UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

UNITED STATES, *et al.*, *Plaintiffs*, v. GOOGLE LLC, *Defendant*.	No. 1:23-cv-00108-LMB-JFA

GOOGLE LLC'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

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PRELIMINARY STATEMENT

1. Over the last 16 years, Google engineers have created a suite of high-quality, safe, efficient, and reliable "ad tech" software that connects sellers and buyers of digital ad space. The technology is extraordinarily sophisticated, subject to constant improvement to meet customer needs and keep up with a rapidly changing digital advertising landscape. Millions of small, medium, and large businesses choose Google's ad tech ecosystem because it works.

2. Each year, Google invests billions of dollars in ad tech innovation. In some years, Google has invested more in ad tech than it has made in profit from the use of ad tech. As a result of those investments—and those of Google's many ad tech competitors—the ad tech industry has experienced an extraordinary eighteen-fold economic growth since 2008. Today, there are more transactions than ever. Prices have never gone up but quality has increased, along with both ad space seller revenue and ad space buyer return on investment. And Google—for all its innovations—had just 25% of the U.S. market for digital display advertising spend when Plaintiffs filed this case. Huge, billion-dollar companies—for example, Meta, Amazon, Microsoft, TikTok, Comcast, Disney, Walmart, Criteo, and The Trade Desk, very few of which were in this market when Google entered—all compete with Google for that spend.

3. A marketplace this sophisticated, crowded, and efficient did not develop overnight. Instead, between 2008 and 2022, Google and others introduced thousands of innovations (with some innovations making others obsolete) to fine-tune product design and better serve the needs of customers.

4. From Google's long track record of innovation (and from the sprawling range of conduct discussed in the Complaint), Plaintiffs and their experts now identify only five allegedly anticompetitive acts. One of these acts involved a 2011 acquisition that the Department of Justice reviewed and allowed to go forward. Within a few years, the acquired technology became

obsolete. Another act involved a product feature that was discontinued five years ago and superseded by a later Google innovation that Plaintiffs do not challenge. All of the acts are described in greater detail below but each was taken in response to customer demands, each benefited customers, and each has a valid business purpose.

5. Taken together, the upshot of Plaintiffs' claims—as Plaintiffs' own expert describes it—is that Google "established a Google-only pipeline through the heart of the ad tech stack, denying non-Google rivals the same access." Lee Rpt. ¶ 574. Put another way, Google has designed a set of products that work efficiently with each other and attract a valuable customer base. The heart of Plaintiffs' complaint is that rivals should have been able to access Google's technology and its customers on their preferred terms and that their inability to do so was unfair and anticompetitive. But this is conduct the Supreme Court considers to be *per se* legal.

6. All of Plaintiffs' claims fail as a matter of fact and as a matter of well-settled antitrust law.

Out of Touch, Out of Date, and Gerrymandered Markets

7. In an antitrust case, the relevant market must be defined by "commercial realities." *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 544 (2018). But Plaintiffs' alleged product markets—which their expert says were "delineated for this case"—bear no resemblance to the commercial realities of how sellers and buyers transact to fill digital ad space. While there are numerous tools that can be mixed and matched to facilitate these transactions, Plaintiffs focus only on three tools: ad servers, ad exchanges, and what they dub "advertiser ad networks." Then, they artificially limit their markets only to tools that facilitate "indirect open-web display advertising" transactions, notwithstanding that there is no such thing as a tool that only facilitates what Plaintiffs call "open web display advertising."

8. Because the entire purpose of ad tech is to facilitate transactions between buyers and sellers of ad space, the three tools Plaintiffs identify are part of a single "two-sided platform for transactions" where a firm "cannot make a sale to one side of the platform without simultaneously making a sale to the other." *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 535, 546 (2018). Plaintiffs minimize this controlling precedent, and the existence of this two-sided transaction platform between buyers and sellers of ad space, because it enables them to exclude obvious substitutes. For example, Plaintiffs exclude direct transactions between buyers and sellers of ad space, which account for 70 percent of all display ad revenue, even though industry participants who substitute between direct and indirect transactions account for the majority of all transactions.

9. Even if Plaintiffs could justify slicing and dicing this market for digital ad space matches to focus on three separate tools that together can help facilitate those matches, Plaintiffs' definitions still fail as a matter of law. The Fourth Circuit has warned against markets such as these that are gerrymandered to support Plaintiffs' case. *It's My Party*, *Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016). Each of the tools identified by Plaintiffs transacts more than just "open-web display ads," which are defined by Plaintiffs as some (but not all) image ads that appear on some (but not all) websites. For example, each of Google's tools identified by the Plaintiffs transacts native ads (ads that blend into the context around them), instream video ads (ads that appear within a video player), in-app ads (ads that appear on mobile applications on phones), Connected TV ads (ads that appear on television streaming devices), and more. But Plaintiffs artificially exclude all of these transactions and calculate market share only based on "open web display" transactions, even though the excluded transactions account for the vast majority of transactions facilitated by the tools.

10. Plaintiffs' definitions are not just out of touch, they are dramatically out of date. Plaintiffs' case focuses on a limited type of advertising viewed on a narrow subset of websites when user attention migrated elsewhere years ago—to apps, social media and Connected TV (all excluded from Plaintiffs' markets). The last year users spent more time accessing websites on the "open web," rather than on social media, videos, or apps, was 2012. In 2022, when Plaintiffs filed their Complaint, only 29% of display advertising spending was spent on the "open web." By contrast, nearly twice that amount was spent on display advertising in mobile apps (55%) and another 15% was spent on Connected TV (ads transacted by the same tools Plaintiffs are focused on). The amount spent on display advertising on Connected TV alone ($20.7 billion) was greater than what was spent on *all* display advertising a decade earlier ($18.5 billion in 2013).

11. It is only by arguing for these artificially gerrymandered markets that Plaintiffs are able to inflate Google's market shares and exclude major companies that view themselves to be major ad tech competitors to Google. Once that competition is added back into the market, Google's shares are dramatically lower: 30% of all display advertising among ad servers; 17% among ad exchanges; and 19% among ad space buying tools. And even if the Court were to accept Plaintiffs' own market for "ad exchanges for open web display advertising"—the heart of Plaintiffs' theory of a "Google-only pipeline"—Google has only a 45% share, well below the 70% the Fourth Circuit observed had been the threshold for Supreme Court cases finding monopoly power. *Kolon Indus. Inc.* v. *E.I. DuPont de Nemours & Co.*, 748 F.3d 160, 174 (4th Cir. 2014).

Conduct Protected by the Antitrust Laws

12. Plaintiffs' claims, all of which challenge Google's decision to develop an integrated ad tech stack and decline to provide rivals access identical to Google's own, are squarely foreclosed by Supreme Court precedent regarding lawful refusals to deal. The Supreme Court has held that: "As a general matter, the Sherman Act 'does not restrict the long recognized right of [a]

trader or manufacturer engaged in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal.'" *Verizon Commc'ns., Inc*. v. *Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004). The Supreme Court reaffirmed this general rule several years later, holding that "businesses are free to choose the parties with whom they will deal, as well as the prices, terms, and conditions of that dealing." *Pac. Bell Tel. Co*. v. *linkLine Commc'ns, Inc*., 555 U.S. 438, 448 (2009).

13. United States Department of Justice ("DOJ") antitrust officials have made frequent speeches calling for the overturn of this controlling Supreme Court precedent, but that precedent binds this Court. In a recent case in the D.C. Circuit, DOJ advanced the same arguments, to no avail. *New York* v. *Meta Platforms, Inc.*, 66 F.4th 288, 306 (D.C. Cir. 2023) (quoting DOJ's amicus brief and rejecting its argument); *see also id.* at 305("To consider Facebook's policy as a violation of § 2 would be to suppose that a dominant firm must lend its facilities to its potential competitors. That theory of antitrust law runs into problems under the Supreme Court's *Trinko* opinion.").

14. Even though the law did not require it, over the years, Google increased its interoperability with rivals' offerings, carefully considering how best to do so without sacrificing safety, efficiency, and reliability. For example, Google's advertiser customers can now use Google Ads to bid on over 30 non-Google ad exchanges and DV360 (a Google buying tool that Plaintiffs artificially exclude from their market) to bid on over 80 non-Google ad exchanges. Likewise, Google's ad space seller customers can reach buyers through at least 30 non-Google ad exchanges through Google's Open Bidding, and can connect to many more non-Google exchanges through header bidding. Moreover, any seller of ad space, regardless of which ad server it uses, can access

Google's advertiser demand from Google's ad exchange by simply placing a piece of code on its website.

15. Again here, Plaintiffs are focused on a world that no longer exists. Industry actors, including Google, have continued to introduce tools that increase interoperability with third parties, not limit it. And today, there is an enormous emphasis today on "Supply Path Optimization," which allows sellers and buyers to eliminate the middleman tools, like ad exchanges, Plaintiffs use to define their markets. The industry will keep moving in this direction not just because these tools improve the bottom line for customers, they also reduce the number of touchpoints for bad actors to enter the advertising ecosystem and reduce technical delays (i.e., latency) that would slow down the speed of these transactions or the delivery of ads to end users before their attention moves on.

Pro-Competitive and Not Anticompetitive Conduct

16. Plaintiffs' case independently fails because they cannot satisfy the standards for Section 2 claims. *See Oksanen* v. *Page Memorial Hosp.*, 945 F.2d 696, 710 (4th Cir. 1991) ("Even assuming [Plaintiff] could demonstrate the existence of monopoly power, he must still prove that [Defendant] willfully acquired such power or sought to maintain it. To satisfy this burden, [Plaintiff] must show that a [factfinder] could find no valid business reason or concern for efficiency" for the challenged acts).

17. Across not just the five challenged acts that form the basis of Plaintiffs' case but also the thousands of innovations introduced during the period at issue, Google endeavored to maximize value for ad space buyers and sellers (as well as users) by improving ad safety and security, user privacy, auction transparency, and the customer experience.

18. The five challenged acts were each motivated by these valid business reasons or concerns for efficiency. Google's decisions only gradually to expand the ability of Google Ads'

customers to bid into third-party exchanges reflected a concern for ensuring that these ad space buyers were guaranteed access to vetted sellers with quality inventory. This guarantee has been part of Google's value proposition from its earliest days in the industry when Google expanded from selling ads on its Search property to helping those buyers access other vetted inventory on the Internet. Buyers who were willing to trade-off some vetting could always access third-party sellers and exchanges through Google's DV360 offering. Similarly, Google's decision to restrict real-time bids from its ad exchange to its ad server ensured efficient and reliable performance by minimizing latency and enabling Google to introduce other features that helped its customers maximize value. One such feature was Dynamic Allocation, which allowed Google's ad space sellers to get the highest possible bids for their inventory, and has only been before the advent of yet another Google feature that now allows customers to compare real-time bidding information across exchanges. Google also adopted Unified Pricing Rules, which helped protect ad space buyers from price-fishing schemes by sellers of ad inventory that caused buyers to overpay for inventory and improved matches by simplifying the increasingly confusing ad tech bidding landscape. Finally, the 2011 acquisition of AdMeld, which DOJ reviewed, enabled Google to acquire a (now obsolete) technology that some of its customers were requesting at the time, and its subsequent decision not to integrate a certain AdMeld feature was affirmed by that company's CEO who acknowledged the feature was plagued with security and reliability issues.

19. That is why, far from anticompetitive effects, Google's conduct in this case has led to increased consumer choice, dramatically increased output, decreased prices, and greater opportunities for businesses of all sizes, especially small businesses. This is hardly a commercial market in need of government intervention.

20. What's more, as the Supreme Court has warned for Section 2 cases, findings of antitrust violations can do real damage by harming innovation and competition. Right now, as we speak, the entire industry is focused on new technologies, including AI, that are a world away from what Plaintiffs propose the Court focus on. Yet Plaintiffs are here, seeking to declare who has market power when the future is unknown and an injunction to control that future based entirely on an evaluation of technology from the past. The consequences—intended and unintended—threaten to disrupt and impede the millions of businesses, especially small businesses, that rely on a very complex ecosystem that for sixteen years has been constantly improving to serve their needs.

PROPOSED FINDINGS OF FACT

1. These Proposed Findings of Fact are organized into six primary sections:

1.1. **Section I** addresses the purpose of ad tech tools, which is to match the sellers and buyers of ad space in display advertising transactions. This enables ad space sellers to monetize their content and ad space buyers to advertise to users. This section describes the growth of the ad tech industry in response to the digital content revolution brought about by the Internet and how the ad tech marketplace—and its participants—have developed in response, with intense competition and a growing number of competitor ad tech providers and tools.

1.2. **Section II** addresses Google's ad tech innovations and the products it offers and why, given its overall business, it is uniquely positioned to take into account—when making ad tech product design decisions—the entire display advertising ecosystem, which includes digital content providers who sell ad space, advertisers who buy ad space, and ultimately users who receive digital ads.

1.3. **Section III** addresses Plaintiffs' market definitions and why their proposed markets are inconsistent with the commercial realities of the ad tech marketplace for multiple reasons. *First*, their division of the ad tech marketplace into markets based on component parts ignores the commercial pressures that all the pathways connecting ad space sellers and ad space buyers exert on each type of tool. *Second*, their focus on tools that facilitate indirect "open-web display" advertising ignores that no ad tech tool upon which their market definitions are based transacts solely in "open-web display advertising," with each transacting across different ad channels and formats to serve customer

needs. Users are spending a rapidly declining amount of time accessing digital content on the open web, accessing content instead on apps, social media, and Connected TV—all channels that Plaintiffs exclude from their markets even though display ad spend follows users. *Third*, even within Plaintiffs' component-based markets, they exclude important alternatives for facilitating display ad transactions that compete with the tools in their markets.

1.4. **Section IV** addresses the leading role that Google has played in addressing emerging security threats in the display advertising ecosystem to the benefit of ad space sellers, ad space buyers, and ultimately users. Google has taken into account security and safety risks before allowing rival ad tech tools to interoperate with Google's tools.

1.5. **Section V** addresses the small number of product design innovations on which Plaintiffs focus their claims, explaining that each of Plaintiffs' challenges to those innovations is based on Google not immediately providing rivals "comparable" access to Google's innovations, infrastructure, and customers.

1.6. **Section VI** addresses the metrics for a competitive market—Google's declining market share, new entrants and competition, expanding output, improved quality, and flat or declining prices—which all demonstrate that the ad tech marketplace is a marketplace with vibrant and intense competition.[1]

[1] For any statement in these Proposed Findings of Fact for which no citation is currently provided, Google expects to present supporting testimony and documents at trial. In addition, for statements in these Proposed Findings of Fact for which evidence is cited, Google anticipates that there may be additional evidence introduced at trial beyond the evidence currently cited. At the appropriate time, Google is prepared to discuss with the Court the parties' submission of amended Proposed Findings of Fact that cite to the trial record.

I. The Purpose of Ad Tech Tools Is to Match Ad Space Buyers and Sellers More Efficiently, and the Marketplace for Those Tools Is Vibrant and Growing, with Google Only One of Many Participants Who Fiercely Compete.

2. The emergence of digital content dramatically challenged the traditional newspaper advertising model. New tools emerged, called advertising technology or "ad tech," with the purpose of more efficiently connecting ad space buyers to digital content providers. As a result, advertisers could reach broader audiences with their advertising, and digital content providers could more effectively monetize their content. Ad tech tools saved both ad space buyers and ad space sellers considerable amounts of time and resources.

3. Since the introduction of ad tech tools to serve ad space buyers and sellers, competition among ad tech providers has been intense. Today, as both Google and its competitors recognize, the marketplace remains vibrant and constantly changing, with new entrants challenging existing ad tech providers. Google is just one of the many participants who fiercely compete to attract and retain its buyer and seller customers.

A. With the Emergence of Digital Content, Ad Tech Tools Developed to Connect Digital Content Providers and Advertisers.

4. Before even radio and television, let alone the Internet, the traditional newspaper model provided a "one-stop shop" for sought-after content—local and national news, sports, fashion, entertainment, leisure, and weather.[2] DTX-173 at 12.

[2] With respect to quoted material, unless otherwise indicated, all brackets, ellipses, footnote call numbers, internal quotations, and citations have been omitted for readability. All emphasis is added unless otherwise indicated. Any citation to deposition transcript excerpts designated, counter-designated, or fairness designated by Plaintiffs does not constitute waiver of any of Google's objections to those deposition designations, counter-designations, and fairness designations.

5. Newspaper publishers relied on sales teams and advertising agencies to identify advertisers who would purchase premium ad space in their publications along with the classified ad section of the paper.

6. Newspaper publishers generated revenue based on a combination of subscription and advertising revenue. DTX-173 at 9.

7. The challenges facing print news publications existed for decades before Google was even founded in 1998. And the slow death of print media was already well underway before the earliest conduct challenged by Plaintiffs in this case.

8. According to the Newspaper Association, newspapers experienced a particularly sharp decline in classified advertising in the 2000s, at the same time that Craig's List, a website providing classified advertising, was becoming increasingly popular. DTX-173 at 9, 33.

9. Because of the Internet, the nature of content was redefined. While under the traditional newspaper model, a user would receive information about national news, local news, sports, weather, and style all through a single printed newspaper, the Internet allowed for the creation of more specialized and focused content, allowing a user to search for content on a single subject of interest–for example, a local baseball team's performance. DTX-173 at 12.

10. There was a proliferation of subject-matter specific content on digital properties, including user generated content, that competed with traditional newspaper publishers for users' attention, as well as for advertising dollars. The Internet democratized who could be a publisher, as publishers could distribute content solely from a website and make money from digital advertising. DTX-173 at 12.

11. With increasing content available through digital content, newspaper circulation has been flat or declining and newspaper ad revenue has been on a steady decline since 2005. DTX-173 at 33.

12. A recent study by the Pew Research Center concluded that social media now plays a crucial role in news consumption, with half of U.S. adults receiving news from social media "often" or "sometimes." Israel TT.

13. With the explosion of digital content starting in the mid 1990s, technology also developed to assist ad space sellers to sell and ad space buyers to buy advertising on digital properties. Milgrom TT; Ghose TT; Israel TT.

14. The creators of digital content designate space for digital ads, called inventory. Every user who navigates to a creator's digital content—whether a website, app, TV streaming service, podcast platform, gaming console, or any other digital platform—provides an ad opportunity, referred to as an "impression." Milgrom TT; Israel TT.

15. Ad space buyers—depending on who their target audience is—place different values on impressions based on factors such as the inventory and the user associated with an impression. Milgrom TT; Ghose TT; Israel TT.

16. Ad tech is software that connects digital content providers (ad space sellers) with advertisers who are seeking to reach users through that digital content (ad space buyers). Today, ad tech can facilitate an instant auction, match, and delivery of an ad from an advertiser within a fraction of a second when a user opens digital content. For example, between the time a user navigates to a webpage—for example, *The Washington Post*—and the time the page loads, ad tech works behind the scenes to place ads in multiple slots that exist on the web page, which are usually targeted to the specific user visiting the page. Milgrom TT.

17. The purpose of ad tech is to match sellers and buyers of ad space, and ultimately the users viewing the digital content provider's content, in transactions. The product "sold" is the transaction or the "match," with the interests of ad space sellers and buyers and users all intersecting. Milgrom TT; Israel TT.

18. Today, advertising technology needs to be able to find the best match—often out of millions of possibilities—to show to a particular user within a few hundred milliseconds. That requires engineering and computational power. *E.g.*, DTX-77 at 2 (identifying "speed" as one of the key "forces at play in computing today" because " milliseconds really do matter to users [and also to] our product innovation cycle."); Milgrom TT.

19. The first digital display ad was placed in 1994. Initially, display advertising was sold through "direct deals." Digital content providers, through their sales teams, contracted directly with advertisers and advertising agencies to sell inventory on their websites. Ghose TT.

19.1. eMarketer, a leading industry analyst cited by Plaintiffs' own expert, defines "digital advertising" to include "advertising that appears on desktop and laptop computers as well as mobile phones, tablets, and other internet-connected devices, and includes all the various formats of advertising on those platforms."[3]

19.2. eMarketer defines "display advertising" as "advertising that appears on desktop and laptop computers as well as mobile phones, tablets, and other internet-connected devices; includes banners, rich media, sponsorship, video, and ads such as Facebook's News Feed Ads and Twitter's Promoted Tweets." DTX-2161 at tab "Digital by Format", cell Y3.

[3] EMarketer, *US Digital Ad Spending Forecast*, tinyurl.com/eMarketerDigitalAds.

20. In the mid-to-late 1990s, ad space sellers and buyers started to conduct direct deal transactions through ad servers. **Publisher ad server**s helped digital content providers manage their inventory across their often many direct deals, communicate to advertisers the characteristics of their inventory, and monitor performance. One such publisher ad server that emerged was DoubleClick for Publishers. Ghose TT.

21. Even with ad servers, digital content providers still had some online inventory that was not sold through direct deals—referred to as "remnant inventory." **Ad networks** emerged as a tool to sell remnant or leftover inventory. Just like ad networks before the Internet, these ad networks would aggregate remnant inventory from multiple digital content providers and resell the inventory to advertisers. DTX-1514 at 29; Ghose TT.

22. Ad networks have always served both digital content providers and ad space buyers. For content providers, ad networks provided a more cost-effective way to package and sell remnant inventory. For ad space buyers, ad networks provided a wide selection of trusted digital content providers and the ability to target ads to particular audiences. DTX-1 at 3, 5; DTX-2 at 3-4; Milgrom TT.

23. By the early 2000s, because there were hundreds of ad networks and multiple different channels to sell remnant inventory, digital content providers set up a "waterfall" system to fill their inventory. Under the "waterfall" system, content providers would offer their inventory to ad networks in a sequential order, but only if there was no direct deal to fill the impression being sold. Content providers ordered ad networks by preference. These preferences were set based on static prices: for example, a content provider that had previously sold ads to Ad Network A for $3 and to Ad Network B for $2 might place Ad Network A above Ad Network B in the "waterfall."

Ad Network A would be offered the remnant impression; if it were not interested, Ad Network B would be offered the same impression. Milgrom TT.

24. Between 2005 and 2007, an additional form of advertising technology—"**ad exchanges**"—emerged. Ad exchanges ran auctions that enabled digital content providers and ad buyers to transact without needing to negotiate direct deals or with ad networks on a bulk basis upfront. In their earliest form, ad exchanges used the waterfall process. That meant ad buyers and their ad agencies submitted fixed (static) bids on impressions. DTX-7 at 3 (Microsoft noting that "it is inevitable that exchanges develop, because they are inherently more efficient than 1-1 negotiated advertising"); Milgrom TT.

25. In 2007, **demand-side platforms** also emerged. Demand-side platforms help ad space buyers synthesize available data on a user and website, create ad creatives (the visuals and any accompanying audio that is actually presented to a user when the user views an ad), and manage buying across multiple channels, including across exchanges, direct deals, and other means of reaching publishers. DTX-71 at 22; DTX-91 at 3-4. Demand-side platforms provide a single interface that connects to all the sources from which an ad space buyer can purchase impressions. DTX-71 at 22; [redacted] Milgrom TT; Israel TT.

26. On the ad space seller side, at around the same time, **supply-side platforms** ("SSPs") became popular. Supply-side platforms helped ad space sellers to manage their relationships with multiple ad networks from a single interface. They also automated the "waterfall" process for prioritizing and selecting among ad networks so that sellers could optimize their inventory sales in order to maximize revenue. Ghose TT.

27. Starting around the same time, major digital content providers like Facebook and Amazon who wanted to sell their owned-and-operated inventory directly to ad space buyers created **self-service platforms**, which are internally developed ad tech tools that content providers can use to sell their owned-and-operated inventory (and, in some instances, third-party inventory) directly to ad space buyers. Ghose TT.

28. Finally, in one of the most recent stages in the evolution of ad tech, **supply path optimization** is a push to improve the return on investment of advertising spend by, among other things, eliminating the number of third-party intermediaries involved in each ad transaction. Supply path optimization products enable ad space buyers to bypass some intermediaries when connecting with ad space sellers.

29. All of these ad tech tools benefit both ad space buyers and sellers by consolidating campaigns and media, which reduces the expenditure of hours and resources. If ad tech did not exist, ad space buyers and sellers would still need to directly connect for each individual campaign.

30. From the beginning, ad tech tools have been built to facilitate ad transactions on digital content—regardless of where the ad is displayed, whether on websites, in apps, on Connected TV, or even digital out-of-home advertising such as digital billboards. That is because digital content is available on, and thus reaches users, across numerous screens and devices. Digital content also displays numerous formats and layouts of display ads.[4] The goal of ad space

[4] Throughout these Proposed Findings, the term "ad channels" is used to refer to the variety of devices and environments that display ads can appear on, including, for example, websites, mobile apps, Connected TV, gaming consoles, audio programs, digital out-of-home, and more. The term "ad formats" is used to refer to the layouts that a display ad can appear in, such as traditional banner, native, and video. These are just two axes—among others such as context, size, price, creatives, type of targeting, and more—along which display ads can have different characteristics. As explained below, *infra* §§ III.B, ad space buyers and sellers shift their display advertising spend across ad channels and ad formats, and the same ad tech tools are used to serve display advertising transactions across ad channels and ad formats.

buyers is to reach users, and of ad space sellers is to monetize content. Neither goal is specific to an ad channel or ad format.

31. Programmatic ad tech tools refer to ad tech tools that automate buying and selling of digital advertising. They have been especially effective in achieving better outcomes for display advertising. DTX-1514 at 27-28; DTX-574 at 3 ("Marketers have learned that data and automation can help all of their campaigns perform better."); Milgrom TT.

32. Programmatic tools are also valuable to ad space buyers and sellers because they automate the manual work and leave marketing and sales teams, respectively, with more time and resources to devise creative, higher-level strategies for marketing and monetization. They can also add value by providing a centralized user interface from which to manage display advertising transactions across ad channels and formats. For example, a digital content provider with a website and an app can manage sales on both from one tool.

33. Programmatic ad tech tools have allowed digital content to operate economically at scale and keep publisher content open, not behind a paywall. Ad tech democratized digital content—including not just websites, but apps, streaming TV, audio platforms, and more. Prior to programmatic advertising, advertising was concentrated in the largest publishers. Now, small digital content providers with quality content are able to monetize their content in the same way that larger providers are, creating an open digital ecosystem of information. *E.g.,* DTX-76 at 5 ("The work we do with publishers is critical because it keeps the internet open and accessible.").

34. Integration of tools from the same provider so that ad space buyers and sellers can connect through one integrated product benefits ad space sellers and buyers. That is because the tools of different providers are not automatically interoperable. As an initial matter, connecting two tools from different providers always requires writing new code to make the connection

possible. Moreover, connecting tools requires additional investments in a number of areas: latency reduction, quality control, technological infrastructure, negotiation of billing agreements, and more. Without integration, many of those inefficiencies are avoided, creating value for customers, tech efficiencies, and improved safety and security. *E.g.*, DTX-939 at 2 (Xandr document describing these benefits of an end-to-end platform).

35. When ad tech tools from multiple providers participate in facilitating a match, "latency"—or the period of time between when the user reaches the digital content and when the ad actually loads—increases. DTX-49 at 1 (noting that Google executives' "biggest concern was latency" and explaining that "daisy chaining from one network to another was one of the biggest culprits in terms of latency today"); DTX-50 at 23-24 (explaining that for each additional transaction segment between two products, latency is added); Deposition of The New York Times (Jay Glogovsky) Tr. at 274:22-275:3 ("In my personal capacity, I prefer Google Ad Manager and AdX and the benefits of them being connected for the efficiencies that the publishers, The New York Times included, gain from being in one system and the reduction in operations, operational burden that it saves").

36. Latency is important because ads that load slowly hurt digital content providers, advertisers, and users. It is annoying for users when websites load slowly. "Part of a good user experience is fast loading pages." DTX-60 at 31.

37. From the advertiser perspective, when an ad loads slowly it is likely a user might have clicked away from the content or scrolled down by the time the ad loads—without actually viewing the ad. And from the content provider's perspective, slow load times make users less likely to return to a website or may even prompt users to navigate away from the website. DTX-

755 at 3 ("The most recent research shows that every second of delay reduces conversions by 7%.").

38. Moreover, as latency challenges get introduced, increased computational power is required in order to keep loading ads in the fast window that users expect.

39. The participation of multiple ad tech providers in facilitating a match also increases exposure to security and safety risks. Deposition of Microsoft (Benneaser John) Tr. at 289:16-20 ("Q. And would you … agree that having an end-to-end platform helps prevent fraud? A. Yes."); DTX-939 at 2. When a match between an ad space buyer and seller is facilitated by one provider, that provider can vet both parties before allowing them to use its tools, require that both comply with safety policies, and monitor both for compliance with security and safety policies. When a single match passes through multiple providers, each individual provider has less visibility into and control over the security and safety standards of other providers. DTX-1016 at 8, 43.

40. Connecting multiple intermediaries in a match also increases exposure of Internet user data. Each impression is accompanied by data about the user who would view the ad, which informs the advertiser's judgment of the impression's value based on who the advertiser is trying to reach. That information can include the user's IP address (a numeric label assigned to the user's device when it connects to the Internet), the user's browser, the domain name and URL of the website visited, the previous page loaded by the user, data shared by the digital content provider about the user (such as gender, race, parent, income bracket, education, year of birth, zip code, and more), as well as data shared by the digital content provider about the user's likely interests (such as movie bug, fitness enthusiast, or pet lover). When that information passes through intermediaries, all of it is exposed to more parties—and to more risk of bad actors accessing that data.

41. Beyond addressing latency, security, and data privacy, connecting two different providers' ad tech tools with each other requires negotiating agreements between providers—often with each individual additional provider that is added. Agreements have to establish policies on data collection, how to resolve billing discrepancies between providers when they take revenue shares and pay digital content providers, and how to divide the costs of the engineering work required to create an integration.

B. The Number of Participants in the Ad Tech Industry—and the Tools that Are Available—Keeps Growing, Creating Dynamic and Rigorous Competition.

42. As early as 2010, the Interactive Advertising Bureau, an industry organization, described the competition to facilitate matches between ad space buyers and sellers as "crowded." DTX-71 at 1, 5. That has remained true ever since. For example, the number of ad exchanges grew from less than 10 in 2010 to over 80 in 2019 and now over 100 today.

43. Today, there are hundreds of ad tech tools available to match ad space sellers and buyers and facilitate display advertising transactions. Since 2003, the following companies are just a few examples of the competitors that have introduced new ad tech tools and continue to successfully compete for display advertising spend today: Index Exchange, Kargo, Smart Ad Server (since acquired by Eqautiv), PubMatic, Yahoo!, Rubicon (now known as Magnite), Facebook (now known as Meta), AppNexus (since rebranded as Xandr and acquired by Microsoft), Freewheel (since acquired by Comcast), The Trade Desk, Kevel, Roku, YieldMo, Amazon, PromoteIQ (since acquired by Microsoft), Prebid, Beeswax (since acquired by Comcast), Concert, Target, Criteo, Walmart, TikTok, Disney, and more.

44. By any metric, the marketplace for ad tech tools has, with the benefit of such intense competition, experienced dramatic growth and innovation in the exact time period when new entrants and technologies are constantly entering the marketplace.

45. Google's internal documents reflect that Google has been acutely aware of the significant pressures exerted by competitors:

45.1. "Competition in the display space is strong and increasing." DTX-486 at 38.

45.2. "The Ads ecosystem is becoming increasingly complex and even more competitive." DTX-670 at 2.

45.3. "Meta, Amazon and now TikTok have made significant share gains by outpacing overall digital ad industry growth." DTX-1271 at 5.

45.4. "Programmatic advertising has grown more complex, with multiple access points to inventory for Buyers and multiple demand sources for Publishers." DTX-1016 at 10.

46. To address the fierce competition it faces, Google must continuously invest in innovating and improving its products. Google's engineering expenditures investing in its display business, for the period 2017 to 2022, totaled $7.6 billion—over $1 billion each year. DTX-1881 at 1; Israel TT.

47. Contemporaneous Google documents demonstrate that it plans and invests in product improvements in order to respond to the dynamic and intense competition it is facing. For example:

47.1. A June 2011 presentation noting Google's plans to invest in remarketing, in response to competition from Criteo and other rival ad space buying tools. DTX-89 at 28; *see also* DTX-128 at 3, 5 (listing Dynamic Remarketing as "#2" initiative based on "losses to competition" and charting action steps to "double down on our efforts" to improve performance).

47.2. A September 2015 presentation describing competition from native advertising providers, including Outbrain, Taboola, Sharethrough, and Facebook, and describing Google's development of "native-like" ad formats in response. DTX-267 at 6, 7, 13.

47.3. An April 2018 presentation highlighting competition from Amazon, Criteo, and Facebook, and describing Google's investments in targeting, bidding, and feature improvements. DTX-549 30-34, 38, 93-97.

47.4. A May 2019 presentation noting that Google's display business is "growing below market, and below Facebook and the Trade Desk, key competitors" and discussing Google's enhancement of product features in response. DTX-706 at 2-3, 17-23.

47.5. An October 2019 presentation summarizing competition with Amazon and Facebook regarding performance measurement, and Google's investments in AI and machine learning to enhance its measurement capabilities. DTX-805 at 10, 21, 24, 33, 40.

48. The documents and testimony from some of Google's biggest competitors likewise describe the ad tech industry as highly competitive, with disruptive new technologies developing, new products and services emerging, and competition expected to intensify:

48.1. AppNexus: "This is an ideal time to make a big play. The battle lines are being drawn to determine the major winners of the upcoming cycle. Amazon is stealthy aggressive and winning. Google is a bit on the ropes and is surprisingly vulnerable. Facebook and Apple have retrenched but have the resources to

come back with a new push sometime over the next 12-14 months." DTX-379 at 2.

48.2. Microsoft: "Q. But at this point, as you just said, there are multiple competitors, do you know how many at this point in 2021? A. It's the same list that I mentioned before, Amazon, Google, Facebook, Trade Desk, Magnite, Pubmatic." Deposition of Microsoft (Benneaser John) Tr. at 92:15-22; *id.* at 93:24-94:12 (also identifying Yahoo, Freewheel, Index Exchange, and Criteo as competitors).

48.3. Meta: "Our business is characterized by innovation, rapid change, and disruptive technologies. We compete with . . . companies that sell advertising to businesses looking to reach consumers and/or develop tools and systems for managing and optimizing advertising campaigns. . . . As other companies introduce new products and services, including as part of efforts to develop the metaverse or innovate through the application of new technologies such as AI, we may become subject to additional competition." DTX-1480 at 12.

48.4. Criteo: "We compete in the commerce media market and in the broader market for digital marketing and media monetization, primarily through Display Advertising. Our market is complex, rapidly evolving, highly competitive, still fragmented, and yet rapidly consolidating. We face significant competition in this market, which we expect to intensify in the future." DTX-1420 at 29.

48.5. The Trade Desk:

[redacted]

[redacted]

ii. "The market in which we participate is intensely competitive, and we may not be able to compete successfully with our current or future competitors." DTX-1484 at 5.

49. Meta (formerly known as Facebook)[5], Amazon, Microsoft, Criteo, and TikTok are just some of the most significant competitors who have won display advertising spend from Google throughout the time period that Plaintiffs allege Google has had monopoly power.

1. Meta

50. Meta's display advertising began in earnest when it launched Facebook Ads, a social media platform, in 2007. DTX-21 at 1.

51. The growth of Meta's display advertising business was further facilitated by its acquisition in 2012 of Instagram, another social media platform that became popular for sharing pictures and that offered valuable ad space to reach Instagram users.

52. Meta's U.S. ad revenues grew from $224 million in 2008 to approximately $50 billion in 2022. Israel TT; DTX-2147; *see also* Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 22:3-21 (in 2022 Meta generated approximately $100 billion globally from ad sales on its own and operated properties).

53. Meta's advertising business was initially focused on advertising on its own properties. It offered advertisers seeking to reach Facebook or Instagram users a self-service buying tool, now known as Meta Ads Manager, to purchase Meta's owned-and-operated inventory.

[5] Meta Platforms, Inc. ("Meta") owns and operates multiple digital properties—of most relevance to this case, Facebook and Instagram, which are both available in website and app formats. Meta Platforms, Inc., the parent company, was formerly named Facebook, Inc.

54. In 2014, Meta also launched the Facebook Audience Network (now the Meta Audience Network), which allowed ad space buyers to purchase ad inventory both from Meta and from third-party website sellers. Deposition of Meta Platforms, Inc. (Omri Farber) Tr. at 16:3-17:12. In 2020, Meta's ad network transitioned away from selling third-party website inventory to selling third-party app inventory. Ad space buyers that use the Meta Audience Network also purchase advertising on Facebook and Instagram. Deposition of Meta Platforms, Inc. (Omri Farber) Tr. at 28:17-22.

55. Google estimates that the Meta Audience Network attracted between $4.5 billion and $5 billion of ad spending in 2018. DTX-801 at 7.

56. Meta manages sales of its owned-and-operated inventory using its own in-house tool technology, which runs auctions for each impression on Meta's properties in order to select the demand source that will win a particular impression.[6]

57. As shown in Google's internal documents, since at least 2013, Google has considered Meta a significant and threatening competitor for its display advertising business, and one that has successfully won spend from Google's customers.

57.1. In 2017, Google observed that "Facebook has taken the leadership position from Google over the last four years, capturing a significant share of display market growth," since 2013. DTX-486 at 6.

57.2. In 2017, Google reported that Facebook is winning advertiser business from Google because Facebook competes on ROI based on its "in-depth audience profiles and more aggressive attribution." DTX-370 at 1.

[6] Meta Business Help Center, *About Ad Auctions*, tinyurl.com/MetaAdAuctions.

57.3. Again in 2017, Google noted that "Facebook (FB) and Amazon (AMZN) have been winning more mind and market share from our top partners due to their growing array of publisher solutions," and advertisers have shifted their budgets to both competitors. DTX-463 at 2, 4.

57.4. By January 2018, referring to the display and video market, "Facebook has become the dominant player and is expected to continue to grow faster than the market through 2020." Google viewed itself as having "been in second place" compared to Facebook "since 2014." DTX-695 at 3.

57.5. As Google observed, "Facebook's ad business continues to strengthen (in spite of their PR issues). They are building deeper capabilities that are being integrated to 4 of the largest mobile properties in the world." DTX-670 at 2.

57.6. The trend of Facebook competing successfully against Google has continued. In its 2021 Global Display Plan, Google listed Facebook as "competition" because it is "the first stop for [small and medium-sized businesses] solidified with 9 [million] advertisers." DTX-1043 at 7.

58. Meta considers itself to compete with both Google and other ad tech providers, like Amazon, in the display advertising business. *See, e.g.*, Deposition of Meta Platforms, Inc. (Omri Farber) Tr. at 83:20-84:7, 87:13-88:5, 88:14-16, 90:7-10, 91:8-11 ("Amazon would be one of our competitors," as well as The Trade Desk, Microsoft's Xandr, Criteo, Google's Display Network, and Connected TV providers); DTX-293 at 6 (Facebook comparing its market share in "digital non-search" to Google, Microsoft, Twitter, and others).

2. Amazon

59. Like Meta, Amazon began its ad business by selling ad space on its own properties (including its immensely popular e-commerce store) before expanding to providing other ad tech services.

60. Today, Amazon's buy-side products include self-service buying tools and a demand-side platform that allows advertisers to purchase ad inventory "on and off Amazon." DTX-553 at 1; DTX-1423 at 1.

61. Amazon's sell-side products include two header bidding products, Transparent Ad Marketplace and Unified Ad Marketplace. Sellers such as Dow Jones use Amazon's header bidding products, which, in essence, connect ad space sellers to multiple exchanges and permit them to compare real-time bids from those exchanges. Deposition of News Corp (David Minkin) Tr. at 46:13-25.

62. In addition, [redacted]

63. Evidence indicates that Amazon may currently be developing its own third-party publisher ad server technology that would enable other ad space sellers, including website publishers, to use Amazon's product to sell their own inventory. That evidence includes job postings that indicate Amazon intends to hire personnel to build a supply-side tech platform that would help digital content providers sell ads on and off Amazon. Israel TT.

64. Amazon's digital advertising revenues have grown from $85 million in 2008 to $29 billion in 2022. Israel TT; DTX-2147.

65. Google documents and surveys identify Amazon's ads business as a key competitive threat to Google, particularly because Amazon has developed ad tech solutions that serve buyers and sellers, creating an integrated ad tech offering that competes with Google's.

65.1. A Google slide deck compared Amazon's product offerings against Google's and observed: "Amazon has developed key pillars of an advertising ecosystem that can compete with DoubleClick stack." DTX-406 at 6.

65.2. Google observed that "Facebook and Amazon have been winning more mind and market share from our top partners due to their growing array of publisher solutions," and advertisers have shifted their budgets to both competitors. DTX-463 at 2, 4.

65.3. "Competition in the display space is strong and increasing," with Amazon as a key competitor that "continues to innovate in performance marketing." DTX-486 at 38.

65.4. Google described Amazon as "an existential threat" that is "competing in Commerce and Ads." DTX-527 at 6.

65.5. "Amazon is scaling their ads business in multiple ways - geographically, going deeper for on-Amazon ads . . . , scaling ad-supported offerings . . . , and growing their [demand-side platform] / ad-network." DTX-670 at 2.

65.6. When compared to Facebook and Amazon, Google views itself as "weakest amongst competitors in display and video." DTX-884 at 8.

65.7. Under "competition," Google listed as competition to its display ads business "Amazon as [the] go-to for online shopping as eCommerce accelerated." DTX-1043 at 7.

66. Amazon considers its ad tech products to compete with Google (specifically Google's buying tool, Google Ads), Facebook, Pinterest, and Twitter in the display advertising business. For example, it compared its own self-service platform for ad space buyers to those offered by these four "competitor services." DTX-553 at 1.

3. Microsoft

67. Microsoft is a digital content provider that owns many properties, ranging from its own search engine, Bing, to a gaming console, Xbox, and a video call platform, Skype.

68. Microsoft also has a long history in the ad tech landscape that has been driven, in part, by a series of strategic acquisitions and deals. In 2006, it launched MSN adCenter, its first digital advertising platform and expanded it in 2010 through a joint venture on Yahoo Search and Bing. Israel TT.

69. In 2015, Microsoft entered into a deal with AOL for AOL to manage sales of Microsoft's inventory across various Microsoft products.

70. In 2016, Microsoft acquired LinkedIn, a major business and employment-focused social media platform. LinkedIn has a long history of selling ad space, and since it was acquired by Microsoft has continued to expand to new ad formats and offerings.

71. In 2018, Microsoft launched the Microsoft Audience Network, an ad buying tool that allows Bing search advertisers to extend their campaigns to include display ads on both Microsoft and third-party publisher properties. Deposition of Microsoft (Benneaser John) Tr. at 31:20-33:13, 284:5-21.

72. In 2019, Microsoft acquired Promote IQ, which facilitates the sale of advertising on retail websites such as Kroger and Kohl's. Israel TT.

73. In 2022, Microsoft acquired Xandr from AT&T. Xandr provided ad tech tools that serve both ad space buyers and sellers, including a cross-screen buying platform and a publisher

ad server and supply-side platform (which was formerly known as AppNexus). Deposition of Microsoft (Benneaser John) Tr. at 9:13-18.

74. Following the acquisition, Microsoft integrated Xandr's products with its other offerings. Deposition of Microsoft (Benneaser John) Tr. at 133:12-134:6. One of the primary reasons that Microsoft was interested in acquiring Xandr was Xandr's offering of an "end-to-end platform." DTX-1524 at 16 ("Integrated platform advantage provides an optimized path to demand through [Xander] Invest demand-side platform, maximizing revenue that reaches you."); DTX-939 at 1-2 ("The collective value of the end-to-end advertising technology stack is critical to success."). Owning an integrated, end-to-end platform enabled Xandr to "increase its" revenue share, "increase value for customers," create "tech efficiencies," and "ensure its high-value data stays within its platform." DTX-939 at 2.

75. Microsoft has described Xandr as "one of the world's largest marketplaces," Deposition of Microsoft (Benneaser John) Tr. at 290:12-17, with an "expansive" advertising ecosystem that reaches over one billion users, *id.* at 294:7-19. Microsoft and Xandr market to advertisers that their combined advertising ecosystem allows buyers to "reach across different audiences and formats," including through "CTV, gaming, shopper marketing and native all as a result of Microsoft and Xandr." *Id.* at 296:2-18.

76. On the sell side, following the integration, Microsoft stated that ad space sellers using Xandr would have access to "unique demand" originating from Microsoft's search (Bing) and Microsoft Audience Network customers. Deposition of Microsoft (Benneaser John) Tr. at 284:5-13; *see also* DTX-1524 at 15, 17-18 (referring to demand available through Xandr's sell-side tools as "proprietary demand" and "premium demand").

77. In 2022, Microsoft beat Google and Comcast in winning a deal to become the "global advertising technology and sales partner" for Netflix's ad-supported subscription plan. Deposition of Microsoft (Benneaser John) Tr. at 101:20-24. [redacted]

78. Following Microsoft's successful win of the Netflix deal, Google documents demonstrate that Google considered Microsoft a competitor in both the buy-side and sell-side ads business, as the deal could "open up doors for agency and client meetings to test out what Microsoft Ads has to offer" and Microsoft could use the new deal "to actively promote their sellside ads business." DTX-1309 at 3. As Google observed, its loss of the deal showed "that there is a healthy ads market with players joining offering exclusive inventory and data packages to compete with Google." *Id.* at 4.

79. Microsoft views itself as a competitor to not just Google, but also other ad tech providers such as Amazon and Facebook. Deposition of Microsoft (Benneaser John) Tr. at 26:19-24 ("Q. And is it also your understanding that Microsoft competes with Google – Microsoft Advertising competes with Google Ads? … A. That is correct."); *id.* at 95:15-20 ("Q. But at this point, as you just said, there are multiple competitors, do you know how many at this point in 2021? A. It's the same list that I mentioned before, Amazon, Google, Facebook, Trade Desk, Magnite, Pubmatic."); *see also id.* at 93:21-94:12 (also identifying Yahoo, Freewheel, Index Exchange, and Criteo as competitors). Xandr, before it was acquired by Microsoft, also considered Facebook, Google, and Amazon to be its major competitors in display advertising. DTX-962 at 28 (Xandr competitive analysis stating "Facebook, Google, and Amazon account for a growing

share of programmatic display ad spend"); [redacted]

[redacted]

4. Criteo

80. Criteo offers both buy-side products, such as a demand-side platform, and sell-side products, such as a publisher ad server and a supply-side platform. DTX-1420 at 12.

81. Criteo markets as a competitive advantage its access to proprietary commerce data about users. Criteo's advertiser customers can use that data to identify the best users to target with advertisements, so that they can serve "highly relevant digital [ads]." DTX-1420 at 9. Criteo's access to this proprietary data gives it "exposure to over $1 trillion in online sales" annually, reflecting approximately "$2.7 billion worth of transactions per day on average" and delivering 1.8 trillion ads in 2022. *Id.* at 2, 13. Criteo has exposure to daily data for over 750 million active consumers and billions of opportunities to connect to consumers each day. *Id.* at 2. It has used these datasets to develop AI tools that improve user targeting.[7]

82. According to Criteo's Chief Product Officer, Criteo's data access provides the company with a "competitive advantage," and Criteo "definitely" competes against Google, Amazon, and Facebook. Deposition of Criteo (Todd Parsons) Tr. at 89:13-90:16, 91:9-92:3.

83. Google documents demonstrate that it considered Criteo a notable competitive threat to Google's display ad business. For example, one noted that Criteo "boasts a 90%+ win rate" in head-to-head tests with Google and other competitors and has "90% client retention." DTX-961 at 10. Another described Criteo's "strong and growing portfolio" with "[r]apid and accelerated growth at a global scale." DTX-394 at 5-7.

[7] Criteo Commerce Growth Help Center, *Criteo AI Engine*, tinyurl.com/CriteoAI.

84. Criteo considers not just Google, but also Facebook and Amazon, to be "main threats" to its ad tech offerings. DTX-360 at 8; *see also* DTX-1179 at 2-3, 5 (assessing strengths and weaknesses of Facebook, Amazon, and Google compared to Criteo). In addition, "in-house ad stacks" also serve as a threat to Criteo. From Criteo's perspective, when sellers develop their own in-house means to sell inventory, Criteo must "strengthen customer relationships and offer a differentiated solution." DTX-360 at 8.

5. TikTok

85. Since its official launch in 2018, TikTok (a Chinese social media platform) has become the most downloaded app in the U.S. Israel TT.

86. According to estimates, in 2023, U.S. adult users spent 55.8 minutes per day on average on TikTok, exceeding the time spent on YouTube (47.5 minutes), Twitter (34.1 minutes), Snapchat (30.8 minutes), Instagram (30.6 minutes), and Facebook (30.2 minutes). Israel TT.

87. With the success of TikTok's platform, its advertising business has likewise grown because the inventory on the app provides advertisers another way to reach a broad audience without the use of third-party ad tech tools like Google's. Israel TT. TikTok provides advertisers with a self-serve ad platform, TikTok Ads Manager, that enables buyers "with various degrees of savviness" to advertise content on the app. DTX-1188 at 15.

88. In addition to selling ad space on its own platform, TikTok also now offers Pangle, an ad network that connects ad space buyers to non-TikTok digital content providers, "totaling over 100,000 global apps," from TikTok's ad tech tool. TikTok describes Pangle as "one of the

fastest growing mobile ad networks" that is "continu[ing] to expand . . . into … mobile web traffic."[8]

89. TikTok manages sales of its owned-and-operated inventory using an in-house tool that runs auctions "based on bid price and the relevance an ad might have to [viewers]."[9]

90. TikTok's advertising revenues are predicted to be $9.5 billion by 2025. DTX-1927 at 1; Israel TT.

91. Internal Google documents describe TikTok's growth as the "fastest ever." DTX-1188 at 2, 3; *see also* DTX-884 at 8 (connecting Google being "weakest amongst competitors in display and video" with "TikTok gr[owing] to 150M users in <2 yrs"), *id*. at 37 (identifying TikTok as an emergent new competitor); DTX-1271 at 14 ("Ongoing customer research efforts confirms TikTok's emerging threat, but also a reminder of Meta's current presence."). Google noted that TikTok's "advertising strategy replicates Facebook's," DTX-1188 at 2, but that TikTok's goal growth "outpaces Google & Facebook's hyper-growth phases" in advertising, *id.* at 8.

6. Connected TV

92. Connected TV ("CTV") devices are smart devices that stream videos, such as Apple TV, Roku, and Amazon Fire TV. The growth of advertising on CTV, and tools that facilitate those ads, has posed a significant competitive threat to Google's display advertising business.

93. CTV devices are a growing source of user attention that draws advertisers. Israel TT; Deposition of Criteo (Todd Parsons) Tr. at 47:11-48:11; DTX-1173 (reporting study results

[8] TikTok Business Help Center, *About Pangle* (last updated July, 2024), tinyurl.com/TikTokPangle.

[9] TikTok Business Help Center, *Available Bidding Methods* (last updated Aug. 2024), tinyurl.com/TikTokAuctions.

showing 28 percent of advertisers shifting spend from "other types of digital/mobile video" to CTV and 30 percent of advertisers shifting spend from "other types of digital, non-video" to CTV). The time spent by consumers with CTV devices has grown from 57 minutes in 2019 to 111 minutes in 2023. Israel TT. It was estimated that by 2023 at least 85 percent of households would have at least one CTV device. Israel TT.

94. Many CTV providers, including Peacock, Max, Paramount+, Netflix, Hulu, and Disney+, have launched ad-supported tiers of membership, which present opportunities for ad tech tools to facilitate transactions in CTV. Ghose TT.

95. Internal Google documents describe the buying tools that specialize in purchasing CTV inventory, such as The Trade Desk, Roku, Amazon, and Verizon, as exerting significant pressure on Google's buying tools. For example, one stated that "DV360 is significantly behind competitor" tools in the third-party CTV space. DTX-1229 at 1-2; *see also* DTX-1379 at 1 ("[W]e lag behind The Trade Desk in" third-party CTV growth. . . . This is concerning given the pace of CTV market growth."); DTX-1053 at 3 ("In 2020, Google has already lost $[redacted] to TTD, with another $[redacted] at risk. Post 2020, there is $[redacted] at risk."). Roku and Amazon are able to "leverage logged in user data for audience matching & measurement," which gives them certain advantages over Google's tools. DTX-1229 at 2.

96. One the sell side, a key source of competitive pressure third-party ad tech tools like Google's are the proprietary self-service platforms CTV providers have created to sell their own inventory. For example, before it was acquired by Disney, Hulu developed and used its own, internal publisher ad server. Ghose TT. Disney, which Google identifies as a "digital competitor" for advertising budget, also invested in building its own advertising technology infrastructure from

scratch to sell its CTV inventory. DTX-1504 at 5. Disney now uses its own in-house publisher ad server to monetize much of its video inventory.

97. Google's sell-side tools also compete with the third-party sell-side tools, like Freewheel, that win the business of CTV providers because they have strong capabilities in serving video ads. *See infra* ¶ 449.

98. Other ad tech providers, like Meta, likewise recognize that their ad tech tools compete for display ad spend with tools that facilitate Connected TV ads. *E.g.,* Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 35:13-17 (agreeing that Meta "compete[s] for ad spend with companies that sell ads on connected television").

7. Supply Path Optimization

99. An important trend in digital advertising, called supply path optimization, is that ad space buyers and sellers, as well as ad tech providers, are seeking to find the most efficient supply paths to facilitate matches. Through supply path optimization, ad space buyers and sellers are seeking more efficient pathways to facilitate transactions, which may combine existing ad tech tools or bypass them entirely. DTX-1534 at 50 (describing the "on-going reshuffle in the services and approaches offered by various ad tech vendors aiming at supply path optimization"). One of the ways supply path optimization is accomplished is by disintermediating third-party exchanges (e.g., The Trade Desk's OpenPath and Criteo's Direct Bidder) and buying tools (e.g., Magnite's ClearLine and PubMatic's Activate), which can add another layer of prices on top of each ad transaction. Deposition of The Trade Desk (John Dederick) Tr. at 68:19-23, 71:6-14 (OpenPath "contributes to" The Trade Desk's "supply path optimization efforts").

100. The Trade Desk is just one example of an ad tech provider that now has a major supply path optimization offering, OpenPath, [redacted]

[redacted] As of May 2022, The Trade Desk announced that "more publishers have joined OpenPath . . . to provide advertisers with direct access to premium digital advertising inventory."[10] Sellers that have contracted with The Trade Desk to use OpenPath include major digital content providers such as Reuters, The Washington Post, Gannett, USA Today, Conde Nast, McClatchy, Advance Local, News Media Group, Tribune Publishing, Nextar Digital, CafeMedia, BuzzFeed, the Los Angeles Times, Forbes Media, and CNET among others. Deposition of The Trade Desk (John Dederick) Tr. at 85:19-86:3, 86:12-86:21.

101. Ad space sellers and buyers are seeking to optimize supply paths because additional intermediaries on supply paths can increase exposure to bad actors and lead to increased costs, latency, safety and security risks, a lack of transparency, and more. DTX-1016 at 7, 8 (benefits of implementing supply path optimization include "reducing fraud and brand safety issues," as well as improving key performance indicators and buying power).

102. Documents by Google and its competitors describe the competitive pressure that supply path optimization initiatives, including offerings such as The Trade Desk's, pose to their ad tech tools. *E.g.*, DTX-1562 at 28 (Google describing OpenPath as a challenge to Google); DTX-1435 at 3 (Google describing OpenPath as "driving revenue away from" Google); [redacted]

[10] "The Trade Desk Adds More Publishers to OpenPath, Enabling Advertisers to Directly Access Premium Publisher Inventory," theTradeDesk (May 5, 2022), https://www.thetradedesk.com/us/news/press-room/the-trade-desk- adds-more-publishers-to-openpath-enabling-advertisers-to-directly-access-premium-publisher-inventory (last accessed Aug. 16, 2024).

103. Just like the rise of numerous new entrants such as Meta, Amazon, and TikTok, supply path optimization initiatives demonstrate that the display advertising landscape is constantly evolving. Historical categories of tools such as "advertiser ad networks," ad exchanges, and publisher ad servers no longer capture the world of competitive pressures within ad tech. And long-time players in ad tech, such as Google, Microsoft, and Criteo, recognize that they compete with these new entrants and must continue to compete fiercely to attract and retain customers.

II. Google Has Competed Through Innovation by Creating Ad Tech Products that Benefit Ad Space Buyers, Ad Space Sellers, and End Users.

A. Google Is Incentivized to Design Its Ad Tech Tools in Order to Enable Ad Space Buyers, Ad Space Sellers, and Users All to Make the Most of the Digital Content Revolution.

104. In this thriving ad tech landscape, Google is positioned to make display advertising decisions that consider the best interests of advertisers, digital content providers, and end users.

105. Google's mission is to organize the world's information and make it universally accessible and useful. DTX-299 at 27. Because Google's primary business—and its origin—is Search, the company's "north star" is to keep digital content free, accessible, and useful for users. DTX-1043 at 3; *see also* DTX-639 at 3 ("Responsibility to the world to ensure that good content continues to be created. . . . [If] there isn't funding for that information, there's no information to organize! . . . Living by our values supersedes everything and has proven to be a sustainable long term approach to maximizing our impact.").

106. In the early days of the Internet, before Google existed, finding particular digital content was difficult and time-consuming. The landscape changed with Google's creation of a search engine, which made it possible for Internet users to find sought-after content online and, in turn, spur the creation of new content producers by allowing them to monetize their content through advertising.

107. Google has since endeavored to further democratize digital content through innovations in display advertising. *E.g.*, DTX-54 at 1 (launching a new ad exchange is "really all about opening up and making display advertising as widely accessible and effective as possible for all types of advertisers and all types of publishers").

108. Part of Google's vision is to create a diverse and open digital ecosystem of information that delivers revenue to digital content providers to allow them to continue to create content. Helping content providers monetize their content ensures that these providers can make content available to users for free. Smaller digital content providers are critical to that vision. Google designs and creates products that benefit content providers of all sizes because the content produced by smaller providers contributes to a diversity of content and viewpoints.

108.1. "[G]oogle's mission is to organize the world's info; publisher[s'] mission is to create content - at the heart of it all, Google was created for pubs before it was created for advertising." DTX-173 at 19.

108.2. "Helping our publishers and developers to grow their online businesses is at the heart of what we do, tying directly to our . . . vision to fund the world's information by enabling content creators. Why does this matter? First, we enable our partners to pursue their passions and create meaningful jobs. Second, we help to create a globally diverse and open digital ecosystem of information and viewpoints which is good for humanity." DTX-506 at 1.

109. Another part of Google's vision is to attract a broad array of ad space buyers to digital advertising with tools that make it easy for ad space buyers to launch campaigns and connect with valuable audiences. A robust supply of interested and trustworthy ad space buyers is vital to

the health of a free and open Internet because they are key partners for content providers seeking to monetize their content.

110. The ultimate purpose of a healthy, diverse and free Internet is for users—all of us—to find useful, productive, and safe digital content. Google launches innovations in service of the user experience, including showing relevant ads that are appropriate and free of malware and viruses.

111. As a result, Google's business model—not just its ad tech products—depends on attracting users to the Internet and giving them confidence to search and browse the open web.

111.1. "Google is predicated on 'the open web.' We provide Search for it. We provide monetization tools for it." DTX-339 at 45.

111.2. "The creation of an open information ecosystem is strategically important for Google, especially for our search business!" DTX-506 at 1.

112. Because of its overarching mission to organize the world's information and make it universally accessible and useful, Google is incentivized to value what is in the best interest of the ad tech ecosystem as a whole, not just the interests of ad space buyers or sellers.

112.1. As early as 2007, Google's goal for ads was "to maximize end user experience and revenue through ads and drive the virtuous cycle between publishers and advertisers." DTX-17 at 2.

112.2. "In 2010, ensuring that all Google products took into account the interests, connections, and preferences of our users became a key initiative, and display is no exception." DTX-76 at 7.

112.3. Google identified as one of its strategic initiatives: "How can we turn the Display Ads user experience into a consumer web product? Are there

alternative experiences more compelling for users that we can create with the AdX/AdSense inventory we have access to?" DTX-128 at 15.

112.4. In 2013, "Display 2.0 is the collection of efforts focused on improving the user experience throughout the Display Ads ecosystem." DTX-132 at 6.

112.5. In a 2019 strategy book, Google wrote: "Given this complexity, our goal is to provide a simple, consolidated, and profitable platform where: Advertisers can maximize reach & efficiency, leveraging Google's access to inventory and data[;] Publishers can maximize revenue from audiences on all screens. This will also create a better user experience for the end consumer, improving the overall ecosystem." DTX-601 at 127.

113. Not all market participants have the same incentives to take into account the interests of the ecosystem as a whole. There are participants in the digital advertising ecosystem that focus on short-term gain rather than the long-term functioning of the Internet. For example, an ad space seller may misrepresent its inventory to receive the benefit of an increase in short-term sales; such misrepresentations harm advertisers and users. Similarly, an individual ad space seller's short-term interests may be advanced by filling its pages with excessive and annoying ads; in the long term, excessive and annoying ads degrade the user experience, to the detriment of all quality digital content providers and ad space buyers.

114. Since the beginning of Google's investment in ad tech, Google has recognized that innovation in ad tech should as a whole benefit all stakeholders.

114.1. In 2003, when Google launched its first ad network for non-Google publishers (AdSense), Google stated: "Google AdSense brings relevant, unobtrusive ads to web users at a time and place when they are likely to be interested in them,

increasing the overall value of the web. . . . By providing website publishers with an effective way to monetize content pages on their sites, Google AdSense strengthens the long term business viability of content creation on the web." DTX-3 at 2.

114.2. Google lauded 2008 as a year when it "delivered this continuous stream of innovation for our users, advertisers, and publishers while successfully integrating two companies and creating a unified display / content organization." DTX-24 at 1.

114.3. Google's goal for 2009 was to "take this quest for yield by publishers and ROI by advertisers one step further, an open marketplace with scale, transparency, efficiency and choice is the most effective way to accomplish this for all participants in the ecosystem." DTX-24 at 4.

114.4. "What Do We Do? We build the platform, tools and services so that . . . Publishers can maximize the value of the audience . . . Advertisers can maximize ROI . . ." DTX-31 at 5.

114.5. Google mapped out its "vision for the Google Content Network" with three stakeholders in mind: publishers, advertisers, and users. DTX-56 at 14; *see also id.* at 10 ("Our Vision: Grow The Display Pie For Everyone.").

114.6. "Our technology will eliminate fragmentation in the market helping publishers maximize the value of their content and advertisers realize the best possible ROI for their campaigns." DTX-127 at 11, *see also id.* at 3, 13-14.

114.7. Describing 2013 as "an incredible 12 months in which we've done amazing things for our users, publishers[,] and advertisers across the globe." DTX-132 at 1.

114.8. Google is "embracing" the economy of users choosing the content and ads they want to see because it can "align advertiser, user[,] and publisher incentives." DTX-156 at 4.

115. Google "believes that growing the display advertising pie for everyone will greatly enhance the web experience for advertisers, publishers, and ultimately users." DTX-52 at 2.

115.1. For publishers, Google's mission is "to enable every publisher in the world to create great content by providing them with a comprehensive monetization, yield management, and ad serving solution." DTX-84 at 1; DTX-1043 at 3 ("Fund and sustain the free and open internet."); DTX-1435 at 1 ("Ad Manager's mission is to help publishers thrive by creating sustainable businesses with advertising.").

115.2. For advertisers, Google's mission is to "Help advertisers grow their businesses and engage customers through display ads that are simple to create, beautiful, highly performant, easy to measure and respect users." DTX-1043 at 3.

115.3. For users, Google's mission is to "lead the industry in providing users transparency, choice and control in advertising as well as verified advertisers using Google buying doors." DTX-1043 at 3.

116. When Google makes auction design decisions, it considers value for both ad space buyers and sellers combined, to the benefit of the overall marketplace. DTX-221 at 19; DTX-601 at 104. If Google only prioritized ad space buyers or only prioritized sellers, its integrated digital

advertising business would inevitably suffer. Google must attract and keep customers on both sides of advertising transactions.

117. When Google considers pricing, it considers prices across the ad stack for a single transaction matching an ad space buyer and seller—not only prices divided into individual products. *E.g.*, DTX-34 at 6-7.

118. Google's products are built to serve customers big and small: "We work with almost three million publishers around the globe, from the smallest bloggers to the world's biggest media companies." DTX-132 at 5.

119. Google has also invested in growing and opening the display advertising industry to the benefit of all players in the industry, not just Google.

119.1. Google works to ensure "display advertising as an industry is living up to its potential, so we're focused on three things to grow the display advertising pie for everyone: making it really easy for advertisers and publishers to transact display inventory, delivering and measuring performance, and democratizing the world of display advertising." DTX-54 at 1; *see also* DTX-59 at 3.

119.2. Google employees also "recognize the need to think beyond individual partner success and tackle problems that impact our industry more broadly." DTX-506 at 1.

119.3. When Google innovates, its employees are seeking to "pushing the entire ecosystem forward," not just driving "the success of our key clients and partnerships," but also "opening new opportunities for everyone." DTX-132 at 1.

120. An important part of those efforts is building trust, which is critical to the digital advertising industry. Ad space buyers spend on digital advertising because they trust that their ads will be shown to relevant users and reach valid traffic. If there is fraud or the ads do not successfully get user engagement, then ad space buyers will stop spending. Digital content providers want to display ads on their inventory that are suitable for their content and safe for users. And users, too, value safety and security in ads: if they are served with unsafe ads, they may turn away from digital content that monetizes through advertising (as opposed to, for example, subscription-based models). That in turn impacts the ability of digital content providers to monetize their online content and of ad space buyers to reach their desired audiences.

121. Recognizing the importance of promoting trust in digital advertising, Google invests heavily in ensuring that its tools are safe for ad space buyers, ad space sellers, and end users. DTX-348 at 11, 15 ("Combating fraudulent display ad fraud is part of a wider Google effort to keep our advertising ecosystem clean for users, advertisers, and publishers.").

122. Others in the industry recognize Google as a leader in the fight against invalid traffic. *E.g.*, DTX-348 at 6 (leader from a major ad targeting company stating in 2016: "Earlier this year we turned off about 1,000 real-time bidding publishers where we'd seen suspicious activity. . . . When we compared notes with Google, we found that AdX had already turned off every single one. Every other partner on our list had suspicious sites still active, but Google had filtered out 100% of them.").

123. Google invests significantly in ad tech innovation even though there are years in which Google's ad tech tools operate at a loss. Google makes these investments because it is committed to building the ad tech ecosystem even when those investments do not directly lead to

ad tech revenue increases to Google. A healthy ad tech ecosystem also contributes to Google's other revenues, such as its Search revenues.

124. As an example, in 2022 alone, Google blocked or restricted the serving of ads on more than 143,000 publisher sites. DTX-1182 at 2. Google also removed or blocked millions of ads involving adult or inappropriate content, misrepresentation, and dangerous products or services. *Id.* In addition, Google launched the "Ads Transparency Center," a searchable hub of verified advertisers which allows users to learn more about the ads run on Google's platforms, and "My Ad Center," which provides users control over their ad experience. *Id.*

B. The Development of Google's Display Advertising Business Reflects a Series of Innovations in Order to Better Serve Ad Space Sellers and Ad Space Buyers.

125. With ad space sellers, ad space buyers, and end users in mind, Google has built a display ad business that is constantly innovating in response to dynamic competition. When faced with rivals who find ways to better serve the needs of ad space buyers and sellers, Google has also invested and improved its products in response, often creating new innovative solutions to fulfill its customers' needs. Google's innovations—and the resulting ad tech tools—have been critical to attracting and maintaining customers to its business, as well as to growing the display advertising industry overall.

126. Many of Google's ad tech tools, and the innovations that made them possible, are explained in further detail below. Plaintiffs' allegations cherry-pick five individual acts—out of the thousands of innovations that have made up Google's tools today—out of time and context to frame them as anticompetitive. But when viewed in the context of the history of the ad tech landscape, each of Google's products was built in response to the evolving needs of ad space buyers and sellers and improved on what existed before.

126.1. In the 2008 and 2009 time period, Google was one of only a few companies that had developed the technology for real-time bidding and embedded that feature into an ad exchange. Real-time bidding alone was an immense benefit to both buyers and sellers; when combined with a DoubleClick feature, Dynamic Allocation in DFP, it resulted in even more successful matches and improved publisher revenue.

126.2. As real-time bidding took off, tools that connected sellers and buyers proliferated. Demand-side platforms emerged to help buyers purchase across different inventory sources. In 2010, Google's only tool for ad space buyers was Google Ads, and Google Ads purchased only from ad space sellers that Google had a relationship with. In order to offer buyers a way to manage their purchases across AdX as well as non-Google inventory sources, Google acquired Invite Media, a demand-side platform. Today, that product is known as DV360, a product that Google has continuously improved for its customers in order to purchase more efficiently across sources and optimize return on investment.

126.3. In 2010, more publishers started creating apps, and ad space buyers were interested in reaching the users on those apps. Google acquired AdMob to provide its ad space buyers with an ad network that connected to app publishers.

126.4. By 2013, Google recognized that its Google Ads customers were missing out on valuable inventory by buying only from ad space sellers that used Google tools. Google built a feature in Google Ads, AwBid, that connects to non-Google inventory sources while preserving, as much as possible, the security,

safety, and quality of the inventory that Google Ads connects to. AwBid was later followed by gBid, which connects Google Ads and DV360 customers to non-Google app inventory.

1. Google Ads

127. From its genesis, Google Ads was intended to be a tool to provide ad space buyers with access to curated, high-quality inventory. Google started Google Ads in 2000 as AdWords.[11] It originated as a buying tool for ad space buyers seeking to place search ads on Google's search engine; over time it evolved and today it can also be used to buy ads on Google's other valuable owned-and-operated properties, including YouTube and Gmail.

128. As the Internet continued to expand, the buyers using AdWords in Google's nascent display business sought to place display ads on more than just Google's owned-and-operated properties. The first step in expanding available inventory was Google's launch in 2003 of AdSense, a network of non-Google publishers vetted by Google before they joined. Advertisers could buy the inventory of non-Google publishers on AdSense by purchasing through AdWords. DTX-3 at 1-2.

129. After the launch of AdSense, ad space buyers using Google Ads could use Google Ads only to buy third-party display advertising inventory from the Google Display Network. The Google Display Network included both properties owned and operated by Google and third-party publisher inventory. Non-Google publishers joined the Google Display Network by joining AdSense. Google Ads buyers remained free to access any inventory through other buying tools.

[11] At some points, this product was also referred to as the Google Display Network or "GDN." For consistency, the buying tool product will be referred to as "Google Ads" throughout. The term "Google Display Network" will be used to refer to the network of ad space sellers that Google Ads buys from.

130. As explained in greater detail below, *see infra* ¶¶ 188-192, when DoubleClick, the largest publisher ad server offering at the time (DoubleClick for Publishers, or DFP), offered itself for sale, Google acquired DoubleClick in order to offer sellers a desirable tool and buyers expanded access to even more non-Google ad space sellers.

131. In 2009, after Google acquired DoubleClick, it rebuilt DoubleClick's publisher ad server and launched a new version of DoubleClick's ad exchange as AdX. Google connected AdX to Google Ads so that ad space buyers using Google Ads could purchase third-party inventory through AdX. DTX-55 at 1.

132. Today, the Google Display Network consists of more than 2 million websites, videos, and apps that use Google tools—AdSense, AdMob (Google's ad network for in-app ads), and AdX (now a functionality in Google Ad Manager)—to sell ad inventory.

133. Because Google has a relationship with all digital content providers who are part of the Google Display Network, Google Ads can better ensure that its ad space buyers bid on valid and safe display inventory. DTX-1498 at 19 ("Google Ads demand values high quality publisher inventory that is addressable, viewable, brand safe and support their ad formats."); DTX-812 at 7 ("We protect your brand through our global Publisher Quality team - made up of data scientists, engineers, and subject matter experts—and automated and manual filters to defend our ecosystem."); DTX-1514 at 44 ("Google Ads . . . includes ads on Google search results pages, our network of partner sites, YouTube, Gmail, Maps, Discovery Feed, and apps."). Google Ads thus provides ad space buyers a curated experience because it can protect against, detect, and remediate ad quality problems.

134. Over time, Google has also developed tools in Google Ads that improve ad space buyer outcomes and usability on Google Ads.

135. In 2008, Google launched Display Ads Builder in Google Ads, which enabled small ad space buyers to create professional-looking display ads through Google's interface instead of hiring a designer or starting from scratch. DTX-40 at 3; DTX-56 at 17.

136. Google Ads also helps automate bidding for ad space buyers. These tools maximize buyers' return on investment and save time. Through automated bidding, ad space buyers can set campaign goals based on visibility, website traffic, conversions or sales, or revenue. Google Ads bids automatically to optimize cost for achieving the ad space buyer's goals. In order to figure out how to optimally set up their campaigns, ad space buyers can even use Google Ads to test changes to their campaigns and measure the impact of various automated bidding strategies. DTX-547 at 8.

137. Google has incorporated machine learning into Google Ads to further enable automation beyond bidding. A feature called Responsive Display Ads uses machine learning to select among the best content to display from an ad space buyer's "assets," which refers to the useful business information and images that make up an ad (such as links to the buyer's website, location information, pictures, videos, headlines, and more). DTX-812 at 9-10. On average, Responsive Display Ads can lead to up to 50% more conversions when a responsive display ad is used instead of an uploaded image ad. DTX-812 at 12.

138. Google Ads' automated campaigns can help ad space buyers target users across platforms and across devices. DTX-1029 at 5. Google has developed a number of features that sharpen user targeting, and in turn improve campaign performance, by analyzing past performance data, information available about the user, and information about the websites where ads are being placed. DTX-1029 at 12-21, 26-29. Google Ads also enables detailed campaign reporting and

conversion tracking for ad space buyers, so that they can understand exactly how their advertising efforts are translating into tangible results. DTX-1029 at 43-45.

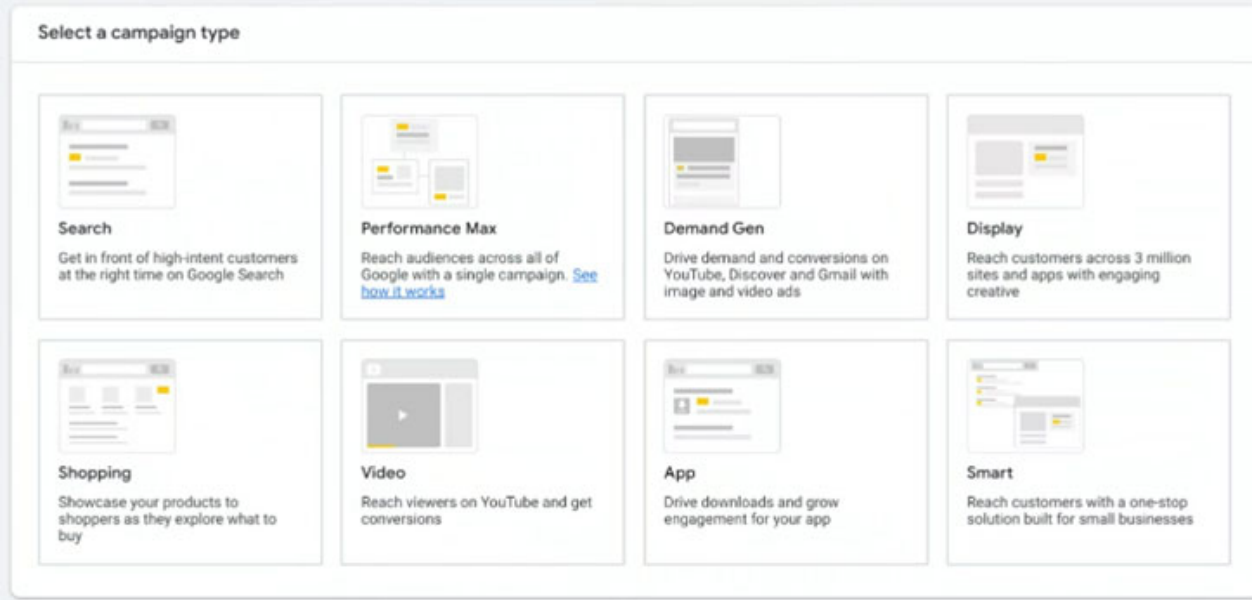
139. In November 2021, Google unveiled Performance Max, an artificial intelligence-based tool that brings together all of its automation efforts to maximize ad space buyers' return on investment while saving buyers time and money that would otherwise be spent on running campaigns. With Performance Max, an ad space buyer selects its budgets and goals, and uploads the "assets" that will make an ad. The rest is taken care of by Performance Max, which automatically creates ads and purchases ads across all the channels and formats that Google Ads can serve: Google Search, YouTube, Google's other owned-and-operated properties, third-party websites, apps, Connected TV, banner ads, video ads, native ads, and more. Performance Max reacts to past performance and shifts spend dynamically in order to achieve the best outcomes for the ad space buyer.

140. The amount of Google Ads spend that occurs through automated bidding tools has increased dramatically between 2005 and 2022, with manual bidding now accounting for only 11% of Google Ads spend in 2022. DTX-1882 at 1; Israel TT.

141. Ad space buyers can set up an account on Google Ads at no cost to them, and Google Ads does not have a minimum spend requirement. Ad space buyers pay Google Ads based on a revenue share. The revenue share is paid to Google as a percentage of an ad space buyer's bid, if it is successful and wins an ad on which a user clicks, before the remainder is paid to other ad tech intermediaries and, ultimately, the ad space seller.

142. When ad space buyers set up Google Ads and start a new campaign, as shown below in the Google Ads window, they can choose from a variety of campaign formats, including the AI-

powered automated bidding through Performance Max. A "display" campaign can "reach customers across 3 million sites and apps with engaging creatives."



143. Google Ads generally charges ad space buyers on a cost-per-click model: Google takes a revenue share from the buyer's bid only when the user clicks on the purchased ad, so buyers do not pay for ads that users did not engage with. When Google Ads charges buyers on a cost-per-click model, it still pays sellers based on the number of impressions, which means that sellers are paid regardless of whether a user clicks on an ad. Google Ads thus bears the risk of ads not receiving clicks or receiving few clicks.

144. Today, Google Ads is used by ad space buyers of all sizes. Buyers using Google Ads specify campaign goals and constraints, including type of end users to target, maximum bids or budgets, and other goals, and Google Ads uses that information to determine bids for impressions.

2. AwBid: A Google Ads Tool to Connect to Third-Party Exchanges

145. Until 2013, Google Ads bid solely into the Google Display Network, which was a source of publisher inventory that Google had vetted in advance. Part of the value proposition of

Google Ads to ad space buyers was that, when they purchased through Google Ads, they could be assured that the publisher inventory met Google's quality, safety, and security standards. DTX-574 at 9 ("Google Display Ads will still be largely focused on buying from our own managed inventory sources").

146. At the same time, particularly after the advent of real-time bidding, more and more third-party ad exchanges were introduced to the market, each offering inventory that included digital content providers who did not already have relationships with Google. Google Ads also wanted to be able to reach users outside of Google's digital content provider relationships. In 2011, Google first conceived of a feature that would enable Google Ads customers to bid on inventory through non-Google exchanges—AwBid. DTX-79 at 2; *see also id.* at 3 ("In 2010, the team made significant progress towards AwBid.").

147. One of the early challenges to building a feature like AwBid was that integrating with third-party exchanges raised quality and security concerns. If AwBid were to bid on non-Google exchanges, Google could not enforce its standards for ad space sellers who sold inventory through those third-party exchanges. DTX-83 at 1-2. Accordingly, an ad space buyer purchasing through AwBid might end up purchasing an impression on a website that would not have been approved to join AdX or AdSense.

148. Further, for inventory bought through third-party exchanges, Google's ability to check information about an ad space seller's inventory and discern whether the inventory is valid is diminished. And, in the event an ad space buyer buys ad space on an invalid site, Google did not have the ability to reimburse the buyer by clawing back money from the ad space seller through a third-party exchange. Maintaining inventory quality standards was a priority, so Google

approached connecting with third-party exchanges with caution. DTX-83 at 2; DTX-85 at 3; DTX-152 at 1.

149. Google did not want to connect Google Ads to third-party exchanges until it could minimize these security, safety, and quality concerns: "We still need a pre-launch plan on how to handle Google publisher policy and AdSpam. We can't just use AwBid as a way to evade our publisher rules–pubs are smart and will figure that out as soon as a pub previously from AdSense starts seeking Google ads via their exchange/network/yield manager, and that will cause harm to the AdSense business way beyond just AdX." DTX-86 at 2-3.

150. In 2011, Google envisioned that AwBid would first connect to Yahoo! and Microsoft's first-party owned-and-operated inventory such as Hotmail, where users were spending much of their online time. On first-party owned-and-operated inventory, concerns about spam and ad space sellers evading AdSense policies would be mitigated because the inventory was owned and operated by legitimate websites. DTX-86 at 3 ("It seems like we all agree that it's fine to go to First Party Owned & Operated and that won't harm the publisher business unduly . . .").

151. In order to commercialize AwBid, however, Google needed to individually negotiate separate agreements with each additional exchange into which AwBid would bid. DTX-79 at 3.

152. The version of AwBid first envisioned in 2011 fell through because Google was unable to reach deals with key third-party sources of inventory. DTX-129 at 2.

153. Google Ads' ad space buyers remained interested in non-Google inventory, particularly for the purposes of remarketing. Remarketing refers to showing ads to users who had previously interacted with an ad space buyer's website or ad. For example, a clothing store like Macy's might seek to remarket to a user who had already clicked on clothes in Macy's website

and added them to her cart without purchasing. When those users visit websites outside of Google Display Network inventory, purchasing through rival exchanges might be the only way to reach those users again.

154. Ad space buyers' interest in expanded reach for remarketing continued to create competitive pressure on Google to develop a new tool for Google Ads ad space buyers to bid into non-Google exchanges. DTX-129 at 1 ("Google Display Network (GDN) Remarketing (RMKT)" was "hurting in a very competitive remarketing field due to its complete dependence on AdX and AdSense inventory and the lack of reach into other exchanges").

155. In 2013, after extensive engineering work and contract negotiations with other exchanges, Google began an extended launch of AwBid. DTX-284 at 13. AwBid was first launched for remarketing because Google Ads faced the "most competitive pressure" to give buyers additional reach for retargeting. DTX-786 at 3; *see also* DTX-149 at 2. In addition, the risks of invalid inventory are lower for remarketing purchases: because the relevant signals and information about inventory that Google Ads needs for remarketing purchases are simpler, there is less risk of exposure to bad actors based on distorted signals.

156. Contemporaneous documents demonstrate that AwBid, as first launched, experienced a significant uptick in invalid traffic[12] and spam from non-Google exchanges.

[12] Invalid traffic refers to any ad that does not get legitimate user views or engagement. It can occur through accidental clicks or through automated "views" that are not attributable to real people. Ad fraud is typically seen as a subset of invalid traffic involving bad actors with fraudulent intent. It can arise, for example, when bad actors pose as reputable ad space sellers in the ad buying process by closely impersonating the domain of a legitimate and reputable organization. Alternatively, a bad actor might create an unknown website but direct click bots to visit the website so that it appears to be a website with a high volume of traffic. The advertiser believes its ads are being delivered to legitimate sites or legitimate viewers, but in reality the ads are not being seen by the users the advertiser wants to reach. For these sites, click bots may be the only source—if any—of traffic to the site. The bad actors are paid by the advertisers even though their ads were never seen by an actual person.

156.1. "All AWBID (go/awbid-design-vs) impressions are delayed impressions. . . . We've observed a high percentage of spam rate since we started awbid live traffic; higher than usual GDN traffic. Reliable and timely spam detection is important here because if we fail to detect spam, we'd have to pay publishers for spam impressions, and charge advertisers for spam clicks, which we have to credit back later. Since publishers for AWBid are not adsense publishers, clawbacks is going to be difficult, and it hurts Google's reputation." DTX-152 at 1.

156.2. "Here is a quick look at the AwBid traffic . . . prompted by a meeting with the AwBid team after AdSpam Ops saw high rates of spam and high rates of missing . . . signals. . . . For the signals we do have, the traffic is very spammy." DTX-188 at 1.

156.3. "As far as the traffic quality goes, we have not noticed a great volume of malicious traffic on these three now serving exchanges, except for Pubmatic which had some issues. . . . We should also note that for PulsePoint there were traffic issues so severe that we eventually had to stop bidding on the exchange altogether (95% of click and impression traffic was deemed as invalid). This highlights the need to carefully evaluate any new exchanges that we may consider bidding on in the future." DTX-230 at 2; *see also id.* (finding in manual review that 52% of clicks from PubMatic, another third-party exchange, were spam).

157. Google also found that ad space buyers bidding through AwBid were exposed to harmful content or content inconsistent with brand safety, such as illegal file sharing or explicit

content. DTX-230 at 5 ("Where we have been able to review, we see some troubling content and behavioural violations.").

158. An added concern following the launch of AwBid was that sellers who had been disabled from Google's tools because they offered invalid or unsafe inventory—including because they were reported by Google Ads customers—could still be connected to Google Ads buyers through AwBid. As Google wrote: "It is possible that advertisers that opt into AwBid will be disappointed to see their ads shown on pages that they have reported to us and were told that we have disabled all bad publishers to avoid their ads from showing there in the future." DTX-230 at 2.

159. Since AwBid was launched, non-Google exchanges have continued to struggle with spam and traffic quality. In 2015, for example, the CEO of AppNexus acknowledged that as much as 65 percent of the inventory being offered on App Nexus was fraudulent. Deposition of Brian O'Kelley (AppNexus) Tr. at 322:15-24. That same year, when monitoring publisher inventory quality on AwBid, Google blocked "25-30%" of publishers on Rubicon. DTX-277 at 21. Google also found in manual review that 70% of clicks in Pubmatic and 98% of clicks in Pulsepoint were spam. DTX-277 at 23. In 2019, Google again observed that "AwBid challenges" included "Spam: it's a wild world out there" and "publisher quality." DTX-786 at 12-13.

160. Continuing to address security issues from buying on third-party ad exchanges has required further technical work and innovative solutions. For example, Google temporarily halted bidding on one exchange on which it detected invalid traffic and built a filtering detection system to detect invalid traffic on other exchanges and prevent ad space buyers from bidding on such invalid traffic. DTX-277 at 23. Google invested money and engineering resources into this work in order to provide its ad space buyer customers with increased access to valid inventory on other

exchanges. DTX-277; DTX-348 at 10 ("We are selective about when we decide to run ads through our third-party exchanges via remarketing. We do this through: Pre-bid invalid traffic filters[;] Prevents ad hiding, ad injection, misrepresented inventory, and botnets[;] Ongoing invalid traffic signal collection.").

161. Since AwBid's launch in 2013, ad space buyers have been able to use Google Ads to purchase inventory through non-Google exchanges. DTX-149 at 2; DTX-237 at 1.

162. Google has steadily expanded AwBid to connect to additional exchanges, focusing on where there was the most incremental and valuable ad inventory not available on the Google Display Network. The number of non-Google exchanges connected to AwBid has steadily grown to around 50. DTX-979 at 2. AwBid has expanded beyond enabling buyers to purchase on third-party exchanges for retargeting purposes to expanded inventory for other targeting strategies as well. DTX-826 at 4-5 ("AwBid demand expansion to" "other targeting types"). Spending on third-party exchanges through AwBid has increased by over twentyfold in just 7 years: from $11 million in 2015 to $295 million in 2022. DTX-1469 at 1-2.

3. gBid

163. Google Ads customers bid about $3.5 billion per year on third-party exchanges or other third-party platforms to reach ad space sellers. Beyond AwBid, gBid is another way that Google Ads (and DV360) buyers can buy on non-Google platforms. DTX-1027 at 1.

164. gBid allows buyers who are using Google's buying tools, Google Ads and DV360, to bid on impressions on mobile apps. gBid connects Google's ad space buyers to mobile app publishers through third-party supply-side platforms, and a related product, "gBid Direct," connects those buyers to ad space sellers' proprietary publisher ad servers. DTX-1196 at 13.

165. For gBid inventory, Google has a direct relationship with the ad space seller. DTX-1273 at 2. Spam and safety issues are mitigated both because Google has a relationship with the

app creator—unlike the sellers of web inventory who would be available on third-party exchanges—and because of the way that gBid is set up to serve ads on app inventory. DTX-1008 at 3 ("Pub relationships help secure access and mitigate risk (spam, discrepancy)"). In addition, because app creators whose inventory is available through gBid have a direct relationship with Google, Google pays the creator directly.

4. Display & Video 360 (DV360)

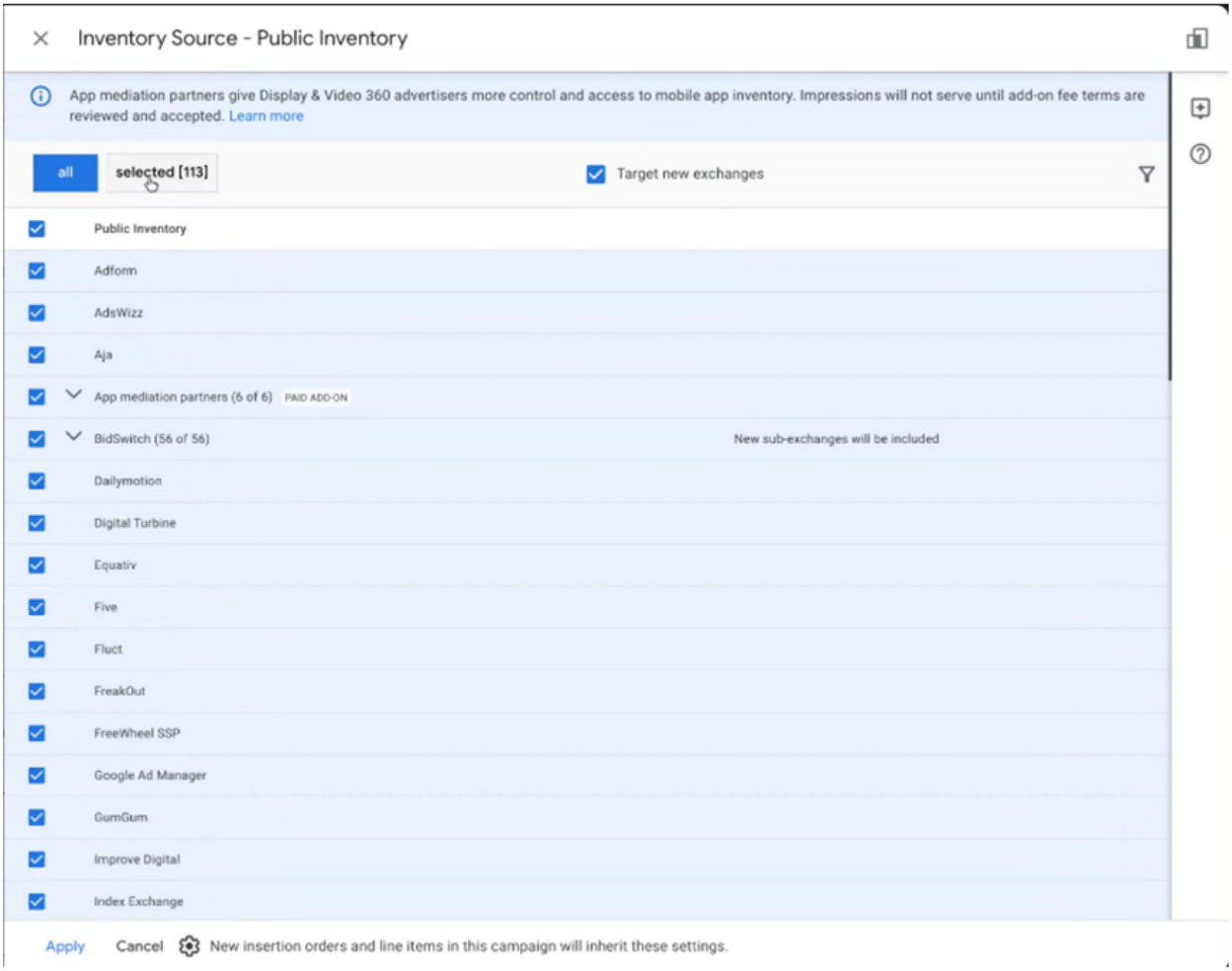
166. From the beginning of Google Ads, its value proposition has been to offer ad space buyers the ability to buy from sellers that it knows have a relationship with and have been vetted by Google.

167. In 2010, to offer a separate tool for those ad space buyers who were interested in purchasing across inventory sources, including non-Google properties, without the same vetting offered by Google Ads, Google acquired Invite Media, a buying tool that provided ad space buyers with a centralized place to manage their bidding across ad exchanges. This tool became known as DoubleClick Bid Manager (or DBM), and was renamed DV360 in 2018.[13]

168. DV360 helps ad space buyers manage and bid on multiple ad exchanges, so it provides advertisers with expanded access to inventory. At the same time, because DV360 has no special relationship with each of these inventory sources, DV360 cannot assure quality to the degree that Google Ads could or that it could if Google had tighter vetted relationships with all inventory sources. DTX-574 at 9; DTX-1514 at 47, 50 ("DV360 offers marketers broad access to both Google [owned-and-operated] and [third-party] inventory, enabling buying efficiencies across channels and formats.").

[13] For consistency, this product will be referred to as "DV360" throughout.

169. Today, ad space buyers can use DV360 to purchase ads on a variety of formats and channels: banner, native, video, and audio ads that appear on websites, apps, Connected TV, and digital out-of-home advertising. When DV360 buyers run a campaign, as shown in the DV360 screenshot below, they can access inventory from many sources, including Google's ad exchange AdX and over 100 of its rivals, including such major exchanges as the Index Exchange, OpenX, Rubicon, Pubmatic, and others. They can also buy from Google's owned and operated properties (such as YouTube), as well as from digital content providers who use their own proprietary publisher ad servers. DV360 also offers ad space buyers flexibility to purchase through bidding in auctions or by making automated direct deals with ad space sellers.



REDACTED VERSION

170. DV360 is used by ad space buyers of all sizes. It attracts both small and large buyers, including buyers that have an in-house marketing team or a relationship with an advertising agency.

171. Ad space buyers can set up campaigns using DV360 in multiple ways. In its early days, DV360 was mostly used by ad space buyers to set up fixed CPM (cost per 1,000 impression) campaigns; the buyer would report to DV360 the characteristics of the impressions it wanted to purchase and provide a fixed CPM. DV360 would then bid in auctions for those impressions.

172. While CPM campaigns are still used, in the 2017 to 2020 period, most DV360 ad space buyers transitioned to automated bidding campaigns. Based on objectives provided by the buyer, DV360 applies prediction and optimization algorithms to "dynamically determine the optimal bid price for a given impression for an advertiser." DTX-680 at 1. One test of automated bidding demonstrated an increase of over 100% in advertiser value for the same spend, as well as considerable efficiency gains for individuals working for the ad space buyers. DTX-618 at 11-12.

173. In 2018, DV360 introduced custom bidding, which allows ad space buyers to input their own algorithms that explain, on an impression-by-impression basis, what they value most in impressions. DV360 then learns from that algorithm what the ad space buyer values and bids optimally according to those preferences. DTX-618 at 19.

174. Google also developed for DV360 a suite of automated products in response to ad space buyer requests that they did not want to give Google individual bids, but rather request a certain number of conversions or clicks. The automated products, called Automated Bidding, use machine learning and user signals to improve the accuracy with which DV360 values ads. Ad space buyers gained many more views and much more user engagement when they used

Automated Bidding. The number of buyers using this optional feature grew from 25% to over 60% of DV360 campaign spend over just a 1.5 year period after its launch. DTX-720 at 11.

175. Five of the eight federal agency advertisers have used, and continue to use, DV360, and not Google Ads.

176. Plaintiffs have excluded DV360 from their product markets.

5. AdSense and AdMob

177. AdSense is one of Google's ad networks. It aggregates a network of digital content providers with web inventory and helps them monetize their inventory by connecting them to ad space buyers. Ad space buyers can use Google Ads to purchase advertisements from the digital content providers who are aggregated in AdSense.

178. When it was first launched in 2003, AdSense was announced as a self-service program to enable ad space sellers to connect with ad space buyers on Google Ads without using a publisher ad server on their websites and make money for clicks on those ads. DTX-3 at 1-2.

179. AdSense allows ad space sellers to monetize digital inventory in a very simple way without using any publisher ad server or other inventory management. In essence, any time a user visits an ad space seller's page, AdSense offers the impression to Google Ads. If a user clicks on the ad, the ad space seller gets paid.

180. An ad space seller can also choose to use AdSense in conjunction with another inventory management tool, such as a third party's publisher ad server. By connecting AdSense to a non-Google publisher ad server, an ad space seller can access buyer demand from Google Ads without using Google products other than AdSense.

181. Since AdSense's launch, Google continuously built innovations to the existing ad network in order to improve the experience for digital content providers. *E.g.*, DTX-24 at 1-2 (describing 90 launches by Google in 2008 that created a 25% increase in publisher revenue);

DTX-74 at 3, 13 (discussing a 2010 launch of a new interface that achieved major improvements in application latency and quality and gave publishers more control over the ads that appeared on their sites); DTX-76 at 4 (launch for ad space sellers that gave them "better insights, more controls, and increased efficiency (reporting data running up to 100X faster!").

182. On AdSense, digital content providers are required to meet certain criteria and agree to AdSense policies in order to be part of the network. Part of the value proposition of an ad network like AdSense for ad space buyers is to connect them with high-quality digital content providers. DTX-47 at 24.

183. Only certified buyers who have relationships with Google, such as by signing up for Google Ads or for Google's buying program called Authorized Buyers, are allowed to buy inventory from AdSense, which benefits ad space sellers because they can be sure their information is not getting stolen and that inappropriate ads are not being shown on their inventory. DTX-47 at 25. Ad space buyers who sign up for Google's tools or buying programs are free to purchase ad space using other tools or programs as well.

184. AdMob is another of Google's ad networks, focused on digital content providers with in-app inventory. Google acquired AdMob in 2010 because mobile was "a huge opportunity." DTX-76 at 2. After the acquisition, Google continued to grow AdMob, "with revenue and ad requests up by 100%" in six months after the acquisition. *Id*.

185. Like AdSense, AdMob is a way to get access to, among other buyers, ad space buyers who are purchasing through Google Ads without using DFP or an AdX auction.

6. Google Ad Manager ("GAM")

186. Google Ad Manager ("GAM") is a platform for ad space sellers that combines both publisher ad server functionality and the real-time bidding capabilities of an ad exchange. The ad

server capabilities were previously called DoubleClick for Publishers ("DFP"), and the ad exchange capabilities were called Ad Exchange ("AdX").

a. Google's Acquisition of DoubleClick

187. In 2007 and 2008, the ad tech industry was still relatively new, and mergers and acquisitions were an important way for ad tech providers to combine technical expertise, infrastructure, and systems in order to create better products.

188. Around this time, Google recognized that display advertising on the web was not operating at its full potential. Because of the large number of ad space buyers, sellers, and ad formats and lack of automation, it took many hours and resources to manage ad campaigns—which mostly were conducted through direct transactions. Digital content providers often ended up with significant unsold inventory. DTX-72 at 1; DTX-10 at 2.

189. In April 2007, Google beat out significant competition (including Yahoo! and Microsoft) to acquire DoubleClick, a company that offered a publisher ad server and a nascent ad exchange. DTX-9 at 3; Deposition of Microsoft (Benneaser John) Tr. at 13:24-14:6.

190. DoubleClick's seller-facing business was attractive to Google because DoubleClick had a strong needs-based assessment of what ad space sellers wanted and had built relationships with its customers. It offered valuable "market-leading products and relationships with many of the most important web publishers and advertisers." DTX-10 at 1.

191. Google, because of its preexisting technology business, had a stronger existing technological infrastructure that was more reliable and computationally powerful; had more engineering resources; and had technological expertise that could be deployed to improve DoubleClick's products. DTX-39 at 56. Google planned "to make free or reduce pricing for the ad serving products" and to "improve [DoubleClick's products] with [its] own technology." DTX-9 at 7.

192. Combining DoubleClick's ad space seller relationships and products with Google's would enable Google to better serve its ad space seller and buyer customers at a time when display advertising was still labour-intensive and inefficient.

193. Shortly after losing out on DoubleClick, Google's competitors acquired their own ad space seller-facing products. Yahoo! bought DoubleClick competitor Right Media, and Microsoft acquired aQuantive and AdECN.

194. The Federal Trade Commission reviewed Google's acquisition of DoubleClick for almost a year and concluded, "after carefully reviewing the evidence," that the acquisition was "unlikely to substantially lessen competition" and therefore did not challenge the acquisition. DTX-23 at 6. The DoubleClick acquisition closed in March 2008.

195. Following the acquisition, Google kept DoubleClick's products running until Google had successfully rebuilt the products on its own ad tech infrastructure. All of Google's products—including Search, YouTube, Gmail, Google Maps, and many others—exist on a network of Google data centers, undersea cables, and shared computing power that is incredibly powerful, resilient, and safe. Recreating the same ad space seller functionality of DoubleClick on Google ad tech required significant engineering and resources.

196. When Google rebuilt the DoubleClick products on its tech stack, it also integrated the DoubleClick products with Google's existing ad tech, which made the products considerably more reliable with access to more inventory, improving buyers' return on investment and sellers' yield. DTX-29 at 9.

197. Google also launched the DoubleClick cookie, which enabled frequency management. Frequency management controls whether the same ad is served to the same user

because reaching the same user too many times with the same ad can have diminishing returns. DTX-24 at 1-2.

198. Google made clear that it was rebuilding a platform solution "for every type of publisher," large or small, with digital content in websites or app or video:

198.1. "We successfully positioned GAM and DFP / DE in the market to make it clear that we had a platform solution for every type of publisher." DTX-24 at 2:

198.2. By acquiring DoubleClick, Google sought to provide services for both "publishers with large direct sales teams or complex inventory" and "publisher with small direct sales teams." DTX-31 at 16.

198.3. Google wanted to "provide the first multi-format exchange that supports not only traditional online display formats, but provides comprehensive support for in-stream video, expandable and mobile formats." DTX-76 at 8.

198.4. "By providing the most comprehensive enterprise class revenue generation solution for large publishers and a turn-key, no worries solution for torso and small publishers, we will continue to deliver on this promise in 2011." DTX-76 at 5.

b. DFP

199. DoubleClick, before its acquisition by Google, had developed DoubleClick for Publishers ("DFP"), a publisher ad server that helped ad space sellers manage their ad inventory, serve the ads that showed up on the web page, and produce reports for those ads that ran so that the sellers' ad sales forces could look at how the ads performed.

200. Around 2008, when DoubleClick was acquired, the primary way that digital content providers sold inventory was through direct agreements with advertisers or their advertising agencies. However, this system was not perfect. There was sometimes leftover remnant inventory

that had not been committed to a direct deal. To sell this remnant inventory, digital content providers often sold it indirectly (in other words, without a pre-existing commitment to sell inventory to an individual advertiser or advertising agency) to ad networks, which aggregated buyers who were interested in purchasing leftover inventory.

201. Historically, as explained above, *see supra* ¶ 23, the way that ad space sellers determined which ad network to sell to was by ordering them by priority called the waterfall. Those priorities were assigned based on either historical information regarding how much the network had bid on the ad space seller's inventory in the past, or fixed prices that had been pre-negotiated with an individual demand source. The ad network with the highest historical bids or fixed price was placed at the top and offered the opportunity to buy an impression first, then the ad network with the next highest, and so on. Historical information (or pre-negotiated fixed prices), however, did not always reflect the actual amount an ad network might be willing to pay for a particular impression being offered up for sale. This created inefficiencies: for any particular sale of an impression, an ad space seller might not receive the maximum amount of revenue that it could have if the historical bid information did not match what ad networks were actually willing to pay.

202. Prior to the acquisition, DoubleClick had developed a feature called Dynamic Allocation on its publisher ad server. Dynamic Allocation allowed ad space sellers to configure DFP to maximize revenue for sales of leftover inventory by trying to allocate each impression to the buyer who was willing to pay the most money for it. DFP changed the way that sellers ordered their calls to various demand sources in order to offer inventory. With Dynamic Allocation, DoubleClick's ad server called DoubleClick's nascent ad exchange first to inquire whether a buyer on the exchange was willing to pay more than the amount the publisher expected to receive from

any other demand source for leftover inventory. If so, the buyer on DoubleClick's ad exchange would win. DTX-53 at 5.

203. Even when paired with DoubleClick's old ad exchange—before it was rebuilt by Google—Dynamic Allocation resulted in a revenue lift of 136% for ad space sellers compared to how they were previously selling inventory. DTX-80 at 2.

204. Google rebuilt DoubleClick's existing publisher ad server on its own stack, which required years of engineering design and development. *E.g.*, DTX-76 at 3 ("In February we launched the new DoubleClick for Publishers after two years of hard work with a revamped workflow, better forecasting, new reporting, ad server optimization, etc."); DTX-132 at 5 ("Our largest publishers saw the completion of the [DFP] project, the epic five-year effort to upgrade DFP to the Google technology stack. It took years for a dedicated team of hundreds to recreate and improve the industry's original ad server.")

205. The rebuilt server added dozens of new features to drive revenue for ad space sellers. DTX-76 at 3. For example, in 2011 Google released over seventy-five features, including a full suite of capabilities for not just web banner ads, but also mobile, video, and other web capabilities. DTX-101 at 2.

206. After DFP was rebuilt on Google's stack, Google understood that publisher satisfaction reached an all-time high. DTX-67 at 21; Deposition of Disney (Jeremy Helfand) Tr. at 86:7-16 (explaining in RFP process in 2019, Disney selected Google's ad server, agreeing it was a "high quality ad server").

207. Ad space sellers pay DFP very low fees, which are a fixed number per impression on the order of pennies for one thousand impressions. In addition, it is not unusual for DFP to offer customers fee waivers or heavy discounts on platform fees for Google Ad Manager, including

DFP ad serving fees. *E.g.*, DTX-1261 at 1-2 (approved discounts on DFP of up to [redacted] and [redacted]; DTX-586 at 1 ("we historically have been subsidizing the platform (ad server discounts like the ones reflected in these deals)"); DTX-1169 at 1-2 (proposal to waive ad serving fees and offer performance bonuses to entice publisher to sell inventory through GAM).

208. For sellers who use DFP to transact in a relatively low volume of impressions, Google does not charge any ad serving fees if they fall below certain monthly impression limits—today, sellers with less than 90 million non-video impressions and 800,000 video impressions per month are not charged to use DFP. In 2022, 86% of DFP ad space sellers in the United States paid zero ad serving fees. DTX-1954 at 1.

c. AdX

209. Before Google's acquisition of DoubleClick, DoubleClick had launched the DoubleClick Advertising Exchange, which was designed to bring ad space sellers and buyers together on a website where they can participate in an auction for ad space.

210. The DoubleClick Advertising Exchange had been primitive and more closely resembled an ad network. DTX-32 at 1-2. For example, the infrastructure of the DoubleClick Advertising Exchange could not have handled the volume of traffic transacted through AdSense and could not integrate with AdSense inventory. DTX-32 at 2.

211. After Google acquired DoubleClick, it rebuilt the DoubleClick Advertising Exchange on its own tech stack and relaunched it as a new, improved Google ad exchange—AdX. DTX-55 at 1 ("The team has done a great job not only getting to parity with AdX 1.0 but to also go beyond in some very important areas, e.g. . . . Real Time Bidding, and of course integration with AdSense and AdWords.").

212. To rebuild DoubleClick's nascent ad exchange into AdX, Google essentially built an "entirely new" exchange from the "ground up." DTX-51 at 1-2; DTX-30 at 19.

213. When Google launched AdX, it also incorporated into AdX real-time bidding—an innovation (as described in further detail below) that was at the forefront of display advertising at the time and required technical investment and resources to create. DTX-55 at 1; *see infra* ¶¶ 223-228.

214. Google also connected AdX to advertiser demand on Google Ads and publisher inventory on AdSense. DTX-72 at 2-3.

215. Connecting Google Ads to AdX helped ad space sellers "maximize the yield on their inventory by enabling them to sell more of it." DTX-13 at 6; *see also* DTX-51 at 1. Increased buyer demand drives up seller revenues because a larger pool of bidders creates increased auction pressure, driving prices up.

216. Google's version of the new exchange additionally implemented improved controls for ad space sellers to manage ad space buyers, networks, ad formats, and bid types on a minute-by-minute basis; easier reporting and measurability; and a centralized clearing system for payments to sellers. DTX-72 at 3-4.

217. One of Google's "value pillars" in creating its re-built version of the DoubleClick Advertising Exchange was the creation of a "balanced focus—focusing on both the buy and sell sides." DTX-396 at 5; *see also* DTX-51 at 1 (Google's display strategy–a neutral transaction platform for connecting ad networks to publishers); DTX-59 at 2 ("I believe our Ad Exchange (AdX) will transform the display advertising industry by making it more open, transparent, fair and effective for everyone from ad networks to agency holding companies to large publishers."). Balancing all interests "ensures a healthier more sustainable environment over the long run for all

parties (Google, advertisers & publishers)." DTX-396 at 7. As Google has noted, players "who focus on publishers" end up "sacrificing long term sustainability to win short term business," which "impacts . . . user experience." *Id.*

218. Since its launch, AdX has vetted ad space buyers and sellers in order to ensure that sellers display high-quality and appropriate ads, and buyers protect their brands by placing their ads next to appropriate and high-quality content. DTX-30 at 32-33.

219. From its launch until 2019, AdX used a second-price auction to allocate impressions. In 2019, it transitioned to a first-price auction.

219.1. In a second-price auction, the advertiser who bid the highest amount above the publisher's minimum "floor" price wins—but only pays the higher of (1) the second-highest bid, or (2) the floor price set by the publisher.

219.2. In a first-price auction, the advertiser who bid the highest amount—assuming it is higher than the minimum floor price—wins and pays the amount it bid.

220. Since it was created by DoubleClick (and before it was rebuilt by Google), AdX has used a revenue share model. The revenue share is a percentage of the price that an ad space buyer pays when it wins an impression, which means that the revenue share is taken out of the amount that the ad seller receives. The "baseline" revenue share that AdX charges for auctions of inventory that are generally available to all the buyers on an exchange (called "open auctions") is 20 percent for Google and 80 percent to the ad space seller. That revenue share has not changed since before the DoubleClick acquisition—despite the numerous innovations, including the addition of real-time bidding, that Google has added to AdX. DTX-723 at 37. Ad space sellers have the ability to negotiate lower revenue shares or tiered revenue shares that depend on how much inventory is sold or ad revenues. DTX-849 at 2.

221. After the introduction of sell-side Dynamic Revenue Sharing (explained further below, *see infra* ¶¶ 656-664), in August 2015, and until Google transitioned to a first-price auction in 2019, Google varied AdX's revenue share across transactions, while maintaining a 20 percent revenue share per seller overall, in order to increase overall returns for digital content providers. Milgrom TT.

222. AdX does not charge ad space buyers any fee. DTX-723 at 37 ("Ad Exchange does not impose a buy-side fee").

d. Google's Incorporation of Real-Time Bidding into AdX

223. As set forth above, in the 2008-2009 time period, along with a few other companies, Google was at the forefront of making real-time bidding technology available, which enabled ad space buyers to submit non-static, "real-time" bids at auction for any given individual impression. DTX-91 at 5, 9-10.

224. Real-time bidding completely changed the value of display advertising. Real-time bidding maximized the amount of information appended to a bid request and allowed both ad space sellers and buyers to defer their decision as to ad placement until just before placement, when the advertiser could most accurately value the impression based on who the specific user viewing it would be, and the seller could best assess who the buyer with the highest valuation was. Advertisers had, for the first time, real-time information relating to the user viewing a particular impression and the content of a website so they could submit bids that were based on a real-time evaluation of the value of that user's view or potential click. DTX-60 at 6; *see also* DTX-91 at 10 ("This helps a buyer learn much more about a particular user and a particular impression, gain a smarter answer to the three essential questions[,] and make a more data-driven decision.").

225. Real-time bidding resulted in tangible benefits to ad space buyers, who experienced immediate improvements in return on investment and performance. DTX-91 at 6.

226. Ad tech and digital ad sales grew significantly as a result of real-time bidding. Real-time bidding made auctions more efficient by promoting fair competition among ad space buyers for a particular impression. DTX-2114 at 1; Ghose TT; Milgrom TT. Because of real-time bidding, new ad exchanges and buying tools emerged to take advantage of the growth in digital advertising. Ghose TT; Milgrom TT.

227. The pairing of real-time bidding through AdX with Dynamic Allocation in DFP further increased the benefits of Dynamic Allocation for ad space sellers. Because AdX was embedded with real-time bidding, Dynamic Allocation enabled sellers to determine in real-time, for a particular impression, whether there were AdX buyers willing to pay a higher price than what the seller expected that its other demand sources (not including buyers with direct deals) would pay. If AdX buyers beat the highest expected price from other sources, the highest-bidding AdX buyer would win. This increased yield for ad space sellers even more than DoubleClick's original version of Dynamic Allocation did. AdX could elicit buyer bids based on real-time information about the impression. DTX-80 at 2 (one study finding the combination led to a 188% increase in revenue, on average, when AdX won the auction).

228. Following the innovations in 2009, more supply-side platforms—tools that historically helped ad space sellers by automating the "waterfall" system for selling inventory—also built their own real-time bidding functionality. Ghose TT. Over time, these supply-side platforms like Pubmatic and Rubicon shifted their focus away from optimizing among ad networks in the "waterfall." The services these traditional supply-side platforms offered became virtually indistinguishable from those offered by ad exchanges. Ghose TT; DTX-118 at 2 (Google employee observing that the ad network optimization service of supply-side platforms was "dying").

e. Google's Development of Open Bidding as a More Secure and Efficient Alternative to Header Bidding

229. By about 2014, as the number of ad tech providers offering real-time auction ad exchange functionality increased, ad space sellers sought a way to compare bids from real-time auctions head-to-head. In response, header bidding emerged.

230. Header bidding allows sellers to solicit and compare real-time bids from ad exchanges and demand partners before the impression is sent to their publisher ad server. In the most popular form of header bidding at the time, digital content providers set up comparisons between real-time bids by manually placing publicly available code on their websites. When a user visited the publisher's website, the website browser would "read" the header bidding code and activate the process of running an auction between other ad exchanges and demand sources participating in the header bidding auction. That entire process of collecting and comparing bids was handled by code on the digital content provider's website.

231. Because header bidding used by digital content providers directly on their websites involved open-source code and multiple ad exchanges and providers, it introduced a number of risks or problems for both ad space buyers and sellers: "increased latency, . . . [with] timeouts on HB exchanges significantly higher"; "operational complexity"; "data security/leakage"; "eventual loss of advertiser trust in RTB auctions"; "significant discrepancies between HB and DFP . . . and risk of bid fraud"; and "troubleshooting complexity." DTX-376 at 10.

232. One security risk was domain spoofing, which involves fraudulent digital domains impersonating reputable digital content providers. As a result, an ad space buyer's ads might wind up on a fraudulent website and not receive any user views. The high volume of bid requests created by header bidding could make such fraud harder to detect because many different exchanges were

offering the same inventory and impressions for sale to buyers simultaneously, which could make it harder for a buyer to determine which of all the offers were legitimate.

233. Additionally, header bidding risked data leakage, which would harm the privacy of Internet users. The user data connected to an available impression could be exposed to all bidders.

234. Header bidding also introduced latency problems. As explained above, *see supra* ¶¶ 35-38, increased latency is a real detriment to the return that ad space buyers see.

234.1. Header bidding increased load time on Forbes' page by around 1.5 seconds (a 20% increase). DTX-346 at 4-5.

234.2. Header bidding "negatively impacts ad loading which can be particularly detrimental for mobile web performance" and "incentivize[s] visitors to use ad blockers." DTX-266 at 13.

234.3. "Header implementations can lead to complexity & inefficiencies," such as "operational complexity," "suboptimal yields," "increase in latency," and "payment discrepancies." DTX-375 at 15.

234.4. Header bidding "would make the website load slower." Deposition of Meta Platforms, Inc. (Omri Farber) Tr. at 276:11-22.

235. Header bidding could create billing problems for ad space sellers. Because, with header bidding, the ad serving and billing were handled by different systems, a seller might be subjected to discrepancies between the header bidding exchange and the publisher ad server. DTX-376 at 19; DTX-1016 at 16.

236. Header bidding risked artificially inflating the prices ad space buyers paid for ads. With header bidding, ad space buyers might bid against themselves in "self-competition" when they bid through multiple exchanges for the same impression. DTX-1016 at 19 (header bidding

can cause "bid duplication due to multiple requests for the same inventory."); Ghose TT; Milgrom TT.

237. Because of all these challenges to ad space buyers, ad space sellers, and users that were introduced by header bidding, Google's ad exchange, AdX did not participate in header bidding.

238. Google responded to the shift toward header bidding by developing its own technology—Open Bidding[14]—to allow ad space sellers to put exchanges in competition with each other without the same risks of header bidding. DTX-1016 at 23, 25 ("We built Open Bidding in response to changes in the aggregated bidding landscape, recognising the need to help publishers attain a higher yield on their ad inventory without sacrificing on user experience, regardless of which demand source they use."). The tool was developed "in direct response to feedback from publishers and buyers that asked for help in overcoming key monetization and media buying challenges." *Id.*

239. Google introduced Open Bidding on a trial basis in 2016 (when it was known as Exchange Bidding). Open Bidding was launched fully to all ad space sellers in 2018. Open Bidding enabled third-party ad exchanges to compete with each other and with AdX in a real-time auction, but with significant improvements to the operational issues present in header bidding. DTX-755 at 1 ("[T]he goal . . . was to help publishers attain a higher yield on their ad inventory without sacrificing on user experience, regardless of which demand source they use (AdX or [third-party])."); DTX-1498 at 11 (Open Bidding provides increased yield, reduced latency, simplicity with "no code changes required," and consolidation of reporting and billing); Deposition of Meta

[14] When originally launched, Open Bidding was referred to as Exchange Bidding. For consistency, the feature that was first launched as Exchange Bidding and then renamed Open Bidding will be referred to as "Open Bidding" throughout.

Platforms, Inc. (Omri Farber) Tr. at 278:18-25 ("Q. Was, in Meta's view in 2017, Google's open bidding solution superior to header bidding in some of those respects that you mentioned? A. To the best of my knowledge, Google's open bidding solution addressed those issues.").

240. Open Bidding reduced page latency, provided ad space sellers with transparency about prices, and reduced billing discrepancies.

241. Open Bidding was also more secure than header bidding used by digital content providers directly on their websites because it involved encrypted server-to-server communications rather than open source code using unencrypted communications.

242. Another benefit of Open Bidding for ad space sellers was that Google handled all billing, including for purchases made through third-party exchanges, so sellers could receive guaranteed net 30 day payments. DTX-1498 at 12; DTX-1016 at 25; DTX-755 at 1.

243. Open Bidding provided both ad space sellers—and buyers bidding through exchanges—with a simple, convenient, and transparent product to obtain all these benefits. It came with "virtually no setup cost or operational complexity" for sellers. DTX-1016 at 25. And, for buyers, Open Bidding offered tools that limited the possibility that they would bid on the same impression multiple times through different exchanges, thereby inadvertently inflating the price of the impression. *Id.* at 25-26.

244. Even after Open Bidding became available, header bidding remained popular. The adoption rate of header bidding among digital content providers has ranged from 66% to 79% between 2018 and 2022. Ghose TT; *see also* DTX-866 at 5. Ad tech providers and digital content providers have developed improved ways to enable header bidding, including by reducing the latency problems created in the early days of header bidding. Deposition of John Gentry (OpenX)

Tr. at 286:1-11. Many ad space sellers still use both Google's ad exchange, AdX, and various forms of header bidding to sell their inventory. Ghose TT.

f. Google's Integration of AdX and DFP Into Google Ad Manager

245. In 2018, based on feedback from ad space sellers who were already using DFP and AdX together, Google launched Google Ad Manager ("GAM"), which integrates the functionalities of DFP and AdX into one umbrella product. Sellers sought an integrated, streamlined interface for reporting and usability. *E.g.*, DTX-213 at 26 (summarizing results of publisher survey: "Publishers want the option to see their data together," which increases efficiency, conveniences, and productivity); DTX-211 at 3 ("On the publisher side, we have two great products—DFP and AdX—but our customers are asking us for a more unified offering."); DTX-198 at 1 (absence of a streamlined integration was a "very big pain point[]" for DFP customers).

246. In addition, most ad space sellers prefer an interface that combines the functionalities of ad servers and exchanges because, among other reasons, [redacted]

247. Today, Google offers two versions of Google Ad Manager: one directed toward small business digital content providers, and an enterprise version for larger digital content providers.

248. Plaintiffs are not challenging the combination of DFP and AdX functionalities into Google Ad Manager. Br. in Opposition to Google's Mot. for S.J. at 23, ECF No. 669 ("Plaintiffs do not challenge the integration of AdX and DFP 'itself'").

249. Ad space sellers who want to use Google Ad Manager retain the flexibility and control to choose which of Google's sell-side functionalities to use, as well as the flexibility and control to use Google Ad Manager to compare bids from other demand sources. Ad space sellers who use Google Ad Manager are free to manage as much of their inventory as they want through other tools.

250. Ad space sellers can use Google's ad server, DFP, without AdX. *E.g.*, Deposition of NBCUniversal (Krishan Bhatia) Tr. at 48:21-23 ("I would say DFP is the ad server, and you can contract with DFP independently of AdX."). Google Ad Manager permits sellers to configure their DFP set-up to call to any exchange in the world. In addition, through Open Bidding, GAM connects directly to real-time bids from more than 30 ad exchanges, all of which connect to a variety of buying tools with varied advertiser demand. DTX-1498 at 11.

251. Ad space sellers using GAM can also use header bidding, which enables them to access bids from over 100 other ad exchanges.

7. Google Enabled Ad Space Buyers and Sellers to Connect Directly Through Programmatic Direct Transactions.

252. By 2013, because of innovations like real-time bidding on ad exchanges, sales of leftover "remnant" inventory had become highly efficient. DTX-153 at 3.

253. The same was not true for direct deals, through which many ad space sellers continued to sell much of their most valuable inventory—accounting for the large majority of display ad spending. DTX-153 at 4; DTX-428 at 3. Because direct deals require one-on-negotiations with individual ad space buyers, they could be time and labor-intensive for sellers to negotiate, requiring large sales teams to negotiate and manage the deals.

254. In order to make direct deals (and other types of transactions that are negotiated with a more limited set of parties) more efficient for ad space buyers and sellers, DV360 and DFP offer features that automate what ad space buyers and sellers would otherwise spend time and money doing through marketing and sales teams. These features are collectively referred to as "Programmatic Direct," an umbrella that includes Programmatic Guaranteed deals, "Preferred" deals, and private auctions. DTX-264 at 32. All three Programmatic Direct features give both buyers and sellers more control over their transactions and make them easier to manage.

255. Programmatic Guaranteed deals resemble traditional direct deals in which one ad space buyer and one seller agree that the seller will place a certain amount of the buyer's ads on its inventory.

256. Google started developing Programmatic Guaranteed in 2013. Its goal was to add to its ad tech stack the ability to facilitate—and automate—direct deals between ad space sellers and buyers through Google's existing, powerful ad tech tools. DTX-153 at 5; *see also* DTX-189 at 4 (the initiative "could transform the industry by making campaign execution dramatically more efficient"). In 2015, Google launched this feature on DFP and DV360.

257. Buyers benefit from a unified tool that consolidates both direct deal purchases and purchases on auctions. They can use a single user interface for both kinds of transactions and optimize their spending across both kinds of transactions. DTX-153 at 7. In addition, centralized

access to different forms of digital inventory permits ad space buyers to improve frequency control across transactions, managing the frequency with which the same ad is shown to the same user so it is not shown too many times and wasted on the same user. DTX-1498 at 15; DTX-428 at 4.

258. Ad space sellers benefit from a unified tool as well. They can use one interface to monetize all of their inventory, and Google manages automatic payment processing. DTX-153 at 7; DTX-189 at 4. Google's tools give them the ability to control, even for direct deals, where ads appear, the price of ads, who can purchase ads, and the rules governing which ads are shown on different parts of their inventory. DTX-1498 at 15.

259. The difference between Programmatic Guaranteed and Preferred deals is simply that, for Guaranteed deals, the ad space buyer has a contractual guarantee to receive ad space on the seller's inventory. For Preferred deals, the buyer is given preference, but is not guaranteed inventory. DTX-1050 at 7. Preferred deals also provide individual buyers and sellers a means to negotiate one-on-one deals on price upfront. Like Programmatic Guaranteed, Preferred deals on Google's tools automate a negotiation process that would otherwise require extensive time and money.

260. Finally, private auctions, which are also automated through Programmatic Direct, refer to auctions in which only invited buyers can bid, rather than all of the buyers who are purchasing through an open auction. Private auctions give ad space sellers more control over the ads shown on their inventory. For certain ad locations, such as ads on a website homepage, sellers might prefer to personally vet the buyers who are allowed to purchase impressions in order to maintain brand quality.

261. There has been a strong shift over time from non-programmatic (or non-automated) direct transactions to programmatic (or automated) direct transactions. Programmatic direct

transactions have become a crucial way that ad space buyers and sellers reach each other: they accounted for only 6% of U.S. display ad spending in 2013, and 67% (two-thirds) of U.S. display ad spending by 2022. DTX-1832; Israel TT.

8. Google's Integrated Ad Stack Facilitates Transactions with Benefits to Ad Space Buyers, Ad Space Sellers, and Users.

262. Today, Google owns an integrated ad stack that includes buying tools and sell-side tools. Both buyer and seller customers of Google's tools are free to transact as much or as little of their business as they would like using either Google's tools or non-Google tools. In other words, to use Google's tools there is no requirement that a certain amount—or any amount—of business is transacted through Google's tools. Using an integrated product provides better results for ad space buyers and sellers, including improved stability, speed, reliability, simplicity, and security. The security and safety benefits created from an integrated ad stack are also explained further below. *See infra* Part IV.

262.1. Microsoft testified to these benefits: "When you run a marketplace, connecting the buyers and sellers through the underlying same platform, will yield better results for advertisers and that—and avoid errors; and those are the efficiencies when you run a marketplace both buy and sell in the same ecosystem." Deposition of Microsoft (Benneaser John) Tr. at 74:3-9.

262.2. A Microsoft deck identified further "benefits of an end-to-end solution" as "more value from media spend," "seamless deals troubleshooting," and "streamlined transactions." DTX-1524 at 16.

262.3. Google's competitor, Xandr (before it was acquired by Microsoft), has recognized the same benefits of integration. According to Xandr, owning an integrated, end-to-end platform enabled it to "increase its" revenue share,

"increase value for customers," create "tech efficiencies," and "ensure its high-value data stays within its platform.". DTX-939 at 2.

263. Google's integrated product also creates economic value for ad space buyers and sellers. "An open end-to-end platform for buying and selling display ads" lowers costs for ad space buyers and enables sellers—not ad tech providers—to receive more revenue from each dollar a buyer pays. DTX-77 at 5-6; *see also* DTX-371 at 2 ("The BCG study demonstrated the advantages of the full stack vs. separate components (speed, reliability, simplicity) and the uplifts of EDA.").

264. Prices are lower across integrated products because of the economic theory of "double marginalization," which states that integrated products priced jointly tend to have lower prices than products priced separately. When different providers connect their individual products, each provider is incentivized to mark up prices for its particular tool within the ad stack because it will not capture revenue share from other tools. As a result, when prices are compared across the transaction, integrated products have lower fees. Israel TT.

265. Google's prices are lower than its competitors' prices when viewed across the integrated stack. Across Google Ads, AdX, and DFP, the average revenue share on an impression has totalled slightly over 30% from 2014 to 2022, DTX-1977, as compared to average fees of 42 to 46 percent charged by different combinations of Google buy-side and sell-side competitors in the same time period, DTX-1886; Israel Rpt. TT. The integrated fee for the combination of Google Ads and AdX is significantly lower—among the ten least expensive—than the combined fees of a wide swath of other buying tools and exchanges paired together. DTX-1893.

266. Google is not alone in offering an integrated ad stack. [redacted]

[redacted]

[redacted] For example, Microsoft (Xandr), FreeWheel, Magnite, and Equativ have all integrated sell-side operations. Ghose TT. And other providers have integrated products facing both ad space buyers and sellers, including Criteo, Microsoft (Xandr), Amazon, Comcast, Nexxen, and Magnite. Ghose TT.

III. Plaintiffs' Market Definitions Ignore the Commercial Reality that the Purpose of Ad Tech Tools Is to Match Ad Space Buyers, Ad Space Sellers, and Users, With Display Advertising and Its Ad Tech Spend Shifting to Follow Users.

267. Plaintiffs allege that Google has monopolized three markets: (1) "publisher ad servers for open web display advertising"; (2) "ad exchanges for indirect open web display advertising"; and (3) "advertiser ad networks for open web display advertising." First Am. Compl., ECF No. 120 ("FAC") ¶¶ 16-41, 282, 290, 297, 310-335. According to Plaintiffs, of Google's ad tech tools only DFP is in the first market, only AdX is in the second, and only Google Ads is in the third.

268. Plaintiffs' markets all turn on whether a given tool serves and transacts a specific form of digital advertising, which Plaintiffs and their experts have constructed for this case: "open-web display digital advertising," which they define as (1) traditional banner ads (to the exclusion of "native" ads and "instream video ads"), (2) that appear on websites (but not in apps or on Connected TV), (3) operated by ad space sellers that use third-party ad tech tools (i.e., products that these publishers do not themselves own) to sell their display ad inventory. Lee Rpt. ¶¶ 50, 55, 56. Plaintiffs further limit their "ad exchanges" market to only those ad exchanges for "indirect open-web display advertising," which excludes ad transactions facilitated through direct deals.

A. Plaintiffs' Markets Fail Because They Are Based on Individual Components in the Ad Tech Stack, Excluding Other Sources of Competitive Pressure in Matching Ad Space Buyers and Sellers.

269. The fundamental purpose of ad tech is to match ad space buyers to sellers. Buyers and sellers have multiple options to achieve such matching, and the different pathways to a match

involve different sets of ad tech tools. All of these alternatives exert competitive pressure on each other.

270. Ad space buyers seeking to run campaigns are generally driven by their advertising goals, not by requesting particular ad tech tools or combinations of tools. For example, federal agency advertiser RFPs do not request ad tech tools (like Google Ads or DV360), but rather seek the optimization of advertising spend.

271. Industry participants view their products as connecting ad space buyers and sellers in transactions—not just particular components of the stack. They view their products as fundamentally two-sided because the ad tech business depends on connecting interested customers on both the buy-side and the sell-side. *E.g.*, Deposition of Meta Platforms, Inc. (Omri Farber) Tr. at 35:19-36:4 (The Audience Network is a "two-sided marketplace" because "it connects two businesses, one being the publisher, the other one being the advertisers, supply and demand."); DTX-358 at 4 (AppNexus noting that it "depends on sellers of advertising inventory for our buy-side customers to buy through our platform" and "depends on advertising inventory to allow our sell-side customers to sell through our platform"); DTX-939 at 1 (Xandr document recognizing importance of investing in buy-side in order to create a "demand channel for our supply").

272. Industry participants identify their competition as other providers seeking to win display advertising spend. They do not limit the competitors they identify to companies that provide the exact same components in the ad tech stack:

272.1. Meta:

i. When asked what "broader market" ad servers are in, a Meta representative responded: "the ad tech market," which includes "any and all companies' entities that take part in the process of serving

digital ads online." Deposition of Meta Platforms, Inc. (Omri Farber) Tr. at 274:2-12.

ii. Meta has repeatedly identified Google as its competitor in the market for connecting ad space buyers and sellers in digital advertising. Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 30:12-21; *see also id.* at 32:23-33:3 ("we compete for advertising dollars on Instagram and all our apps and services with any form of advertising that customers might invest in."). [redacted]

272.2. As Google explained in an internal presentation, "an evolving supply chain now has many buying doors," including "direct buying," "ad servers," "ad networks," "ad exchanges," "header bidding," and "Open Bidding." DTX-1016 at 12. Another presentation identified as a competitive pressure on Google's third-party tools: "Large buyers (Amazon, Facebook & Criteo) are establishing direct relationships with pubs." DTX-563 at 3.

272.3. A Criteo representative testified: "We currently compete with large, well-established companies such as Amazon, Meta platforms, Google and Microsoft; pure play demand-side platforms, such as The Trade Desk or Viant Technology or Google's DV360; pure play supply-side platforms such as Magnite, Pubmatic or Google Ad Manager; and pure play retail SSPs, such as Microsoft's PromoteIQ or Publicists Citrus Ad." Deposition of Criteo (Todd Parsons) Tr. at 71:24-72:19 (discussing Criteo 10-K's description of competition). "The market in which we participate is intensely competitive," including "competing against Google." *Id.* at 76:25-77:12; *id.* at 89:13-16 (agreeing that Criteo is "a competitor to Google, Amazon, and Facebook").

272.4. In a document identifying "risks related to [its] business and industry," AppNexus described its competition as follows: "We compete for digital advertising spending against a variety of competitors, including Google and Facebook, who, in some cases, are also buyers on our enterprise technology platform. We also compete for supply of digital advertising inventory against a variety of competitors, including Google and Facebook." DTX-358 at 2.

[redacted]

273. The number of different pathways from buyer to seller is far greater than the pathway between the three components Plaintiffs identify: "advertiser ad network" to ad exchange to publisher ad server. Some of the different pathways through which an ad space buyer and ad space seller can connect are depicted below in the chart prepared by Google's industry expert Dr. Anindya Ghose.

Table 1. Examples of Different Pathways of Display Ad Transactions

1	**Advertiser**	Self-Service Platform*			**Publisher**
2	**Advertiser**	Publisher Ad Server [*Direct Deals*]**			**Publisher**
3	**Advertiser**	Ad Network*			**Publisher**
4	**Advertiser**	Ad Network		Publisher Ad Server	**Publisher**
5	**Advertiser**	DSP / Ad Network	Ad Exchange / SSP	Publisher Ad Server	**Publisher**
6	**Advertiser**	DSP / Ad Network	Ad Exchange / SSP through Header Bidding	Publisher Ad Server	**Publisher**
7	**Advertiser**	DSP / Ad Network	Ad Exchange / SSP*		**Publisher**
8	**Advertiser**	Supply Path Optimization with Ad Exchange / SSP		Publisher Ad Server	**Publisher**
9	**Advertiser**	Supply Path Optimization with DSP		Publisher Ad Server	**Publisher**

* In the case of this transaction path, this tool would also perform the ad serving function.
** In some cases, this path can also involve negotiation that takes place via a DSP and SSP.

DTX-2121.

274. The providers, like Google, who offer component tools recognize that they must compete against other pathways as well because ad space buyers and sellers have many options to

connect. For example, in March 2020, Google noted that "the average Publisher sold ads through 21.6 different supply paths." DTX-1016 at 14; *id.* at 15 ("Many paths can lead Buyers to the same inventory."). Google Ad Manager needed to "evolve to keep up with the demand" for different supply paths. *Id.* at 17.

275. Plaintiffs' markets fail to account for the competitive pressures other pathways exert on "advertiser ad networks," ad exchanges, and publisher ad servers. For example, as explained below, they exclude both pathways that facilitate direct transactions and products that eliminate various intermediaries.

276. In a single two-sided market for connecting ad space buyers and sellers for display advertising, during the 2008-2022 period, Google's market share was never higher than 46% and since 2013 has been on a steady decline, with a 25 percent market share in 2022. DTX-1875 at 1; Israel TT.

1. Direct Transactions Remain an Important Way of Matching Ad Space Buyers and Sellers.

277. Direct transactions remain an important way to match ad space sellers and buyers for sellers' most valuable inventory. For example, the impressions facilitated through direct deals may be particularly valuable ads such as the banner on a home page for a website, or a particularly engaging ad that is customized to the surrounding content. During the 2013-2022 time period, direct transactions accounted for at least 70 percent of U.S. display ad spending. DTX-1832 at 1; Israel TT.

278. Direct transactions are an important source of revenue for ad space sellers. [redacted]

[redacted]

[redacted]

279. Direct deals have become especially valuable to both ad space buyers and sellers in recent years because digital advertising has shifted toward the use of first-party data—which includes data collected by digital content providers about their own customers or site visitors—in order to provide ad space buyers with information about the user who will be viewing an impression. Ad space sellers often collect their own first-party data and information about the users visiting their properties, so they can more effectively monetize their content by incorporating that valuable data about their users into direct deals agreed to with ad space buyers.

280. Ad space buyers shift spend from other forms of ad transactions to direct transactions. *E.g.*, [redacted]

281. For ad space sellers, too, direct transactions compete with other transactions. Digital content providers can strategically prioritize or deprioritize direct transactions for sales of certain inventory. *E.g.*, [redacted] Deposition of John Gentry (OpenX) Tr. at 231:9-14 ("I would say, in general, many of the publishers we're working with are trying to get competition—are using competition at a price level between their varying sources of demand. Often that will be programmatic demand and direct sales demand.").

282. As explained in more detail below, *see infra* ¶¶ 581-584, Google even offers a feature on DFP, Enhanced Dynamic Allocation, that dynamically optimizes for ad space sellers—in real time—whether to place an ad in a given impression from a direct deal or an indirect transaction. In essence, when Enhanced Dynamic Allocation is running, for each individual impression direct and indirect transactions are literally competing for that impression.

283. That direct deals compete with indirect deals is important because direct deals can bypass or combine the functions of the third-party "advertiser ad networks," ad exchanges for "indirect" transactions, and publisher ad servers that are in Plaintiffs' defined markets. Ghose TT. For example, Google offers automated direct deals (called Programmatic Direct, *see supra* ¶¶ 252-261) through both its publisher ad server for ad space sellers, DFP, and its demand-side platform for ad space buyers, DV360. On the buy-side, Plaintiffs omit DV360 from their market definition for "advertiser ad networks." Even though ad space buyers interested in shifting spending from indirect to direct deals might shift more spend to DV360 to take advantage of its Programmatic Direct offerings, Plaintiffs exclude DV360 from the market that Google Ads is in. Or an ad space buyer might not use a buying tool or exchange at all, and make a deal directly with a seller's ad server. Plaintiffs' "advertiser ad network" and "ad exchange" markets do not account for that

pressure. On the sell-side, Plaintiffs exclude in-house ad servers from their "publisher ad servers" market even though ad space sellers can and do manage their direct deals (and other inventory) using in-house ad servers. That includes managing automated direct deals made with buyers who are using third-party buy-side tools like DV360. *E.g.*, [redacted]

284. Because ad space buyers and sellers can and do shift their ad tech spending between direct and indirect transactions, the existence of these alternative pathways to facilitate direct deals exerts competitive pressure on the tools that Plaintiffs do include in their alleged markets.[15]

2. Numerous Tools Provide Alternate Paths to Match Ad Space Buyers and Sellers that Are Not Accounted for by Plaintiffs' Component-Based Markets.

285. Products that combine or bypass certain tools also match advertisers and publishers, yet are excluded from Plaintiffs' component markets. By defining markets based on components of the ad tech stack that first emerged decades ago, Plaintiffs ignore competition to make matches outside of these components.

286. In the last decade, ad tech intermediaries that provide alternate paths to match ad space buyers and sellers have become more important than ever. As explained above, *see supra* ¶¶ 34-41, 262-265, integrating products has numerous benefits for ad space buyers, ad space sellers, and users: security and safety, transparency, improved latency, consistent billing, and more. Ad space buyers and sellers are seeking to capitalize on the benefits of integrating tools and of reducing the number of intermediaries necessary to connect. The goal is to maximize return on

[15] As explained below, *see infra* ¶¶ 424-426, Plaintiffs also omit from their market share calculations for the ad exchange market any direct transactions and therefore overstate AdX's market share.

investment (for buyers) and revenue (for sellers): by eliminating intermediaries, especially third-party ones, each individual ad spend dollar goes more to quality inventory than to intermediaries.

287. This trend is called supply path optimization—optimizing the pathways through which ad space buyers and sellers reach each other. DTX-1380 at 3. Plaintiffs' claims, which are centered on particular ad tech tools, completely ignore that the ad tech industry is evolving toward making supply pathways more efficient.

288. The supply path optimization trend is consistent with the history of ad tech. The functions of various tools have often shifted or been consolidated. For example, ad exchanges and supply-side platforms have now largely merged into one type of offering, and some publisher ad servers have integrated with ad exchanges.

289. All of the new ad tech tools that are emerging to make connecting ad space buyers and sellers more efficient have exerted competitive pressure on third-party buying tools, ad exchanges, and inventory management tools like Google's.

290. *First*, multiple industry participants now offer products that eliminate the need for a third-party ad exchange, placing competitive pressure that Plaintiffs' component-based markets do not take into account. Israel TT.

291. In 2022 The Trade Desk, which has historically operated a demand-side platform that serves ad space buyers, launched its OpenPath product. OpenPath disintermediates exchanges, and solutions like Open Bidding that compare bids from exchanges, by connecting directly to ad space sellers' inventory without an ad exchange. DTX-1198 at 2. Ad space sellers can now use OpenPath to sell their inventory directly to buyers using The Trade Desk's demand-side platform. OpenPath's customers include Reuters, Conde Nast, The Washington Post,

BuzzFeed, the Los Angeles Times, Forbes, and others. DTX-1217 at 1; [redacted]

[redacted]

292. In 2017 Criteo launched its Direct Bidder product, which performs the same function as The Trade Desk's OpenPath product. Criteo describes Direct Bidder as allowing Criteo "to bypass . . . exchanges in the bidding process and to save publishers the take-rate" exchanges "would typically charge them." DTX-1071 at 25.

293. Yahoo Backstage, which provides direct access to publisher supply, and Mediavine's direct integration with Basis (a buying tool) also offer ad space buyers ways to bypass ad exchange in accessing ad space sellers' inventory. Israel TT.

294. *Second*, other tools offered by exchanges can eliminate the need for third-party buying tools.

295. Magnite's ClearLine and Pubmatic's Activate provide buyers direct access to sellers, eliminating the need for buying tools. DTX-1528; DTX-1442. PubMatic's product has seen significant growth and success. *E.g.*, DTX-1380 at 3 ("In Q3, over 30% of activity on the PubMatic platform was SPO-related."); DTX-1541 at 4 ("In the past quarter alone, we have seen an over 80% increase in buyers interested in engaging" with PubMatic's solutions).

296. *Third*, some ad tech tools bypass third-party buying tools, exchanges, and publisher ad servers by connecting ad space buyers to ad space sellers directly.

297. Many—including some of the largest—digital content providers now offer self-service platforms that allow buyers to purchase owned-and-operated inventory directly from the seller. Ghose TT. Transactions run through self-service platforms (also referred to as integrated buying tools) can elide any third-party ad tech intermediaries entirely. Self-service platforms include Meta Ads Manager, TikTok Ads Manager, X Ads Manager, Snapchat Ads Manager,

Amazon Ads, Microsoft Advertising, Walmart Ad Center, Disney Advertising and Hulu Ad Manager, and Vox Media's Concert Ad Manager.

298. Third-party ad networks like the Meta Audience Network, Taboola, and Outbrain directly connect ad space buyers with third-party sellers, without any other ad tech intermediary (including an inventory management tool for sellers). Ghose TT.

299. The Meta Audience Network was formerly the Facebook Audience Network and connected ad space buyers directly to inventory on third-party websites—in other words, what Plaintiffs term "open-web display ads." In 2020, the same tool, now known as Meta Audience Network, was repurposed to help non-Meta app publishers, instead of non-Meta website publishers, monetize their app inventory. Meta announced that this change was made "based on where we see growing demand from our partners, which is in other formats across mobile apps."[16] As Google has recognized, the Meta Audience Network is "an established monetization partner for publishers." DTX-801 at 7. The Meta Audience Network has the competitive advantage of enabling ad space buyers to reach third-party sellers directly while leveraging data Meta has about its users.

B. Plaintiffs' Markets Based on Whether Tools Serve and Transact "Open-Web Display Ads" Exclude Most Competition.

300. Plaintiffs' markets are all focused on ad tech tools that "serve and transact" "open-web display advertising." Plaintiffs define "open-web display" ads as ads that (1) appear on certain websites (not apps, social media, or Connected TV); (2) are traditional banner ads (not native or instream video ads); and (3) are placed through third-party ad tech tools "(i.e., products that these publishers do not themselves own)" to sell their display ad inventory. Lee Rpt. ¶¶ 50, 55, 56.

[16] Meta Business Help Center, *Changes to Web and In-Stream Placements*, tinyurl.com/MetaAudienceNetworkChanges.

301. Plaintiffs' own experts agree that they had not heard of the term "open-web display advertising" before this case. Plaintiffs' expert, Dr. Abrantes-Metz testified that she did not recall hearing the term "open-web display advertising" before, and that the term is "a name that was given to the relevant antitrust market delineated for this case." Deposition of Rosa Abrantes-Metz Tr. at 26:22-28:5. Dr. Ravi testified that, when he heard the term, he connected it to "open auctions versus private auctions"—a distinction that has no relation to Plaintiffs' allegations in this case. Deposition of Ramamoorthi Ravi Tr. at 62:2-22. And when Prof. Lee, the expert who delineated the markets in this case, was asked whether this case is "the first time anyone has tried to compute market shares for markets that use the term open-web display advertising," he replied: "I can't speak to what anyone has ever done." Deposition of Robin S. Lee Tr. at 47:9-12, 14-15.

302. The industry does not recognize "open-web display ads," as defined by Plaintiffs, as a distinct set of ads.

303. And no ad space buyers who testified in this case—including the federal agency advertiser plaintiffs—use ad tech tools dedicated to "open-web display advertising" or understand the term to mean the narrow set of ads Plaintiffs identify.

304. No advertiser who testified in this case has a media plan focused only on "open web display" advertising.

305. The exhibits and testimony in this case do not refer to tools that transact in "open-web display advertising" as a distinct market or suggest market shares or a dominant firm in any such market.

306. Nor have Plaintiffs identified any tool that transacts only in "open-web display advertising," or charges a fee structure that is specific to "open-web display advertising" as Plaintiffs define it.

307. Third-party industry and market reports do not refer to markets for "open-web display advertising" or provide data for such proposed markets. The market research company, eMarketer, a leading source of industry data and analysis on which Plaintiffs' experts heavily rely, defines "display ads" far more broadly than Plaintiffs and their experts. It defines "display ads" to include: "advertising that appears on desktop and laptop computers as well as mobile phones, tablets, and other internet-connected devices; includes banners, rich media, sponsorship, video, and ads such as Facebook's News Feed Ads and Twitter's Promoted Tweets." DTX-2161 at tab "Digital by Format," cell Y3.

308. A survey conducted on behalf of OpenX, a competitor exchange, defined the term "open web" as "any online property, website[,] or app that is not owned by a major technology company (Facebook/Instagram, Amazon, YouTube)."[17] The New York Times "does not consider apps as being a separate ad product. It is one ad product under digital display running across web and apps." Deposition of The New York Times (Jay Glogovsky) Tr. at 249:20-250:3. Meta considers Facebook and Instagram—which Plaintiffs would exclude from the "open web" because they sell ads through proprietary tools—to be part of the "open web," which includes "the mobile web or however people are accessing the Internet." Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 15:24-16:12.

1. Ad Tech Tools Are Multi-Functional and Do Not Solely Serve and Transact "Open-Web Display Ads."

309. None of the ad tech tools in Plaintiffs' markets have been identified as having functionality that is limited to "open-web display" ads. DTX-1789. Prof. Lee explained that some

[17] OpenX, *The Open Web vs. the Walled Gardens*, tinyurl.com/OpenXSurvey.

ad tech may be used by digital content providers who only have "open web" inventory, but Plaintiffs have not presented evidence of ad tech limited to that functionality.

310. That ad tech tools are multi-functional and facilitate transactions across ad channels and formats is no accident. The history and development of the ad tech industry is defined by innovations that are made to tools, often not specific to a particular ad format or channel. For example, real-time bidding was not a paradigm-shifting innovation because it applied only to auctions for a certain kind of ad, but rather because it was an innovation on how tools match ad space buyers and sellers. The acts identified by Plaintiffs as allegedly anticompetitive were not specific to transactions in a particular ad format or channel, much less transactions in "open-web display ads."

311. Moreover, ad space sellers and buyers particularly value tools that offer a centralized interface from which to manage, for sellers, inventory across multiple platforms and, for buyers, campaigns that span ad channels and formats. *See* DTX-962 at 113 (Xandr slide deck identifying "cross-screen capabilities" as a "media products value" for buyers); DTX-866 at 2 ("But as the world continues to shift to a more omnichannel, identity conscious advertising environment, publishers increasingly see the value in turning to wrapper partners that can help them make sense of—and monetize—their inventory across their broader portfolio."). For example, when ad space buyers can run a campaign across ad channels and formats from the same place, the buying tool can provide improved frequency management for the campaign. It can ensure that the same ad is not shown too many times to the same user on a website, app, and YouTube. The multi-functionality of tools to support multiple ad channels and formats is itself a selling point of the tools in Plaintiffs' markets.

312. Google's ad tech tools support ads on multiple ad formats and platforms, including banner, native, and instream and outstream video ads on websites, apps, and Connected TV. DTX-406 at 59; DTX-1514 at 39, 50 ("DV360 access is available over multiple formats, including display, native, in-app ads, CTV, video, . . . and audio."); DTX-1498 at 10 ("Ad Manager allows you to transact with advertisers in multiple ways across all screens with engaging formats" on apps, CTV, native, and instream video).

313. Because the multiple functionalities of tools are important to customers, Google proactively reacts to shifts in user attention by innovating on its products to better compete in serving additional ad channels and formats. Throughout the entire time period identified by Plaintiffs, Google has built and improved—on the very same products in Plaintiffs' markets—functionality for ads that are not just website banner ads, such as native ads, instream video ads, in-app ads, and Connected TV ads.[18]

313.1. "Our solutions should help advertisers maximize ROI through data-driven portfolio optimization and streamlined workflow across multiple digital marketing channels," including Search, display, rich media, video, mobile, and CTV. DTX-31 at 21.

313.2. "We have moved from a network that served text ads and a few types of display banners to one that supports nearly every format relevant for users—graphical ads, video formats, rich media, mobile, feeds, expandables, and even online streaming audio ads." DTX-59 at 2.

313.3. "Display does not just mean graphical ads for our publishers—it includes mobile and video." DTX-76 at 5; *id.* at 8 ("Provide the first multi-format

[18] Emphases marked in the quotes below are added.

exchange that supports not only traditional online display formats, but provides comprehensive support for in-stream video, expandable and mobile formats.").

313.4. AdX is a "cross-channel offering in the market—supporting desktop, mobile and video—a huge win for [Google's] publishers and advertisers." DTX-101 at 3.

313.5. One of Google's goals was to "offer an integrated platform to maximize publishers' advertising revenue," including to "support all channels and formats seamlessly," including "mobile and video." DTX-101 at 5.

313.6. "Ad innovation: Google supports a growing variety of ad formats (text, image, rich media, and click-to-play videos) to cater to the evolving web and user." DTX-116 at 2.

313.7. "Across all our platforms, we're building to offer you cross channel flexibility," including capability on mobile and video. DTX-156 at 10.

313.8. "[T]he advertising world moves quickly, and we are racing to offer new ad formats and new ad solutions that can cater to the important opportunities that lie ahead in mobile, display, and video." DTX-214 at 1.

313.9. "We can retain our lead [in DFP] with two investments: 1. Increase our velocity of support for new ad formats," including "audio and digital out of home." DTX-339 at 31; *see also id.* at 33 ("A fallback option could be to de-invest in desktop advertising, in order to bet heavier on mobile-only features for each segment.").

313.10. To compete effectively against AppNexus, "DoubleClick is the proven solution in market that can seamlessly support ad serving and yield management across mApp [mobile apps] and desktop." DTX-406 at 22.

313.11. "Over the last decade we have entered the golden age of video . . . . Never before has there been so much compelling content to watch, and across so many devices—mobile, desktop, Connected TVs—and services . . . . Given this complexity, our goal is to provide a simple, consolidated and profitable platform" for ad space buyers and sellers. DTX-601 at 127.

313.12. "To address these challenges our investments across both buy and sell should focus on: Build for CTV future: Offer solutions that provide personalized targeting, frequency management, advanced measurements and buying workflows that account for the unique characteristics of [CTV]." DTX-601 at 128.

313.13. In a 2023 plan for Google Ad Manager, Google planned to "drive incremental publisher revenue through formats innovation, especially via . . . the ability for [ad space sellers] to easily test and roll out new ad formats/units." DTX-1435 at 8. The value proposition of Google Ad Manager is "offering a comprehensive [cross]-platform, [cross]-device solution in three core offerings (Web, App, Video)." DTX-1435 at 1.

314. The same is true for Google's competitors. Not only do they also offer multi-functional ad tech tools, but they specifically market their ad tech tools for their ability to transact across multiple channels and ad formats. For example:

314.1. The Trade Desk:

i. "Our platform allows clients to execute integrated campaigns across ad formats and channels, including video, which includes Connected TV, CTV, Display, audio, digital out of home, native and social on a multitude of devices, such as computers, mobile devices, televisions and streaming devices." Deposition of The Trade Desk (John Dederick) Tr. at 13:22-14:13 (discussing description of The Trade Desk's business in The Trade Desk 10-K).

ii. "Our platform provides integrated access to a wide range of omnichannel inventory and data sources . . . . Our platform's integration of these sources and services enables our clients to deploy their budget through a wide variety of channels, media screens and formats, targeted in their desired manner, through a single platform." DTX-1484 at 9.

314.2. Magnite: Magnite offers "a single omnichannel partner to reach target audiences globally across all channels, including CTV, mobile, desktop, and digital out of home in formations including video display and audio". Deposition of Magnite (Adam Soroca) Tr. at 147:20-148:9.

314.3. Microsoft:

iii. Microsoft offers what it describes as a "Meta demand-side platform," which is a "fully integrated Omnichannel demand-side platform that provides an easy way to run omnichannel campaigns using premium inventory and exclusive data," which allow "a buyer to buy multiple formats through one demand-side platform." The

formats include "search display, native, video, CTV, DOOH [digital out of home] . . . gaming, audio, and social." Deposition of Microsoft (Benneaser John) Tr. at 298:19-299:6, 299:23-300:10, 301:11-302:12.

iv. A slide deck described Xandr's publisher ad server as "an open and flexible platform with global scale trusted by the world's most sophisticated publishers across all channels and ad formats (display, mobile, native, video)." DTX-1524 at 14.

314.4. Index Exchange: Ad space sellers can use Index Exchange to sell ads on the web in multiple forms (static, video, native, or animated, and over multiple devices, including phones, laptops, personal computers, Connected TV). Deposition of Index Exchange (Andrew Casale) Tr. at 60:11-62:6, 65:12-19.

314.5. Criteo: "Criteo's solutions work seamlessly across digital devices (desktops, laptops, smartphones and tablets), commerce and advertising environments (browsers, apps, Connected TV, and physical retail stores), . . . advertising channels and formats (display, including social and native, online video, Connected TV and ads on retailers' properties), and media environments (retail media, thousands of direct publishers and mobile app developers in the open Internet, and all major real-time bidding exchanges)." DTX-1420 at 13.

314.6. AppNexus: A Google competitive analysis deck noted that AppNexus offers mobile and video functionalities, and that "AppNexus will shift resources and focus between features at any given moment." DTX-406 at 14.

314.7. Adobe: "Advertising DSP is the first independent demand-side platform that brings cross-screen and cross-channel integrations for planning, buying, measurement, and optimization. It's the only omnichannel DSP that supports Connected TV, video, display, native, audio, and search campaigns." DTX-2272 at 1.

315. Plaintiffs overstate Google's market share by counting only a narrow slice of all the transactions certain tools facilitate—even though all the other transactions play an important role in how ad space buyers and sellers choose products. As a result, a rival that is competing more successfully by winning significant advertising spend in popular non-"open-web display" ads formats would, by Plaintiffs' calculations, have no impact on Google's market share. Plaintiffs' market shares discount ad tech providers' ability to shift their focus and business to particular channels and formats. DTX-601 at 128 ("At the same time, competitors are winning TV *and* digital spend by developing and marketing CTV inventory as a centerpiece of their offerings. . . . Not investing in TV capabilities puts at risk our digital video business.").

315.1. To take a concrete example, The Trade Desk has had particular success competing against Google's tools for ad space buyer business in video and Connected TV formats. Plaintiffs' market share analysis would discount all of The Trade Desk's success in instream video and CTV, thereby calculating a market share for Google's buy-side ad tech tools that does not take into account this competition.[19]

[19] Plaintiffs exclude The Trade Desk from their asserted buying tools market because The Trade Desk offers a demand-side platform. For purposes of this analysis, even assuming that The Trade Desk were included in Plaintiffs' buying tools market, Plaintiffs' market share calculations would still overstate Google Ads' share by discounting transactions in other ad formats and channels.

315.2. On the seller side, Freewheel is capable of managing "open-web display" inventory, but specializes in managing a seller's video and Connected TV content. *Infra* ¶ 449. Plaintiffs' market share analysis would similarly discount all of Freewheel's success in instream video and CTV, instead calculating a market share for Google's publisher ad server that does not take into account this competition.

316. In addition, Plaintiffs also exclude a subset of the ads the same ad tech tool can serve by treating the same ad format served on the same ad channel by the same tool as "open-web" in some instances but "closed web" in others. For example, Google Ads enables ad space buyers to purchase ads on both third-party properties and Google's owned-and-operated properties, including Search, YouTube, and Gmail. By Plaintiffs' definition, website banner ads purchased through Google Ads that are placed on Google's own properties are not "open-web display ads," but website banner ads purchased through Google Ads that appear on third-party websites are.

2. Ad Space Buyers and Sellers Shift Spend Between "Open-Web Display" and the Functionalities of Ad Tech Tools that Are Not "Open-Web Display."

317. Ad tech tools are not designed to transact solely in "open-web display ads" because numerous other ad channels and formats are reasonable substitutes for "open-web display ads." In fact, as the industry has grown, "open-web display ads" play a shrinking role in the display advertising market.

318. The evidence shows that ad space buyers and sellers shift their ad tech spending to follow user attention, so they view "open-web display ads" as interchangeable with other ads. Ad space buyers and sellers can and do shift spending, including within the same tools to other ad

channels and formats, so the other functionalities of tools are an important source of competition against "open-web display" ad transactions.

319. By failing to account for these other, increasingly important functionalities of ad tech tools, Plaintiffs' markets ignore important competitive constraints. Plaintiffs' market share calculations fail to account for other ad transactions facilitated by the same tools. Moreover, Plaintiffs' markets exclude tools that do not serve or transact "open-web display ads" but are viewed by Google and its competitors as competing with tools that serve or transact "open-web display ads."

a. "Open-Web Display" Ads Exclude All of the Channels Where Display Ads Are Placed Other than the "Open Web," Even Though Advertising on "Open Web" Websites Is Declining.

320. Plaintiffs' definition of "open-web display advertising" includes content viewed on a website operated by an ad space seller using third-party ad tech, but not on websites that serve ads using in-house proprietary ad tech, apps, Connected TV, or other ad channels. Websites relying on proprietary ad tech include many social media websites, like the website versions of Facebook and Instagram; retail websites, like the websites of Amazon and Walmart; and video websites, like the websites of YouTube and Hulu.

321. The last time that users spent more time on traditional, non-video websites than on other digital properties, such as mobile apps, social media, or Connected TV, was in 2012. DTX-1833 at 1; Israel TT.

322. The fraction of time that adult users spend viewing non-video content on the open web has precipitously declined from 73 percent in 2010 to 23 percent in 2022. DTX-1833 at 1; Israel TT; Ghose TT.

323. Because the core purpose of digital advertising is to target users of interest to ad space buyers, this seismic shift in where users spend their time directly affects the ads that ad space

buyers consider to be relevant. Israel TT. Advertisers are spending more money advertising on the digital properties where users are spending their time, including apps, Connected TV, and social media properties. And, in turn, publishers are turning their attention to other types of digital properties as well.

324. Participants in the advertising industry have explained that the industry has shifted away from what Plaintiffs call "open-web" ads:

324.1. Index Exchange: "I think it's well-documented that consumers are spending more of their time in front of devices than traditional forms of media, print, and so that has expanded the reach of programmatic. There was on[c]e a time where we just had desktops. Now we have laptops and phones. And so we're constantly seeing the channel that we operate in grow as consumers reach content in new ways." Deposition of Index Exchange (Andrew Casale) Tr. at 71:8-17; *id.* at 80:8-11 ("The expansion of channels by our customers has now included CTV, and so we follow suit. We take direction from our customers.").

324.2. Meta: "Q. It's fair to say that Google Display ads would not be one of the top four main competitors for Facebook's video ads? A. I would say in recent time Google Display Network doesn't come up as often as others when we are losing budgets. Q. Why is that? A. I'd say because advertisers are—I think Connected TV has a lot of momentum right now with advertisers. It's a new—it's a relatively new format. It allows people to watch on a television but it's measurable. I think there are benefits with Connected TV that are making it competitive right now. Again, I think it's important to mention it's a dynamic marketplace that changes as innovation occurs. So what we would consider our

competitive set today would have been very different a year, two, three years ago. But right now, I would say if we're losing budgets on video, Connected TV would come up often. I think You Tube would also come up often as would Tik Tok." Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 176:14-177:18.

[redacted]

325. Today, display ads on websites account for a very small—and diminishing—percentage of display advertising spend.

325.1. NBCUniversal: "Q. And of the total, what percentage of NBCUniversal's advertising revenue today comes from web display advertising? A. Of the total? Q. Of the total. A. It would be around 1 percent, maybe." Deposition of NBCUniversal (Krishan Bhatia) Tr. at 151:16-22.

325.2. Zulily: Zulily, for example, reallocated a significant portion of its advertising spend from Google Ads to Facebook, including Instagram. Deposition of Zulily (Brian Bumpers) Tr. at 80:9-17, 81:9-17, 84:19-82:4-9, 84:19-85:9, 86:1-8, 89:5-90:1 (describing reduction of Zulily's ad spend on Google Ads from $30 million to $8 million and shift of that spend to Facebook and Instagram).

326. The percentage of advertising dollars spent on "open-web display advertising" is declining. In 2022, at most 29 percent of display ad spend was for "open web" advertising, compared to 81 percent of ad spend in 2013. DTX-1831; Israel TT; *see also* Deposition of

Microsoft (Benneaser John) Tr. at 301:19-302:12 (referring to non-website display ads like video and CTV as on a "growth trajectory").

327. Ad tech providers like Google want to facilitate the matching of ads between ad space buyers and sellers where it matters most. By limiting the relevant market to ad tech tools for "open-web display ads," Plaintiffs exclude the most significant areas of growth in display ads, which is where ad tech providers are focusing their attention and facilitating transactions.

328. Display advertising on owned-and-operated inventory: Display advertising on owned-and-operated inventory is excluded from Plaintiffs' market definitions because Plaintiffs define "open web" to include only ad space sellers using third-party ad tech tools. But providers of owned-and-operated inventory also sell their inventory through the same types of tools that transact on the "open web." For example, as of October 2023, over 30 demand-side platforms can purchase inventory on Disney+ owned-and-operated inventory—the same way they would purchase inventory on so-called "open web" inventory. *See also* Deposition of Disney (Jeremy Helfand) Tr. at 25:15-26:1 (Disney invested in the creation of its own ad tech tools to be able to "deploy them into—into market with a sufficient amount of speed"); *id.* at 26:20-27:17 (tools Disney created include the Disney Ad Server, the Disney Real-Time Exchange, Hulu Ad Manager, Disney Ad Manager, and Disney XP, which is a cross-platform product across multiple inventory sources).

329. Display advertising on social media properties that use in-house ad tech like the websites and mobile apps of Facebook, Instagram, and Tiktok are excluded from Plaintiffs' market definitions. Spending on these social media properties per year in the United States alone has increased from less than $10 billion per year before 2014 to at least $65.3 billion (even when only accounting for some of the major social media sites) as of 2022, and has increased from 16 percent

of U.S. display ad spending in 2008 to 48 percent in 2022.[20] DTX-1829 at 1; DTX-2095 at 1; Ghose TT; Israel TT. Social media advertising spending has rapidly grown to match display spending on non-social media properties. DTX-2096 at 1; Ghose TT; Israel TT.

330. Social media properties compete effectively for advertisers because they are able to leverage for improved user targeting the social network structure and unique user data such as demographics, interests, online activities, and more. Ghose TT. Advertisers shift advertising spend from display ads to these social media properties in response to low performance on display advertising.

331. Display advertising on retail sites like Amazon.com and Walmart.com that use their own ad tech to sell ads is also excluded from Plaintiffs' market definitions. Display spending on retail sites in this category has grown from $3.3 billion in 2018 to $12.7 billion in 2022. DTX-2100 at 1; Ghose TT; *see also* Deposition of Criteo (Todd Parsons) Tr. at 70:11-23 ("We expect more entrants into the space, particularly because commerce media, retail media is becoming a very popular way for brands to advertise to consumers.").

332. Retailers have invested in ad tech that develops data-driven solutions based on first-party data collected from customers, such as customers' purchase history, in order to help advertisers reach their target audiences more effectively. Ghose TT.

333. There are no practical differences between a display ad that appears on an "open web" publisher's webpage and a display ad that appears on a "closed web" webpage. No ad space buyer or ad tech provider who testified in this case described competition with a market for serving

[20] This figure accounts only for some of the major social media sites in the United States, including Facebook, Instagram, LinkedIn (display only), Snapchat, Twitter, TikTok, Pinterest, and Reddit.

and transacting only "open-web display ads," all describing display ads more broadly than those appearing on the "open web." For example:

333.1. NBCUniversal: A "display ad" "runs alongside a web page that you might be reading or a mobile app page that you may be reading," and can run on social media or "on television." Deposition of NBCUniversal (Krishan Bhatia) Tr. at 25:14-22, 152:4-153:8. The same team at NBCUniversal responsible for selling display advertisements also sells video advertising , mobile advertising, social media advertising, and in-app advertising. *Id.* at 155:10-25.

333.2. Meta: "We don't specifically compete for advertising on the open web. We compete for advertising dollars within our apps and services of which the open web is a part of that." Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 94:22-95:9.

333.3. Criteo: Display advertising consists of: "Visual ads placed on websites, social media networks or apps. They're typically image, text, or video banner acts that, when clicked on, take a consumer to a website or landing page." Deposition of Criteo (Todd Parsons) Tr. at 64:15-65:9 (agreeing with this statement in a Criteo glossary). Display ads appear on websites, on mobile apps, on social media, tools including Meta and TikTok, and Connected TV. *Id.* at 67:11-68:25.

334. In-app display advertising: Spending on display ads (including traditional banner ads, native ads, and video ads) that appear on apps has become a major driver of growth in display ad spending in recent years. Users on mobile devices now access digital content primarily via apps. DTX-461 at 18 (apps account for 90% of time logged on mobile devices); Israel TT.

335. In-app display ad spending increased from $3.4 billion in 2013 to $75.4 billion in 2022. DTX-1831 at 1; Israel TT. It grew from 18 percent of U.S. display ad spending in 2013 to 55 percent in 2022. DTX-1831. In Google Ads, in-app spend represents an increasing percent of non-video display ad spend, growing from zero percent in 2012 to 38 percent in 2022. DTX-1854 at 1; Israel TT.

336. Both in-app and web ads rely on similar formats to capture user attention and engagement. The similarity in formats allows ad space buyers to create cohesive ad campaigns across the web and apps.

337. Connected TV display advertising: Display advertising on Connected TV, which includes streaming devices such as Roku and Amazon Fire TV, is similar to display advertising—and unlike traditional TV advertising—because it allows advertisers to target users based on granular data regarding a user's demographics, interests, viewing habits, and other metrics. Ghose TT.

338. CTV display ad spending in the United States has grown from $2.8 billion in 2017 to $20.7 billion in 2022. DTX-2102; Ghose TT. That corresponds to growth from nearly 6 percent of U.S. display ad spending in 2017 to 15 percent in 2022. DTX-1922 at 1; Israel TT.

339. By excluding these important areas of growth in display advertising (owned-and-operated websites, apps, and Connected TV), Plaintiffs' markets thus exclude transactions in the overwhelming majority of display ads across other channels. In 2022, in-app and Connected TV display ads alone accounted for 70 percent of display ads, while display ads on the "open web" accounted for only 29 percent, continuing a steep decline from 2013. DTX-1831 at 1; Israel TT.

b. "Open-Web Display" Ads Exclude Important Display Ad Formats Used By Ad Space Buyers and Displayed on Ad Space Sellers' Inventory.

340. Plaintiffs' market definitions and market share calculations also exclude transactions in instream video and native ads, which are both display ad formats that advertisers use to reach users and that even "open-web" publishers display on their websites.

341. Video advertising is an increasingly important form of digital advertising, particularly because viewing ads across multiple screens and formats drives greater engagement. DTX-156 at 10. Video advertising accounted for only 9 percent of display ad spending in 2008; in 2022 it accounted for 54 percent—over half—of display ad spend. DTX-1830; Israel TT.

342. Video advertising includes two formats: instream and outstream. Instream video ads are played on a website's own video player before, during, or after the video that the user sought to watch on the website. Outstream video ads are video ads placed elsewhere on the website, including to the side of or next to the content the user is viewing, in ad slots that could also be filled by traditional banner ads. Both are types of video advertising, often placed using the same tools, including Google Ad Manager, and used to target the same users. The exact same video ad might be categorized as either instream video or outstream video depending on where it appears.

343. Plaintiffs offer no principled reason to distinguish between the two types of video ads, and the industry treats them both as interchangeable forms of advertising. In a document cited by Plaintiffs' expert himself, instream video advertising is listed as a form of display advertising. DTX-2161 at cell Y3.

344. Native ads are text and image ads that are intended to blend in with the digital content surrounding them, but are otherwise the same as other text and image display ads. Native ads are particularly useful to advertisers in a multi-screen world, where users expect to see

"flexible, component-based ads" that blend into the content. DTX-264 at 26. "Many of the fastest-growing properties are only running native ads." *Id*. Native ads are commonly seen today on social media sites or news sites—which includes sites that also display the traditional banner ads that Plaintiffs refer to as "display" ads.

345. Industry participants do not distinguish between banner ads and native ads. They consider both banner and native ads to be display ads, and ad tech providers market their ability to transact across both kinds of ads.

345.1. Criteo: "Criteo's solutions work seamlessly across . . . advertising channels and formats (display, including social and native, online video, Connected TV and ads on retailers' properties) . . ." DTX-1420 at 13.

345.2. Google: "Display Formats to meet today's publisher needs: Native ads, Content Recommendations, Engagement Ads." DTX-217 at 3.

345.3. The New York Times: "Q. So would native ads fall into the display category? A. They would fall within the display category is how we have personally classified them." Deposition of The New York Times (James Glovosky) Tr. at 75:9-15.

346. Ad formats other than "open-web display" are increasingly important to advertising as the importance of traditional banner ads on websites fades. Google Ads spend on instream video, for example, grew from 14 percent in 2013 to 31 percent in 2022. DTX-1857. Google built instream functionalities on DoubleClick for Publishers in part because it wanted to attract large, top-tier ad space to its ad tech product. DTX-48 at 4. By excluding functionalities in these ad formats from their markets, Plaintiffs have created markets that do not accurately reflect Google's market share.

347. When ad space buyers purchase these other ad channels and ad formats, they can use the same tools that they would to purchase traditional website banner ads. Google Ads transacts display, native, video, and search ads that can appear on third-party websites, apps, and Connected TV (with Disney as a large partner), as well as on Google's owned-and-operated websites and apps, including on YouTube. Similarly, DV360, Google's demand side platform, transacts display, native, and video ads that appear on third party sites and YouTube.

348. The same is true for ad space sellers, who can sell inventory across these channels and formats using the same tools. Deposition of News Corp (David Minkin) Tr. at 55:11-15, 56:20-57:8, 58:3-7, 59:5-11. For example, major video content creators such as Disney can use Google Ad Manager to serve both traditional banner ads and instream video ads on their properties. DTX-1321 at 2. The tools are the same; the only difference is how the ads appear.

c. Ad Space Buyers Shift Display Advertising Spending Between Ad Channels and Formats.

349. Advertisers follow users and spend their advertising dollars where users can be found. Digital content providers follow both users and advertising dollars in order to reach their audience and to continue monetizing their content. Accordingly, as user attention moves outside the narrow universe of "open-web display," the distribution of spend on digital ads—and on ad tech tools to facilitate digital ads—also changes. By defining markets solely based on the ability to transact in "open-web display ads," Plaintiffs do not account for the fact that ad space buyers shift their ad tech spend to follow users.

350. Over time, multiple changes have enabled ad space buyers to shift spend even more effectively than they did before. First, advertising has shifted to performance-based marketing. DTX-371 at 2. Because of technological improvements in measurement capabilities, advertisers are increasingly outcome-driven. Before the digital age, it was challenging to collect and process

data about ad performance across different channels. But now, advertisers can make data-driven decisions about exactly what channels and advertising formats are providing better returns by reaching the right audience, so they make choices driven by returns and consumer engagement—not particular type of ad format or channel. *E.g.*, Deposition of Zulily (Brian Bumpers) Tr. at 73:18-21 ("Q. Does Zulily allocate ad spend between different intermediaries based on their performance? A. Yes."); Deposition of Comcast (Kristy Kozlowski) Tr. at 59:16-60:4, 60:7.

351. In addition, today advertisers can better target users across devices and channels based on the particular audience they want to reach, not just based on the context or environment that an ad appears in. DTX-962 at 11. For example, when digital advertising first began, ad space buyers purchased ad space in large part based on the context surrounding the ad space. A dog food seller might place an ad on a blog post about dog health. As technology evolved, ad space buyers became better equipped to make decisions about where to purchase ads based on the user who would view that ad, not just the surrounding context. The same dog owner might be reached on any website, app, Connected TV device, or other digital content. This shift in advertising strategy has made it even more important that a buying tool can advertiser to digital content viewers across the many digital properties they might visit. Because advertisers are trying to maximally reach the right users across screens, ad space buyers do not seek out ad tech providers based solely on their "open-web display" capability.

352. Ad space buyers are also now better equipped to more nimbly shift ad spend as digital advertising technology develops that facilitates analytics on how they can most effectively allocate their ad spend. As even Plaintiffs' own expert acknowledges, advancements in measurement capabilities provide "a key input for advertisers' financial planning and budget

allocation." Ravi Rpt. ¶ 248. Advertisers can now pinpoint exactly which dollars of ad spending are providing better returns for them. Ghose TT.

353. This is especially true given the advent of features that use artificial intelligence to shift advertising budget between ad formats and channels automatically—without the ad space buyer making any decisions about particular ad formats or channels. Artificial intelligence is already dramatically changing how ad tech tools operate and compete in ways that belie Plaintiffs' proposed markets. *E.g.*, Deposition of Comcast (Kristy Kozlowski) Tr. at 120:10-21 (explaining Google has "continued to invest and evolve their ability to use AI in order to drive more predictive sorts of outcomes"); Deposition of Criteo (Todd Parsons) Tr. at 211:10-213:15 (AI "will play a significant role in the future . . . ."). AI can increase the likelihood of reaching the right person with the right ad at the right time, enabling advertisers to predict who the best users are to reach and which ads are likely to provide the best return on investment. As a result, AI can enable optimized buying across ad channels and formats in order to achieve an advertiser's particular goals.

354. For example, Google Ads' Performance Max tool, which has been immensely popular, utilizes AI to buy different types of ads shown in different places—in apps, on third-party websites, and on Google's owned-and-operated O&O properties—based on the expected return on investment calculated by Google Ads AI-powered technology. The ad space buyer plays no manual role in deciding the channels where ads will be placed, so when it bids through Performance Max it does not purchase in order to seek out a particular advertising format or channel. DTX-1248 at 6-7, 20 ("Limiting a channel will limit performance."). Performance Max also handles, on behalf of the ad space buyer, the creation or deployment of different ad creatives to create an image, video, or text ads that fits the property the ad is displayed on. Ad space buyers

who upgraded to Google's Performance Max experienced an average of 12% conversion value increase. DTX-1248 at 9. Microsoft offers a similar tool that competes with Google's, also called Performance Max.

355. Ad verification services further facilitate shifting spend by helping ad space buyers to assess details beyond just whether a user has seen an ad, but also how long the user has seen the ad, where the ad was displayed, and more. Ghose TT. A 2019 study found that 72% of advertisers in the United States rely on such ad verification services to assess the effectiveness of their marketing. Ghose TT. Based on such detailed data, advertisers can adopt data-driven approaches to optimizing across display ad formats, devices, and properties. Ghose TT.

356. Finally, much of ad space buyers' decision-making is also based on experimentation and adjusting targets in order to maximize rate of return. In traditional, print advertising, advertisers could not easily experiment with ad channels and formats given the long lead times for ad production and displacement. Ghose TT. In the digital display advertising context, they can easily use the same tools to experiment with purchasing different ad formats and get immediate feedback on each ad format's rate of return. Ghose TT.

357. Today, aided by all these developments, buyers can dynamically adjust their spending strategies depending on the audience they want to reach and where they can find them.

357.1. For example, the Census needed to reach everyone in the United States to encourage completion of the Census questionnaire. To do so, it had to extend its campaign beyond digital display advertising on the web because not everyone has access to the Internet. The purpose of the Census advertising was to maximize reach, so it did not make sense to focus only on the value of one particular channel to the Census.

357.2. On the other hand, when the FBI advertises for recruitment, it is trying to reach a particular kind of user demographic and might adopt a narrower strategy targeted at reaching certain users. Ghose TT.

358. Plaintiffs' expert Prof. Lee relies upon the concept of a "marketing funnel" to describe what he claims are "relevant distinctions between web display and other forms of digital advertising for advertisers." Lee Rpt. ¶¶ 285-286. According to Prof. Lee, display ads on websites serve a different purpose in the funnel than other display ads, so ad space buyers cannot reasonably substitute between ad formats and channels. Prof. Lee fails to account, however, for changes in the way that the marketing funnel works.

358.1. The traditional "marketing funnel" model describes stages from the top to the bottom of the funnel in reaching consumers. For example, a traditional framework starts from driving attention and awareness, to building customer interest, then desire, followed by customer action. Ghose TT.

358.2. The "marketing funnel" concept first originated in 1898. Because of the emergence of digital advertising, the traditional funnel has been disrupted in two ways. First, customers no longer systematically advance from one stage to the next in a fixed sequential format. They may interact with various forms of advertising touchpoints at different times. Ghose TT.

358.3. Second, a particular category of ads can achieve multiple objectives at different stages in the consumer's purchase process—all at the same time. Each advertising channel does not necessarily serve only one, distinct function within a consumer's purchase process. Ghose TT.

359. Applying that modern understanding of the marketing funnel, there is no single, definitive funnel that assigns particular types of display ads to particular sections of the funnel. Plaintiffs' own expert, Prof. Wilbur, agreed with that proposition: "As a statement of possibility, multiple types of advertising could have effects across the advertising funnel." Deposition of Kenneth Wilbur at 215:14-216:3; *see also id.* at 214:22-215:7 ("I never argued that search, display, and social would not have effects across the funnel or could not have effects across the funnel. . . . It depends a lot on how you configure the campaigns, what you're trying to say to whom, and how much you're willing to pay to say that.").

360. As a result, industry participants have varying views of where ad channels fit in the funnel. For example, different industry participants may group ads in different ways and place them at different places on the funnel. Documents from Google and ad space buyers alike demonstrate that, no matter how different types of ads are grouped, the industry recognizes that other ad channels and formats can serve the same functions in the funnel that website display ads do (or can even serve every part of the funnel, also referred to as "full-funnel"). For example:

360.1. A media plan recommendation to [redacted]

360.2. Another media plan recommendation to [redacted]

360.3. A Google presentation listed native ads within "display" as "mid funnel" and "low funnel." "Social" was also treated as serving the same parts of the funnel. DTX-267 at 5.

360.4. A Google competitive analysis document evaluating Instagram as a competitor noted that Google's display and video ads have "comparable performance" to Instagram in the "lower funnel." DTX-1023 at 11.

360.5. A media plan proposed [redacted]

360.6. Google asked ad space buyers what performance metrics different tools are considered to fulfill, and "Facebook [was] perceived as [a] full funnel platform." DTX-1430 at 45.

361. Reflecting the industry reality that different ad channels and formats can serve interchangeable purposes, every industry participant in this case testified that advertisers shift ad spend to different ad channels or formats including from or to website-based display advertising, based on return on investment.

361.1. Criteo: "Q. When Criteo is dealing with advertiser customers, do they shift their spend across inventory types that you discussed such as in-app, video, Connected TV—A. Yes." Deposition of Criteo (Todd Parsons) Tr. at 108:10-15; *see also id*. 109:21-24 ("We would shift investment to help the advertiser measure return on investment as perceive it.").

361.2. Comcast: "Q. So if display was underperforming on Comcast's key KPIs, what other channels would Comcast consider spending—shifting its spending to? A. We would assess all channels. Q. Are there any channels that Comcast would

exclude if display was underperforming along key KPIs? A. I don't think we would exclude." Deposition of Comcast (Kristy Kozlowski) Tr. at 143:10-18.

361.3. Meta: "Performance-minded advertisers, oftentimes they will not put a budget in a specific category like a programmatic. They'll have a budget and then they'll fluidly move that around based on performance." Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 101:9-102:11.

361.4. Zulily: "I believe we—and we've reduced spending and—at the Google ad network and we increased spending at Facebook's—I forget what they call it, but the Facebook ad network. . . . We've had shifting priorities on the way we target our audiences since I have been there. So we have had a new CMO—previously we had a different CMO—and he was focused on a different population, and we went to Facebook to bring those people in." Deposition of Zulily (Brian Bumpers) Tr. at 89:8-90:1.

361.5. The display advertising spend of two significant advertisers—[redacted]—as measured by Google's Campaign Manager oscillates over time across video display, audio display, and static display. DTX-2106 at 1; DTX-2107; Ghose TT.

362. Internal Google documents describe numerous instances in which Google lost advertiser business to competitors. such as Meta, because ad space buyers shifted spend in order to improve returns. DTX-371 at 2, 3; DTX-726 at 1; DTX-971 at 1-3.

363. In sum, no ad space buyer selects an ad tech provider solely on the basis that it offers "open-web display advertising." Buyers, who seek to shift spend to optimize return on investment, value tools that facilitate matches on multiple types of digital platforms—that is, offer

an "omnichannel platform." Deposition of Magnite (Adam Soroca) Tr. at 149:16-19. The cross-functionality of buying tools, which permits ad space buyers to reach a wide array of inventory from one tool, is a feature of those tools—not an aspect of the tools to be ignored.

d. Ad Space Sellers Shift Display Advertising Spending Between Ad Channels and Formats.

364. Digital content providers, including display ad space sellers, also follow user attention. Because they monetize through ad revenue, content providers additionally consider where advertisers are spending their marketing budgets. As users—and ad space buyers seeking to reach those users—shift ad spend to other ad channels and formats, so too do digital content providers. DTX-339 at 29 ("In response, our traditional content partners (publishers and broadcasters) are working hard to diversify their revenue streams with new kinds of ads . . . ."). This pattern of substitution is shown by the sharp decline in the percentage of display advertising dollars spent on "open web display advertising" from 2013 (81 percent of dollars) to 2022 (29 percent of dollars). *Supra* ¶ 326.

365. As one example of shifting spend, many digital content providers who traditionally had only websites have built in-app content because the popularity of apps—and advertising on apps—has steadily and significantly grown in recent years. Israel TT. Users on mobile devices are spending more time on apps compared to the mobile web, with the disparity in usage increasing over time. Israel TT. Data from eMarketer shows that, in 2022, the ratio of time users spend on apps versus the mobile web was nearly 4:1, compared to 0.5:1 in 2010. DTX-1869 at 1.

366. Given the strong trend towards users viewing content in apps, it has become increasingly common for digital content creators to develop in-app content in addition to web-based content. DTX-406 at 22 ("Mobile is critical for many publishers as desktop growth slows down."). Of the 100 largest publishers, 97 have apps. Israel TT.

367. Many digital content providers actively seek to direct their own users to their apps because the economics on apps are better for them. Israel TT. Digital content providers can encourage such movement by developing better app-specific content, offering superior app functionality and performance, and including on their websites directives to open the same content being viewed on the website in the app. Israel TT.

368. For example, Facebook started as a web-based publisher, but it has shifted almost entirely to app inventory due to, among other reasons, these improved economics for reaching users on apps. In 2011, 93% of users accessed Facebook through desktop; by 2019, that number was estimated to be only 26%. DTX-628 at 7 (Google competitive analysis suggesting that Facebook, as a publisher, "successfully pivoted its [business] to mobile" because it "considers desktop a 'declining' business" with "falling usage, slower rev growth").

369. News Corp and Dow Jones are other examples of traditional website publishers that have developed "many apps," including apps for The Wall Street Journal, MarketWatch, and Barrons. Dow Jones sells advertising space programmatically within its apps. Deposition of News Corp. (David Minkin) Tr. at 55:24-56:19. The New York Times now makes content available in print, on the web, and in apps, and it runs digital ads "across our many surfaces, both web and app base," during its podcasts, and over email. The New York Times also has a "video business within the web and apps" that it testified "would be considered digital as well." Deposition of The New York Times (Jay Glgovsky) Tr. at 34:9-35:6, 35:9-36:7. Other examples of household-name website providers that have developed mobile apps with in-app advertising include The New Yorker, H&M, Blue Apron, Calendly, and Canva. Ghose TT.

370. These shifts in the channels where digital content providers publish their content are driven not only by user economies, but also by monetization. If, for example, a digital content

provider were not successfully monetizing ad space on its website, that provider would push more of its content and direct more of its users to other platforms, such as apps, where it can more effectively monetize available ad space.

371. Smaller digital content providers are also shifting their monetization efforts, and in turn their ad tech spend, away from traditional websites. For example, they might start creating content through popular social media channels like Instagram, YouTube, or TikTok, which have relatively low barriers to entry and infrastructure requirements. These other channels provide digital content providers with a quick and easy way to start monetizing their own content.

372. When digital content providers shift their inventory and efforts to make revenue from advertising, their ad tech spending also changes. As apps become more important to digital content providers, for example, the amount of inventory they sell through apps, and ad tech spending to manage that inventory, increases.

373. As ad space sellers diversify their digital content, they particularly value tools that offer support for serving multiple forms of inventory across devices and ad formats so that they can manage their inventory from a centralized place. Ad tech providers build and market their functionalities accordingly. *E.g.*, DTX-406 at 22 ("DoubleClick is the proven solution in market that can seamlessly support ad serving and yield management across [apps] and desktop."); DTX-101 at 2 ("We cemented [DFP's] standing as the best cross-channel revenue platform by adding a full suit of mobile and video capabilities."); DTX-213 at 17 ("Goal: Reduce complexity and increase transparency for pubs and Google . . . Better cross-channel visibility and revenue transparency for publishers.").

e. Display Advertising Spend Shifts Between Ad Tech Tools Within Plaintiffs' Markets and Tools Excluded from Their Markets.

374. Because ad space buyers shift spend to optimize performance, and ad space sellers prioritize inventory that gets user attention and effective monetization, ad spend shifts between ad tech tools that do serve and transact "open-web display advertising" (included in Plaintiffs' markets) and tools that do not (not included in Plaintiffs' markets).

375. Plaintiffs also exclude from their market share calculation for the ad exchanges market any transactions that are facilitated through direct deals. But buyers and sellers shift spend between sales channels, such as between open auction sales of indirect inventory and direct deals negotiated between buyer and seller.

376. For example, [redacted] is a major ad space buyer that shifts its advertising spend across ad tech tools from year to year. Between 2015 and 2022, its spending on display ads through DV360, a tool Plaintiffs would consider to serve and transact "open-web display," varied from as low as [redacted] to as high as [redacted] DTX-1848 at 1. Its spending through direct deals varied between [redacted]. *Id.* [redacted] share of spending on social media—which is facilitated by tools that are excluded from Plaintiffs' markets—varied between [redacted] *Id.* Its spend also changed across ad format, with share of spending on video ads (including instream video ads, which Plaintiffs would not include in their market share calculations) ranging between [redacted] *Id.*

377. The same is true for other advertisers who produced data in this case. Tracked over time, Zulily's spend on Google Ads has steadily declined from 2016 to 2018, while its spend on Meta's tools (excluded from Plaintiffs' markets) has steadily increased from less than $5 million to roughly $20 million. DTX-1930 at 1. In essence, the same marketing budget is shifting from Google Ads to Meta. *Id.* Similarly, Mars' spending on social media has varied between [redacted] across four years from 2019 to 2022. DTX-1933 at 1.

378. Those larger trends can also be seen in data produced by Omnicom, one of the five major advertising agencies, about its top 25 clients' spending via selected ad tech tools (that do serve and transact "open-web display ads") and social media ad tech tools (which do not). DTX-1972 at 1. For many of these advertisers, there is significant variation across years in ad space buyers' relative spending across these two channels. *See id*. To take just one example, anonymous advertiser #14 switched from 0% spend on social media in 2019 to 51% spend on social media in 2022—put another way, all the 51% spend on social media advertising was advertising dollars that moved out of Plaintiffs' purported markets. *See id*.

379. Google is also an ad space buyer. It purchases advertising to market its own products, and its spending patterns as an advertiser demonstrate the same substitution between tools. One product Google advertises is Fitbit, a wearable fitness activity tracker. In a year-and-a-half period, the share of display spending through Google Ads to advertise Fitbit fluctuated between one percent and 21 percent. DTX-1847 at 1. The share of spending through direct deals fluctuated between zero and 19 percent. *See id*. And the share of spending on social media fluctuated between 2 percent and 31 percent. *See id*. In other words, in quarters in which Google spent more to advertise on social media, it had substituted spend from other arenas, including spend on Google Ads, to social media ad tech tools. *See id*.

380. Similar trends apply to Google's advertising of Pixel Phones and its Play Store. For example, advertising on YouTube would not be accounted for in Plaintiffs' market share calculations because YouTube is a Google owned-and-operated property and is not served by third-party ad tech tools. But Google's advertising spend through YouTube to market the Play Store changed wildly between quarters—from 27% in the first quarter of 2022 to 83% in the second quarter of 2022 and back to 25% in the third quarter of 2022. DTX-1932 at 1. As to social media

spend, between the second and third quarters of 2022 Google's advertising spend on social media to market Pixel Phones declined from 44% to 8%. DTX-1931.

381. If ad space buyers and sellers did not substitute away from or toward tools that serve or facilitate "open-web display advertising," the division of display ad spend between categories would remain relatively stable across time. Instead, buyers' spending patterns demonstrate that ad space buyers (and, as a result, their transactions with ad space sellers) substitute between tools that facilitate various ad channels, ad formats, and sales channels.

382. As a result of substitution of ad spend, providers of ad tech tools that are excluded from Plaintiffs' markets have won display advertising spend from Google. The percentage of U.S. display ad spending that accrues to various ad tech providers has consistently changed year-to-year between 2008 and 2022. DTX-1874 at 1. The percentage accruing to Google started at 5% in 2008, increased to 15% around 2012 and 2013, then decreased back to 10% from 2018 to 2022. *See id*. At the same time, the proportion of display ad dollars accruing to other industry participants has changed dramatically. For example, Meta's share has grown from 3% in 2008 to 37% in 2022 (and 41% at its peak, in 2018 to 2020). *See id*. Amazon's share grew from one percent in the mid-2010s to 6 percent by 2022, and TikTok is up from almost nothing in 2018 to 4 percent in 2022. *See id*. The very same share that Google is losing is moving to other participants like Meta. *See id*.

383. As another metric for substitution in ad spend, the percentage of U.S. display ad revenue by company—including both buy-side and sell-side tools offered by other companies—is also constantly shifting. Between 2010 and 2022, out of all companies making U.S. display ad revenue, Google's share has declined from slightly above 10% to below 10%. DTX-1969 at 1. Other participants have also lost share, with Microsoft's share declining. *See id*. In contrast, Meta

has grown from roughly 10% of U.S. display ad revenues in 2010 to over 30% in 2022, and Amazon's has increased steadily from a tiny percentage to around 10% by 2022. *See id*. TikTok, a very new entrant into ad tech starting around 2018, increased its annual U.S. display ad revenue to $5 billion by 2022. DTX-1965 at 1. As these patterns demonstrate, display ad dollars and their associated ad tech are constantly moving, as new entrants enter the market and challenge the revenues of others. Display ad revenues are not stagnating with particular types of providers, and certainly not with Google.

384. Plaintiffs also do not account for substitution between what they term the "open web" and everything else. Plaintiffs do not define "open web" based on whether a login or payment is required to use a website, but instead based on whether the website uses third-party ad tech tools to serve ads. As a result, various ad tech tools can move in and out of Plaintiffs' markets—even though they are serving the same needs of the same customers with the same functionalities.

384.1. [redacted] Based on the lines

that Plaintiffs have drawn, serving the same ads appearing on [redacted] website would now fall outside of their market definitions.

384.2. Similarly, the New York Times previously used its own ad server, so its proprietary ad server was not an "open-web" tool under Plaintiffs' definitions. But, in 2015, it started using DFP. According to Plaintiffs, that means ads served on the New York Times website are now "open-web display ads" (even though New York Times content is generally not accessible unless the reader is a paying subscriber who is logged in on its website or app).

385. By defining their markets based on whether tools serve and transact "open-web display ads," Plaintiffs have not accounted for any of this substitution.

C. Even Within Their Component-Based Markets, Plaintiffs' Market Definitions Exclude Competitive Alternatives and Overstate Market Share.

386. Even were Plaintiffs' component-based approach to market definition correct, their markets also exclude important alternatives that exert competitive pressure on "advertiser ad networks," ad exchanges, and publisher ad servers. By omitting these competitive constraints, Plaintiffs have calculated market shares that overstate Google's share because absent this overstatement they would not be able to make assertions of market power.

1. Plaintiffs' Market Based on "Advertiser Ad Networks for Open Web Display Advertising" Excludes Competitive Alternatives and Overstates Google's Market Share.

387. Plaintiffs contend that Google Ads competes in a market for "advertiser ad networks for open web display advertising." FAC ¶¶ 297-298. As explained above, *see supra* ¶ 132, Google Ads is a buying tool that purchases ads on Google's owned-and-operated properties and on third-party publisher properties. According to Plaintiffs, the only competitors to Google

Ads in this market have been Criteo and (for the period of time when it offered sales of third-party inventory) Facebook Audience Network.

388. The term "advertiser ad network" is not a term regularly used in the industry. Since before the Internet, and the start of digital advertising, "ad networks" (as distinguished from "advertiser ad networks") have served *both* ad space buyers and sellers. They would be meaningless if they only served buyers, as ad networks need seller inventory to sell to buyers. Google does not describe Google Ads or the Google Ad Network as an "advertiser ad network."

389. Moreover, the concept of "ad networks" reflects an outdated understanding of the tools available to ad space buyers and sellers today. As a representative of Disney explained, when asked if he could identify "an example of an ad network that's in existence," "I can't. Largely because most of the market has moved more towards programmatic versus kind of a—a more simple transactional network model." Deposition of Disney (Jeremy Helfand) Tr. at 60:11-16.

390. To the extent that Plaintiffs' "advertiser ad network" market refers to a market in tools ad space buyers use to buy ads, their market definition excludes the numerous buying tool alternatives that buyers can choose from.

391. As explained below, they exclude "demand-side platforms" such as Google's DV360. Plaintiffs also exclude buying tools that—like Google Ads—can be used to buy ads on owned-and-operated properties like Facebook, Instagram, Amazon, and TikTok.

392. Competitive analysis documents reflect the intense competition that exists between Google Ads and other buying tools. The competitive analyses are not limited to comparisons of Google Ads against Criteo and Facebook Advertiser Network. For example:

392.1. In a strategy paper, a Google employee noted that, among "other ad networks," "Amazon and [Facebook Audience Network] are becoming must-haves (FAN

is on 80% of [mobile app]), . . . and specialist native networks like YieldMo are growing fast." DTX-339 at 30.

392.2. In a competitive analysis, Google compared Amazon's advertiser platform offering against both Google Ads and DV360 along metrics such as inventory, targeting, measurement, bidding and automation, and reach. DTX-435 at 9, 12.

392.3. Google prepared a case study describing competition for Victoria's Secret display business on Google Ads with the Trade Desk, which, according to Plaintiffs, offers only a demand-side platform and is excluded from the "advertiser ad network" market. DTX-938 at 1.

392.4. Following a slide titled "What are the primary competitors to Google?," Google listed Facebook, Instagram, Bing and LinkedIn (both owned by Microsoft), Twitter, and Amazon. DTX-1061 at 41. It wrote: "Almost all [Google Ads] advertisers use Facebook and Instagram ads to promote the same products they advertise using [Google Ads]." *Id* (emphasis added).

392.5. In a Google slide deck on market position of Google Ads and comparing market share calculations, Google included Facebook and Amazon. It also noted: "Share in Non-Search Ads has gone to TikTok, Snap, Pinterest, and Twitter." DTX-1132 at 9.

392.6. A Google competitive selling deep dive placed both Google Ads and DV360 in "a crowded competitive landscape" against the buying tools of Meta, Amazon, The Trade Desk, Microsoft, Twitter, TikTok, Walmart, Pinterest, Snapchat, Disney+, Apple, Netflix, and Criteo. DTX-1430 at 20; *see also id.* at 51

(comparing Google Ads earnings to ad revenue of Meta, Amazon, Apple, and The Trade Desk).

392.7. In a slide deck depicting the [redacted].

392.8. In a competitive slide deck to support [redacted] DTX-1254 at 54.

a. Plaintiffs' Market Definition Excludes Demand-Side Platforms, Even Though Ad Space Buyers Use Them Interchangeably with Advertiser Networks.

393. Plaintiffs' "advertiser ad network" market excludes demand-side platforms, which are the primary buying tool used by many ad space buyers to buy ads across multiple inventory sources. What Plaintiffs refer to as "advertiser ad networks" and demand-side platforms both are buying tools that allow buyers to access and bid on much of the same seller inventory. These buying tools even participate in the same auctions, which means that they compete head-to-head for individual impressions. For example, some federal agency advertisers use Google Ads; some use DV360; and some use both. FAA TT.

394. Plaintiffs try to distinguish demand-side platforms from "advertiser ad networks" by asserting that demand-side platforms are used only by more sophisticated ad space buyers, and that "advertiser ad networks" allow buyers to bid on a cost-per-click basis. Neither of these distinctions is correct as a factual matter. This distinction also means that Plaintiffs' case with

respect to advertisers is that, while Plaintiffs accuse Google of denying its rivals scale, Google has monopolized small customers, not large customers.

394.1. Many demand-side platforms offer cost-per-click pricing, including Google's DV360, Amazon, The Trade Desk, Microsoft's Xandr, Yahoo, Amobee, and Adform. Israel TT.

394.2. Large advertisers account for a majority of the ad spend on both "advertiser ad networks" and demand-side platforms. In 2022, 89 percent of Google Ads display spending was by advertisers who spent more than $100,000, and 76 percent had advertising spend exceeding $1 million. DTX-1971 at 1; Israel TT. The same year, 98.9 percent of DV360 display spending was by advertisers who spent more than $100,000 and 95.1 percent had advertising spend exceeding $1 million. Large buyers may be attracted to Google Ads because it reaches users on Google's owned-and-operated platforms and a variety of other digital properties and does not require any upfront costs or minimum spend to use.

394.3. Many smaller advertisers use agencies or other consultants to place ads, and those agencies and consultants use multiple buying tools that may include demand-side platforms. Israel TT.

394.4. In general, advertisers and ad agencies alike often multi-home by using multiple buying tools simultaneously, including "advertiser ad networks" and demand-side platforms at the same time. DTX-1970 at 1; Israel TT.

395. The spending patterns of ad space buyers who use buying tools to bid on AdX are also consistent with substitution between Google Ads and other third-party buying tools, including demand-side platforms. During the 2019-2022 time period, for example, there was a large

decrease in AdX spending by ad space buyers via Google Ads and a simultaneous large increase in AdX spending via third-party buying tools that include demand-side platforms. DTX-1970 at 1; Israel TT.

396. In their market for ad networks, Plaintiffs identify Criteo as a participant in the "advertiser ad network" market that does not compete with demand-side platforms. However, Criteo describes itself as a demand-side platform that competes with other demand-side platforms, including Amazon, Facebook, Google, Microsoft, The Trade Desk, and various smaller demand-side platforms. DTX-1420 at 29; DTX-1257 at 32; Deposition of Criteo (Todd Parsons) Tr. at 72:5-76:3. Criteo's competitive analysis compared Criteo against both Google Ads and DV360 on the same slides. DTX-1231 at 7-8 ("Google Ads & DV360 have a different positioning but offer [end-to-end] solutions to their partners…"). Similarly, Google's own competitive analysis compared both Google Ads and DV360 (Google's demand-side platform) against Criteo. DTX-961 at 12-13.

397. The Trade Desk offers a demand-side platform, yet [redacted]

398. Plaintiffs exclude Google's DV360, another buying tool, from their "advertiser ad network" market. But internal Google documents show that Google treats both as the same type of product—"buying doors"—that compete with each other for the same customer needs. DTX-695 at 3, 7 (including both DV360 (also known as DBM, DoubleClick Bid Manager) and Google Ads (also known as AdWords) as "buying doors" in competition with Facebook and Amazon); DTX-549 at 10 (treating both as "buying doors" to compare revenue); DTX-733 at 15 ("Outdated narratives required for two buying doors," referring to Google Ads and DV360); DTX-284 at 4

(noting that DV360 "cannibalized" Google Ads demand); DTX-733 at 15 (referring to "narratives required for two buying doors" as "outdated"). In documents directed at sales teams marketing the two products to ad space buyers, Google stated that both products helped "achieve Google's goal of catering to *all* advertisers, across all environments," but contained some differences in order to "cater to advertisers with different needs." DTX-574 at 3. The same customers might "move . . . over from one platform to another" in order to "best support" the customer's "goals [and] needs." *See id* at 6; *see also* DTX-1514 at 43 ("Why would someone use [Google Ads or DV360] or the other? Both? Like so many situations, it totally depends on a variety of factors, including client preference.").

399. Just like any other two products that serve the same purpose for the same universe of customers, Google Ads and DV360 offer customers choice by prioritizing different qualities. Google Ads connects ad space buyers predominantly to sellers Google has a relationship with so Google Ads can better ensure quality of sellers' inventory. DV360 can manage bidding into multiple exchanges but does not control the quality of ad space sellers on those exchanges in the same way. Some buyers use Google Ads; others use DV360; and others use both.

400. When Google sells its buying tools to ad space buyers, it proposes strategies to help customers meet their advertising goals, which may include either tool—or both tools—precisely because these tools both serve the same function to help fulfill advertisers' goals. The same approach carries through to the sales teams. For purposes of a sales team's quota, revenues are credited to that sales team regardless of whether they come from Google Ads or DV360.

401. Plaintiffs' exclusion of demand-side platforms from their market definition for buying tools thus conveniently excludes DV360 from their buy-side market—even though Google

has connected DV360 to over 100 exchanges, despite Plaintiffs' theory that Google is excluding competitors from accessing Google's advertiser demand.

402. Based on Google data and that of its competitors, when other reasonably interchangeable buying tools such as demand-side platforms are included, Google Ads' share was no higher than 20 percent of U.S. indirect "open-web display" (non-video) ad spending from 2019 to 2022. The combined Google Ads/DV360 share was less than 50 percent in every year and declining, with 40 percent in 2022. DTX-1839 at 1.

b. Plaintiffs' Market Definition Excludes Significant Buying Tools for Other Sources of Digital Advertising Inventory.

403. Ad space buyers who use Google Ads can shift spend to other buying tools that may not transact in "open-web display" but offer the ability to buy ad formats and channels that Plaintiffs arbitrarily exclude from their definition of "open-web display ads." *See supra* ¶¶ 349, 354, 361-362.

(1) Integrated Advertising Tools Like Meta's and Amazon's Compete with Google Ads.

404. The same users that can be reached through Google Ads can also be reached through other channels, including the integrated advertising tools offered by digital behemoths such as Meta, which enables the purchase of ads that appear on Meta's owned and operated properties (including Facebook and Instagram) and third-party properties, and Amazon, which enables the purchase of ads on Amazon's owned and operated properties and third-party properties. Those integrated advertising tools compete with Google Ads, but are excluded from Plaintiffs' "advertiser ad network for open-web display advertising" market.

405. Ad space buyers view "open-web display" and advertising on properties using integrated buying tools as competing for their advertising dollars and interchangeable. One buyer explicitly testified that these integrated buying tools are also "ad networks" that, like Google Ads,

enable advertisers to buy ad space on a publisher's owned-and-operated properties. Deposition of Zulily (Brian Bumpers) Tr. at 69:18-23 ("Q. Can you provide any examples of ad networks? A. I think there's Google's ad network, right, and then there's–I think you mentioned Facebook's ad network, and then you mentioned TikTok's, and then you mentioned Amazon's. So those are probably the larger ones, I think.").

406. For example, in connection with the 2020 Census, the U.S. Census Bureau "made heavy use of digital advertising to promote awareness and encourage self-response," purchasing non-social display, social, and search advertising to promote the Census. DTX-1451 at 7. A study of these purchases concluded: "Social media and non-social display advertisements are more comparable in form, function, and deployment, and their rates of engagement are more similar, although social media advertisements had a higher click and response-per-impression overall." *Id.* at 37. Federal agencies therefore switch their budget allocations between display advertising and social media advertising. DTX-604 at 2; DTX-1381 at 2.

407. As another example, Zulily, an e-commerce company that sells retail products primarily for mothers and children, testified that it uses all of these ad buying tools: "We advertise our services on other websites. We–mainly just on websites and–different websites and on Google and Facebook–yeah different places like that." Deposition of Zulily (Brian Bumpers) Tr. at 15:13-20. Zulily's advertising on Facebook includes ads appearing on Facebook's website, Instagram's website, and the Instagram app, and some of those ads are video ads. *Id.* at 16:9-16, 20:8-13. In addition, Zulily has advertised on Connected TV with video ads, *id*. at 18:22-19:6, 20:3-5, and has also purchased ads on TikTok, Pinterest, Amazon, and Twitter. *Id.* at 66:16-18, 66:25-67:3, 67:11-15.

408. Most ad space buyers multi-home, using multiple buying tools at the same time. This includes multi-homing across multiple categories of tools: (1) tools like The Trade Desk, which are primarily used to buy ads that will appear on third-party properties; (2) tools like Google Ads, which are integrated with Google's owned-and-operated properties and capable of purchasing ads on third-party properties; and (3) tools that are primarily integrated with a digital content provider's own properties like those of Meta (Facebook and Instagram) and Amazon.

409. Data from Google's Campaign Manager product, used by ad space buyers to track their advertising across different web properties and methods of purchasing across those properties, confirms that Google Ads buyers commonly use multiple advertising channels. Nearly three-quarters of the impressions in the data are accounted for by buyers using at least one third-party demand-side platform, social media advertising, *and* direct advertising. DTX-1973 at 1; Israel TT. Google Ads buyers also advertise on TikTok, and the amount of their spending on TikTok is rapidly increasing. Israel Rpt., Table 4 (summarizing DTX-2165); Israel TT.

410. Internal Google business documents describe the competitive threat that integrated advertising tools have posed to Google's ad buying tools, and the risk of losing ad space buyers to those products.

410.1. "FB's Q2 mobile earnings were startling . . . worrisome for Google for a number of reasons. Given 1 B+ users, with significant daily user time spent on FB (approximately 20% of time on mobile devices is spent on FB app alone), there is a risk that FB becomes the 'starting point' of the Internet". DTX-184 at 1.

410.2. In a competitive analysis deck that described Amazon as developing "Key pillars of an advertising ecosystem that can compete with [Google's] stack,"

Google identified Amazon's "mobile ad network" and "desktop display network" as competing with Google Ads. DTX-406 at 6.

410.3. "Facebook poses a unique threat" to Google's buy-side business, including Google Ads. "Most immediately, their advertising-facing business is growing rapidly and is expanding into non-owned-and-operated inventory, posing a direct threat to [Google's] buyside products." "Social networks (such as Facebook) . . . can reduce friction for users, advertisers, and product purchasers in ways that [Google] may find difficult to respond to." PTX-359 at 189, 205.

410.4. "Current internal analysis demonstrates strong FB ads performance relative to comparable Google Products" on the buy side, including Google Ads. "Ads placed on Facebook have grown significantly faster than Google Display." DTX-449 at 18.

410.5. A document focused on Google Ads identified "significant competition, primarily from Facebook, Criteo, Amazon." Google observed: "Facebook has taken the leadership position from Google over the last four years, capturing a significant share of display market growth." It graphed the year over year growth of Facebook against that of Google Ads (and DV360). DTX-486 at 4-6.

410.6. Google conducted a case study of how two ad space buyers, Hubble Contact Lenses and Helix Sleep (an online mattress seller), spent money on buying tools, distributed between Google (including Google Ads) and Facebook. DTX-494 at 5-6; *see also id.* at 8 ("One potential conclusion (that we hear from advertisers and agencies) is that Facebook is great at demand generation for a

demographic."). Google planned to engage in "ongoing efforts to address gaps" between Google Ads and Facebook, including "head-to-head tests," "measurement efforts," and "front-end/simplicity." *Id.* at 18; *see also id.* at 25 (direct comparison of advertiser user interfaces for Facebook and Google Ads).

410.7. Google wrote that "Facebook is continuing threat – 90% of advertisers plan to buy FB media next 6 months." DTX-516 at 16.

410.8. Facebook and Amazon are "increasing competitive pressure to deliver improved ROI w/ simpler solutions" for ad space buyers. According to Google, "both provide very compelling ROI/performance for advertisers vs. [Google Ads]"). DTX-593 at 14.

410.9. Google is "losing share in US Display market overall to key competitors (FB & TTD), primarily driven by [Google Ads]." DTX-733, at 3; *see also id.* at 6 ("We are losing App Promo share to Facebook - customers perceive their product as superior to ours."). Google noted that Google Ads had "product gaps and instability compared to key competitors," including Facebook, which "offers greater creative controls & native formats to advertisers" as well as a stronger data proposition. *Id.* at 15, 18.

410.10. On the buy side, Google described itself as "weakest amongst competitors in display and video": Facebook and Amazon had ad revenue growth of 28% and 50%, whereas Google only at 17%. Google attributed this trend to "advertisers . . . seeing better customer match and measurement capabilities in competing app-based, signed-in experiences." DTX-884 at 8.

411. Similarly, Google's competitors recognize integrated buying tools as competition to Google Ads.

411.1. Microsoft testified that advertisers "use multiple platforms," including Microsoft Advertising, Google Ads, Facebook Ads, Amazon, The Trade Desk, and Yahoo!. Deposition of Microsoft (Benneaser John) Tr. at 26:13-28:16.

411.2. Meta:

i. "Q. In Meta's experience, do its advertiser customers move their ad dollars between ads on apps and ads on websites? A. Yes. We see advertisers move their investments based on the performance metrics they care about across all forms of advertising." Deposition of Meta Platforms, Inc. (Simon Whitcombe) Tr. at 33:16-24.

ii. Meta performed a survey of advertisers, which demonstrates that advertisers compare Google Display and Facebook when deciding where to spend their advertising dollars. DTX-481 at 7; Deposition of Meta Platforms, Inc, (Simon Whitcombe) Tr. at 239:3-7, 240:11-19, [redacted]

iii. According to data produced by [redacted] 95 percent of the ad space buyers purchasing on [redacted] also advertise on Google Ads. [redacted]; Israel TT.

[redacted]

[redacted]

(2) Tools that Transact in Other Ad Formats and Channels Compete with "Advertiser Ad Networks for Open-Web Display Advertising."

412. Google Ads facilitates ad purchases in a variety of other ad formats and channels beyond "open-web display," and it competes with buying tools that facilitate those other ad formats and channels.

413. Google Ads competes with buying tools that facilitate in-app advertising. Many buying tools, including Google Ads, facilitate purchases of both "open-web display" and in-app advertising, which, as explained above, are reasonably interchangeable ad formats. *Supra* ¶¶ 336, 349. Ad space buyers use those tools to purchase in-app advertising in addition to website advertising. Almost 90% of buyers on Google Ads use the tool to purchase both website ads and in-app ads. DTX-1855.

414. Google considers its tools, which facilitate both website advertising and in-app advertising (in addition to other forms of advertising), to compete with tools that facilitate only in-app advertising.

414.1. When AdMob (before it was acquired by Google) launched an Android version of its product, Google's "competitive response" was to launch a feature on Google Ads, which already facilitated website transactions, for mobile app ads. DTX-41 at 1.

414.2. "Ad Formats: Our work in ad formats has shifted to a 'mobile first' approach and we made major progress in this regard." DTX-132 at 1.

415. Google Ads also competes with buying tools that facilitate instream video advertising not only because Google Ads facilitates the purchase of instream video advertising, but also because instream video is a reasonable substitute for "open-web display" banner ads. Many ad space buyers purchase both formats. For example, Google Ads buyers use the same tool to purchase both "open-web display" banner ads and instream video ads. Sixty-four percent of Google Ads spending came from buyers who purchase both. DTX-1858 at 1. And advertisers shift spend between "open-web display" banner ads and online video ads in order to optimize performance. *E.g.*, Deposition of Comcast (Kristy Kozlowski) Tr. at 142:12-19; Deposition of NBCUniversal (Krishan Bhatia) Tr. at 159:17-21, 159:23-160:6 (describing "shift from display to video advertising as video advertising has scaled digitally and, therefore, offered advertisers the benefits of sound in motion in digital advertising"); DTX-1267 at 26 ([redacted]); DTX-995 at 1 (shifting "a portion of the video budget into display"); DTX-671 at 5 (advertiser reduced ad spend "due to strategy shift from display to video").

416. Buying tools that facilitate the purchase of native advertising also compete with Google Ads not only because Google Ads facilitates the purchase of native advertising, but also because native ads substitute for banner ads. As explained above, *supra* ¶ 345, many industry participants do not even distinguish native ads from other forms of display ads.

417. When accounting for all the buying tools that are competitive alternatives to Google Ads, the percentage of U.S. display ad spending accounted for by Google's buying tools (Google Ads and DV360) is 19 percent over the 2019 to 2022 time period. DTX-1860 at 1; Israel TT.

2. Plaintiffs Market Based on "Ad Exchanges for Indirect Open Web Display Advertising" Excludes Competitive Alternatives and Overstates Google's Market Share.

418. Plaintiffs allege that "ad exchanges for indirect open web display advertising" is a relevant product market, FAC. § VI.B.2, and that AdX competes in that market.

419. Plaintiffs' expert Prof. Lee's market share calculations demonstrate that, even based on a market limited to "ad exchanges for open web display advertising," Google's market share in the United States calculated based on fees was low—less than 45 percent each year during the 2018 to 2022 time period. PTX-1266 at 1; PTX-1276 at 1; see also DTX-1862 at 1. That share is on the decline, declining to 36 percent in 2022. DTX-1862 at 1. Even calculated by impressions, Google's market share in the United States was less than 56 percent each year during the same time period, and was only 47 percent in 2022. PTX-1266 at 1; PTX-1267 at 1.

420. Today, numerous successful ad exchange competitors, including PubMatic, Magnite, Index Exchange, OpenX, and Xandr (owned by Microsoft), compete with AdX. Israel TT; Deposition of Criteo (Todd Parsons), Tr. at 39:12-15 ("There are a whole group of exchanges that are matching-making between buyers and sellers that we are a buyer—are a buyer on."); *id.* 39:16-40:10.

421. Ad space sellers multi-home across exchanges. Of the top 100 web publishers that publicly list the selling tools authorized to sell their inventory (through the ads.txt project, described in further detail below, *see infra* ¶¶ 511-516), only a single publisher listed only one ad space seller. Eighty-seven listed ten or more authorized sellers. DTX-1903. Google data reflect the same pattern: 67 percent of U.S. DFP impressions are accounted for by ad space sellers that use 4 or more exchanges, and 94% by sellers using more than 1 exchange. DTX-1904.

422. Plaintiffs exclude from their asserted market alternatives, including direct deals, traditional ad networks (those not relying on real-time bidding), closed web platforms, and other

ad tech tools, alleging that these alternatives "are distinct in terms of inventory type, use cases, functionality, inventory constraints, and/or monetization." FAC. ¶ 219.

423. Plaintiffs' narrow focus on differences in functionality ignores the vigorous competition that exists for connections between ad space buyers and sellers. Just as buyers can substitute to other buying tools, they can also substitute to the other tools that connect them to sellers. Substitution by ad space sellers is also relevant to exchange competition. If sellers place more emphasis on direct deals, for example, that emphasis exerts competitive constraints on exchanges. While ad exchanges provide one mechanism to connect buyers to impressions, exchanges compete with all options that connect ad space buyers to sellers.

424. Plaintiffs delineate their market as "ad exchanges for indirect open-web display advertising," thereby excluding the functionalities of ad exchanges in facilitating direct deals from their market share calculations. AdX itself facilitates direct deals programmatically, which means that it automates direct deals to the benefit of both ad space buyers and sellers. *Supra* ¶¶ 252-261. Programmatic direct is an extremely popular form of display ad transaction across the industry—accounting for 67% of U.S. display ad spending in 2022. Google and competitor exchanges developed programmatic ways to transact direct deals in order to attract sellers' spend, and they market as an advantage the ability to automate both direct and indirect deals.

425. Moreover, ad space sellers can negotiate direct deals with ad space buyers and facilitate those ad placements without any ad exchange at all. An ad space seller can simply negotiate and manage its direct deals using a publisher ad server.

426. If direct sales are also considered in calculating Google's market share in "ad exchanges," during the 2019 to 2022 time period, AdX's share of impressions was no higher than 37 percent over the period. DTX-1866 at 1. Calculating AdX's share based on ad spending rather

than impressions, including direct sales, AdX's share was no higher than 25% over this period. DTX-1867 at 1; Israel TT.

427. In addition to direct deals, there are numerous other ways that ad space buyers and sellers can connect without auctions on third-party ad exchanges. For example, a buyer can purchase inventory directly from a seller using a seller's self-service platform, like Facebook's or TikTok's which perform auctions. A number of major digital content providers have launched their own self-service platforms in recent years. *See supra* ¶ 297. Buyers and sellers can also connect through third-party ad networks, such as Google's AdSense or Meta Audience Network, Taboola, and Outbrain. *See supra* ¶¶ 298-299. The tools that sellers use to manage their inventory are also serving exchange-like functions by running auctions for available inventory and comparing sources of demand. For example, Disney has created an in-house ad exchange that makes Disney inventory available to ad space buyers and compares different demand sources. Deposition of Disney (Jeremy Helfand) Tr. at 54:17-55:8, 57:8-58:4. Third-party publisher ad servers also compare bids submitted by demand sources.

428. Finally, AdX's market share is significantly reduced when the share calculation includes not only direct sales, but also other transactions in other ad channels and formats such as social media, instream video, and in-app advertising. AdX facilitates auctions in more than just traditional banner ads, including instream video, native ads, in-app ads, and Connected TV ads. Other ad exchanges included in Plaintiffs' market also facilitate more than just "open-web display ads." Moreover, Plaintiffs' market definition excludes specialized exchanges that transact other ad channels and formats ad channels, such as AppLovin Exchange (which specializes in apps and Connected TV), Unity Exchange (which specializes in apps), and Exchange by Chartboost (which specializes in apps). With adjustments accounting for other ad formats and channels, Google's

share among ad exchanges for total U.S. display ad spending was only 17 to 18 percent during the 2019 to 2022 period. DTX-1868.

3. Plaintiffs' Market Based on "Publisher Ad Servers" Excludes Competitive Alternatives and Overstates Google's Market Share.

429. Ad space sellers have alternatives that allow them to substitute away from Google's publisher ad server and impose competitive restraints on Google's ad server, DFP, including: (a) alternatives sellers have for managing their "open web display" inventory (including developing their own ad server); and (b) managing inventory outside of "open web display" (including in-app content). These competitive pressures can and do attract customer spend from DFP. *E.g.*, DTX-1435 at 3 ("Off-platform growth is expected to continue with a few key drivers: [Amazon] growth in [Transparent Ad Marketplace, Amazon's header bidding solution], . . . [The Trade Desk] OpenPath announcement driving revenue away from Open Bidding . . . through direct publisher integrations").

430. When reviewing Google's past ad tech acquisitions, both the Federal Trade Commission and U.S. Department of Justice acknowledged that ad space sellers can and do move between different seller products in response to changes in quality and price. DTX-96 at 2; DTX-23 at 10. The Federal Trade Commission was even presented with an argument that publisher ad servers may be subject to "high switching costs," yet concluded that sellers could effectively "exercise counter measures, including the development or acquisition of alternative ad serving products and the securing of favorable contractual terms." DTX-23 at 10.

a. Plaintiffs Overstate Google's Share by Excluding In-House Publisher Ad Servers, As Well as Other Pathways to Connect that Do Not Require Third-Party Publisher Ad Servers.

431. Prof. Lee does not include in his market share calculations in-house publisher ad servers. But even Prof. Lee acknowledges that in-house publisher ad servers "could provide

competitive discipline to a hypothetical monopolist of publisher ad servers." Lee Rpt. ¶ 323 n.467. Similarly, Google documents describe the shift of ad space sellers off Google's third-party publisher ad server, DFP, to proprietary ad servers as a source of competitive pressure that Google needs to respond to. *E.g.*, DTX-563 at 3.

432. When the FTC reviewed and permitted Google's DoubleClick acquisition in 2008, it based its analysis in part on the fact that ad space sellers could switch away from DoubleClick for Publishers—including by "the development or acquisition of alternative ad serving products." DTX-23 at 10.

433. At least 60 percent of U.S. display ad spending is accounted for by sellers with in-house ad servers. Israel TT (calculating share based on eMarketer data, DTX-2147).

434. The prominence of in-house ad servers—and existence of other alternatives for publishers to manage and sell inventory—has rendered third-party publisher ad servers less important. *See, e.g.*, DTX-1196 at 7 ("Why are we seeing large TV partners invest in their own auction/mediation tech? . . . These pubs are making long-term investments needed to become less dependent on 3P companies (*some seen as competitors*).").

435. Even ad space sellers who do not already operate their own ad server have the option to do so. Kevel provides infrastructure necessary for a seller to build a publisher ad server in one to two months and at a fraction of the cost associated with building an ad server from scratch, and its clients include Ticketmaster, Strava, and Edmunds. Deposition of James Avery (Kevel) Tr. at 70:10-25. Kevel markets its publisher ad server solution as a competitive alternative to DFP. Deposition of James Avery (Kevel) Tr. at 10:21-25 ("Q. In your current position, so at a high level, what is Kevel's business? A. At a high level, we–we built a set of APIs that customers use to build ad platforms, so essentially, an ad-serving API."); *id.* at 71:1-25 (explaining that a

brand can use Kevel's APIs to launch its own ad server in a couple of weeks to a couple of months at an average annual cost of $100,000 to $120,000, with a lowest cost option of approximately $25,000).

436. Plaintiffs allege that Google's publisher ad server, DFP, has a market share "above 90%." FAC. ¶ 285.

437. This share significantly changes when just a subset of ad space sellers with in-house ad servers who produced data in this case—Meta (Facebook and Instagram), Pinterest, Snapchat, and TikTok—are included in the market. Notably, these sellers include some of the largest publishers today, which account for a significant portion of digital ad spend. These sellers had the resources and capacity to build successful in-house ad servers. Plaintiffs cite purportedly high costs of building an in-house publisher ad server, but those numbers pale in comparison to the ad revenues of the large publishers that account for most digital advertising spend.

438. Considering just the subset of sellers with in-house ad servers who produced data in this case (Meta (Facebook and Instagram), Pinterest, Snapchat, and TikTok), Google's share was never higher than 45 percent for the 2019 to 2022 period. DTX-1872 at 1; Israel TT.[21]

439. Plaintiffs also argue that in-house ad servers should not be included in the same market as third-party ad servers because sellers without their own in-house servers cannot use other sellers' in-house servers to sell inventory. For example, a blog owner cannot use Facebook's in-house ad server to sell her own inventory. That argument elides the obvious fact that sellers who build in-house servers literally substitute in-house ad servers (which are not in Plaintiffs' market) for third-party ad servers (which are). [redacted]

[21] This calculation excludes many significant in-house ad servers, including Amazon, Disney, and Vox Media. Ghose TT.

[redacted] The same inventory was sold on a third-party server before, and an in-house server after. A Google competitive analysis document comparing Amazon's product presence to Google's identified as a "strong existing product" Amazon's "proprietary ad server," which was compared to DFP. DTX-406 at 6. As another example, Disney moved some of its instream video inventory from Google Ad Manager to its in-house ad server, again literally substituting an in-house ad solution for a third-party one. DTX-1321 at 2; Deposition of Disney (Jeremy Helfand) Tr. at 47:13-16, 130:19-24 (Disney continues to use both Google Ad Manager and its own in-house ad server to sell inventory today).

440. Google documents that describe certain inventory that is served through in-house tools as "unaddressable" do not establish anything about substitution. The documents identify unaddressable opportunities for Google to place ads, rather than a discussion of competitors or Google's market share. DTX-519 at 28. Such documents were developed to provide a way for Google to track its success in selling DFP to ad space sellers.

441. Google sometimes competes successfully to win inventory management business from even ad space sellers who were previously considered "unaddressable." For example, DFP recently started serving content on Internet Movie Database (IMDb, owned by Amazon). IMDb is one of Amazon's largest properties and one of the web's largest entertainment sites. It was previously deemed "inaccessible" inventory for Google because ad inventory was served through Amazon's tools, but in 2023 IMDb entered a deal for Google Ad Manager to manage all of its indirect demand sources. In addition, IMDb inventory would be accessible through AdX. DTX-1511 at 1. IMDb now uses both Amazon's in-house ad server and Google Ad Manager at the same time.

442. Other examples of digital content providers that previously managed and sold their inventory through proprietary ad tech but switched to using Google's third-party ad tech tools include Twitter (now known as X) and Yahoo!, which today offers a variety of curated experiences for users such as news, email services, and more. Google frequently pitches digital content providers that are using proprietary solutions in order to win their business to Google Ad Manager, though it does not always succeed. For example, Google recently pitched FedEx to use Google Ad Manager for both its publisher ad server and exchange capabilities, but FedEx chose to keep using its own internal ad server. Conversely, Discord, a communication and community app that connects users with shared interests, was considering developing a proprietary ad serving solution but decided to work with Google instead. All of these digital content providers use Google Ad Manager to serve ads across ad channels and formats, including web, app, and video.

443. Ad space sellers can even sell inventory without any publisher ad server at all, third-party or in-house. Ad networks such as Google's AdSense and AdMob, Meta Audience Network, Taboola, and Outbrain all connect ad space buyers directly to sellers. *Supra* ¶¶ 298-299.

444. Alternatively, an ad space seller can serve an ad on its content by placing a "tag" (a piece of code) directly on its page. The tag calls an ad network, ad exchange, or other demand source in order to place an ad on the page. Sovrn is an example of an ad tech provider that now offers ad space sellers such a functionality. DTX-1718 at 2 (referring to "hard coding," or "literally placing the ad tag within the code on the publisher's webpage instead of placing the tag within an ad server"); *see also* Sovrn, *What Is an Ad Server?* (Nov. 8, 2016), tinyurl.com/SovrnAdServer ("If you're an early blogger or website, chances are you won't need to utilize an ad server quite yet."); Sovrn, *How to Install Sovrn Ad Tags on a WordPress Site* (Aug. 21, 2016), tinyurl.com/SovrnAdTags/.

b. Plaintiffs Overstate Google's Share by Excluding Tools Used to Sell Ad Space Sellers' Non-Website Inventory, and Inventory in Formats Other than Banner Ads.

445. Plaintiffs' market further excludes inventory management for ad space sellers' inventory that does not appear on traditional websites, including in apps and on Connected TV. *Supra* ¶ 300. Plaintiffs' markets do not include any publisher ad server tools that do not transact in "open-web display" but do transact in other channels and formats. Moreover, Plaintiffs' market share calculations discount certain transactions even for the tools that are in their markets, thereby omitting an important portion of the functionality of many publisher ad servers.

446. By excluding apps from their definition of "open-web display," Plaintiffs exclude in-app mediation platforms, which are inventory management tools specific to in-app content. Ad space sellers seeking to manage and sell their app inventory can use these in-app mediation platforms and do not need to rely on "publisher ad servers" in Plaintiffs' market, like DFP, at all. Because Google Ad Manager also provides the ability to sell app inventory, it directly competes for customers against sell-side tools that serve only in-app advertising. DTX-1169 at 2 (GAM trying to win the business of a publisher that used GAM only for video and audio, and was considering shifting its "display business" from MoPub, a mobile sell-side platform, to GAM); DTX-1171 at 1 (another seller weighing GAM against other app-focused seller platforms). The data available indicate that Google's share among in-app mediation platforms is well below 40 percent. DTX-1976.

447. Plaintiffs' market definition further ignores that ad space seller tools offer the ability to manage inventory across formats and channels. Those tools generate value for sellers by allowing them to engage with ad space buyers across ad formats from one centralized place, so sellers do not use those tools on the basis of their ability to transact in "open-web display advertising" alone. *E.g.*, DTX-1701 at 2 (Criteo offers the ability for publishers to "support

multiple formats," including "video and native ad units," as well as to "monetize cross-device"); DTX-2358 at 3 (Media.net Marketplace) (Media.net "unifies disparate marketplaces to maximize value for publishers," including traditional display, native, and video ads).

448. For example, Google Ad Manager, which contains a "publisher ad server" functionality that is included in Plaintiffs' market, gives ad space sellers the ability to connect with ad space buyers across direct and indirect deals; websites, in apps, and on CTV; and through banner and native ads, as well as instream video ads. DTX-1498 at 10.

449. As publishers move to content beyond traditional websites, it is also more important for ad servers to offer support for these other ad channels. Excluding any consideration of these functionalities ignores the primary loci of competition for ad space seller business today.

449.1. For example, when [redacted]

449.2. Another ad server, Freewheel, is capable of what Plaintiffs characterize as "open-web display" and competes with the ad tech products that are included in Plaintiffs' markets. *E.g.*, Deposition of Microsoft (Benneaser John) Tr. at 93:6-94:5 (identifying Freewheel as an ad tech competitor). Freewheel has grown its business by specializing in capabilities to sell and manage video and Connected TV ads for sellers. Deposition of NBCUniversal (Krishan Bhatia) Tr. at 38:14-39:11; Deposition of Index Exchange (Andrew Casale) Tr. at 113:2-5, 113:9-23, 114:2-13 (FreeWheel has "robust offering for publishers" because it has "more capabilities in different channels" and "video in

particular," though publisher ad servers serving across different channels are "fundamentally similar").

449.3. In response to this competition, Google has developed its own support for ad space sellers seeking to sell CTV advertising by "dramatically increas[ing] access to premium video content via [Google] Ad Manager," in order to "surpass[] industry leader and point player in the U.S. (Freewheel)." DTX-601 at 129. Ad space sellers can use both Freewheel and Google Ad Manager together, test the relative effectiveness of each server, and assess how to distribute inventory sales across servers. *E.g.*, Deposition of NBCUniversal (Krishan Bhatia) Tr. at 38:14-23 (NBCUniversal "made the determination that Freewheel is the best video ad serving technology for our business, and Google serves that purpose for display.").

450. Taking into account inventory management tools for all display ad spending, the percentage of total U.S. display ad spending accounted for by Google's "publisher ad server" tools (DFP, AdSense, and AdMob), as well as the display ad spending on Google's properties such as YouTube, was never higher than 38 percent for the 2019 to 2022 period, with Google's share 30 percent in 2022. DTX-1873 at 1.

D. The Relevant Geographic Market Is the United States.

451. Plaintiffs define the relevant geographic market for all of their product markets as the United States, with a worldwide geographic market in the alternative. The relevant geographic market is the United States, and no support exists for an alternate worldwide market.

452. The alternative worldwide market does not account for the fact that competitive conditions for ad tech tools differ across geographies. For example, the share of AdX impressions

accounted for by different buyers (Google Ads, DV360, and third-party Authorized Buyers) varies by region. Israel TT.

453. The shares for AdX and Google Ads of indirect web non-video impressions in the United States compared to the world also provides evidence of differing competitive conditions. Google's shares are higher in the rest of the world than they are in the U.S. DTX-1877 at 1; Israel TT.

454. The average revenue for ad space sellers using AdX also varies considerably between different countries. DTX-1878 at 1; Israel TT.

455. The purpose of advertising is to encourage viewers to purchase the advertiser's products and/or services. Consumers of digital content have different characteristics in terms of language, income, and tastes across countries. Ad space buyers must adapt to different languages in order to effectively reach users. Ad space buyers and sellers are best matched when the language is shared, so an ad in French does not compete for the same users as an ad in English.

456. Because of the different language and other user characteristics across countries, the average publisher revenue per thousand impressions for web non-video impressions sold via AdX in 2022, depending on the country of the user, varied.

457. The regulatory landscape also varies across geographies. For example the European Union's General Data Protection Regulation affects how ad tech companies can use user data.

458. The internal documents of ad tech providers reflect country-specific and regional—as opposed to worldwide—analyses. *E.g.,* DTX-320 (describing an "APAC Ad Tech Market"); DTX-297 (describing EMEA-specific trends); DTX-307 at 11, 12 (providing "Action Plan[s]" for

EMEA countries, France and UK); DTX-264 at 67 (depicting growth trends by region and noting "regional disparities"); DTX-827 at 8; DTX-962 at 17, 46-53; DTX-963 at 4.

459. Plaintiffs bring suit on behalf of ad tech customers located within the United States. The federal agency advertisers' advertising goals—for example, ensuring that as many United States citizens complete the United States census questionnaire—are directed toward Internet users in the United States. And ad space buyer spending in a particular region often returns to ad space sellers and their tools in that region. PTX-904 at 19. Accordingly, the transactions that Plaintiffs engage in are likely all located within the United States.

IV. Google Has Played a Leading Role in Addressing Emerging Security Threats to the Benefit of Its Ad Space Buyers and Sellers, As Well As the Entire Digital Advertising Ecosystem.

460. From its first ad tech innovation to the present, each of Google's innovations has taken, and continues to take, into account the interests of the entire ad tech ecosystem to improve the experiences of ad space buyers, ad space sellers, and end users. Google's innovations have fallen into three main categories: (1) improving performance for ad space buyers and sellers (e.g., auction and bidding optimization); (2) automating time-intensive, laborious tasks for ad space buyers and sellers (e.g., the process of preparing creatives based on a limited number of inputs/dashboards); and (3) taking measures to improve security and safety for the benefit of the entire ecosystem.

461. Plaintiffs cherry pick certain optimizations, examining them solely from the perspective of buyers and sellers and their financial gain instead of all participants in the ecosystem. By doing so, they entirely ignore that innovations can improve security and safety to the benefit of the entire ecosystem.

462. As the display advertising industry became more complex and well-resourced, the complexity introduced security threats. For example, major criminal groups now use ad sales on

fake domain names that will not actually reach relevant users as a major source of monetization. Bad actors can also use ads to track information about users on behalf of foreign governments. Google has innovated and invested considerable resources in order to protect its customers by focusing on security features for its integrated advertising products and for online advertising more broadly. A large scale of resources and investment is necessary because the threats are constantly evolving and becoming more sophisticated.

463. As the types of content and advertising increase and diversify, ad safety is also important. Ad space sellers want to display relevant, appropriate ads that complement their content. And buyers want to place their advertisements next to relevant, complementary publisher content.

464. Both security and safety are critical to the long-term sustainability of the ads ecosystem: from Google's perspective, ad tech is not just about tapping into the market and maximizing profit at a given time. Rather, ad tech ensures that digital content providers will continue to have a livelihood and advertisers can grow their business over a period of time, and users can continue to access free digital content created by providers large and small.

A. Google Has Invested In Security, Safety, and Privacy Features for Its Own Tools to Provide Ad Space Buyers and Sellers with a Quality Experience.

465. Google designs its products so that safety and security are part of the product design from day one. As Google has explained since at least 2012: "We've always approached our ads system with trust and safety in mind." DTX-109 at 1.

466. Google has numerous teams dedicated to ads safety and security, with thousands of employees across various teams. The Ads Privacy and Safety umbrella contains teams devoted exclusively to Ads Privacy, Ads Safety, and Ad Traffic Quality. Beyond that team, Google has

teams that work across the entire organization on safety, including ads safety, such as the Trust and Safety: advertisers, digital content providers, and users.

1. Google Protects Ad Space Sellers, Ad Space Buyers, and Users from Invalid Traffic.

467. Google's Ad Traffic Quality (also known as "Ad Spam") team consists of hundreds of people who serve publishers, advertisers, and users to manage invalid traffic. DTX-214 at 1. The team spends over $120 million a year combatting invalid traffic. Invalid traffic involves use and engagement with ads that are not intentional or do not involve real users. It can occur through accidental clicks or through automated review. Ad fraud is typically seen as a subset of invalid traffic involving bad actors with fraudulent intent. *Supra* note 12.

468. Defending against invalid traffic is "integrated into just about everything" that Google's advertising business does. DTX-348 at 15; *see also* DTX-396 at 7 ("Google's commitment to a 'fraud-free' market, combatting invalid traffic for advertisers"). For example, each time a new product or feature is developed, the Ad Spam team reviews the feature in order to assess the feature for invalid traffic safety risks.

469. Google is aware that ad fraud as a billion-dollar enterprise can have virtually no consequences because it can be difficult to detect. Google makes decisions understanding that many private criminal groups are attracted to business in ad fraud, including from hotspots in Eastern Europe, Russia, and China.

470. Invalid traffic harms ad space buyers because they spend money on ads that are not seen or clicked on by real users. It harms ad space sellers, too, because advertising spend is diverted away from legitimate sellers. And in the long term, invalid traffic harms all participants in the advertising ecosystem. Money is directed away from the content creators who users rely on. If advertisers see a low return on their ad spend when they purchase invalid traffic, they may

start to reduce their bids and therefore lower publisher revenue. DTX-476 at 3 ("Fear of ad fraud is limiting display and video online programmatic spend.").

471. Google uses computer-automated technology to scan ad traffic around the clock to root out invalid traffic and ensure that the traffic complies with Google's safety policies. The computing power of that technology equates to roughly a hundred thousand computers running around the clock to process data.

472. For computer-automated detection, Google has developed and deployed over 200 sophisticated filters to stop various forms of invalid traffic in real-time. DTX-410 at 1; DTX-411 at 1. These filters, which use machine learning techniques that build on Google's extensive past experiences fighting invalid traffic, stop most invalid traffic at the outset. DTX-348 at 12; DTX-214 at 3. For example, if an ad space seller has a suspiciously high clickthrough rate or traffic from a single user, Google's filters catch suspicious activity before the advertiser is charged. Google is continuously updating these filters to reflect invalid traffic identified by employees.

473. Google also has around 50 employees who are dedicated to manually reviewing that traffic, including to identify new actors and sources of invalid traffic that the filters are not yet equipped to catch. It is important that human employees pore over traffic data to identify new actors and sources of invalid traffic that the filters are not yet equipped to catch.

474. Google has a policy that it does not benefit from transactions that involve invalid traffic. Invalid traffic on ad space sellers' inventory hurts buyers: they are spending their hard-earned money on clicks that are not from users who will actually do business with the buyer. If Google discovers invalid traffic after it has paid the seller, it will still return the money to the advertiser even if the seller does not return the money to Google.

475. Another way that Google raises the quality of its inventory is by selectively limiting the ad space sellers that can sell inventory on its tools. Google thoroughly screens ad space sellers and buyers before they can use its platform and accepts only a small minority of those who apply. For example, as of 2016 Google only accepted about 20% of all sellers who applied. Google does this because it wants to guarantee that sellers have quality content that "would create a good experience for both the user and the advertiser." DTX-348 at 9.

476. A team of around one thousand people is dedicated to reviewing ad space sellers' digital content after they are permitted to sell on Google's tools in order to ensure continued compliance with Google's policies. *Id.* at 12. Sellers that generate a high volume of invalid traffic may be suspended completely, so that buyers do not end up purchasing any inventory from that seller.

477. Google strives to avoid invalid traffic and accordingly tracks industry reaction to the security of its ad tech offerings. When compared to other exchanges, AdX has "among the lowest percentage of invalid traffic." DTX-348 at 7; *see also* DTX-206 at 3 ("AdX regarded across the industry as providing significantly more protection against fraudulent and illegitimate inventory than any other exchange."). It has an "unmatched commitment and investment in protections for users, sellers and buyers," including more malware and spam blocking and investment in protections than other ad tech providers. DTX-396 at 5.

478. Google promotes the fight against invalid traffic across the entire industry, not just on its own products. DTX-214 at 4 ("[W]e will actively participate in setting industry standards for ad traffic quality").

2. Google Provides Safety Features that Protect Ad Space Buyers, Ad Space Sellers, and Users and Gives Ad Space Buyers and Sellers Control Over Advertising.

479. Google's Ads Safety team ensures the safety and quality of all ads through the creation and enforcement of Google's ads safety policies. This team consists of 30-35 product managers and approximately 300 engineers.

480. Both ad space buyers and sellers who use Google's products must abide with certain safety policies. There are 300-400 safety policies on the buyer side, and over 100 policies on the seller side. DTX-1186 at 3; DTX-348 at 11.

481. Google's policies are developed iteratively based on what Google learns about the evolution of abuse in the Internet ecosystem. As technologies change and threats emerge, Google drafts updated guidelines and standards and measures them to ensure it is combatting new threats. Google updates its safety policies around 30 times a year. DTX-1186 at 6.

482. Google enforces its safety policies through a combination of automated and human review. Google's automated screening tools can stop an ad before it gets served. Google also employs people to train its automated tools and draft safety policies, as well as handle appeals of its enforcement decisions.

483. Each year, Google issues Ads Safety reports that describe Google's efforts at addressing ads safety and quality issues, as well as any particular challenges it has faced and information about bad actors. *E.g.,* DTX-1182. In 2022, for example, Google blocked or removed 5.2 billion ads. *Id*. at 2. That number had almost doubled from 3.4 billion in 2021. DTX-1263 at 2. 4.3 billion more ads were restricted, or only allowed on a limited basis, because they were legally or culturally sensitive. DTX-1182 at 3. In 2023, Google blocked or removed over 5.5 billion ads. DTX-1422 at 2. It also suspended 12.7 million advertiser accounts and blocked or restricted ads from serving on more than 2.1 billion publisher pages. *Id* at 2.

484. Google protects ad space sellers from harmful ads containing prohibited content, including ads for adult content, counterfeit goods, dangerous products/services, inappropriate content, and ads that contain misrepresentations or otherwise encourage dishonest behavior. For example, in 2022, Google blocked or removed 198 million ads for violating Google's policies regarding ads on financial services. DTX-1182 at 3.

485. Another example of harmful ads is malvertising, which occurs when there is harmful content in an ad itself. Once a user clicks an ad, that user may be exposed to malware installed on the device or be redirected to a malicious website that collects sensitive information.

486. Google is aware that a rising threat from harmful ads comes from deep fakes generated by artificial intelligence. Deep fakes are videos or images of a public figure that have been digitally altered and manipulated to misrepresent someone as doing or saying something they did not actually do or say.

487. The number of ads that Google has blocked has increased considerably from 2020 to 2022 because automation has permitted bad actors to connect to users at scale and grow their abilities to reach users and make money with their fraudulent tools. Google understands that number will only keep rising with the advent of AI and machine learning.

488. For Google's ad space buyer customers, Google is aware that it is important that their ads appear on safe and high-quality digital content. DTX-1498 at 19 ("Google Ads demand values high quality publisher inventory that is addressable, viewable, brand safe, and support their ad formats."). Google works to ensure that the ads of its buyer customers do not appear on harmful content, including those with illegal or misrepresentative content or malicious and unwanted software.

489. Google provides its customers, both ad space buyers and sellers, with further control over safety preferences. For example, an ad space seller such as a kids television network can choose not to display certain types of ads. DTX-39 at 43. In 2012, Google launched the Predictive Ad Review Center system, which gave sellers the control to block and allow particular ads on their websites. DTX-111 at 2. Because the number of ads can be overwhelmingly high for larger sellers, the Predictive Ad Review Center also suggests ads to block or allow based on past choices. *Id.*

490. On the buyer side, Google offers ad space buyers Digital Content Labels that give them control over where their ads appear. DTX-348 at 17, 19. Buyers can exclude content based on brand appropriateness, sensitive content, type of placement, location, or even website domain. *Id.*.

491. Just as it does with ad space sellers, Google also protects its platforms through, among other things, a thorough vetting process for buyers in order to screen out bad actors before they get on Google's systems. For example, when ad space buyers are onboarded and make accounts, there is a "Global Advertising Identity Verification" process that requires the buyers to verify information about their businesses, where they operate from, and what they are selling or promoting. Google then evaluates the buyer's signals to determine whether the buyer is trustworthy. Last year, around 133 million ad space buyers attempted to create ad accounts with Google, but only 5 million of those were legitimate. Over 100 million were stopped in the sign-up process before receiving access to a full account.

3. Google Provides Customers and Users with Transparency, Privacy, and Control Over Their Data.

492. Google also seeks to be at the forefront of policies and programs that enhance ads transparency for users. Transparency benefits users by providing them with more information about ad space buyers, which in turn enables users to make better choices.

493. Since at least 2013, Google provided consumers with the Ads Preferences Manager, which permitted users to modify their ad preferences or choose to opt out of targeted advertising. Thereafter, "twice as many consumers" modified their ads preferences than opted out, demonstrating that consumers are interested in "relevant, engaging ads." DTX-156 at 4.

494. Building on these features, in 2023, Google also launched My Ad Center, which provides users with further control over the advertisements they see and their privacy settings. Through My Ad Center, users can turn off ads personalization completely. Users can also modify their ad settings, understand why they are seeing an ad, tailor their ad experience, exclude categories of ads they do not want to see, and limit the types of information that are used in order to provide them with personalized ads.

495. In 2023, Google launched the Ads Transparency Center, which is a searchable hub for verified ad space buyers' ads. This permits users, researchers, and other stakeholders to have access to information about the ads run on Google's platforms.

496. Google seeks to be more privacy-protective than its competitors, even though it could compete more effectively if it shared more detailed information concerning Internet users. Google has prioritized the privacy of users since it started innovating in ad tech. DTX-101 at 5 ("Lead the industry in terms of user-privacy innovations. Most importantly, users should remain firmly in control, for example, with the ability to easily block unwanted ads."). In the context of real-time bidding, for example, Google took a multi-layered approach to protecting users from

being identified through the data that accompanies real-time bids, including anonymization and aggregation. Anonymization is important because bad actors can reaggregate large volumes of data and put together who the individual or set of individuals who correspond to personally identifiable information is.

B. Google Has Taken Into Account Security and Safety Risks Before Allowing Rival Ad Tech Tools to Interoperate with Google Tools.

497. Integrated tools have important benefits for both ad space buyers and sellers. Security and safety concerns are better and more reliably addressed when Google operates an integrated system. DTX-371 at 2 ("Our historical value proposition relies on an integrated solution that seamlessly covers majority of publisher monetization needs across all inventory types via direct and indirect . . . [including] enterprise-grade technology with a full feature offering, coupled with stability, uptime, security, and anti-spam protection.").

498. Google's competitors recognize the security and safety benefits of an integrated product offering. *E.g.*, Deposition of Microsoft (Benneaser John) Tr. at 289:16-20 ("Q. And would you agree that having an end-to-end platform helps prevent fraud? A. Yes.").

499. When products are integrated, there are two main benefits that Google can wield in order to ensure ad traffic quality: vetting both ad space buyers and sellers, and collecting signals. When Google has a relationship with both the ad space buyer and seller in a transaction, it can vet both sides of the transaction and thus better maintain the quality and security of the supply path. When a third-party intermediary is involved in the supply path, Google may not have a direct relationship with either the buyer or seller. For example, a Google ad space buyer may purchase from a seller using a third-party publisher ad server, in which case Google may not have a direct relationship with the seller. Or a Google ad space seller customer may sell inventory to a buyer using a third-party buying tool, in which case Google may not have a direct relationship with the

buyer. Absent a direct relationship, it is more difficult for Google to vet the quality and security of both the seller's ad inventory being offered and the buyer's ad being placed.

500. Recognizing the security and safety challenges that are introduced by the involvement in a transaction of non-Google intermediaries, Google moves deliberately in deciding whether and when to open up its integrated systems to interoperate with third-party ad tech providers in new ways to account for—and address—quality and security concerns such as invalid traffic.

501. As to collecting signals, when a Google ad space buyer purchases through AdX, Google has access to more information about the seller's digital content that assists in spam detection. Those "signals" permit Google to evaluate whether traffic to that ad represents a genuine user viewing the ad. When Google tools are used to purchase an ad being sold through a third-party exchange, Google does not have access to the same set of signals.

502. For example, in order for seller inventory to be offered for sale through AdX, the ad space seller must meet specific validation processes, including account, traffic quality, and policy validations. DTX-47 at 47. Account validations identify duplicate or fraudulent accounts; traffic quality validations identify whether inventory is fraudulent or creating false clicks or impressions; and policy checks that inventory complies with Google's policies. On the other side, only buyers who have agreed to Google's policies for purchasing on AdX can purchase inventory through AdX, which verifies that buyers do not try to serve ads containing malware or viruses or that do not comply with content policies. DTX-47 at 41, 46. Those same buyers are also vetted by Google before joining Google's platforms, just as sellers are.

503. Integration also benefits the safety and security of data about Internet users. When multiple ad tech providers are involved, user data must be shared with intermediaries and is exposed to more privacy and security risks as a result.

504. Integration has the added benefit of creating the right incentives for an ad tech provider like Google, which needs to be accountable to ad space buyers, sellers, and users—all the parties to a digital ad transaction. In developing products, for example, if a potential product benefits ad space buyers, but negatively impacts sellers, Google continues to experiment until it arrives at a solution that better promotes the health of the overall advertising ecosystem.

505. Over time Google has gradually made its tools more interoperable with rival tools while preserving ad security and safety. The timing of expansion of interoperability has been dictated by technological hurdles and security and privacy issues.

506. For example, as explained above, Google balanced the expansion of AwBid with technical challenges and risks to security and quality. Google eventually expanded AwBid's bidding on third-party exchanges as Google engineered additional tools to protect ad space buyers from invalid or unsafe inventory.

507. One of the reasons that real-time bids from AdX are provided only to DFP is because, on DFP, Google can more effectively vet ad space sellers, ban sellers, and more effectively assess traffic quality. *Infra* ¶¶ 567-568. Providing AdX real-time bids to other publisher ad servers would require engineering additional spam and quality controls for the inventory offered by third-party ad servers. Even with controls, making AdX real-time bids available elsewhere could still expose ad space buyers bidding on AdX to potential spam or invalid inventory that Google has less control over.

508. When header bidding started to gain traction, header bidding introduced new security risks that increased the prevalence of ad fraud. For example, bad actors could more easily impersonate reputable ad space sellers and win advertiser business. Google created its alternative to header bidding, Open Bidding, in order to provide a safer, more secure, and more reliable way for multiple exchanges to compete against each other. *Supra* ¶¶ 238-243.

C. Google Has Invested and Innovated in Security and Safety Features that Protect the Digital Advertising Ecosystem.

509. Because Google recognizes the importance of building trust in digital advertising, Google has developed security tools that allow ad space buyers to feel more secure even on third-party tools. It has also shared its security innovations with its competitors to increase the safety of the entire digital advertising ecosystem.

510. Helping clean up the entire advertising ecosystem benefits Google individually, too, because large bad actors can damage the entire digital advertising ecosystem for all ad tech providers. DTX-476 at 6 ("Hypothesis: Cleaning up Ecosystem far better than just improving [Google's products]."). If ad space buyers can no longer trust that real human users are viewing their ads placed through ad tech, they will stop investing in digital advertising. That in turn results in less advertising revenue for publishers, who may no longer be able to offer digital content for free.

511. One initiative that Google helped spearhead was ads.txt (which stands for "Authorized Digital Sellers"). DTX-496 at 2. The ads.txt project was inspired by the increasing prevalence of bad actors masquerading as legitimate publishers. *Id.* ("Before the enforcement launch we were at the peak spending estimated $1.2M / day on unauthorized inventory (while coverage was at about 33% of spend)."). Before ads.txt, there was no easy way to verify which ad tech providers were authorized to sell an ad space seller's ad inventory.

512. Google helped write the ads.txt standard, with a Google product manager as one of the co-authors. Adx.txt is a simple text file that ad space sellers can place on their websites to list the ad tech providers that are actually authorized to sell their inventory. Ad space buyers can reference the files to ensure that they are bidding only on tools that are the seller's authorized partners. *E.g.*, Deposition of News Corp. (David Minkin) Tr. at 105:14-16 ("An ads.txt file is a list of demand partners who have been authorized to programmatically monetize a website."); Deposition of The New York Times (Jay Glovosky) Tr. at 80:15-19 ("Ads.txt, to my knowledge, was an industry initiative to help reduce the amount of ad fraud domain spoofing and to better declare who publishers are working with so that was recognized.").

513. Google played a leading role in advocating and lobbying industry bodies, including the IAB Tech Lab, to adopt ads.txt, as well as other industry standards to make the digital advertising ecosystem safer. Google engaged with many sellers to explain ads.txt to them and drive adoption of ads.txt.

514. In order to promote the importance of addressing counterfeit inventory across the industry, Google incorporated ads.txt into its own tools. DTX-496 at 2 ("To contribute our part to addressing the counterfeit inventory problem across the industry we have launched ads.txt enforcement across all Google ads products . . . ."). Its platforms for ad space buyers filter inventory according to whether it matches the information in an ad space seller's ads.txt file. Google also built an ads.txt tool that scans all active sites in Google's network daily (over 30 million domains) for additional ads.txt files to reference.

515. The ads.txt initiative has directed spend by ad space buyers away from unauthorized inventory. DTX-496 at 2. It also benefits ad space sellers: "By removing misrepresented/spoofed inventory, the demand for inventory from legitimate publishers is expected to increase, leading to

more revenue." *Id.* at 3. And the digital ecosystem as a whole benefits from increased trust and digital ad spending on legitimate inventory.

516. Google played a leading role in developing additional tools that build on the benefits of ads.txt.

517. Google identified the need for and co-authored app-ads.txt, the app version of ads.txt, which performs the same function as ads.txt but for apps, where most online ads are placed. DTX-1016 at 36.

518. Google also played a leading role in the development and industry adoption of sellers.json, which helps ad space buyers identify sellers and their intermediaries by name—not just an opaque ID number—and by domain. Sellers and their intermediaries can share their names in a publicly-available file. Based on that file, buyers can further verify the identities of sellers and whether they are legitimate. DTX-1016 at 35, 38. This signal has become an important tool driving monetization of digital content, as some ad space sellers now require sellers.json in order for the buyer to participate in the action.

519. In addition, Google played a leading role in the development of SupplyChain, a standard that shows all intermediaries involved in the payment flow for the sale of an impression. SupplyChain also enables ad space buyers to verify, for all intermediaries, that they are included as verified sellers in the seller's ads.txt file. *Id.* at 36.

520. Finally, Google created the Better Ads Standard (referred to internally as "Project Magnolia") which is now operated by the Coalition for Better Ads (an alliance of leading digital media companies). DTX-299 at 27; DTX-811 at 59. The Better Ads standard was created to make advertising better for consumers by identifying the ad types that are most annoying to consumers based on users' own preferences and choices. DTX-299 at 16, 19-20; DTX-811 at 59. Each

individual platform or ad tech provider can decide whether to enforce the published standard so that annoying ads are not shown to users. Google enforces the standard by, for example, filtering ads that do not comply with the standard from appearing on Chrome, Google's web browser, DTX-499 at 35; DTX-339 at 212. In addition, to use Google's ad tech ad space, sellers must agree to comply with the Better Ads standard, and Google monitors compliance with the standard.[22] DTX-801 at 12.

521. These industry standards have helped not just Google, but all ad tech providers and ad space buyers and sellers by making the supply path for advertising more transparent so that buyers can verify whether the entities involved are legitimate. DTX-1016 at 35. Using these standards together, an ad space buyer has visibility into the entire supply chain. *Id.* at 40.

522. Google has also worked with law enforcement, including the Federal Bureau of Investigation ("FBI"), to detect and dismantle fraudulent ad operations. In June 2017, for example, Google detected a large domain spoofing scheme known as "Methbot" that made fraudulent websites look like legitimate, reputable websites. Methbot loaded real ads on blank webpages that it represented were real webpages of legitimate publishers. As a result, Google's advertisers paid almost $7 million dollars for fake ad space spoofed by Methbot. When it detected the invalid traffic from Methbot, Google referred the case to the FBI, and eventually a Google employee testified in federal court in the criminal trial against the leader of Methbot. That leader was eventually convicted and sentenced to ten years in prison.

523. Also in 2017, Google played a key role in taking down a massive fraud operation, 3ve (pronounced "Eve").

[22] Google Publisher Policies Help, *Better Ads Standards*, tinyurl.com/GoogleBetterAds.

523.1. 3ve generated up to 3 billion fake ad bid requests per day at its peak using domain spoofing. 3ve then created botnets (large, sophisticated networks of bots) that would direct fake, automated bots to the fake websites, generating fraudulent ad impressions.

523.2. Google independently detected 3ve, and brought 3ve to the FBI's attention. Google cooperated with law enforcement and roughly 17 other industry actors also victimized by 3ve to investigate and eventually prosecute 3ve. In November 2018, Google—in collaboration with the FBI, Department of Homeland Security, and a cybersecurity firm called White Ops (now known as "HUMAN")—initiated operations to take down 3ve. Just 18 hours later, incoming bot traffic from 3ve was nearly zero.

523.3. A press release by the U.S. Attorney's Office for the Eastern District of New York following the dismantling of 3ve extended appreciation and recognition to "Google LLC for [its] assistance in the investigation and botnet takedown."[23]

524. While taking a leadership position on safety and security issues, Google also makes a conscious effort to bring the entire industry along with its advancements. Google recognizes that it will be more successful in the long term if the entire ad tech ecosystem is safer. Building trust in ad tech and digital advertising is key to that project. Trust benefits not just Google but the entire ecosystem.

525. For the reasons explained above, *supra* ¶¶ 497-508, Google is able to build trust in its own products more capably when it has relationships with the ad space buyer and seller.

[23] United States Attorney's Office Eastern District of New York, *Two International Cybercriminal Rings Dismantled and Eight Defendants Indicted for Causing Tens of Millions of Dollars in Losses in Digital Advertising Fraud* (Nov. 27, 2018), tinyurl.com/DOJ3ve.

Introducing third-party intermediaries into Google's integrated system thus requires thought, design, and engineering to maintain the same level of safety and security that ad space buyers and sellers count on when they use Google's products.

526. Today's digital ecosystem connects content creators, large and small, with advertisers and everyday users because ad space buyers and sellers have trust in the safety and security of ad tech. To continue growing that ecosystem, Google and its competitors are continuously responding to the rapid changes in where users consume content and how technology enables transactions, all while maintaining the safety, security, and privacy of all participants in digital content.

V. Plaintiffs Challenge Five Product Design Innovations by Google Because Google Did Not Immediately Provide Rivals "Comparable" Access to Google's Innovations, Infrastructure, and Customers.

527. Plaintiffs' experts now argue that only five forms of conduct were themselves anticompetitive, all on the theory that, through these acts, "Google established a Google-only pipeline through the heart of the ad tech stack, denying non-Google rivals the same access."

527.1. "Providing unrestricted access to Google Ads' advertiser demand exclusively to its AdX ad exchange, and denying comparable access to rival ad exchanges," Lee Rpt. ¶ 12(3)(1);

527.2. "Providing access to and use of real-time bids from AdX exclusively to its DFP publisher ad server, and denying comparable access to rival publisher ad servers," Lee Rpt. ¶ 12(3)(2);

527.3. For the period 2009 to 2018, providing access to a feature known as "Dynamic Allocation" exclusively to AdX within DFP, and "granting AdX valuable 'first-

look'[24] and 'last-look; advantages over rival ad exchanges," Lee Rpt. ¶ 12(3)(3);

527.4. Following the acquisition of AdMeld in 2011, eliminating AdMeld technology as a competitive threat to Google's AdX and DFP products; and

527.5. Eliminating publishers' ability to use variable pricing floors within DFP (in other words, adopting the Uniform Pricing Rules).

528. All five of those acts—except for Google's adoption of Uniform Pricing Rules—involve product design decisions and acquisitions that took place at least four years before 2015, the earliest year that any of Plaintiffs' experts opine that Google had substantial market power. Deposition of Robin S. Lee Tr. at 198:7-20.

529. Of the acts that Plaintiffs still argue were anticompetitive on their own, only three are arguably ongoing conduct today: (1) the Unified Pricing Rules; (2) limitation of Google Ads bidding into AdX; and (3) making real-time bids from AdX available only to DFP. Dynamic Allocation has not been limited to AdX since 2016, and features of how publishers set up Dynamic Allocation such as "first look" and "last look" have not existed since, at the latest, 2019.

[24] As Plaintiffs' expert explains, the "first look" as defined by Plaintiffs and alleged to be anticompetitive is not the same as a feature Google developed that is referred to as "DoubleClick First Look," which was introduced in 2016 and "allows publishers to offer certain buyers an ability to buy selected inventory ahead of any reservation campaigns as long as they bid above a first look floor." Lee Rpt. ¶ 666 n.955 (quoting DTX-723).

A. The Challenged Acts

1. "Providing unrestricted access to Google Ads' advertiser demand exclusively to its AdX exchange, and denying comparable access to rival ad exchanges."[25]

530. Plaintiffs' experts opine that Google should provide rival exchanges with access to Google's ad space buyer customers who use Google Ads that is "comparable" to the access AdX has, which would require Google Ads to bid into all rival exchanges on the same terms that it bids into AdX. Plaintiffs maintain that this conduct foreclosed rival ad exchanges in their ad exchange market because those rival exchanges could not access Google Ads demand on the same terms as AdX did.

531. Prior to the DoubleClick acquisition, Google Ads did not bid into any exchanges, including AdX. It purchased inventory that was not owned-and-operated by Google only on the Google Display Network, which at the time consisted only of publishers who used Google's AdSense tool to sell ad inventory and had been vetted by Google.

532. When Google re-launched AdX on its own infrastructure in 2009, Google Ads was connected to AdX. To sell on AdX, ad space sellers also had to become part of the Google Display Network, which required vetting by Google.

533. The integration between Google Ads and AdX benefited Google's buyer and seller customers by connecting both to a larger pool of potential matches. DTX-72 at 3-4 ("By automatically introducing AdWords . . . into the new Ad Exchange, there's a very large pool of advertisers and ad space available").

534. The integration with AdX benefited buyers for the same reasons that purchasing on Google's AdSense and owned-and-operated properties benefited buyers. AdX was a source of

[25] Lee Rpt. ¶ 12(3)(1).

inventory that Google could control: sellers agreed to Google's safety policies, were vetted by Google, and were subject to monitoring for invalid traffic and other security or safety violations. Any ad space buyers seeking expanded access to inventory—but less assurance about inventory—could choose other buying tools that were less focused on connecting to known sellers. One such option would be Google's alternate buying tool, DV360. DTX-574 at 9 (DV360 "will continue to focus on agnostic, broader inventory access for campaigns of all types as well as publisher direct and . . . integrations with major publishers").

535. Prior to 2013, there were still relatively few ad exchanges to purchase on, and what few existed were still plagued with quality problems and invalid traffic in comparison to AdX. DTX-131 at 3; DTX-152 at 1.

536. Expanding interoperability between Google Ads and other ad exchanges required extensive work to preserve Google Ads' promise to protect ad space buyers from invalid or unsafe inventory. DTX-472 at 3, 6-8; DTX-979 at 2, 4; DTX-545 at 2. Even after AwBid was launched in 2013, Google found that non-Google inventory often continued to raise quality and security problems.

537. Building and expanding AwBid also required technical work, contract negotiations with third-party exchanges, and more in order to set up the actual connections between Google Ads and third-party exchanges. Because Google Ads originated as a buying tool that purchases from ad space sellers who have signed up for Google tools, its infrastructure was not designed to bid into multiple other exchanges. Building new software and infrastructure to enable that functionality required engineering.

538. Starting with the launch of AwBid, Google has continued to invest heavily into new innovations and features to ensure third-party integrations are sufficiently safe. DTX-284 at 13; DTX-979 at 2.

539. Since AwBid was launched in 2013, Google Ads has not purchased third-party inventory exclusively through AdX. The use of AwBid has grown, with spending on third-party exchanges in excess of $295 million by 2022—a twenty-fold increase in just 7 years, from $11 million in 2015. DTX-1907. Today, AwBid enables bidding on around 50 non-Google ad exchanges.

540. Since before AwBid was created, Google also has not restricted Google Ads' ad space buyers from using other tools to bid into third-party exchanges. Buyers, including the ones that use Google Ads and especially larger ones that account for most of the spend on Google Ads, can and do use other buying tools. For example, five of the eight federal agency advertisers in this case bid into AdX without using Google Ads. The other three used a combination of Google Ads and other buying tools, including Google's DV360, which bids into over 100 non-Google exchanges, and a third-party buying tool, The Trade Desk.

541. Expanding the existing degree of interoperability between Google Ads and third-party exchanges would require Google to undertake technical work. As with any new integration, it would also implicate a number of additional considerations and investments beyond technical work such as new security systems to monitor inventory, negotiated agreements about data collection and billing discrepancies, infrastructure to reduce latency resulting from connecting to third parties, and expanded machine capacity to improve sheer processing power.

542. All of these additional steps would require considerable investment by Google.

543. Expanding the existing degree of interoperability between Google Ads and third-party exchanges would also expose Google Ads' advertiser customers to increased invalid traffic and brand safety risks due to lower quality control on inventory on third-party exchanges. DTX-472 at 3-4.

544. Plaintiffs' focus on Google Ads and its integration with AdX excludes the fact that Google offers another buying tool, DV360, used by many large advertisers and advertising agencies that account for considerable advertising spend, that is integrated with over 100 exchanges.

545. Integrating Google Ads with third-party exchanges is not as easy as the integration of DV360 with third-party exchanges. DV360 started as a programmatic buying tool for remarketing, a form of targeting that benefits from reaching as many sources of ad space inventory as possible because the advertiser is seeking to retarget a user who has already been reached before. In contrast, Google Ads was a tool for contextual targeting, which connects ad space buyers to inventory based on information about the content and context of the inventory (for example, whether a website is a recipe blog or geared to hikers). For contextual targeting, it is more important to verify that inventory offered is high-quality and brand safe.

546. In addition, expanding AwBid for Google Ads was also more technically complex and expensive than enabling DV360 to bid on other exchanges. Google Ads originated in the year 2000 without connections to third-party exchanges (which did not exist then), while DV360 was the product of an intentional acquisition of technology already established with those connections to third-party exchanges. *Supra* ¶¶ 127, 167.

a. Google Ads Demand Is Not "Unique."

547. Plaintiffs' argument that Google Ads demand is "unique" and that ad space sellers are unable to compete without access to it through AdX (or, as explained below, *infra* ¶ 557, DFP) fails to reflect competitive realities on multiple counts.

548. *First*, ad space buyers use multiple buying tools at once and, as a result, bid into multiple exchanges. *E.g.,* Deposition of Comcast and NBC Universal (Kristia Bhatia) Tr. at 78:2-4 ("We might operate on—we might have eight to ten different display advertising demand sources in addition to Google's AdX"); Deposition of Criteo (Todd Parsons) Tr. at 175:2-14 (in addition to AdX, Criteo bids into "all the major ones," including Index Exchange, Magnite, and Pubmatic). And ad space sellers accept bids from multiple exchanges. As a result, there are multiple paths from which demand can flow from ad space buyers to ad space sellers that are not just Google Ads to AdX.

549. Large buyers that account for the overwhelming majority of advertising spend through Google Ads multi-home, meaning they use multiple ad buying tools simultaneously. DTX-1978 (summarizing DTX-2181); Israel TT. In 2022, the top 0.1 percent of advertisers (all of whom spent at least $1.7 million during the year) accounted for 72 percent of total spending; the top one percent of advertisers accounted for 90 percent of total spending; and the top quarter of advertisers accounted for 99 percent of total spending. *Id.* These large buyers multi-home across buying tools, which means they are accessible through alternative buying tools and bid into multiple exchanges. In 2022, 84 percent of Google Ads spend came from buyers who buy using more tools than just Google Ads. DTX-1902; Israel TT.

550. *Second*, any small ad space buyers on Google Ads that do not multi-home do not spend enough to be "must have" demand for sellers, accounting for no more than 3.6 percent of spending on DFP. Israel TT. Much of the demand running through AdX does not come from

Google Ads. DTX-1906; Israel TT. The buyers who bid on AdX use Google Ads, DV360, or one of many third-party buying tools. Between 2014 and 2022, DV360 and third-party buying tools accounted for 59 percent of U.S. ad spending on AdX. Google Ads therefore accounted for only 41 percent of the spending on AdX. *Id*.

551. *Third*, Google has made the small amount of possibly "unique" demand coming from Google Ads accessible on third-party exchanges through AwBid. DTX-786 at 4; *see also* DTX-1196 at 18 (Google also developed Google Ad Connector, known internally as "Yavin," a feature that enabled ad space sellers with in-house ad servers to access demand from buyers using Google Ads).

552. *Fourth*, Plaintiffs rely on a handful of internal Google documents that reference Google Ads' "unique demand." The use of that phrase to praise a customer base does not change their financial significance.

553. Rivals can—and successfully do—compete by providing access to demand to which Google Ads does not have access. *E.g.*, DTX-298 at 2 (Google internal email stating that Rubicon has "true unique demand due to buy-side sales efforts," and "leads on deals" with buyers Google cannot access); DTX-463 at 4 (noting that Facebook and Amazon have "robust and unique demand to rival [Google Ads]"); DTX-879 at 10 (Google competitive analysis noting "key differentiator: Amazon provides unique demand"). Google Ads does not control such a distinct, "must-have" set of small ad space buyers that sellers have no other options to seek out "unique demand." *E.g.*, DTX-298 at 2 (Google employee observing, in response to competitors with "true unique demand," that "we'll never win everything every time").

554. Many competitor buying tools also claim that they have access to "unique demand."

554.1. Adform: "Adform provides significant, unique demand through Adform's demand-side platform." DTX-1534 at 50.

554.2. Criteo: "Criteo Direct Bidder directly connects your inventory to Criteo's unique demand." DTX-1701 at 1.

554.3. Facebook: "Access Unique Demand at Scale: From local business to big brands, get access to Facebook's 3 million advertisers." DTX-305 at 2.

554.4. Magnite: A new tool launched by Magnite, ClearLine, "helps Magnite publishers generate more revenue and develop new sources of unique demand." DTX-1528 at 2.

554.5. Media.net: "Our Marketplace is comprised of truly unique content-driven demand sources." DTX-2358 at 1.

554.6. Xandr (acquired by Microsoft): "Driving Unique Demand for Your Inventory." DTX-1524 at 15.

554.7. PubMatic: "Activate is an end-to-end [supply side optimization] solution that enables buyers to execute non-bidded direct deals on PubMatic's platform, . . . unlocking unique demand for our publishers." DTX-1541 at 4.

554.8. [redacted]

555. Ad space sellers seeking to expand their reach use non-Google tools in order to connect with additional demand. For example, NBC Universal and Comcast explained that they contract with ad exchanges and ad networks beyond AdX to "bring additional advertising

campaigns and, therefore revenue from either the same advertisers or other advertisers." Deposition of NBCUniversal (Krishan Bhatia) Tr. at 80:9-14.

556. *Fifth*, reflecting the reality that ad space buyers today have many different pathways to reach sellers, Google's (and its competitors') representations about "unique demand" often do not even refer to control over some unique set of buyers that cannot be reached elsewhere. As Google noted in an internal presentation, "many [supply-side platforms] claim exclusive access to unique demand via direct deals and private auctions. However, the demand is rarely exclusively available through 1 [supply-side platform] vs. another." DTX-396 at 15; *see also* DTX-298 at 2 ("mostly the same buyers exist in every exchange.").

2. "Providing access to and use of real-time bids from AdX exclusively to its DFP publisher ad server, and denying comparable access to rival publisher ad servers."[26]

557. Plaintiffs' experts opine that Google should provide rival publisher ad servers with access to AdX bids that is "comparable" to the access Google's publisher ad server, DFP, has—in other words, access to real-time bids from AdX. As Plaintiffs see it, rival ad servers are unable to compete absent this "comparable access" because the "unique demand" of Google Ads buyers is available only through AdX. Plaintiffs' experts maintain that providing real-time bids from AdX exclusively to DFP forecloses rival publisher ad servers in their alleged market for publisher ad servers.

558. In September 2009, Google launched the rebuilt AdX, which provides ad space sellers using Google's publisher ad server (DFP) access to real-time bids from buyers bidding on AdX. DTX-55 at 1. The buyers who bid on AdX include both advertisers using Google's buying tools (Google Ads and DV360) and advertisers using non-Google buying tools that bid into AdX.

[26] Lee Rpt. ¶ 12(3)(2).

559. Google decided to build—and then maintain—its sell-side products in this integrated way for a number of reasons.

560. First, there are innovative features built into the products that increase product functionality when the two are used together. When ad space sellers use DFP and AdX, the combination of real-time bidding with Dynamic Allocation (and later Enhanced Dynamic Allocation) increases publisher revenue, as explained further below. *Supra* ¶ 227; *infra* ¶¶ 578-580.

561. In addition, integration between DFP and AdX reduces latency. When products are built on the same ad tech stack, they can share the same servers, data centers, networks, and source code, allowing the products to coordinate more seamlessly, thereby reducing the amount of time that passes before an ad loads on an ad space seller's digital content, which in turn improves the user experience and makes the user more likely to view and click on the ad.

562. Integration also reduces latency by making it easier for the system to recover if there is a point of failure. For example, within AdX and DFP, if an ad is called but not successfully returned, it is easier to fall back to the next ad in the queue. But if a third-party ad server is not integrated, the system needs to call back to get a new ad and create additional steps in the process. When transactions occur on the order of milliseconds, each step adds a critical amount of time.

563. With shorter latency periods, more time can be spent instead on running internal auctions, which in turn increases the likelihood of identifying an ad space buyer willing to pay more for a particular impression. The reduced frictions resulting from integration therefore not only improve the user experience, but also enable better matches between ad space buyers and sellers.

564. Today, the link between AdX and DFP in GAM further increases the value of Google's products by providing sellers better quality control and a streamlined user interface. DTX-198 at 1.

565. One reason for the GAM product was that Google understood that digital content providers prefer the combined interface, analytics, and efficient workflow.

566. Providing AdX real-time bids to other publisher ad servers would require significant additional engineering work. For each additional integration of AdX to a third-party publisher ad server, new code would need to be written.

567. Google would also have to engineer additional tools to control for spam and the quality of inventory sold through third-party ad servers. DTX-150 at 2.

568. Google has explored the possibility of integrating AdX with third-party ad servers, but concluded there was no business case for doing so. It observed at that time that third-party ad servers "show a continued reluctance to do the integration coding required" without payment, even though Google expressed interest in aligning with any ad server that would be interested in putting in the work to integrate. DTX-150 at 2. Moreover, Google's initial efforts were stalled in part by "engineering concerns associated with spam detection and inventory quality controls." *Id.* at 4. As the Google team learned, another provider's past experiences with similar features (integrating real-time bids from an ad exchange with third-party publisher ad servers) were "plagued with ongoing issues" and added "a new challenge with every customer." *Id.* at 2.

569. Plaintiffs' theory of harm to rival publisher ad servers is based on the "unique" demand available only through AdX, but AdX is not a big enough source of "unique" demand flowing to DFP to support that theory. From 2015 to 2022, the period for which data are available, AdX accounted for no more than 38 percent of U.S. DFP (non-video) impressions, DTX-1946,

and the demand that was arguably "unique" to Google Ads accounted for around 3.6 percent. Israel TT.

570. Ad space sellers using DFP therefore get most of their demand from non-AdX sources, and AdX gets much of its demand from buyers using non-Google Ads buying tools. DFP provides sellers with access to much more than just a narrow set of buyers that are only purchasing through Google Ads and bidding into AdX.

571. In addition, since Google re-launched AdX on its own infrastructure in 2009, any seller—including ones that use third-party publisher ad servers or in-house ad servers—has been able to access the advertiser demand that bids into AdX by using "AdX Direct" tags. AdX Direct tags are pieces of code that publishers can place on their digital content to access demand from AdX.

572. Going beyond AdX Direct, and providing additional access to and use of real-time bids from AdX to third-party ad servers, would require Google to undertake additional technical work.

3. Limitation of Dynamic Allocation to AdX

573. Plaintiffs' experts opine that Google should have modified the ways in which rival exchanges could access the functionality of Dynamic Allocation, a product innovation first built for DFP by DoubleClick, before Google launched Open Bidding.

574. Plaintiffs claim that Dynamic Allocation gave AdX what they call a "first look" and "last look" over other exchanges. Plaintiffs' experts maintain that Google should have provided rival ad exchanges comparable access to Dynamic Allocation or designed Dynamic Allocation to allow rival exchanges to submit real-time bids alongside each other. Plaintiffs maintain that Google's Dynamic Allocation design foreclosed rival ad exchanges in the alleged market for ad exchanges.

575. Dynamic Allocation was a product innovation that DoubleClick introduced in 2007, before Google acquired DoubleClick. DTX-16 at 12; DTX-20 at 2. The feature was called "Dynamic Allocation" because the system allocated each ad impression offered for sale based on who was expected to pay the most for it. In other words, it improved revenue for ad space sellers. DTX-103 at 15.

576. Following its acquisition of DoubleClick, Google maintained and continued to improve upon the Dynamic Allocation feature.

577. Before Dynamic Allocation, impressions were offered for sale through a "waterfall" process, with each impression offered in sequence to various demand sources where ad space buyers were bidding based on how the seller prioritized each demand source in the ad server. The seller generally ordered demand sources according to their historical bids (or fixed prices that had been negotiated with an individual demand source in advance), so that demand sources who were expected to bid higher were offered impressions earlier. The "waterfall" process was inefficient because, for each individual impression, a demand source might be willing to bid higher than what it had historically or had agreed to in advance. As a result, the "waterfall" system based on expected bids sometimes resulted in a buyer winning an impression even though a buyer lower in the waterfall would have paid more. *E.g.*, Deposition of Criteo (Todd Parsons) Tr. at 131:3-9 (explaining waterfall "prevented efficient competition, at times, for the—for the—at the publisher's disadvantage"); Deposition of Meta Platforms, Inc. (Omri Farber) Tr. at 115:3-16 ("I can say that it was Meta's point of view, and it is today, that waterfall generally—we've been fairly public about this—is an inefficient system that does not provide the best value for publishers or advertisers."); Milgrom TT.

578. Dynamic Allocation in DFP paired with real-time bidding in AdX increased competition for an impression even more because it allowed AdX ad space buyers to bid in real time for an impression, using the highest expected bid from the waterfall as the minimum price to beat. Because AdX buyers were bidding in real time for each impression, they had information about the particular user who would be viewing the impression and could more accurately value the particular impression being offered for sale. Armed with that information, AdX buyers were often willing to bid more than bidders who did not have real-time information because they were interested in reaching particular users.

579. Under Dynamic Allocation, the same bidders who would have been subject to the waterfall could bid in a real-time AdX auction for the impression instead. *E.g.*, DTX-103 at 4 ("Dynamic allocation is a yield maximization feature between DFP* and AdX/AFC which sets a dynamic floor where an AdX/AFC ad only serves if the price–calculated in real time–can beat the campaigns directly booked at the same priority setting or below it. It allows publishers to maximize their earnings by getting the highest paying ad available for any given ad impression."). As a result, the buyers who valued an impression most had more opportunity to win that impression. With the combination of Dynamic Allocation and AdX real-time bidding, ad space sellers made more revenue than they did using the waterfall. DTX-80 at 2; *see also* DTX-202 at 20 (AdX customers using Dynamic Allocation made more revenue than AdX customers not using Dynamic Allocation).

580. Although the combination of Dynamic Allocation with real-time bids from AdX still did not guarantee that an ad space seller would receive the highest bid *any* demand source was willing to pay for a particular impression, it was a dramatic improvement over the existing set-up.

580.1. It remained *possible* that another demand source in the waterfall might, for a particular impression, have been willing to bid higher than its historical average. And it was *possible* that the demand source would have been willing to bid even higher than AdX. But at the time that Dynamic Allocation was first introduced to Google's ad stack, that possibility was unavoidable. The technology to compare all bids from all demand sources in direct competition with each other on a real-time, impression-by-impression basis (what would later emerge as header bidding and Google's Open Bidding) had not yet been innovated.

580.2. The relevant comparator for whether Dynamic Allocation with real-time bidding benefited ad space sellers is not the innovation yet to come, but the system that ad space sellers were previously using—the waterfall. The combination of Dynamic Allocation and real-time bidding was demonstrably an improvement over that old system. Ad space sellers generated more revenue, on average, than they otherwise would have in the absence of Dynamic Allocation. In the waterfall, all demand sources were ordered by historical average bids regardless of how much they were actually willing to pay for a particular impression. Both before and after Dynamic Allocation, it was possible that a demand source lower in the waterfall would actually be willing to bid more for a particular impression than a demand source higher in the waterfall, or that a demand source higher in the waterfall was not willing to bid as much for a particular impression as its historical average. The combination of Dynamic Allocation with real-time bidding was nonetheless an improvement because it added another source of demand—based on real-time information

about the impression so buyers that would be good matches might be more likely to bid higher—that would only win if it offered more revenue than the seller otherwise expected to receive based on historical information. That was an innovative improvement, even if imperfect.

581. In 2014, Google introduced Enhanced Dynamic Allocation, which further increased competition for impressions. At the time, sellers with direct deal contracts faced the challenge of ensuring that they complied with contractual requirements to deliver impressions to specific buyers without sacrificing revenue by allocating inventory to direct deals when indirect demand sources would have paid more.

582. Before Enhanced Dynamic Allocation, direct deals received the highest priority above the waterfall. Ads purchased through direct guaranteed deals were always served (without looking to other demand sources) if there was a direct deal ad available to fill an impression.

583. Enhanced Dynamic Allocation enabled real-time bidding to compete not only with demand sources seeking to purchase leftover inventory in the waterfall, but also with buyers who had direct guaranteed deals. Enhanced Dynamic Allocation worked by assigning varying priorities to direct deals based on whether the ad space seller was ahead of or behind schedule to deliver on its direct deal with a buyer—in other words, the opportunity cost of not selling a particular impression to a direct deal. For example, a seller might commit to displaying 100 ads in a month for a buyer. If, halfway through the month, the seller had only displayed 30 ads for the buyer, the guaranteed deal ads would be assigned a higher priority value. On the other hand, if the seller had already placed 90 ads for the direct deal buyer by halfway through the month, the seller was ahead of schedule. Enhanced Dynamic Allocation would assign the guaranteed deal ads a lower priority value. If a buyer bidding in real time on AdX bid enough to beat that lower priority value, the

AdX buyer would win the auction. This resulted in greater revenue for the seller, who otherwise might not have made more money on that impression because it would have been allocated to the direct deal buyer.

584. Google launched Enhanced Dynamic Allocation to "expand competition between ads among priorities," and sellers would benefit from increased revenues as a result. DTX-125 at 2; *see also* DTX-371 at 2 (Enhanced Dynamic Allocation "optimizes competition on every impression").

585. Dynamic Allocation was initially limited to AdX's real-time bids because, until Google developed Open Bidding, it had not yet developed a technology that plugged real-time bids from third-party exchanges into Google's publisher ad server DFP in a safe, secure, and reliable way. With the initial launch in 2016 of Open Bidding, Google's more secure and reliable alternative to header bidding, DFP made available an integration like Dynamic Allocation for third-party exchanges that enabled them to compete with AdX in real time.

586. "First look" and "last look" are terms that refer to how Dynamic Allocation worked, and do not refer to any new or different functionality that Google designed after DoubleClick first invented Dynamic Allocation. Because they were both effects of Dynamic Allocation, what Plaintiffs refer to as "first look" and "last look"—just like Dynamic Allocation—were risk-free ways for publishers to earn strictly more revenue than they would have otherwise.

587. "First look" is a term Plaintiffs use to refer to how Dynamic Allocation worked.

587.1. Prior to header bidding, ad space sellers could not compare real-time bids from different demand sources simultaneously. Instead, they prioritized demand sources based on the waterfall, which ordered demand sources according to static, predicted prices.

587.2. Dynamic Allocation, paired with real-time bidding, allowed sellers to first run a real-time auction to see if any AdX buyers were willing to beat the highest predicted bid from the waterfall.

587.3. In other words, AdX got a "first look" at the impression to see if AdX buyers were willing to pay more than the highest amount the publisher expected to receive from any other demand source.

588. Ad space sellers remained free to set up DFP, with Dynamic Allocation, so that third-party, non-Google exchanges were at higher priority levels than AdX. With this set-up, inventory sold through DFP might be "looked" at first by other ad exchanges before being offered to AdX. Google documents demonstrate that some ad space sellers did set up DFP this way, as the inventory that reached AdX was "already passed on by other buyers." DTX-243 at 3; *see also* DTX-242 at 4.

589. "Last look" is a term that was "used by some in the industry" (and Plaintiffs) to refer to how ad space sellers could configure Dynamic Allocation to work with header bidding. PTX-856 at 1. Dynamic Allocation was first created by DoubleClick and then maintained by Google long before header bidding emerged. It was not—and could not have been—designed to enable any "last look" setup in conjunction with header bidding.

589.1. As explained above, *supra* ¶ 230, ad space sellers used header bidding to compare multiple real-time bids from different ad sources in real time. Sellers using header bidding might also seek to compare header bidding bids against other remnant demand sources—including AdX, which did not bid on header bidding because header bidding introduced security, safety, latency, and other problems.

589.2. To do so, sellers could configure their Dynamic Allocation setup in DFP so that the header bidding auction was run first. Then, the winning bid from the header bidding auctions would serve as one of the floor prices for an AdX bidder to beat. That meant AdX buyers had an opportunity to beat the winning bid from a header bidding auction—but only if an AdX buyer was willing to bid more than the header bidding winner.

589.3. The "last look" was a result of header bidding taking place before the AdX auction ran and the way that ad space sellers configured Dynamic Allocation to work with header bidding.

589.4. AdX buyers won the impression only by paying more than the seller was previously offered.

590. Plaintiffs' experts acknowledge sellers who chose to give AdX a "last look" benefited from increased revenue. The "last look" mechanism "made Google's ad exchange more attractive to the buyers in exchanges because of increased ad space opportunities. AdX buyers benefited from the opportunity to bid higher on impressions more valuable to them.

591. "Last look" thus benefits ad space sellers and is not an unusual way to set up yield maximization. Tools like OpenX and [redacted] offered sellers similar features.

592. Because "first look" was an effect of how Dynamic Allocation worked and "last look" was an effect of how some ad space sellers chose to set up Dynamic Allocation with header bidding, changes in Google's auction structure over time also changed whether there was any "first look" or "last look" for AdX.

592.1. In 2017, after Google first launched Open Bidding, its more secure and reliable alternative to header bidding allowing sellers to compare real-time bids from

different sources, *supra* ¶¶ 239-243, any "last look" specific to AdX relative to Open Bidding exchanges was removed. DTX-569 at 1; DTX-750 at tab "Q1Q2 17 Launch News," cell R60. This meant that all rival sources of buyer demand that participated in Open Bidding had the same information and opportunity to bid on impressions as AdX.

592.2. In 2019, Google transitioned to a Unified First-Price Auction, which enabled sellers to run an "auction of auctions" to compare bids from all sources against each other at once. *Infra* ¶¶ 603-604. In the Unified First-Price Auction, neither "first look" nor "last look" exists for any AdX and DFP set-up.

593. Plaintiffs opine that Google should have built Dynamic Allocation differently so that ad space sellers could have chosen to give rival exchanges a "first look" or "last look." Before Open Bidding, Google could not have done so without technical and engineering work to permit Dynamic Allocation to be set up to work with real-time bids from rival exchanges.

4. Unified Pricing Rules

594. Plaintiffs' experts opine that Google's adoption of the Unified Pricing Rules was anticompetitive because Google should not have eliminated ad space sellers' ability to set, on DFP, variable minimum prices by demand source. In other words, Google should have designed its own tools to preserve the complexity of variable price floors and allow sellers to use Google's publisher ad server to discriminate against Google's ad exchange. Plaintiffs maintain that requiring uniform minimum prices across demand sources on DFP impaired rival ad exchanges in Plaintiffs' alleged market for ad exchanges.

595. Google adopted the Unified Pricing Rules in 2019. By the calculations of Plaintiffs' own expert, Prof. Lee, the market share of Google's own ad exchange has declined since

UPR was adopted. PTX-1384. Also by Prof. Lee's own calculations, non-Google exchanges have earned increased revenue since then. PTX-1262.

596. By 2019, the ad tech space had become complicated and confusing because ad space sellers had so many different pathways through which they could sell their inventory: direct deals, programmatic guaranteed deals, real-time bidding on ad exchanges, header bidding, and Open Bidding. The complexity made it difficult to create an "auction of auctions" in which all kinds of bids could compete against each other.

597. Further complicating the landscape, different exchanges and tools ran different types of auctions. Google believed that second-price auctions—in which the winning advertiser pays the higher of the second-highest bid or the minimum floor price—are the most efficient auction design for both buyers and sellers. DTX-822 at 3. But second-price auctions work best when there is one auction. With the proliferation of ad tech tools, one single impression might be sold through 10 different auctions—some second-price and some first-price. As a result, ad space buyers were forced into complex bidding strategies, and sellers into complex monetization schemes.

598. Exacerbating this complexity, one of the tactics sellers used to optimize revenue in this fragmented world was setting variable price floors. Prior to 2019, sellers could separately set price floors—the minimum price to beat at auction—for each of the exchanges to which they sold inventory. A buyer bidding on an impression through one exchange could face a different minimum price to beat than if the same buyer were bidding on the same impression through a different exchange, and a different minimum price to beat than the one faced by a different buyer bidding on the same impression through a different exchange.

599. Variable price floors could result in a situation where the buyer willing to make the highest bid did not win the impression because it bid through an exchange subject to a higher floor price. For example, assume buyer A entered a $5 bid on AdX, and the publisher set a $6 floor price for AdX. Buyer B entered a $4 bid on Index Exchange, and the publisher set a $3 floor price for Index Exchange. Buyer B would win even though it bid less than buyer A because buyer A's bid did not exceed the higher floor price set for AdX bids.

600. Variable price floors created complications for both ad space buyers and sellers. Sellers, who had to manually set these price floors, adopted "complex monetization strategies" for gaming variable pricing floors that were "hard to maintain in the long term." Buyers "struggled to optimize when bidding across different channels due to lack of symmetry." Because "different floor prices could apply for the same impression," buyers were forced to adopt more involved bidding strategies in order to optimize their likelihood of winning desirable impressions at the lowest price possible. DTX-1016 at 21. In addition, because the same impression might be valued differently depending on the bidding channel, buyers struggled to "understand how to value the impression." DTX-1016 at 22.

601. Given these challenges, Google recognized the benefits to ad space buyers and sellers of offering a simpler, more transparent marketplace. *E.g.*, DTX-730 at 3; DTX-705 at 7 (prior to Unified Pricing Rules: Google's pricing rules "exponentially increase the volume of queries in the ecosystem and the amount of duplication, with buyers dealing with multiple instances of the same impression").

602. Google sought to "establish a level playing field" for "buyers and sellers," and by extension, create a "more sustainable programmatic ecosystem." DTX-1016 at 20. In 2019, in furtherance of that objective, Google transitioned GAM to the Unified First Price Auction.

603. The Unified First Price Auction compares the bids for a seller's inventory that have come in through a range of different channels at the same time, including bids from Google Ads, DV360, other AdX bidders, Open Bidding, and other non-guaranteed demand sources such as bids from third-party exchanges submitted via header bidding.

604. Google's Unified First Price Auction works as follows. First, it filters all bids for eligibility based on settings specified by the ad space seller (such as whether the bids meet the floor price). Second, it ranks the bids according to net revenue to the seller, accounting for any revenue shares or fees Google would charge. Third, a seller can choose whether the highest ranked bid will win, or, in some cases, override and select a different bid (for example, if the publisher has a preferred deal where it arranged for a buyer to have priority regardless of price). The bidder with the highest net bid wins the auction, subject to the publisher's decision to override that bid, and pay the amount it bid.

605. At the same time that Google moved to the Unified First Price Auction, it also adopted the Unified Pricing Rules ("UPR"). UPR allows ad space sellers to set price floors that vary by the properties of the impression and characteristics of the buyer, but not price floors that vary by the identity of the exchange or demand source. As a result, buyers are treated the same whether they are bidding on AdX or a non-Google demand source. DTX-799 at 4 ("Unified Pricing rules will not support the following functionalities that were present in Open Auction pricing rules: Buyer-specific floors: ability to set different floors for different [demand sources] for a given inventory targeting . . . publishers will still be able to: Set per-advertiser floors in Unified Pricing rules").

606. The Unified Pricing Rules still permits ad space sellers using Google Ad Manager to set different floors for specific advertisers, brands, ad sizes, categories, and more. In addition,

sellers can continue to set different price floors for different ad exchanges using the tools made available by other ad exchanges. The other, non-Google ad exchanges can apply those price floors prior to submitting bids into the Unified First Price Auction, after which the other ad exchanges are also subject to the price floors set by the seller in Google Ad Manager.

607. The transition to a Unified First Price Auction and UPR addressed the increasing complexity and confusion arising from the multitude of pathways through which ad space buyers and sellers connected. Under the new system introduced by Google, all demand—whether from AdX, header bidding, non-Google exchanges, or direct deals—competed on the same first-price basis, with the highest bidder winning the impression (subject to any seller override to give priority to a particular buyer).

608. The launch of a Unified First Price Auction, along with UPR, "resulted in a simpler, fairer, and more transparent auction for [Google's] publisher and demand partners." DTX-829 at 1. As Google explained in a contemporaneous document, "for Google, these changes reduce the complexity of our products and improve market competitiveness through greater consistency of rules among the auction participants." *Id.* at 2.

609. UPR simplified bidding for buyers, including buyers bidding into Google's own ad exchange AdX, because it created a single floor a buyer had to beat no matter what exchange it bid on. UPR thus minimized bidding errors, improved decision-making, and lowered effective price floors, resulting in increased successful transactions. DTX-770 at 2. Third-party advertiser buying tools bidding through AdX experienced an approximately 25 percent increase in impressions won. DTX-838 at 6, 9.

610. UPR protected ad space buyers from price-fishing by sellers—a tactic by which some sellers called the same buyers on different exchanges using different price floors in an

attempt to make buyers compete against themselves and bid higher in order to win an impression. Milgrom TT. Ad space sellers could no longer game different price floors to create artificial competition for the same impression.

611. Most sellers either benefited from—or were at worst unaffected by—the Unified Pricing Rules.

611.1. Immediately following the launch, Google employees noted that "to land everything in the neutral-to-positive arena for publishers and advertisers is an amazing achievement." DTX-829 at 1.

611.2. Google's "top 500 publishers saw a median increase of 2.7% in auction revenue." DTX-829 at 2 ("Overall, publishers experienced a neutral to positive impact in revenue.").

611.3. Google documents establish that Google anticipated that publisher revenue would increase after UPR. DTX-784 at 31 ("estimated 6.4% increase in value of impressions won by AdX").

612. As evidence that sellers were dissatisfied, Plaintiffs point to a video of a meeting with publishers about UPR in April 2019. By July 2019, however, following discussions with sellers, contemporaneous Google documents describe "positive feedback received from a variety of publishers, including the Washington Post, Vice Media, NYT, MailOnline, etc," with only "a few unhappy publishers." DTX-784 at 30.

613. A third-party 2020 survey provided to Google informed Google that only 4 percent of sellers claimed UPR had a negative impact on them, while 30% saw a positive impact and 65% were neutral or did not know. DTX-861 at 6.

614. Some ad space sellers did not like UPR; others did. As one example, the Chief Product Officer at Buzzfeed testified that his "ad op team and programmatic technical account managers like using" UPR because "changing bids all the time is a pretty laborious task." Deposition of Ken Blom (Buzzfeed) Tr. at 72:4-20; *see also id.* at 73:5-6, 8 ("Q: But are you in favor of the UPR functionality? . . . . A: Yes, we are."). Competing anecdotal testimony by sellers does not establish that sellers were harmed by UPR.

615. The combination of the Unified First Price Auction and UPR benefited ad space sellers, in addition to buyers, by enabling them to simplify their price floor strategies. As explained above, *supra* ¶ 219, in a second-price auction, the price floor set by the seller plays an important role in the amount of revenue the seller makes. If only one buyer bids above the floor price, that buyer does not pay the amount it bid, but the floor price. Thus, in a second-price system, sellers were incentivized to optimize price floors to get as close to the winning bid as possible. Doing so was "difficult and time-consuming," which could "lead to lost revenue or to complex implementations"—doubly so when sellers set variable price floors to optimize further. DTX-684 at 10.

616. With the move to a first-price auction subject to Unified Pricing Rules, winning ad space buyers pay the amount they bid, so a price floor no longer set the final price paid to the ad space seller. In a first-price auction, setting higher price floors creates less value for sellers than it would in a second-price auction. In a first-price auction, sellers could therefore set floor prices that were actually a true minimum—for any given impression, the floor price would represent the minimum amount the seller would need to make from an auction in order to sell that impression through an auction instead of through other channels, such as direct sales or non-ad revenue channels. DTX-684 at 10. In general, the simplification of sellers' floor strategies allowed them

to focus on maximizing yield across different types of inventory sales instead of strategizing about how to set price floors to optimize revenue.

617. For these reasons, after the launch of the Unified First Price Auction, sellers no longer had the same need to impose different price floors for different exchanges. They could set their actual minimum price knowing that, if the floor was exceeded, the amount of the winning bid would be paid.

618. The Unified Pricing Rules also could increase revenue for sellers by allowing them to compare the full range of bids—across demand sources—and sell the impression to the highest bidder. As explained above, *see supra* ¶¶ 598-599, with variable price floors, an ad space buyer might lose an auction even if it was willing to bid a higher amount because it bid through an exchange that faced a higher price floor. With Unified Pricing Rules, ad exchange bids compete on equal footing, so higher bids are more likely to win more consistently.

619. In sum, Google's launch of the Unified First Price Auction, accompanied by the Unified Pricing Rules, contributed to the entire ad tech ecosystem—not just buyers and not just sellers—by creating "a more sustainable programmatic market for everyone." DTX-684 at 8.

619.1. The new auction, especially the Unified Pricing Rules, were simpler for both buyers and sellers to understand. Buyers would "pay what they bid," and sellers could adopt a "simpler floor pricing strategy" that no longer required them to "constantly optimize floors." DTX-1016 at 21.

619.2. The changes also "helped create a more sustainable programmatic marketplace for publishers and buyers." DTX-1016 at 21. By enforcing uniform pricing rules, Google "helped buyers better understand the value of the inventory and bid more confidently." DTX-1016 at 22.

619.3. Finally, the new auction was more transparent, "with no clearing price games," for all parties. DTX-1016 at 22.

620. Unified Pricing Rules is now viewed as an industry best practice. Deposition of Brian O'Kelley (AppNexus) Tr. at 285:18-24; DTX-429 at 1; Deposition of Ken Blom (Buzzfeed) Tr. at 72:4-76:25; Deposition of Ramamoorthi Ravi Tr. at 245:15-246:2. Google's competitors have adopted their own versions of the Uniform Pricing Rules. For example, Meta's code of conduct requires that floor prices be equal for all bidders. Deposition of Omri Farber (Meta) Tr. at 270:21-271:12. [redacted]

621. Since Unified Pricing Rules was implemented in 2019, by the calculations of Plaintiffs' own expert, Prof. Lee, the market share of Google's own ad exchange has declined. PTX-1384 at 1. Also by Prof. Lee's own calculations, non-Google exchanges have earned increased revenue since 2019. PTX-1262 at 1.

5. Conduct Following the Acquisition of AdMeld

622. Plaintiffs allege that, in 2011, Google acquired an emergent competitor, AdMeld, and then eliminated that competitor's functionality because it was a competitive threat to AdX in Plaintiffs' asserted ad exchange market and to DFP in Plaintiffs' asserted publisher ad server market. AdMeld was an ad tech provider that offered traditional yield management functionality as well as ad exchange functionality. Google acquired AdMeld in order to fill a gap in its offering and provide ad space seller customers with traditional yield management functionality that did not yet exist in DFP. As explained below, Google did not eliminate that functionality, but rather integrated it (and other AdMeld ad exchange functionality) into Google's products in order to better serve its ad space seller customers.

623. In 2011, the acquisition was reviewed by the U.S. Department of Justice and was not challenged. DTX-96. The Department of Justice noted that "web publishers often rely on multiple display advertising platforms and can move business among them in response to changes in price or the quality of ad placements." DTX-96 at 2. It acknowledged ad space sellers "multi-home," or "use . . . multiple display advertising platforms," which "lessens the risk that the market will tip to a single dominant platform." DTX-96 at 2.

624. Plaintiffs' experts complain that following the acquisition Google did not rebuild for AdX a feature that a "small handful" of AdMeld users used called server-side integration. DTX-124 at 8. Server-side integration enabled AdMeld to provide real-time bids from AdMeld's ad exchange to third-party ad servers. *Id.* at 8. The server-side integration technology used by AdMeld and other yield managers offered real-time bids only from the relevant yield manager; for AdMeld's feature, that meant real-time bids from AdMeld. DTX-81 at 17. According to Plaintiffs, Google should have rebuilt that functionality for Google's ad stack when it integrated AdMeld's ad exchange functionality into AdX so that other publisher ad servers could access real-time bids from AdX.

625. Plaintiffs' experts have not opined that Google had substantial market power before 2015, which was four years *after* the AdMeld acquisition.

626. Leading up to the AdMeld acquisition, starting around 2009, Google first began to evaluate the distinction between its ad exchange and tools on the market called "yield managers." Generally, the term "yield management" refers to any solution that helps ad space sellers maximize revenue from all sources of advertising demand, which can include both indirect sales and direct deals.

627. At a time before widespread adoption of real-time bidding, traditional "yield managers" helped ad space sellers manage relationships with and select among multiple sources of demand—then, generally ad networks and other indirect demand sources that participated in the waterfall—in a single interface. Ghose TT; DTX-81 at 16; DTX-94 at 5. Before real-time bidding was available, sellers had to guess what each ad network and non-real-time-bidding exchange would pay for any given impression based on past information like historical bids. Sellers then ordered the various advertiser demand sources based on their guesses.

628. A traditional yield management solution, also known as an ad network optimization function, improved on this system by predicting the prices ad networks and exchanges would pay using machine learning—but still without the benefit of real-time information. DTX-87 at 3; DTX-70 at 2; DTX-71 at 28.

629. In 2009, Google concluded that yield managers were less effective than Google's existing sell-side products because traditional yield managers were not enabled with dynamic allocation paired with real-time bidding, which was a "huge limitation" resulting in a "big loss of potential revenue across millions of impressions." DTX-45 at 2. Yield managers made "decisions based on historical data," which was "like trying to manage yield with imperfect information," so "publishers cannot be assured that the ad will go to the highest yielding channel." *Id.* "Despite these limitations," Google concluded in 2009, yield managers "are [gaining] traction and positioning themselves as an alternative to exchanges." *Id.*

630. Ad space sellers who had not yet adopted real-time bidding continued to rely on traditional yield management functionality. DTX-87 at 4; DTX-78 at 3-6; DTX-82 at 5.

631. Google recognized that, to better serve those sellers who still relied on traditional yield management, it needed to "change[] strategy to build broader deal support & services."

DTX-78 at 3-4. Google considered acquisitions of AdMeld or Pubmatic, two of the major yield managers on the market at the time, in order to "deliver a complete yield manager to the market quickly." DTX-82 at 6; *see also* DTX-87 at 5. It concluded that AdMeld had a "stronger product offering." DTX-82 at 8.

632. In 2011, Google acquired AdMeld, a supply-side platform that offered an ad network optimization feature. Internal, contemporaneous Google documents explained the strategy behind the acquisition: AdMeld's already fully-formed yield management services and valuable relationships with ad space sellers complemented Google's existing services and tools for sellers.

632.1. "Strategic Rationale: Satisfies a pressing need for publishers - ad network management (+ other features)." DTX-82 at 3; *see also* DTX-87 at 2. Google also described the yield management functionality as "a pressing need for publishers," particularly ones "looking for ad network management for non-RTB [real-time bidding] deals." DTX-82 at 6; *see also* DTX-87 at 5.

632.2. "Admeld nicely complements what we offer through AdSense and DoubleClick, and our goal with AdMeld is to provide a comprehensive, simple solution for publishers to get the most from all their online ad sales. . . . There's no doubt Admeld will strengthen our products and our publisher relationships going forward." DTX-97 at 1.

632.3. "Why We Acquired AdMeld: Strong publisher-focused SSP offering (i.e. Private Exchanges); Reputation for full service, deep publisher expertise; Helps us reinforce our relationships with top publishers." DTX-100 at 4.

632.4. "AdX + AdMeld complement each others' strengths and weaknesses. Successful short-term execution will require additional focus on service and client interaction." DTX-100 at 10.

632.5. "Strategically, Admeld brings industry leading yield management capabilities enabling Google to provide publishers with the most comprehensive solution in the market." DTX-101 at 3.

632.6. "We're committed to helping you meet your long-term goals as a publisher. That's why we bought AdMeld, and it's why we're so excited about the future of this new platform." DTX-126 at 5.

633. It would have taken much longer for Google to build its own version of AdMeld's ad network optimization functionality instead of acquiring it. And even then, Google's offering may still have been less robust than AdMeld's. DTX-82 at 6 ("strategic rationale" for the acquisition included "deliver a complete Yield Manager to the market quickly," improving "time-to-market for key functionality"); *see also* DTX-87 at 5. Acquiring AdMeld enabled Google to more quickly bring to market a feature its seller customers were interested in. Because Google recognized that the feature would soon become obsolete as sellers transitioned to real-time bidding, it needed to act fast to provide its customers with this desired feature.

634. After the acquisition, Google integrated key AdMeld features ("almost all of the great Admeld functionality") into AdX, including its yield management functionality. DTX-124 at 2. Most notably, it integrated AdMeld's traditional ad network optimization feature, as well as mobile ad network optimization support and a private exchange functionality. DTX-124 at 2; DTX-126 at 7, 10, 13. Private exchanges allowed ad space sellers to control who could bid on their ad inventory and were typically used for premium inventory. Contemporaneous Google

documents following the acquisition demonstrate Google's plan to integrate the key features of AdMeld.

634.1. "Almost all the great Admeld functionality is moving into AdX" DTX-123 at 2.

634.2. One of Google's goals in 2012 was to "build a complete yield management solution by integrating AdMeld and further improving AdX." DTX-101 at 5.

634.3. Google integrated "AdMeld's best features into AdX to help [publishers] get deeper insights into buyers, more control over how [they] sell, and higher yield." DTX-156 at 8.

635. Integration of AdMeld features required numerous steps: building of new technology to rebuild AdMeld features on the Google stack, rewriting legal contracts, setting and renegotiating pricing, and migrating customers. Features could not simply be lifted and placed onto the Google stack; rather, they needed to be rebuilt to work with Google's products.

636. In order to permit existing AdMeld customers to keep using AdMeld's features while they were being rebuilt, Google integrated key AdMeld features in a phased approach over time. DTX-100 at 7 ("Sales integration guiding principles . . . approach: Protect AdMeld business by adopting phased integration approach"). After Google finished integrating the key AdMeld yield optimization features into Google's products, Google discontinued AdMeld's products:

636.1. "The features most relevant to Admeld customers will become part of the AdX platform. Additionally, the innovation found on AdMeld will find [a] new home on AdX. In the end, developing on one platform will make more sense for our customers, and for our internal users throughout the organization." DTX-123 at 2.

636.2. "Because AdMeld's key features will be available on the new platform when it launches (or soon thereafter), we're planning to discontinue AdMeld later in 2013." DTX-126 at 4.

637. Beyond technology, Google also integrated AdMeld employees into its display advertising team. DTX-97 at 3.

638. When it was acquired, AdMeld was not the only company offering traditional yield management technology. DTX-88 at 23. At the time, Pubmatic and Rubicon were among yield managers that were just as large as AdMeld. *Id.* Google's acquisition of AdMeld did not prevent Pubmatic, Rubicon, or others from continuing to compete with Google by offering yield management services. In fact, both Rubicon and Pubmatic still exist today (with Rubicon now known as Magnite).

639. Soon after the acquisition, real-time bidding became fully adopted throughout the industry and the industry norm. AdMeld's core yield management services became obsolete. Rather than predicting *likely* bids, as AdMeld did, real-time bidding compared *actual* real-time offers from multiple buy-side sources at the same time. Ad exchanges enabled with real-time bidding functioned better than yield managers because yield managers had to base their decisions on historical information, whereas ad exchanges gave ad space buyers more information about inventory, more control over their inventory, and more inventory to purchase from. DTX-45 at 1-2.

640. Recognizing this trend away from traditional yield management, sell-side products that once competed with AdMeld, including supply-side platforms such as PubMatic and Rubicon, shifted focus away from network optimization to real-time bidding. They transformed into what resembled exchanges with real-time bidding.

641. Even though Google incorporated the key features of AdMeld's functionality into its own products, Plaintiffs complain that Google did not rebuild one feature, AdMeld's server-side integration feature, that gave access to real-time bids from AdMeld's ad exchange to third-party publisher ad servers. Google already offered its own real-time bidding functionality on its ad exchange AdX. It had continued to grow and improve that technology.

642. Google did not rebuild this feature for AdX for multiple reasons. First, building this feature would have been complicated and required technical work to build and maintain for each additional non-Google publisher ad server that it was connected to. As the co-founder of AdMeld, Brian Adams, explained to the Google team, integrating real-time bids from an ad exchange into other publisher ad servers "is a new challenge with every customer." DTX-150 at 2. In that way, it is unlike AwBid, which connects Google Ads demand into third-party exchanges, because integrating real-time bids from exchanges into publisher ad servers is more technically complicated. *Id.* Rebuilding the integration feature would only work if the publisher ad server met interface, formatting, and coding requirements. DTX-196 at 4.

643. In addition, at the time there was not much demand for the feature. As Brian Adams also explained to the Google team, the server-side integration feature of AdMeld had been used by only a "small handful" of users. DTX-124 at 8; *see also* DTX-150 at 2 (Brian Adams noting that he was "not surprised that the ad servers aren't interested").

644. Integration of the server-side integration feature also raised "engineering concerns associated with spam detection and inventory quality controls." DTX-150 at 3 (Google AdX Comms Doc - Server Side Interface for 3rd party ad server dynamic allocation). According to Brian Adams, co-founder of AdMeld, AdMeld's own previous server-side integrations with third-party publisher ad servers, including with Criteo, had been "plagued with ongoing issues." DTX-

150 at 2; *see also* DTX-196 at 3-4 ("The development for this feature is not easy, and this was proved by AdMeld. . . . Account managers and the spam team will have a new type of spam to manage.").

645. Managing the "new type of spam" introduced by server-side integration would require ongoing support from multiple teams, as spam and traffic quality concerns would differ "per pub" connected to real-time bids. DTX-196 at 4.

646. The fact that Google did not integrate into its products a technically involved, relatively little-used feature of AdMeld did not foreclose competitors from trying to build or maintain the same technology. The AdMeld acquisition also did not shut down other exchanges from offering comparable server-side integration features that would make their real-time bids available to third-party publisher ad servers.

B. The Abandoned Acts

1. DoubleClick Acquisition

647. Plaintiffs' experts do not opine that Google's acquisition of DoubleClick was anticompetitive or exclusionary.

648. In April 2007, Google announced its acquisition of DoubleClick, a company that at the time offered both a publisher ad server and a nascent ad exchange. *Supra* ¶ 189.

649. The Federal Trade Commission concluded, "after carefully reviewing the evidence," that the acquisition was "unlikely to substantially lessen competition" and therefore did not challenge the acquisition. DTX-23 at 6.

650. Among the issues analyzed by the FTC was whether Google could leverage the potential market power of DFP to engage in anticompetitive behavior. The FTC concluded that this was not a concern because "DoubleClick does not have market power despite its high market share." DTX-23 at 10.

651. The FTC also analyzed whether the acquisition was likely to cause the ad intermediation market (which is now the market for ad tech intermediaries that run auctions and other ways to connect advertisers and publishers) to "tip" to Google due to the network effects of connecting Google's existing products to DoubleClick's ad space seller network. DTX-23 at 10. It concluded that ad intermediation products depend on a host of factors that attract customers, such as "quality of the ad inventory" and "type and quality of the targeting technology," so the combined networks of Google and DoubleClick alone did not mean that the market would "tip" to Google. DTX-23 at 11.

652. The FTC observed that any "high switching costs" for sellers switching publisher ad servers are belied by the fact that large ad space sellers can "exercise counter measures, including the development or acquisition of alternative ad serving products and the securing of favorable contractual terms." DTX-23 at 10. "The evidence shows that [publishers] can and do switch ad serving firms when it is in their self-interest to do so." DTX-23 at 10.

653. As to the nascent ad exchange DoubleClick created, the FTC rejected the argument that acquiring the ad exchange was likely to harm competition in the market for ad intermediation. At the time, "the ad intermediation market . . . is highly fragmented and correspondingly competitive." DTX-23 at 8.

654. As explained above, *supra* ¶¶ 195-196, after Google acquired DoubleClick, it invested years of engineering resources and human talent into rebuilding DoubleClick's products with significant improvements and on Google's more robust and reliable infrastructure.

2. Dynamic Revenue Sharing

655. Plaintiffs' experts do not opine that sell-side dynamic revenue sharing (or the various iterations of buy-side dynamic revenue sharing) was anticompetitive.

656. In 2015, Google introduced sell-side dynamic revenue sharing ("DRS"). Sell-side DRS is designed to increase the number of successful matches, which both increases ad space sellers' revenue and allows buyers to win more impressions that are valuable to them. DTX-212 at 1 ("in order to get more auctions with winners (and increased revenue)"); DTX-313 at 3-4.

657. Sell-side DRS was directed at auctions that did not have a winner because no buyer bid higher than the seller's minimum floor price. One way to help a buyer win such an auction—with the same bid—is to lower the revenue share taken by AdX. Reducing AdX's revenue share effectively increases a buyer's bid. If, for example, the buyer's bid was $1, with AdX taking a 20% revenue share the seller would only see an 80-cent bid. If, instead, AdX's revenue share was 10% for that particular bid, the seller would see a 90-cent bid. If the seller's floor price was set at 85 cents, changing AdX's revenue share could enable a match to be made that would not have otherwise been possible.

658. Using sell-side DRS, Google facilitated auction wins that would not otherwise have happened. DTX-212 at 1 ("Stick to 20% rev share for queries with winners . . . Reduce the 20% rev share when there is no winner at 20% and an opportunity to find a winner with a reasonable, lower rev share"). For all versions of DRS, the AdX revenue share could change on a per-impression basis only as long as the ad space seller still received at least their agreed-upon revenue share (usually 80%) in aggregate over the contractual billing period.

659. In a second, later version of sell-side DRS, Google adjusted AdX's revenue share in both directions—sometimes increasing the revenue share and other times decreasing the revenue share—while maintaining an average revenue share of 20 percent. Google only increased AdX's revenue share if the buyer's bid was significantly higher and well in excess of the floor price.

660. The second and subsequent versions of sell-side DRS were optional for ad space sellers, who could choose to opt out by selecting instead to earn a fixed revenue share on each impression. DTX-321 at 1.

661. Contemporaneous documents show that sell-side DRS was intended to "increase publisher payout," "bring more revenue lift for publishers," and "increase match rate." DTX-212 at 1; DTX-659 at 2; DTX-762 at 7. Prior to launching the second version of sell-side DRS, Google conducted experiments to confirm that the launch would accomplish the intended goal of benefiting sellers and allowing impressions to be sold that otherwise would not have been sold.

662. Post-launch documents confirm that both versions of sell-side DRS successfully increased seller revenues and the number of transactions that cleared. DTX-841 at 1, 3; DTX-269 at 1-2; DTX-235 at 10; DTX-313 at 3-4; DTX-312 at 2 (second version of sell-side DRS "consistently makes publishers more money" and "+2.80% lift in publisher revenue").

663. Other sell-side tools, like [redacted] offer features similar to Sell-Side DRS because they also dynamically vary revenue shares across impressions.

664. Sell-side DRS was discontinued in September 2019, following the launch of the Unified First Price Auction.

665. A similar product design launch was also directed at enabling more successful auctions on AdX, but by varying the revenue shares of Google Ads on the bids that it submits. The program was initially known as buy-side Dynamic Revenue Sharing, and was then improved on in a launch referred to as Project Bernanke.

666. From the introduction of the AdX auction in 2008 until the move to a Unified First Price Auction in 2019, Google Ads often submitted two "bids" (when available) to the AdX

auction: a high bid based on the value assigned to an impression by the highest-scoring advertiser and a low bid based on the value assigned to an impression by the second-highest-scoring advertiser in the Google Ads internal auction (both with adjustments taking into account, among other things, Google Ads' revenue share).

667. Buy-side Dynamic Revenue Sharing reduced Google Ads' revenue shares on some impressions in order to allow ad space buyers using Google Ads to win more auctions. DTX-121 at 1. It did so by adjusting the amount of the high bid that Google Ads submitted into AdX. Instead of deducting a fixed Google Ads revenue share from the value the highest-bidding ad space buyer was willing to pay, buy-side DRS sometimes deducted a smaller revenue share. As with sell-side DRS, this had the effect of increasing Google Ads' high bid for certain impressions, making it more likely that a Google Ads advertiser would win.

668. As a result of buy-side DRS, Google Ads advertisers won 4.6% more impressions. In addition, because the increase in successful auctions outweighed reduction in revenue shares for certain auctions, Google Ads' overall revenue increased by 7.6% as well. DTX-138 at 1; DTX-136 at 5, 7.

669. In November 2013, Google launched Project Bernanke, which further optimized bids submitted by Google Ads. Google sought to increase the successful match rate on AdX, which was around 50% at the time, even more by enabling more ad space buyers to beat floor prices and win auctions. DTX-534 at 2. Project Bernanke both increased the Google Ads high bid and decreased the Google Ads low bid for certain AdX auctions in order to improve Google Ads buyers' chances in auctions while keeping Google Ads's average revenue share stable.

670. An experiment run with Project Bernanke showed a 11.8% increase in the number of successful matches, which would boost Google's profits by 12.0% and ad space sellers' revenue by 8.0%. DTX-172 at 5.

671. The initial version of Bernanke varied the Google Ads revenue share with the aim of maintaining the same average revenue share for each ad space seller. DTX-923 at 7. A later launch, Global Bernanke, performed the same optimization but targeted an average revenue share across all ad space sellers, which meant that the average revenue share for each individual ad space seller could vary to a limited extent. DTX-247 at 1. The added flexibility in varying revenue shares and, by extension, Google Ads bids, enabled Google Ads to further increase the total value of impressions won by its ad space buyers.

672. Other buy-side tools have offered similar programs that vary the buy-side revenue shares in order to optimize bids, including [redacted]

3. Project Bell

673. Plaintiffs' experts do not opine that Project Bell was anticompetitive or exclusionary. One expert, Prof. Ravi, contended that a pre-launch version of Project Bell was designed to hurt ad space sellers who tried to pass impressions to other exchanges, but Google never launched that version of the project. As launched, Project Bell successfully benefited buyers bidding on AdX.

674. Google has innovated in multiple ways to help ensure that ad space buyers do not overpay for ads. One mechanism was to design programs that combat ad space seller tactics to artificially drive up the prices of impressions at auctions.

675. Project Bell addressed a seller tactic known as multi-calling, whereby a seller (or sell-side tool) makes multiple calls to a demand source for the same impression. DTX-345 at 1 (referring to multi-calling as "clearly a price raising tactic"). Project Bell modified Google Ads'

bidding behavior when sellers or sell-side tools made multiple calls for the same ad request in order to protect ad space buyers from the risk of price inflation.

676. Multi-calling hurts ad space buyers in two ways. First, a buyer's bids can vary (including increase) in a short period of time—even for the same impression—depending on a variety of factors. A seller who calls the same demand source multiple times misrepresents one impression as multiple, which can lead an advertiser to bid higher on an impression than it otherwise would due to natural variation in bidding. Second, ad space sellers can combine multi-calling with decreasing floor prices to inflate prices even more. DTX-372 at 9; DTX-1435 at 11 ("by calling Google Ads multiple times at waterfall floor prices, publishers maximize revenue from Google Ads"). By, for example, running auctions for the same impression with minimum floors of first $10, then $8, and then $6, a seller can "fish" for the highest advertiser bid by misrepresenting the number of impressions available.

677. In general, multi-calling misleads ad space buyers and makes bidding more complex and less efficient. It can also increase ad latency because more lag time is added each time a call is made and the called ad exchange is forced to run an auction. Ultimately, multi-calling harms sellers, too, as buyers may be forced to invest in tools to assist in bidding optimization or lose confidence in spending on the digital advertising ecosystem. Plaintiffs' expert agreed that multi-calling is "generally not good for the whole ad tech system," and introduces "redundancies in the ad tech ecosystem." Deposition of Ramamoorthi Ravi Tr. at 169:20-24.

678. Multi-calling also degrades the user experience. Ads take longer to load when sellers make repeated calls before the ad shows up, and it is distracting for the user when content changes or loads long after the page loads. Users may scroll or click away from an ad before the ad actually shows up, which in turn wastes the money the ad space buyer paid for that ad slot.

679. In response to the prevalence of multi-calling, in 2015 Google implemented Project Bell, which combated multi-calling by lowering bids on inventory from publishers engaged in multi-calling.

680. At a high level, Project Bell simplified bidding for buyers and prevented them from overpaying as a result of multi-calling. As launched, Project Bell only affected sellers who called the same demand source, AdX, multiple times for a single impression; it had no impact on sellers that called different exchanges before calling AdX.

681. Project Bell consisted of three actions that reduced the likelihood buyers would over-bid on multi-calls. For inventory belonging to multi-calling sellers, it (1) imposed a maximum bid; (2) disabled Google's ability to take less revenue share and thereby increase an ad space buyer's effective bid (also described as Project Bernanke, described above) for inventory belonging to multi-calling sellers; and (3) did not purchase the inventory via non-Google exchanges. DTX-412 at 1; DTX-345 at 1.

682. Project Bell (along with Google's other "launches to protect advertisers") contributed to a reduction of up to 60% multi-calling on AdX. DTX-544 at 5.

683. Project Bell made it less likely for Google Ads to bid more than would have been needed to win a potential ad opportunity in the absence of multi-calling. It also reduced ad space sellers' incentive to call AdX multiple times in an effort to obtain higher bids from Google Ads, which further protected ad space buyers.

684. Measures to combat multi-calling were not unique to Google. [redacted] and others also adopted measures to address multi-calling, including more drastic measures such as refusing to work with sell-side platforms that made "[redacted]" for the same impression or outright reducing bids for likely multi-calls. *E.g.*, [redacted]

685. Project Bell, and efforts like it, are part of Google's larger project to help ad space buyers optimize their spending on inventory that will actually drive user engagement, not invalid inventory or the same inventory with an artificially inflated price.

4. Project Poirot

686. Plaintiffs' experts do not opine that Project Poirot was itself anticompetitive or exclusionary.

687. Project Poirot was another launch that protected ad space buyers from seller tactics to drive up prices. Its objective was to enable buyers "to win the same impressions at lower prices." DTX-615 at 14, 21; DTX-468 at 2.

688. Project Poirot was implemented only for DV360, a Google buying tool that Plaintiffs exclude from their alleged markets. Project Poirot was not launched on Google Ads, the Google buying tool that is included in Plaintiffs' markets.

689. Participation in Project Poirot was optional and at no additional cost to advertisers.

690. Whether an auction is first-price or second-price impacts a buyer's bidding strategy. In a second-price auction, buyers tend to bid higher because the price they pay will be set by the higher of the second-highest bid or the price floor. In a first-price auction, buyers tend to bid lower. They will pay the amount of their actual bid, so they have an incentive to bid less than their true value to avoid paying more than they actually need to win.

691. Some ad exchanges claimed to run second-price auctions but did not run "clean" second-price auctions, which meant their auctions were nominally second-price but actually exhibited features closer to first-price auctions. Because buyers changed their bid strategy when they believed they were bidding into second-price auctions, buyers would overpay if they bid into auctions as if they were second-price auctions but the auctions were not actually second-price. DTX-414 at 1 ("Over half of DBM bidding goes through third-party exchanges, many of which

do not run clean second price auctions. Fixed CPM bidders have the same bid in these unclean exchanges as they do in clean exchanges, which is suboptimal.").

692. It was not always clear to ad space buyers (or to DV360) whether they were bidding into first- or second-price auctions. When faced with non-transparent auctions, buyers had to resort to experimenting with their bidding to develop optimal bidding strategies, which could be a challenging task for an individual ad space buyer because of the technical expertise needed to build statistically robust bidding strategies.

693. Project Poirot was designed to detect "dirty" auctions, such as auctions masquerading as second-price auctions that were not actually second-price, and optimize DV360 ad space buyers' bids according to the type of auction. DTX-414 at 1 ("The goal of Poirot is to discover the exchanges that deviate from second pricing and bid appropriately on these to improve advertiser performance on these exchanges."); DTX-615 at 13-14 ("Objective: win the same impressions at lowest price").

694. To do so, Project Poirot ran daily exploration experiments on a small subset of an ad space buyer's bids in order to determine the optimal bidding strategy for each exchange.

695. Project Poirot applied to all exchanges; in running experiments and adjusting bidding, it did not take into account whether an ad exchange participated in header bidding. In fact, two of the largest exchanges participating in exchange bidding at the time (AppNexus and Index Exchange) experienced increases in spend following the launch of Project Poirot of 23.7% and 33.3% respectively. DTX-1985.

696. Project Poirot never increased either the bids or the amounts buyers paid for impressions.

697. Programs like Project Poirot were "necessary" to shade bids into non-second-price auctions so that buyers would not overpay. Deposition of Ramamoorthi Ravi Tr. at 211:20-25.

698. Project Poirot created tangible benefits to the entire display advertising ecosystem. It benefited DV360's ad space buyers by helping them to win the same impressions at lower prices, a metric called advertiser surplus. DTX-615 at 14, 21 (showing 6% surplus increase, totaling $252 million in initial launch); DTX-468 at 2 (pre-launch study estimating Poirot would increase advertiser surplus); DTX-589 at 2 (Poirot resulted in "an aggregate surplus increase of 8.8% over all [DV360] traffic" on third-party exchanges); DTX-413 at 7. Ad space buyers with more advertiser surplus have more budget to spend on other marketing efforts. DTX-615 at 14 ("savings will buy additional similar impressions").

699. Project Poirot also benefited ad space sellers because, when advertiser surplus increases, "advertisers will spend more if they have more budget dollars; so [publishers] . . . probably get more budget dollars in the long run for the same inventory." Deposition of Microsoft (Benneaser John) Tr. at 125:17-23.

700. Exchanges running clean auctions, in addition to AdX, experienced increased spending after Project Poirot launched. DTX-1985 at 1 (AppNexus experienced a 23.7% increase in spending, Index Exchange 33.3%, AdTech 97.7%, and Yahoo 36.3%); Israel TT; *see also* DTX-615 at 21 (spend on dirty auction exchanges dropped by approximately 10% while spend on clean second-price auctions increased by 6%); DTX-414 at 8 (showing DV360's revenue for AdX up by 9.57% and for clean third party exchanges up by 8.80%).

701. Project Poirot also pushed ad tech providers to be more transparent about the types of auctions that they were running. Many providers who were previously effectively running first-

price auctions started to publicly acknowledge that they were running first-price auctions. DTX-618 at 16.

702. Other buying tools, including [redacted] have designed features similar to Poirot. [redacted] Israel TT; [redacted] Unlike Google, some of these competitors charge for features that are analogous to Poirot.

C. The Documents Plaintiffs Rely on Do Not Establish Anticompetitive Conduct.

703. Plaintiffs rely on selected internal Google documents out of the more than 6 million documents produced in this case, arguing that they demonstrate that what Google identifies as product improvements were product design changes undertaken to coerce ad space buyers or sellers to use Google's products. But each of Plaintiffs' arguments takes snippets of documents out of context and ignores the overwhelming evidence demonstrating that all of Google's product design decisions were made to serve customer needs and improve security, safety, and reliability of its ad tech tools.

704. In making design decisions, Google takes into account the perspectives of both buyers and sellers. While individual team members may advocate on behalf of buyer customers or seller customers, strategic decisions are ultimately made taking into account the interests of both buyers and sellers because Google owns an integrated ad stack that only has value when it serves both buyers and sellers. Key to those interests are safety, security, and trust in digital advertising. In order to grow Google's business and the display advertising "pie" for the industry, Google must ensure that advertisers, digital content providers, and ultimately Internet users are satisfied with their experiences. The views of one individual employee do not represent how decisions are made and do not necessarily capture the full picture of how a change would affect all of Google's customers and users.

VI. All of the Metrics for a Competitive Market—Expanding Output, Improved Quality, Flat or Declining Prices, and Google's Declining Market Shares—Demonstrate that the Ad Tech Marketplace Remains Competitive.

705. Based on all the metrics for a competitive market, the ad tech marketplace for display advertising is intensely competitive.

A. Today, Ad Tech Providers—No Matter Their Size or Whether They Are New or Established Entrants—Can Successfully Compete Against Google.

706. Throughout the history of display advertising, many new competitors have entered and successfully competed. As described above, competitors such as Facebook, Amazon, and TikTok have been able to break into the display advertising market and capture significant ad spend. And numerous other competitors and industry forces, such as the emergence of Connected TV and supply path optimization, exert competitive pressures on existing ad tech products. *See supra* § I.B.

707. Google's rivals are able to compete successfully against Google because, among other reasons, they are able to access sufficient data to attain scale. There are two forms of data that are important to ad tech providers: targeting data and transaction data. Many of Google's competitors, including recent entrants, have been able to attain sufficient scale in both forms of data to attract significant ad space buyers and sellers. The availability of these two forms of data has not significantly impeded competitors from entering the market and winning market share, including winning market share from Google.

708. Targeting data: When ad space buyers purchase ads, they are seeking to reach the right users. Targeting data helps buyers decide how much to bid on an opportunity to reach a particular user visiting a particular digital property at a particular time. Data used for targeting may include, among other things, information about the user's location and online behavior. Ad

space buyers can use that data to match ads to, for example, a "segment" of users based on their characteristics, such as college-aged women who are interested in hiking. Ghose TT.

709. In today's digital landscape, targeting data is not exclusive to a single company, and it is non-rivalrous (i.e., the accumulation of data by one company does not diminish the availability of the same data by competing companies). Many different companies have targeting data about the same user because most users use a variety of digital services and visit an array of digital content, including browsing websites, social media accounts, downloaded mobile apps, streaming TV services, and more. All of those digital touchpoints, as well as the ad tech providers that facilitate transactions on those properties, can collect data about users that can be useful for targeting. Ghose TT.

710. As a result, in today's display advertising ecosystem, ad tech providers (including digital content providers seeking to monetize their own content) can successfully compete in digital advertising no matter their size because they have many ways to access targeting data and use that data to facilitate better ad matches. Ghose TT.

711. Many ad tech providers rely on third-party cookies and mobile device identifiers to identify particular users when they visit different websites and use different apps. Third-party cookies are small files that store information about websites that users visit; mobile device identifiers identify a specific device and track app downloads and usage. Using this information, ad space buyers can target ads to a user based on the user's history of browsing or mobile activity. Ghose TT. Both of these sources of data can be shared by multiple companies: multiple companies can set third-party cookies to store information about users on the same website at the same time, and apps can share device identifiers with multiple companies.

712. In addition to third-party cookies, ad tech providers also use first-party data—that is, information that a company collects directly from its own users or website visitors—to improve targeting. *E.g.*, DTX-1821 at 2 (Yahoo! advertising "first-party data" that "connects the dots in a post-cookie world"); DTX-1796 at 2 ("The data we use and how we use it is changing: First-party data has become a brand's most valuable asset."); DTX-1307 at 2 (announcement of Disney and The Trade Desk deal as a "key milestone" in providing "a path for advertisers to leverage their first-party data . . . as the industry faces new disruption caused by the deprecation of third-party cookies").

713. Many companies also have access to valuable first-party data. Just a few examples include such large digital content providers as Meta, Microsoft (and LinkedIn), TikTok, Pinterest, X (formerly Twitter), Snapchat, Amazon, Walmart, Target, Disney, Netflix, Hulu, and more. Each of those services has access to large-scale first-party demographic and behavioral data about users that are collected in their normal course of business. Ghose TT.

714. Many ad tech tools allow ad space buyers and sellers to improve the targeting capabilities of the tools even further by utilizing those buyers' and sellers' own first-party data about their users. The combination of first-party data with other targeting data can further improve the likelihood that an ad reaches a relevant user. For example, major ad space sellers like The New York Times, Washington Post, and The Guardian now use first-party data about their subscribers and users to improve targeting of users on their own properties, and thereby improve their monetization and increase revenue. Ghose TT.

715. Some of the digital content providers that are collecting first-party data from their digital properties also offer ad tech tools. These providers can use their first-party data to enhance the targeting capabilities of their ad tech tools even when targeting inventory outside of their own

properties. Ghose TT; *see also* DTX-1420 at 11 (Criteo noting that "many . . . retailers are now . . . creating media experiences around their content assets utilizing their first-party data to curate and monetize their audiences"). For example, Meta offers ad space buyers the ability to advertise not just on Meta, but also on third-party digital content providers, using data Meta collects on Facebook and its other properties for targeting when buying inventory from third party sellers as well. Similarly, Microsoft uses first-party data from its online properties to improve targeting both in its Microsoft Audience Network and in its full Xandr stack. Ghose TT. And Amazon DSP uses first-party data to target "Amazon shoppers on Amazon sites, across the web, and in mobile apps." DTX-1678 at 1. This use of first-party data can give ad tech providers a competitive advantage by offering targeting based on data uniquely available to the provider. Ghose TT.

716. Even ad tech companies that do not operate digital properties that collect first-party data can compete on targeting capabilities by leveraging, among other things, third-party data collected by data vendors and data collected by their buyer and seller customers. Data vendors include data brokers and data management platforms. Data brokers gather information about users and resell the information. For example, one data broker studied by the FTC has 3,000 data segments for "nearly every U.S. consumer." Data management platforms allow advertisers, publishers, and ad tech providers to combine data from different sources to improve targeting. Ghose TT.

717. As an example of how ad tech providers without first-party data nonetheless compete successfully on targeting capabilities, Criteo does not itself operate digital properties, but has accumulated targeting data through these sources. Internal Criteo documents describe Criteo's targeting ability as a competitive advantage, or "How Criteo Wins" against Meta, Google Ads, and other competitors. DTX-1179 at 2-5; *see also* Deposition of Criteo (Todd Parsons) Tr. at 79:24-

80:9 (Criteo builds its targeting dataset by "buying transaction data"). Similarly, Google documents describe The Trade Desk as having "stronger targeting" than Google's own buying tool, DV360. DTX-913 at 6.

718. Because targeting data are available from so many sources, there are many ways for new entrants in display advertising to obtain access to such data and successfully compete based on their targeting abilities.

719. Transaction data: Ad tech providers also rely on information about historical transactions to improve the performance of their tools, including by training algorithms to better predict bids and by performing experiments to develop and test new innovations. Transaction data are also used to operate certain features of ad tech tools. Israel TT; Milgrom TT.

720. Ad tech providers typically obtain transaction data by participating in or processing transactions. Ad tech providers gain some amount of data from every auction in which they participate, regardless of whether they win or lose. For example, after each auction, Google provides all auction participants with data about the lowest amount that a bidder could have bid and still won the impression.

721. Both large and small ad tech providers are able to use transaction data to run experiments and improve their products. Even for ad tech providers that facilitate a smaller number of transactions, they can still achieve the desired sample size to run experiments by operating with different percentages of a company's daily data or over a longer period of time. Milgrom TT.

722. Google's competitors, including both very successful and smaller ones, have demonstrated that they have accumulated sufficient transaction data to improve their tools' performance by training algorithms and improving predictions.

723. Many of Google's rivals have sufficient data to precisely predict competing bids so that they can bid only slightly higher and win impressions at the lowest possible price. For example, in GAM data from 2023, Criteo won 37% of its impressions by less than $0.01 CPM. Other examples include The Trade Desk (winning approximately 30% of its impressions by that margin), Pubmatic (approximately 28%), Adobe (approximately 27%), Media.Net (approximately 23%), and many more. For comparison, Google Ads and DV360 won approximately 14% and 6%, respectively, of their impressions by that margin. Israel TT; DTX-1905.

724. In addition, rivals regularly design, test, launch, and run innovations based on transaction data, including innovations that have mirrored Google's. For example, as described above, *see supra* ¶ 694, bid-optimizing features like Project Poirot utilize small amounts of daily transaction data. Many other bidding tools, including [redacted] have developed features that resemble Google's Project Poirot. Milgrom TT.

725. Competitors have also been able to enter the competitive landscape as brand new entrants and achieve scale quickly despite starting without access to significant quantities of transaction data. For example, while there were only a handful of ad exchanges in 2010, that number has increased to over 100 currently. *See supra* ¶ 42. As another example, TikTok's advertising business began in 2019 and has experienced 50% annual growth since. In 2022, 4% of total display advertising dollars spent in the United States accrued to TikTok (as compared to 10% to Google). DTX-1874. This rich history of intense competition, including from new entrants and ad tech providers without their own digital properties, contradicts Plaintiffs' assertion that providers are unable to compete with Google in the absence of sufficient data.

726. That growth includes both large ad tech competitors, like [redacted] and small ones like [redacted] DTX-1955 (both large and small competing buying tools grew between 2019 and 2022); DTX-1956 (same for exchanges); DTX-1500 at 5 (The Trade Desk grew from $114 million in revenue in 2015 to over $1.5 billion in revenue in 2022); DTX-1542 at 3 (emphasizing Magnite's "growth and outperformance" relative to competitors); [redacted] Ad tech providers publicly state that they have achieved sufficient scale to effectively compete. *E.g.*, DTX-1662 (Index Exchange uses "massive scale" to "eliminate inefficiency"); DTX-1380 (PubMatic has the "critical scale required"); DTX-1421 at 79 (Magnite describing its platform as "scaled").

727. Data has diminishing returns once a company has sufficient amounts of data to target ads, conduct experiments, operate features, and train its algorithms, so incremental additions of data do not mean that a company is materially more effective. Milgrom TT; Ghose TT. Plaintiffs have provided no evidence that being able to collect data faster or conduct experiments using smaller percentages of its daily data provide any special competitive advantage.

728. This long history of competition and shifting market shares in the display advertising industry is not consistent with a market dominated by one competitor whose rivals are unable to attain the requisite scale to effectively compete.

729. Because of this competition, Google's share of ad tech tool spending has been on a steady decline. The percentage of total dollars spent on display ads placed by ad tech in the United States that is paid to Google has been steadily declining since 2013.

730. The amount of advertising spend in the display advertising market that was facilitated by Google's tools—even if not taken as revenue share by Google—has similarly decreased. In 2012, at its highest, Google facilitated approximately 46% of all display ad dollars; in 2022, Google facilitated only 25%. DTX-1875 at 1; Israel TT.

B. Industry Output Is Exceeding Expectations and Quality is Improving; At the Same Time, Both Google's and the Industry's Prices Are Flat or Declining.

731. The output of digital display advertising facilitated by ad tech has increased eighteen-fold from 2008-2022, with spending growing from $7.6 billion in 2008 to $136.7 billion in 2022—an average annual growth rate of 22.9 percent. DTX-1884 at 1.

732. Output has increased even according to Plaintiffs' artificially defined markets. For example, by the calculations of Plaintiffs' own expert, revenues of ad exchanges from "indirect open-web display advertising" have doubled from $50 million a month in January 2018 to over $100 million a month by the end of 2022. PTX-1239; PTX-1262. Similarly, by Plaintiffs' expert's own calculations, the number of "open-web display impressions" served monthly by publisher ad servers has risen from around 450 billion in January 2018 to almost 600 billion by the end of 2022. PTX-1277.

733. This period of increasing output—beating industry projections—has continued throughout the period of allegedly anticompetitive conduct. DTX-1885 at 1; Israel TT.

734. In the same time period, industry fees have been flat or declining over the 2014 to 2022 period. Between 2014 and 2022, fees paid to ad tech providers as a percentage of display advertising spend declined from 45.8 percent in 2014 to 42.3 percent in 2022. DTX-1886 at 1; Israel TT.

735. Google's fees, in particular, have similarly been flat or declining over the 2014 to 2022 period. DTX-1886 at 1; DTX-1887 at 1; DTX-1888 at 1; DTX-1889 at 1; DTX-1890 at 1; Israel TT.

736. Taken by component, Google's fees are also lower than those of its competitors.

737. The average fees for Google Ads (and DV360) are systematically lower than for many of Google's buying tool competitors. DTX-1891. Even compared to the only two competitors Plaintiffs included in their "advertiser ad network" market, Google Ads' fees are half the price of the average of Criteo's and Facebook Audience Network's. DTX-1894.

738. As to AdX, the predecessor ad exchange owned by DoubleClick charged a 20% revenue share when it was acquired by Google. Google has not changed that revenue share since. DTX-13 at 6.

738.1. The revenue share that Google charges for AdX is in line with, or lower than, the commissions charged by competitive ad exchanges. PTX-1280 at 1; PTX-1281 at 1; DTX-665 at 68; DTX-517 at 29.

738.2. From 2018 through 2020, multiple exchanges charged higher rates or the same share. And in 2021 and 2022, multiple, large competitors charged only slightly lower revenue shares. For example, in 2022 [redacted] PTX-1280 at 1.

738.3. By the calculations of Plaintiffs' own expert, when rival ad exchanges started to lower their revenue shares in around 2020, Google's ad exchange, AdX, lost market share. PTX-1241 at 1.

738.4. The New York Times, an ad space seller customer, agreed that Google's take rate is comparable to its competitors': "Our take rates for Google unique to The

> New York Times in our contract are similar to the take rates that we have negotiated successfully with other programmatic partners. Generally speaking, we use the rates that we have successfully—successfully negotiated as a baseline or a benchmark for ours." Deposition of The New York Times (Jay Glovosky) Tr. at 184:10-185:4.

739. Plaintiffs argue that the AdX revenue share is supracompetitive by comparing that revenue share to an average revenue share across the industry. They omit that the average is driven by a single outlier with a notably low revenue share. When the other, individual ad exchanges' revenue shares are compared to AdX's, AdX's share is lower than some competitors' and generally comparable to the shares of most competitors. PTX-1280 at 1.

740. Finally, DFP's revenue share is low and has remained steady or decreased over time. DTX-1912 at 1; DTX-1964 at 1. DFP's ad serving fees are approximately two to three cents per thousand impressions, and have declined over time. DTX-1887. Calculated as a percentage fee per impression, that number is lower than 2% revenue share and has dropped from 1.7% to 1.3% between 2014 and 2022. DTX-1977. Moreover, DFP charges no ad serving fees for ad space sellers who transact below a certain number of impressions per month. In 2022, that meant eighty-six percent of DFP sellers in the United States paid zero ad serving fees. DTX-1954 at 1; Israel TT. Even for sellers that are charged ad serving fees, Google often offers significant discounts in order to entice seller business. *Supra* ¶ 207.

741. Plaintiffs' expert Prof. Lee purports to compare DFP pricing to other publisher ad server pricing to find that DFP pricing is supracompetitive. But he compares DFP's pricing against the pricing of a single other publisher ad server that produced data in this case. That is not statistically robust evidence regarding DFP's relative pricing.

742. One of Google's competitors, [redacted] compared various supply-side tools against each other based on price and value. It concluded that [redacted]

743. At the same time that the prices of Google's products are flat or declining, Google's customers are deriving more value from the same products—even though they are not paying more to use Google's tools.

743.1. For ad space buyers using Google Ads, the cost per click—or amount of money spent for each user engagement—has declined from about $0.55 in 2014 to about $0.25 in 2022. DTX-1897 at 1); Israel TT. In addition, click through rates for Google Ads buyers have increased significantly from ~.2% in 2014 to ~1.2% in 2022, which signifies that Google Ads is more effectively placing ads in front of the right target audience because users are more willing to click on the ads they are shown DTX-1896 at 1.

743.2. For ad space sellers using AdX, the average monthly revenue per thousand impressions has increased steadily over time from 2014 to 2022. DTX-1895 at 1; Israel TT.

744. In addition to these statistics demonstrating the increased quality of display advertising, the decades-long record of Google's innovation in ad tech, *see supra* ¶¶ 126-166, has generated numerous important improvements in quality—including throughout the entire time period during which Plaintiffs allege Google has engaged in anticompetitive conduct. As artificial intelligence continues to develop, it will inevitably change the landscape of both digital content

more broadly and display advertising more specifically in ways that Plaintiffs have not accounted for at all. For example, digital content providers will be able to show users customized digital experiences that vary by user. And, as existing tools like Google's Performance Max demonstrate, AI is already changing how advertisers can reach the relevant users. What will result is another explosion in output and quality of display advertising, and with it new opportunities to compete for display advertising spend.

745. In sum, Plaintiffs' markets and claims do not account for either the history or future of display advertising, which has always been an evolving and competitive industry. While indirect "open-web display advertising" represented a more significant percentage of display advertising spend a decade ago, today it accounts for a much smaller—and declining—percentage of display advertising spend, with users consuming digital content in different ways, including in apps, on Connected TV, and through social media. *E.g.*, DTX-1831 at 1; Israel TT. Plaintiffs' markets based on "open-web display" advertising—sliced into particular components of the ad tech stack—do not reflect today's market realities because they do not take into account how users are consuming content or how digital ad transactions are being consummated. Nor do they reflect the future as artificial intelligence and other technology are incorporated into ad tech.

PROPOSED CONCLUSIONS OF LAW

I. Overview of Plaintiffs' Claims and Theories of Liability

1. Plaintiffs' First Amended Complaint raises claims arising out of Sections 1 and 2 of the Sherman Act, *see* ECF 120 at ¶¶ 310–339, which can be grouped into three categories:

(1) Unlawful monopolization in violation of Section 2;

- Count I: Unlawful monopolization of the "publisher ad server market," *infra* § IV.B, § IV.E
- Count II: Unlawful monopolization of the "ad exchange market," *infra* § IV.B, § IV.E
- Count III: Unlawful monopolization of the "advertiser ad network market," *infra* § IV.B, § IV.E

(2) Count II in the alternative: Attempted monopolization of the "ad exchange market" in violation of Section 2, *see infra* § IV.D; and

(3) Count IV: Unlawful tying of AdX and DFP in violation of Section 1 and 2, *infra* § IV.C.

2. Plaintiff United States also sought monetary damages, ECF 120 at ¶¶ 340–341 (Count V), which this Court dismissed after Google tendered to the United States the full monetary relief that it sought on this count. ECF 749.

3. The elements of Plaintiffs' claims are as follows:

4. Monopolization: A plaintiff pursuing a Section 2 monopolization claim must prove: "(1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." *United States* v. *Grinnell Corp.*, 384 U.S.

563, 570–71 (1966); *accord Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 407; *E.I. du Pont de Nemours & Co.* v. *Kolon Indus., Inc.*, 637 F.3d 435, 441 (4th Cir. 2011).[27]

5. "The mere possession of monopoly power, and the concomitant charging of monopoly prices, is not only not unlawful; it is an important element of the free-market system." *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004); *see also Oksanen* v. *Page Memorial Hosp.*, 945 F.2d 696, 710 (4th Cir. 1991) (en banc) ("Even assuming that [plaintiff] could demonstrate the existence of monopoly power, he must still prove that [defendant] willfully acquired such power or sought to maintain it."). "The opportunity to charge monopoly prices—at least for a short period—is what attracts 'business acumen' in the first place; it induces risk that produces innovation and economic growth." *Trinko*, 540 U.S. at 407.

6. Specific to Section 2 cases, the Supreme Court has stated that "Under the best of circumstances, applying the requirements of § 2 can be difficult because the means of illicit exclusion, like the means of legitimate competition, are myriad. Mistaken inferences and the resulting false condemnations 'are especially costly, because they chill the very conduct the antitrust laws are designed to protect.'" *Trinko*, 540 U.S. at 414 (quoting *Matsushita Elec. Industrial Co.* v. *Zenith Radio Corp.,* 475 U.S. 574, 594 (1986)). The Court also warned: "The cost of false positives counsels against an undue expansion of § 2 liability." *Id.; see also FTC* v. *Qualcomm Inc.,* 969 F.3d 974 (9th Cir. 2020) (quoting R. Tennis & A. Schwab, *Business Model Innovation and Antitrust Law*, 29 Yale J. Reg. 307, 3129 (2012): "antitrust economists and in turn lawyers and judges tend to treat novel products or business practices as anticompetitive and are likely to decide cases wrongly in rapidly changing dynamic markets").

[27] With respect to quoted material, unless otherwise indicated, all brackets, ellipses, footnote call numbers, internal quotations, and citations have been omitted for readability. All emphasis is added unless otherwise indicated.

7. As to the second element—willful acquisition or maintenance of monopoly power—the Fourth Circuit requires a plaintiff to show that the factfinder "'could find no valid business reason or concern for efficiency in the [alleged monopolist's] choice.'" *Oksanen* v. *Page Mem'l Hosp.*, 945 F.2d 696, 710 (4th Cir. 1991) (en banc) (quoting *White* v. *Rockingham Radiologists, Ltd*., 820 F.2d 98, 105 (4th Cir. 1987)); *see also The Imaging Ctr., Inc.* v. *W. Md. Health Sys., Inc*., 2004 WL 3168776, at *5–*6 (D. Md. Aug. 10, 2004), *aff'd sub nom. Imaging Ctr., Inc*. v. *W. Md. Health Sys., Inc*., 158 F. App'x 413 (4th Cir. 2005) (explaining that to prove a monopolization or attempted monopolization claim, the plaintiff "must present evidence of conduct on Defendants' part that is unreasonably exclusionary or predatory" which "in turn, involves showing the lack of a legitimate business justification other than excluding actual or potential competitors from the market").

8. Attempted monopolization: A plaintiff pursuing a Section 2 claim for attempted monopolization must show: "(1) a specific intent to monopolize a relevant market, (2) predatory or anticompetitive acts, and (3) a dangerous probability of successful monopolization." *Kolon Indus. Inc.* v. *E.I. DuPont de Nemours & Co*., 748 F.3d 160, 177 (4th Cir. 2014) (citing *Spectrum Sports, Inc.* v. *McQuillan*, 506 U.S. 447, 456 (1993)).

9. Both monopolization and attempted monopolization claims require "an element of anticompetitive conduct." *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004); *Imaging Ctr., Inc.* v. *W. Md. Health Sys., Inc.*, 158 F. App'x 413, 421 (4th Cir. 2005) ("Attempted monopolization explicitly requires predatory or anticompetitive conduct, and monopolization has been interpreted to require the same."). In assessing whether conduct is anticompetitive, the Supreme Court has held that "as a general matter, the Sherman Act 'does not restrict the long recognized right of [a] trader or manufacturer engaged in an entirely private

business, freely to exercise his own independent discretion as to parties with whom he will deal.'" *Trinko*, 540 U.S. at 408 (quoting *United States v. Colgate & Co.*, 250 U.S. 300, 307, (1919)). There are "few existing exceptions from the proposition that there is no duty to aid competitors." *Id*. at 411.

10. Tying: The elements of a tying claim are: "(1) the existence of two separate products[;] (2) an agreement conditioning purchase of the tying product upon purchase of the tied product (or at least upon an agreement not to purchase the tied product from another party)[;] (3) possession of sufficient economic power in the tying product market to restrain competition in the tied product market[;] and (4) a not insubstantial impact on interstate commerce." *Serv. & Training, Inc.* v. *Data Gen. Corp.*, 963 F.2d 680, 683 (4th Cir. 1992).

11. Plaintiffs do not argue that the alleged tie in this case must be analyzed under the *per se* framework. Accordingly, the rule of reason applies. The principal distinction between the two is that, under the rule of reason, if a plaintiff establishes the element of an unlawful tie, the burden shifts to the defendant "to show a procompetitive rationale for the restraint." *FTC* v. *Qualcomm Inc*., 969 F.3d 974, 991 (9th Cir. 2020) (quoting *Ohio* v. *Am. Express Co*., 585 U.S. 529, 541 (2018)); *accord County of Tuolumne* v. *Sonora Cmty. Hosp*., 236 F.3d 1148, 1159 (9th Cir. 2001). If the defendant makes that showing, the burden shifts back once again to the plaintiff, who must "show that an alternative is substantially less restrictive and is virtually as effective in serving the legitimate objective without significantly increased cost." *County of Tuolumne*, 236 F.3d at 1159 (quotation marks omitted).

II. Plaintiffs Have Failed to Meet Their Burden of Establishing Relevant Product and Geographic Markets.

A. General Principles

12. "Proof of a relevant market is a threshold" requirement for each of Plaintiffs' claims. *Consul, Ltd.* v. *Transco Energy Co.*, 805 F.2d 490, 493 (4th Cir. 1986). "Without a definition of the market there is no way to measure the defendant's ability to lessen or destroy competition." *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 543 (2018). A relevant market is the "area of effective competition." *Id.*; *Satellite Television & MetaResources, Inc.* v. *Continental Cablevision of Virginia*, 714 F.2d 351, 357 (4th Cir. 1983).

13. Narrowly drawn markets that do not account for the area of effective competition may threaten antitrust enforcement. A market that is drawn "without sufficient breadth to include the competing products" would mean that a merger could be wrongly approved by failing "to recognize competition where, in fact, competition exists." *Brown Shoe Co.* v. *United States,* 370 U.S. 294, 326 (1962). Here that would mean that if the Court were to define markets that were less than the area of effective competition, then firms that compete in display advertising would potentially be free to merge their competing businesses.

14. "The proper market definition . . . can be determined only after a factual inquiry into the commercial realities faced by consumers." *Eastman Kodak Co.* v. *Image Technical Servs., Inc.*, 504 U.S. 451, 482 (1992); *see also Oksanen* v. *Page Mem'l Hosp.*, 945 F.2d 696, 709 (4th Cir. 1991) (it is a "fundamental tenet of antitrust law that the relevant market definition must encompass the realities of competition"). The "determination of the relevant market in the end is "a matter of business reality—of how the market is perceived by those who strive for profit in it." *FTC v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 46 (D.D.C. 1998); *see also E.I. du Pont de Nemours & Co.* v. *Kolon Indus., Inc.*, 637 F.3d 435, 441 (4th Cir. 2011) ("The commercial realities

considered when defining the relevant geographic market include: . . . the area within which the defendant and its competitors view themselves as competing."); *Todd* v. *Exxon Corp.*, 275 F.3d 191, 205 (2d Cir. 2001) ("Industry recognition is well established as a factor that courts consider in defining a market. It is significant because 'we assume that the economic actors usually have accurate perceptions of economic realities.'").

15. A relevant market "has two components—the relevant product market and the relevant geographic market." *Kolon*, 637 F.3d at 441; *Am. Online, Inc.* v. *GreatDeals.Net*, 49 F. Supp. 2d 851, 857 (E.D. Va. 1999).

16. "The plaintiff in an antitrust case bears the burden of proof on the issue of the relevant product and geographic markets." *Satellite Television & Associated Res., Inc.* v. *Cont'l Cablevision of Va., Inc.*, 714 F.2d 351, 355 (4th Cir. 1983); *see also Belmora LLC* v. *Bayer Consumer Care AG*, 987 F.3d 284, 297 (4th Cir. 2021).

17. To meet their burden, Plaintiffs must establish that customers do not view products outside their claimed market (such as alternative ad tech tools) as reasonable substitutes for products within the alleged market. *See It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 682-83 (4th Cir. 2016) (for market confined to "major amphitheaters," *id.* at 682, "Plaintiff has simply not carried its burden of showing that amphitheaters are the only place certain artists are willing to perform, irrespective of the monetary or logistical advantages of other concert locations," *id.* at 683); *Satellite Television & Associated Res., Inc.* v. *Cont'l Cablevision of Va.*, 714 F.2d 351, 356 (4th Cir. 1983) ("It is exactly this failure to provide as evidence anything more than generalizations about the interchangeability and competition among the types of entertainment listed that is fatal to its submarket theory."); *Berlyn Inc.* v. *The Gazette Newspapers Inc.*, 73 F. App'x 576, 582-84 (4th Cir. 2003) (holding that advertising market limited to "legal

and commercial advertising" provided by newspapers was under-inclusive because it "[e]xcluded . . . other forms of print advertising . . . along with non-print media advertising" from their market definition and "from the advertisers' perspectives, direct mail and other forms of advertising may well be 'reasonably interchangeable'").

18. The relevant product market must include the product at issue as well as all economic substitutes for the product. *Brown Shoe Co.* v. *United States*, 370 U.S. 294, 325 (1962) ("The outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it."); 5C Philip E. Areeda & Herbert Hovenkamp, Antitrust Law: An Analysis of Antitrust Principles and Their Application ¶ 530c (4th ed. 2020 supp.) ("To define a market is to identify those producers providing customers of a defendant firm (or firms) with alternative sources for the defendant's product or service."). A plaintiff cannot be permitted to "gerrymander its way to an antitrust victory without due regard for market realities." *It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016).

19. For products to be economic substitutes, they must be "reasonably interchangeable by consumers for the same purpose[.]" *Satellite Television & Associated Res., Inc.* v. *Cont'l Cablevision of Va.*, 714 F.2d 351, 356 (4th Cir. 1983); *see also Va. Vermiculite, Ltd.* v. *W.R. Grace & Co.-Conn.*, 108 F. Supp. 2d 549, 586 (W.D. Va. 2000) (same). "Interchangeability implies that one product is roughly equivalent to another for the use to which it is put: while there may be some degree of preference for the one over the other, either would work effectively." *Queen City Pizza v. Domino's Pizza*, 124 F.3d 430, 437 (3d Cir. 1997). For example, "a person needing transportation to work could buy a Ford or Chevrolet automobile, or could elect to ride a horse or bicycle, assuming those options were feasible." *Id.* Products need not be a "perfect match" to be

economic substitutes. *United States* v. *Booz Allen Hamilton Inc.*, 2022 WL 997603, at *11 (D. Md. Oct. 17, 2022).

20. In evaluating what products are reasonably interchangeable, courts consider the "extent to which consumers will change their consumption of one product in response to a price change in another, *i.e.*, the 'cross-elasticity of demand.'" *It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016). Cross-elasticity of demand "is the ultimate determinative factor for relevant product market definition." *In re Zetia (Ezetimibe) Antitrust Litig.*, 587 F. Supp. 3d 356, 363 (E.D. Va. 2022). Evidence (even statistical evidence) that "consumers generally prefer one or the other" product is insufficient to show they are "in different markets." *It's My Party*, 811 F.3d at 683 (noting that a general consumer preference for Pepsi or Coke does not mean they are in different markets). Rather, a plaintiff must come forward with evidence about what the consumer would do "in response to an increase" in "price." *Id.*

21. The court is "not required to accept uncritically" the market proffered by the Plaintiffs. *It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016). The Fourth Circuit has rejected market definitions that are an "exercise in precise line-drawing" that "suits the needs of plaintiffs" by magnifying the appearance of market power of the defendant. *Id.* For example, in *Ohio* v. *American Express*, the Supreme Court rejected the government's argument, and a district court's ruling, that the credit-card market should be treated as "two separate markets rather than a single two-sided market. 585 U.S. 529, 540, 546 (2018).

22. Differences in the prices and services provided by and capabilities of individual ad tech components do not demonstrate that each component makes up its own individual antitrust market. "Courts have repeatedly rejected efforts to define markets by price variances or product variances. Such distinctions are economically meaningless whether the differences are actually a

spectrum of price and quality differences." *Murrow Furniture Galleries, Inc.* v. *Thomasville Furniture Indus., Inc.*, 889 F.2d 524, 528 (4th Cir. 1989). The reason these factors do not define a market is because consumers are willing to make tradeoffs of these factors within a market. *Id.*; *see also It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 684 (4th Cir. 2016) (rejecting the claim that amphitheaters are a distinct market from other concert venues on the basis of "mere consumer preference"); *Satellite Television & Associated Res., Inc.* v. *Cont'l Cablevision of Va.*, 714 F.2d 351, 356 (4th Cir. 1983) (Plaintiffs failed to show that differences in economic and competitive conditions resulted in an inability of competitors to provide substitute services to impose limits on Defendant's ability "inordinately to influence price and supply"); *DSM Desotech Inc.* v. *3D Sys. Corp.*, 749 F.3d 1332, 1339 (Fed. Cir. 2014) (even when "products are not identical or fungible, they still may be in the same market as differentiated products"); *IGT* v. *All. Gaming Corp.*, 702 F.3d 1338, 1345 (Fed. Cir. 2012) (rejecting argument that market was "limited to wheel games" when evidence showed wheel games competed with all gaming machines); Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* ¶ 563a (5th ed. 2023) ("For antitrust purposes, we apply the differentiated label to products that are distinguishable in the minds of buyers but not so different as to belong in separate markets.").

23. In addition to demand side factors, courts consider supply-side substitution in defining the relevant market. *Brown Shoe Co.* v. *United States*, 370 U.S. 294, 325 n.42 (1962); Julian von Kalinowski et al., 2 Antitrust Laws & Trade Regulation § 24.02[1][c], at 24–55 (2d ed. 2012) ("Another important factor in defining a product market is the ability of existing companies to alter their facilities to produce the defendant's product.... The Supreme Court has long recognized the significance of this factor, often referred to as cross-elasticity of supply.").

24. Therefore, the relevant market must account for substitution by sellers as well as buyers. *See Gulf States Reorganization Grp., Inc.* v. *Nucor Corp.*, 721 F.3d 1281, 1285 (11th Cir. 2013). The "definition of a market depends on substitutability on the supply side as well as on the demand side. Even if two products are completely different from the consumer's standpoint, if they are made by the same producers an increase in the price of one that is not cost-justified will induce producers to shift production from the other product to this one in order to increase their profits by selling at a supracompetitive price." *Blue Cross & Blue Shield United of Wisc.* v. *Marshfield Clinic*, 65 F.3d 1406, 1410-11 (7th Cir. 1995); *see also Stiles* v. *Walmart, Inc.*, 639 F. Supp. 3d 1029, 1047 (E.D. Cal. 2022) ("Two indicators define a market's boundaries, one on the demand side and one on the supply side."); *Bepco, Inc. v. Allied-Signal, Inc.*, 106 F. Supp. 2d 814, 823 (M.D.N.C. 2000) (same). "Two products produced interchangeably from the same production facilities are presumptively in the same market." Phillip E. Areeda & Herbert Hovenkamp, Antitrust Law: An Analysis of Antitrust Principles and Their Application ¶ 561 (5th ed. 2023).

25. As to geographic markets, "the criteria to be used in determining the appropriate geographic market are essentially similar to those used to determine the relevant product market." *Brown Shoe Co.* v. *United State*s, 370 U.S. 294, 336 (1962). The relevant geographic market is "the area in which buyers or sellers of the relevant product effectively compete." *Consul, Ltd.* v. *Transco Energy Co*., 805 F.2d 490, 495 (4th Cir. 1986).

26. The asserted markets here differ markedly from those discussed in the district court's decision in *United States* v. *Google LLC*, 2024 WL 3647498 at *83 (D.D.C. Aug. 5, 2024), a decision with which Google disagrees and that is subject to appeal. There the government argued, and the court accepted, that there is a general search ads market because search ads are "unique" for advertisers because they "respond to expressed user intent in real time" and are a

"bottom funnel ad channel or push ad." *Id.* As described below, the court found that Plaintiffs' search ad market was "underinclusive" because it excluded search advertisements that appear on Amazon. *Id.* at *187. Here, Plaintiffs define ad tech markets for display ads, limited to open-web display ads, excluding display ads from Amazon as well as Meta, TikTok and others, creating another underinclusive market. As discussed below, in a properly defined market that does not define "display ads" in an under-inclusive way, Google lacks market power.

B. Product Market

1. The Market Is a Single Two-Sided Transaction Platform of Ad Tech Tools.

27. The purpose of ad tech is to bring ad space sellers and buyers together to create valuable matches. This is characteristic of "a two-sided platform," which the Supreme Court recently explained is one that "offers different products or services to two different groups who both depend on the platform to intermediate between them." *Ohio* v. *Am. Express Co*., 585 U.S. 529, 534 (2018).

28. In *Ohio* v. *American Express Co.*, 585 U.S. 529 (2018), the Supreme Court considered how to define the proper market in a case involving certain restrictions in Amex's contracts with merchants. The Court held that "credit-card networks are two-sided platforms," *id.* at 544, with Amex as an intermediary between consumers on the one side (using Amex credit cards) and merchants on the other (paying Amex fees but receiving access to a customer network and an efficient payment solution.

29. One defining feature of two-sided platforms is that they exhibit "indirect network effects," meaning that "the value of the services" that the platform provides "increases as the number of participants on both sides of the platform increases." *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 535 (2018). Among other things, these network effects mean platforms must "be

sensitive to the prices that they charge each side," because they cannot raise prices on one side without "risking a feedback loop of declining demand." *Id.*

30. "There is a subset of two-sided platforms that must always receive two-sided treatment: transaction platforms." *US Airways, Inc.* v. *Sabre Holdings Corp.*, 938 F.3d 43, 56 (2d Cir. 2019). The distinguishing feature of a transaction platform is that "the business 'cannot make a sale to one side of the platform without simultaneously making a sale to the other.'" *Id.* (quoting *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 535 (2018)). Thus, they are "best understood as supplying only one product—transactions—which is jointly consumed by [users on both sides of the platform]." *Amex*, 585 U.S. at 545 & n.8 (2018). "These platforms inherently 'exhibit more pronounced indirect network effects and interconnected pricing and demand' than other types of two-sided platforms, because transaction platforms require that 'both sides of the platform simultaneously agree to use their services.'" *Sabre*, 938 F.3d at 57 (quoting *Amex*, 585 U.S. at 545).

31. Therefore, in "cases involving two-sided transaction platforms, the relevant market must, as a matter of law, include both sides of the platform." *Sabre*, 938 F.3d at 57; *see also Ohio* v. *Am. Express Co.*, 585 U.S. 529, 535 (2018) (holding credit-card networks were two-sided transaction platforms because "no credit-card transaction can occur unless both the merchant and the cardholder simultaneously agree to use the same credit-card network."). "Any other analysis would lead to mistaken inferences of the kind that could chill the very conduct the antitrust laws are designed to protect." *Amex*, 585 U.S. at 546.

32. Google's ad tech is a two-sided transaction platform that connects ad space sellers and buyers to facilitate ad transactions. Just like the credit-card networks in *Amex*, no ad tech tool can "make a sale to one side of the platform without simultaneously making a sale to the other."

Ohio v. *Am. Express Co.*, 585 U.S. 529, 535 (2018). Each digital advertising transaction is "a single, simultaneous transaction" that involves an ad space seller, an ad buyer, and a user who will view the ad. *Id.* An ad tech tool can only make a "sale" when an advertiser seeking to place an ad purchases an impression on an ad space seller's inventory, which corresponds to an individual user who will view the ad. FOF ¶¶ 16-18, 269-271. Absent an ad space seller, an ad buyer, and a user, no transaction would exist.

33. As both parties' economic experts agree, ad tech tools exhibit "pronounced indirect network effects." Israel TT; Lee TT. *Amex* held these indirect network effects are common to all two-sided transaction platforms. A tool for ad space buyers that is connected to more ad space sellers (and, by extension, more users) becomes more valuable to ad space buyers. The same is true in the reverse: a tool for ad space sellers that is connected to more buyers becomes more valuable to ad space sellers.

34. Indirect network effects are evident from Google's conduct. For example, when Google rebuilt DoubleClick's ad exchange on its own infrastructure, Google connected AdX to advertiser demand on AdWords (now Google Ads which is part of Plaintiffs' markets) and publisher inventory on AdSense (which is not part of Plaintiffs' markets) because expanded demand and inventory benefited both sides of the transaction. FOF ¶¶ 131, 211, 214-215. As another example, Google developed its AwBid capability to bid on exchanges beyond AdX on behalf of Google Ads customers to expand their access to ad space through Google Ads, but rolled out and grew this capability gradually and carefully in light of the quality, security and latency risks associated with bidding on other exchanges. FOF ¶¶ 58-64. In general, as numerous documents demonstrate, Google makes decisions to maximize the value generated for ad space

sellers and buyers because the value of its products derives from facilitating optimal two-sided transactions between them. FOF ¶¶ 38-44.

35. Because ad tech is a two-sided platform, competition on one side of the market can act as a competitive constraint on the other. *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 546 (2018) (noting in a parenthetical that "focusing on one dimension of . . . competition tends to distort the competition that actually exists among [two-sided platforms]"). For this reason, ad tech providers like Google must be "sensitive to the prices that they charge each side" of an ad transaction. *Id.* at 535. When Google makes pricing decisions, it considers the revenue share paid to ad tech tools across the entire transaction. FOF ¶ 117. Because facilitating an ad is a single transaction, the price for enabling a transaction must be "allocated between" the two sides, with Google considering the full transaction price in the aggregate. *Amex*, 585 U.S. at 535.

36. Because the evidence shows that there is a single ad tech market to match advertisers and publishers, Plaintiffs' proposed markets of individual ad tech components are fatally underinclusive. Plaintiffs' markets are an "exercise in precise line-drawing" that "suits the needs of plaintiffs" by magnifying the appearance of market power of the defendant. *It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016). Plaintiffs' markets omit critical competition and must be rejected. *See Ohio v. Am. Express*, 585 U.S. at 540, 546 (rejecting government's argument, and district court's ruling, that the credit-card market should be treated as "two separate markets rather than a single two-sided market). Plaintiffs have therefore failed to meet their burden to establish a relevant product market. *It's My Party*, 811 F.3d at 681 ("Plaintiff faces . . . the initial challenge of identifying exactly what market defendant is accused of monopolizing.").

37. Further, the Supreme Court explained in *Amex*, although the relevant market is typically the "arena within which significant substitution in consumption or production occurs," courts should "combine different products or services into a single market when that combination reflects commercial realities." *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 543 (2018). This is the case for two-sided platforms, which by their very nature, "offer different products or services to two different groups who both depend on the platform to intermediate between them." *Id.* at 534; *U.S. Airways, Inc.* v. *Sabre Holdings Corp.*, 938 F.3d 43, 56 (2d Cir. 2019).

38. The market for facilitating advertising transactions is two-sided even though some tools operate only at certain levels of the ad tech stack. Any tool that participates in the matching of an ad space seller and buyer by necessity supplies one transaction with two sides—even if it is only used by sellers or buyers. Each component of the two-sided ad tech market matching advertisers and publishers imposes competitive pressure on Google and other ad tech firms.

38.1. Each of the tools at issue in this case exhibits the indirect network effects common to transaction platforms. Ad exchanges intermediate transactions between ad space sellers and buyers. A tool that helps ad space sellers sell inventory has no use if it is not connected to any ad buyer demand. The same is true in reverse for tools that help ad buyers buy ad space, which require ad space seller inventory to sell to ad buyers.

38.2. By contrast, tools that do not directly facilitate the matching required for a transaction exhibit no such indirect network effects and are not included in the relevant market. For example, a product used by ad buyers to design ads need not be connected to ad space sellers to succeed.

39. The proper market must include any product that facilitates transactions within the two-sided ad stack. Ad space sellers and buyers can mix and match products for each ad transaction. To name just a few examples, they can connect to each other directly through the seller's self-service platforms; they can connect through an ad network and an ad server; they can connect a DSP or ad network to an ad exchange, with or without an ad server; and they can use supply path optimization to connect to an ad server. FOF ¶¶ 273, 290-299. These different pathways all achieve the same goal: one simultaneous transaction between an ad space seller and buyer.

40. Consistent with a single two-sided transaction market, industry participants do not identify their competitors as only those that provide the same components in the ad tech stack. Instead, they describe competition in "the broader market for digital marketing and media monetization, primarily through Display Advertising," and with "companies that sell advertising to businesses looking to reach consumers and/or develop tools and systems for managing and optimizing advertising campaigns." FOF ¶ 48, 272. Google assesses revenue shares across transactions, regardless of the different tools used to achieve that transaction. FOF ¶ 117. Advertisers who are seeking to run campaigns do not request particular tools or combinations of tools. FOF ¶ 270.

41. Plaintiffs' framing of this case only underscores this is a two-sided transaction platform. Plaintiffs' Complaint (as well as industry participants) consistently refer to the "buy-side" (those buying ad space) and "sell-side" (and those selling it). ECF 120 ¶ 54 (defining the terms). Plaintiffs' basic theory of the case is that Google intended to "becom[e] the dominant player on both sides of the digital advertising industry" so that it "could also play both sides against the middle." *Id.* ¶ 15. While the evidence will show these allegations are unsupported, the basic

point remains that even Plaintiffs see this market as one with two sides and this case as one about the competitive pressures that can be placed on the transactions linking those two sides of that market.

2. Plaintiffs' Three Alleged Product Markets Fail.

42. In their complaint, Plaintiffs have alleged three distinct product markets for ad tech tools: (1) "advertiser ad networks," (2) "ad exchanges," and (3) "publisher ad servers." Plaintiffs further cabin those three markets to include only the subset of tools in each market that transact "indirect open-web display advertising."

43. Even if the Court were to consider Plaintiffs' markets divided by individual components of the ad tech stack–which is wrong as a matter of law and fact, for the reasons set forth above–Plaintiffs' markets still fail.

a. Defining Markets Based on Tools that Transact in "Open-Web Display Advertising" Fails to Capture Significant Competitive Constraints.

44. Plaintiffs' three markets are for different types of ad tech that are capable of facilitating "open-web display advertising." "Open-web display advertising" as a term or phrase does not reflect "commercial realities." *Eastman Kodak Co.* v. *Image Tech. Servs., Inc.*, 504 U.S. 451, 482 (1992). One of Plaintiffs' experts admitted that the term was invented for purposes of defining a market in this case. FOF ¶ 112. Plaintiffs' definition of the term has changed between their Amended Complaint and the definition advanced by their experts: the Complaint excluded all video ads, ECF 120 at 16 n.4, but one of Plaintiffs' experts includes outstream video ads. Another of Plaintiffs' experts defined it differently from any definition advanced by Plaintiffs, stating that it referred to open auctions—a concept that has no relation to how Plaintiffs define their market. FOF ¶ 302. Witnesses, including all of the federal government agency advertisers (senior government employees in charge of advertising) and DOJ's expert witnesses, had never

heard of "open-web display advertising," used the way that Plaintiffs do, before this case. FOF ¶ 304.

45. Plaintiffs' proposed markets do not include all products that are reasonably interchangeable for the same use because they exclude the environments where most display ads are placed and therefore the ways in which ad tech works to match ad space buyers and sellers:

45.1. *First*, Plaintiffs exclude ads that appear in digital environments other than websites. For example, display ads can appear on mobile apps, Connected TV, or social media. FOF ¶¶ 339, 344. Ad buyers treat other ad channels and associated ad tech as reasonable substitutes for "open-web display ads," and they shift spending to achieve improved results. FOF ¶¶ 357, 361-362. That is because buyers of ads follow users, so they experiment with and allocate spending in order to maximize return on investment in reaching users—regardless of where the ad is displayed. FOF ¶¶ 349-356.

45.1.1. To purchase ads in these channels, advertisers can use the same tools to target the same users using the same ads that they use to purchase ads on the "open web." FOF ¶¶ 309-312, 314. Accounting for a changing landscape, 90% of Google Ads advertisers make use of both the in-app and website ad buying functionalities. *See also* FOF ¶ 413 (noting that in-app and web ads rely on similar formats to capture user attention).

45.1.2. Likewise, ad space sellers can use the same ad tech tools to sell ad space both on their websites and on apps, video streaming services, or social media offerings (i.e., "omnichannel"). FOF

¶¶ 313-314, 447-448, . Google's competitors tout their omnichannel capabilities as a basis for attracting these ad sellers (and competing against Google's own omnichannel offering). FOF ¶¶ 314, 447. Yet ads on apps, CTV, and social media are excluded from Plaintiffs' markets based on the limitation of the proposed market to "open-web display ads." FOF ¶¶ 301.

45.1.3. Integrated buying tools—such as tools offered by Facebook, Amazon, and TikTok that allow buyers to purchase ad space on the owned and operated properties of these major ad space sellers—by their own account and Google's, compete with "advertiser ad networks for open-web display advertising." FOF ¶¶ 410-411.

45.1.4. By excluding ad tech tools and display ads on apps, CTV, and social media from the effective area of competition in their market, Plaintiffs' market definitions would mean that firms outside this market could merge without impairing competition.

45.2. Empirical data show substantial substitution in matches of display ads between advertisers and publishers among Google, Meta, Amazon, Microsoft, TikTok, Twitter and others from 2014 to 2022 with Google's share of advertising revenues declining and other firms such as Meta and Amazon significantly increasing. FOF ¶¶ 374-383.

45.3. Empirical data also show that advertisers move ad spend between Google Ads, or other ad buying tools in which they are purchasing for "open-web display ads," and these integrated products based on what tool drives better return on investment. FOF ¶¶ 374-383.

45.4. *Second*, Plaintiffs exclude ads that appear on the "open web," but are not traditional banner display ads, such as native ads or instream video ads. But ad space sellers and buyers use the same tools to buy and sell these excluded formats as they do "open-web display ads." FOF ¶¶ 346-347.

45.5. *Third*, Plaintiffs exclude ads that are traditional display ads and do appear on websites, but are not "open-web" (by their definition) because they are not served using third-party ad tech tools. That means ads can move in and out of "open-web display" despite being served in the exact same format on the exact same website. [redacted] historically served ads on its website using Google's ad server, but today uses an in-house tool. FOF ¶ 384. In other words, [redacted] substituted Google's tool for its own. But according to Plaintiffs, those ads served by the tool were once "open-web display ads" and within Plaintiffs' alleged markets, but now they are not. This line-drawing by Plaintiffs is inconsistent with commercial realities. *See United States* v. *Google LLC*, 2024 WL 3647498, at *87 (D.D.C. Aug. 5, 2024) (explaining that certain ads shown on Google and Amazon are in the same market because they "share the defining characteristic of search ads" and "look a lot like" each other).

46. The tools at issue in this case do not exclusively transact "open-web display ads." FOF ¶¶ 309-310. Rather, ad space sellers and buyers use the ad tech tools at issue to transact

across ad formats and channels. Plaintiffs' experts nowhere analyze how that reality factors into customer decisions about which tool to select or which tools are reasonable substitutes for others.

46.1. *First,* Google's ad tech tools, and those of its competitors, facilitate a much broader set of ads than those included in Plaintiffs' definition of "open web display advertising." Google designed its tools to provide omni-channel offerings for ad buyers and sellers alike, supporting multiple types of digital advertising such as mobile, video, and CTV. FOF ¶¶ 312-313. Google's competitors have also designed and marketed their products based on their ability to serve ads across different channels and formats. FOF ¶ 314.

46.2. *Second,* ad buyers and sellers do not select ad tech tools based solely on their ability to transact "open-web display advertising." Both value platforms that service multiple channels and ad formats. FOF ¶¶ 311, 363, 373.

46.3. *Third,* Plaintiffs have not analyzed competition as it exists among the multi-functional tools that they say define their markets. Plaintiffs' market definition expert instead testified that he does not know how ad buyers and sellers think about these functionalities. Lee TT.

47. The idea that traditional banner ads on certain websites—"open-web display advertising"—might be a distinct set of ads is becoming even less defensible over time. As ad tech has developed and provided ad buyers with more immediate feedback on how different categories of spending perform, advertisers have been able to shift spending more nimbly. FOF ¶¶ 350-356. In addition, it has become more important for advertisers to target particular audiences, which may occur across different devices or channels and does not necessarily depend

on ad channel or format. FOF ¶ 351. Recognizing this reality, ad tech providers have further developed tools that enable advertisers to run campaigns across ad formats.

48. Artificial intelligence can also make those tools more effective by permitting ad buyers to target users and to predict which users to reach with unprecedented accuracy. Artificial intelligence is already reshaping how ad tech tools choose where to serve ads and what formats to serve by further automating the ad transaction process. FOF ¶¶ 353-354. Google's Performance Max, which has been incredibly successful, is an example of an AI-powered tool that enables buyers of ads to easily shift spending between channels and formats—without any input from the ad space buyer other than setting campaign goals. Ad space buyers who upgraded to the tool already experienced an average 12% revenue increase. Microsoft offers a similar tool. FOF ¶¶ 354. The buyers of ads who use those tools are literally, in real time, treating "open-web display ads" and other formats as substitutes.

49. The same is true for ad space sellers who likewise move revenue-generating efforts to different channels and ad formats based on where user attention and buyer dollars are concentrated. FOF ¶ 364. For example, as user time spent on mobile apps (rather than desktop or mobile websites) has grown exponentially, apps have become an increasingly important way for ad space sellers to reach users. FOF ¶ 365. Many ad space sellers, including traditional website publishers, for example, have created apps and driven users to download them. FOF ¶¶ 366-369 (NewsCorp, Dow Jones, and The New York Times building out efforts to reach their users through apps). Those ad space sellers seek ad tech tools to help them manage their app (or, for some sellers, Connected TV or video) inventory. From the ad space seller perspective, as other channels and formats have become more salient, whether a tool serves "open-web display ads" has faded in importance.

50. Plaintiffs argue that "open-web display advertising" is "a distinct and valuable form of advertising" to support their market definition. Lee Rpt. ¶ 261; Lee TT. That type of analysis is unreliable not only because it is purely qualitative, but also because it would lead to innumerable single markets of "distinct and valuable" products. *E.g.*, *It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016) (rejecting plaintiffs' evidence that customers preferred a certain product because that was akin to "claiming that Pepsi and Coke are in different markets because consumers generally prefer one or the other"); *Delano Farms Co.* v. *Ca. Table Grape Comm'n*, 655 F.3d 1337, 1351 (Fed. Cir. 2011) (plaintiff cannot define market based on "naked assertion" that product was "uniquely valuable and distinct"). Basing market definition on differences in product characteristics would make non-commodity products their own market and result in countless single product markets. *Cf. In re Am. Express Anti-Steering Rules Antitrust Litig.*, 361 F. Supp. 3d 324, 343 (E.D.N.Y. 2019) ("It is an understatement to say that single-brand markets are disfavored.").

50.1. Demonstrating that two products have differences does not establish that they are in different product markets. *DSM Desotech Inc.* v. *3D Sys. Corp.*, 749 F.3d 1332, 1339 (Fed. Cir. 2014) ("For products to be substitutes for one another, they need not be identical or fungible."); *Va. Vermiculite, Ltd. v. W.R. Grace & Co.-Conn.*, 98 F. Supp. 2d 729, 737 (W.D. Va. 2000) (faulting plaintiff's expert for focusing on identifying "the perfect substitute"). Here, even with differences between ad tech tools and ad tech tools and formats, the data show substantial substitution between the different display ads and associated ad tech. FOF ¶¶ 324-393.

50.2. Business documents that describe different categories of advertising also do not answer the question of what advertisements or ad tech are reasonable substitutes. *E.g.*, *Berlyn Inc.* v. *The Gazette Newspapers, Inc.*, 73 F. App'x 576, 583 (4th Cir. 2003) (business documents that media are "targeting slices" of advertising dollars for cable, radio, community newspapers and the Internet insufficient to prove relevant markets for print media advertising).

51. Plaintiffs argue that display ads are nonetheless a distinct set of ads from search ads because they serve a particular function in the "marketing funnel" of promoting interest and awareness. The marketing funnel does not distinguish types of display ads using the distinctions Plaintiffs draw between open-web and other types of display ads. The ordinary course business documents, including from the federal agency advertisers, demonstrate that the industry views other ad formats and channels, including social and retail ads, as serving the same purpose in the advertising funnel as "open-web display ads." FOF ¶¶ 359-360.

52. Further, there has been a steep decline in the desirability of "open-web display ads." As early as 2009, Google observed that it was facing fierce advertising competition from providers in mobile app advertising and social media advertising, such as Facebook. FOF ¶¶ 57, 410. That has only become more true over time, as other popular digital competitors such as TikTok and Connected TV have emerged. FOF ¶¶ 91, 95. Today, the ads that fall in the Complaint's very narrow market definitions account for a very small percent of ad spending. FOF ¶ 326. The idea that other display ads are not substitutes for "open-web display ads"—if it were ever true—is outdated and disregards current market realities.

53. "[M]any courts" have recognized the commercial reality that different forms of advertising can be reasonably interchangeable with each other, and have therefore "rejected

antitrust claims reliant on proposed advertising markets limited to a single form of advertising." *Hicks* v. *PGA Tour, Inc.*, 897 F.3d 1109, 1121-23 (9th Cir. 2018) (a market in advertising to golf fans includes advertising on websites, social media, TV programs, radio broadcasts, and podcasts); *see also Berlyn Inc.* v. *The Gazette Newspapers, Inc.*, 73 F. App'x 576, 583 (4th Cir. 2003) ("from the advertisers' perspectives, direct mail and other forms of advertising may well be 'reasonably interchangeable'"); *America Online, Inc.* v. *GreatDeals.Net*, 49 F. Supp. 2d 851, 858 (E.D. Va. 1999) (market should not be restricted to "email advertising" because there are "numerous substitutes," like "direct mail, billboards, television, newspapers, radio, and leaflets"). Plaintiffs' markets should be rejected for the same reason: other display ads are reasonable substitutes for "open-web display ads."

54. In *United States* v. *Google LLC*, in discussing search ads, the court distinguished *Hicks* because it concluded that the evidence before the court showed that search ads served "fundamentally different purposes" from display ads because, for example, search ads are "unique" for advertisers because they "respond to expressed user intent in real time" and are a "bottom funnel ad channel or push ad." 2024 WL 3647498, at *83-*84, 86 (D.D.C. Aug. 5, 2024). Plaintiffs here take a very different approach and attempt to define markets for ad tech for one category of display ads without showing unique ad tech for different categories of display ads and without showing that the same display ad in social, retail, apps, and the web could serve a different purpose for an advertiser.

55. In *FTC* v. *IQVIA Holdings Inc.*, one district court concluded that the Federal Trade Commission ("FTC") had carried its burden of raising "some question" that certain ad channels were not reasonable substitutes for programmatic advertising to healthcare professionals for purposes of securing a preliminary injunction against a proposed merger and continuing agency

proceedings. 2024 WL 81232, at *13 (S.D.N.Y. Jan. 8, 2024). In *IQVIA*, the FTC was reviewing the proposed merger of two of three companies that had built a specific ad buying tool to target advertising of healthcare products or services to healthcare professionals on the Internet. *Id.* at *5. The use case for the tools was so specific that the court found there was evidence these healthcare professionals could not be reached through typical online advertising channels, like social media (Facebook), or direct deals with website publishers. *Id.* at *14-15. The focus was so narrow that not even Google's ad buying tools were suitable for that purpose. *Id.* at *17-19. Plaintiffs' case here, on the other hand, is not limited to advertising of particular products or services to particular professionals. Rather, it is about advertising all products to any and all online users–a goal that can be achieved through multiple channels and formats. Thus, the preliminary findings in *IQVIA* have little bearing on this case. Further, as noted, given the procedural posture in that case, the FTC faced a far lower burden to prove a market than Plaintiffs do here. As the court acknowledged, at the preliminary injunction stage, the burden on the FTC was "lower" than the burden it would face later. *Id.* at *24. It was "not necessary" for the FTC even to prove the existence of a market, just "raise serious and substantial questions" as to the market. *Id.*

56. Even with the FTC's burden of proof in *IQVIA*, the evidence presented in support of the proposed market definition there only highlights the absence of similar evidence in this case. In *IQVIA*, the FTC presented numerous business documents referring to the healthcare professional advertising market "as a distinct market" and "acknowledg[ing] that there are three leading healthcare-focused DSPs." *FTC* v. *IQVIA Holdings Inc.*, 2024 WL 81232, at *20 (S.D.N.Y. Jan. 8, 2024). Here, all of Google's and its competitors' competitive analysis documents identify a much broader competitive landscape. They name as competition the very providers that Plaintiffs exclude from their markets, such as Meta, Amazon, and TikTok. FOF ¶¶ 57, 65, 91. The exhibits

in this case do not refer to tools that transact in "open-web display advertising" as a distinct market or suggest market shares or a dominant firm for such a market. FOF ¶ 306.

b. Plaintiffs' Experts Have Not Performed a Quantitative Hypothetical Monopolist Test.

57. For the reasons explained above, all of Plaintiffs' markets exclude numerous reasonable substitutes for ad space buyers and sellers. Because Plaintiffs fail to meet their burden to establish their market definitions, all of their claims fail.

58. Plaintiffs' market definition expert has explained how he conducted a "hypothetical monopolist test" ("HMT") using a qualitative analysis he conducted. The HMT is a way to measure cross-elasticity of demand by evaluating whether a hypothetical monopolist could profitably impose a small but significant and non-transitory increase in price ("SSNIP")—i.e., whether enough customers would respond to the SSNIP by choosing an alternative product, thereby causing the price increase to be unprofitable. U.S. Dept't of Justice & FTC, *Horizontal Merger Guidelines* ("Merger Guidelines") § 4.1.1 (2010). The HMT is a "quantitative" approach to defining a relevant product market. *Teradata Corp.* v. *SAP SE*, 570 F. Supp. 3d 810, 838-41 (N.D. Cal. 2021); *Epic Games, Inc.* v. *Apple*, 67 F.4th 946, 975 (9th Cir. 2023) ("inquiry involves empirical evidence in the form of a SSNIP analysis," which "uses past consumer-demand data and/or consumer-survey responses").

59. Plaintiffs' expert's HMT is insufficient to define a market because it is not based on any *quantitative* evidence of customer substitution patterns in response to a price increase. Instead, he based his opinion solely on qualitative evidence: a subset of the practical indica identified in *Brown Shoe* (e.g., industry recognition, product characteristics, customer bases, effect of price changes).

60. Numerous courts have rejected attempts to "primarily" rely on the practical indicia factors" of *Brown Shoe*, noting that they "come into play *only after* the outer boundaries of a product market are determined by evaluating the reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it." *E.g.*, *Ky. Speedway* v. *NASCAR*, 588 F.3d 908, 918 (6th Cir. 2009). These courts reject a qualitative analysis, even based on the full *Brown Shoe* factors, as sufficient to meet Plaintiffs' burden on market definition. *Id.* (*Brown Shoe* factors insufficient to define market); *Reifert* v. *S. Cent. Wis. MLS Corp.*, 450 F.3d 312, 319-20 (7th Cir. 2006) ("While the practical indicia named in *Brown Shoe*" are "important considerations in defining a market, they were never intended to exclude economic analysis altogether. *Brown Shoe* recognized the importance of economic analysis, including cross-price elasticity of demand."); *U.S. Horticultural Supply* v. *Scotts Co.*, 367 F. App'x 305, 310-12 (3d Cir. 2010) (in defining market, practical indicia evidence insufficient in absence of economic evidence); *Teradata*, 570 F. Supp. 3d at 838-39 (N.D. Cal. 2021) (excluding plaintiffs' expert for putting forward a "flawed" analysis where he did not apply the HMT "as contemplated" by the merger guidelines).

61. This does not mean that qualitative evidence is irrelevant to consider in addition to quantitative analysis by an expert. In several cases, in addition to *IQVIA* discussed above, the government's expert conducted a quantitative HMT and then relied on additional supplemental qualitative evidence. *E.g.*, *United States* v. *Aetna, Inc.*, 240 F. Supp. 3d 1, 33-41 (D.D.C. 2017); *F.T.C.* v. *Swedish Match*, 131 F. Supp. 2d 151, 159-62 (D.D.C. 2000); *Polypore Int'l, Inc*. v. *F.T.C.*, 686 F.3d 1208, 1217-18 (11th Cir. 2012).

62. In *United States* v. *Google*, 2024 WL 3647498, at *68 (D.D.C. Aug. 5, 2024), the court cited the Eleventh Circuit's decision in *McWane, Inc.* v. *F.T.C.*, 783 F.3d 814, 829-30 (11th

Cir. 2015), finding the absence of quantitative analysis "surprising," but not "fatal," 2024 WL 3647498, at *68, and reached an opposite conclusion than the Third, Sixth, and Seventh Circuits. *McWane* is limited to a context where the reliability of the HMT was not being challenged and the qualitative evidence consisted of "persistent price differences," "distinct customers," and a "lack of reasonable substitutes." 783 F.3d at 829-30. Here, Professor Lee has not presented evidence that ad tech tools that facilitate "open-web display advertising" have persistent price differences from tools that transact other digital or display advertising, identified customers for different transactions, or analyzed substitution of multi-functional tools whose functions include "open-web display advertising."

c. Plaintiffs' Markets Do Not Satisfy the *Brown Shoe* Factors.

63. In *Brown Shoe Co.* v. *United States*, the Supreme Court made clear that the "outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product itself and substitutes for it." 370 U.S. 294, 325 (1962). The Court recognized, however, that within "this broad market, well-defined submarkets may exist which, in themselves, constitute product markets for antitrust purposes." *Id.* These submarkets may be determined by evaluating "practical indicia" such as: (1) "industry or public recognition of the submarket as a separate economic entity;" (2) "the product's peculiar characteristics and uses;" (3) "unique production facilities;" (4) distinct customers;" (5) "distinct prices;" (6) "sensitivity to price changes;" and (7) "specialized vendors." *Id.*

64. Plaintiffs' expert on market definition Professor Lee does not reference *Brown Shoe,* and offers only a select few "practical indicia." That is insufficient. *See Teradata*, *Corp.* v. *SAP SE*, 570 F. Supp. 3d 810, 835 n.4 (N.D. Cal. 2021) (requiring the existence of at least "three or four of these practical indicia").

65. The qualitative indicia identified by Plaintiffs' expert do not establish cross-elasticity of demand. Analyses of prices and small simulations run by Google do not constitute rigorous evidence that satisfies the HMT. *E.g.*, *Ky. Speedway* v. *NASCAR*, 588 F.3d 908, 918-19 (6th Cir. 2009) (affirming exclusion of market definition opinion where expert, rather "than analyzing whether a price increase at a particular point in time would result in consumer substitution of an alternative product," merely "looked at average," ticket prices and attendance figures "over an eight-year span and concluded that both price and demand increased in this time period"); *Menasha Corp.* v. *News Am. Mktg. In-Store, Inc.*, 354 F.3d 661, 664 (7th Cir. 2004) ("armchair economics" does not show cross-elasticity of demand).

65.1. For "advertiser ad networks for open web display advertising," Plaintiffs' expert points to the fact that one Google experiment in 2018 showed that it could raise fees for Google Ads without losing profit. According to Plaintiffs, the experiment signifies that ad space buyers cannot switch away from "advertiser ad networks." Google did not actually raise prices and thus the experiment does not demonstrate an exercise of any power. The experiment also ignores the competitive constraints on ad tech pricing. Further, the evidence in the record shows that Google's revenue share for Google Ads was substantially lower than that of rival ad networks, which suggests that any hypothetical ability for Google to raise its take rates had little to do with a lack of alternatives for customers. FOF ¶ 739. And even if the experiment had any probative value in 2018, the ad tech landscape is changing so rapidly that these results would have no bearing on market definition today.

65.2. For "publisher ad servers for indirect open web display advertising," Plaintiffs' expert argues that Google charges high prices for DFP and has degraded the quality of DFP by excluding rival exchanges from product features such as Dynamic Allocation. Google's DFP fees have been steady or declining over time, and are pennies for thousands of impressions. FOF ¶ 743. Further, DFP is more valuable, not less, because it has features like Dynamic Allocation and Enhanced Dynamic Allocation, which allows AdX to make bids that provide ad space sellers a risk-free way to increase revenue. FOF ¶¶ 227, 579, 583. The fact that Plaintiffs believe giving other rivals access to this feature would make DFP even more valuable does not mean the initial offering "degraded" value. Moreover, the assertion that Google degraded value with Dynamic Allocation cannot be squared with the fact that this innovation on DFP predated Google—and the time period alleged in Plaintiffs' complaint. FOF ¶ 202.

66. Plaintiffs' markets, as alleged, rest entirely on the notion that there is a specific market for certain tools that can facilitate "open-web display ads." Upon an application of the *Brown Shoe* factors, it is evident that there is no separate market for tools capable of facilitating transactions in "open-web display ads":

66.1. **No Industry Recognition of Tools that Transact "Open-Web Display Advertising"**: After years of discovery, including production of millions of Google and third-party documents as well as dozens of depositions, Plaintiffs cannot show substantial evidence in the record supporting industry recognition of a distinct market in ad tech tools that transact "open web display advertising."

66.1.1. Plaintiffs have not identified any documents or testimony analyzing a market or competition in a market limited to tools transacting what Plaintiffs define as "open-web display advertising." FOF ¶ 306.

66.1.2. Google competitive analysis documents show that Google considers Google Ads to compete with tools that, according to Plaintiffs, do not transact in "open-web display ads," such as in-app buying tools and integrated buying tools like Meta Ads Manager and Amazon Ads. Google's internal documents observe that these tools excluded from Plaintiffs' market pose a significant threat to Google Ads' buyer business. FOF ¶¶ 410, 414.

66.2. **No Peculiar Characteristics and Uses**: Ad tech tools generally are not designed exclusively to facilitate "open-web display ads." FOF ¶¶ 309-310. Ad space sellers and buyers can (and do) use these tools to facilitate other display ads and ad formats like native and video, and in different environments, like in-app or Connected TV ads, all of which Plaintiffs have carved out of their proposed relevant markets. Both ad space buyer and seller tools describe as a competitive advantage their ability to transact across multiple ad formats and channels because, among other reasons, they provide buyers and sellers a centralized interface from which to optimize their advertising transactions. FOF ¶¶ 311-312, 314.

66.3. **Tools that are Capable of Facilitating "Open-Web Display Ads" Do Not Have Unique Production Facilities or Specialized Vendors:** Ad tech tools are based on software code. FOF ¶ 16. As demonstrated by the countless competitors that provide ad tech tools that can facilitate transactions across multiple ad formats and environments, no unique production facilities or specialized vendors are required to facilitate "open-web display ads" as opposed to other ad formats. For example, Meta repurposed a tool that facilitated sales of "open-web display ads" on third-party ad seller inventory in order to sell in-app ads on that inventory instead. FOF ¶ 299. *Cf.* 2 Julian von Kalinowski et al., *Antitrust Laws and Trade Regulation*, § 24.02(3)(b)(vi) (2d. ed.) (Evidence that a product "requires facilities or technology *markedly different from that used to produce its alleged substitutes* supports the existence of a submarket.").

66.4. **Tools that are Capable of Facilitating "Open-Web Display Ads" Do Not Have Unique Customers**: Ad space sellers and buyers multi-home across ad tech tools, including those that are not capable of facilitating "open-web display ads." Most ad buyers multi-home, using buying tools like Google Ads, demand-side platforms, and tools that allow them to purchase inventory on owned-and-operated properties of ad sellers like Meta and Amazon. FOF ¶¶ 395, 408. Similarly, ad space sellers use multiple ad exchanges at any one time. FOF ¶ 421. Finally, ad space sellers also use multiple ad servers. FOF ¶¶ 439, 449. The Federal Trade Commission and the Department of Justice noted this

point when reviewing the AdMeld acquisition, explaining that ad space sellers can shift tools based on price and quality. FOF ¶¶ 623, 652.

66.5. With respect to publisher ad servers, Plaintiffs point out there are some websites who currently only sell "open-web display ads," but they fail to account for those sellers' ability to move to in-house ad tech offerings or to shift their monetization efforts to in-app offerings. FOF ¶¶ 372-373, 439. Nor do Plaintiffs meaningfully compare the pressures that this subset of sellers places on the market against the significant sellers using ad servers who either do not have traditional websites or are evaluating these tools for their ability to transact across ad types. FOF ¶¶ 446-449.

66.6. **Tools that are Capable of Facilitating "Open-Web Display Ads" Do Not Have Distinct Prices**: Ad tech tools capable of transacting multiple ad formats appearing in multiple environments do not apply fee structures that are specific to "open-web display advertising" as Plaintiffs define that term. FOF ¶ 306. Plaintiffs have not put forward any evidence demonstrating that customers using ad tech tools to purchase "open-web display advertising" pay distinct revenue shares to serve those ads than do customers using those tools to purchase other display ads. *Cf. PepsiCo, Inc.* v. *Coca-Cola Co.*, 114 F. Supp. 2d 243, 257 (S.D.N.Y. 2000) ("PepsiCo has adduced no evidence to show that foodservice distributor customers pay higher prices for fountain syrup than other customers.").

66.7. **Sensitivity to Price Changes**: Google's prices have remained static or declined throughout the time period at issue in this litigation, providing few "natural

experiments" for measuring consumers' price sensitivity. FOF ¶ 735. *See In re Zetia (Ezetimibe) Antitrust Litig.*, 587 F. Supp. 3d 356, 362-63 (E.D. Va. 2022) (discussing probative value of such experiments). What evidence exists shows that when third-party prices fell relative to the cost of Google's offering (as was the case for ad exchanges), Google lost market share by Plaintiffs' own expert's account. FOF ¶ 740.

67. Plaintiffs' expert points to the fact that "there are substantial price differences between open-web display ads and instream video ads." Lee Rpt. ¶ 273. An instream video ad might cost an ad space buyer an average of $4, but a traditional banner ad might cost a buyer only $1. But that comparison demonstrates nothing about distinct pricing for tools. In reality, no tool sets a pricing structure specific to "open-web display ads." For example, Plaintiffs have identified no tool that charges an average 20% revenue share for "open-web display ads," but only a 5% revenue share for other types of ads. The "distinct pricing" factor thus does not support Plaintiffs' asserted markets in tools.

68. Plaintiffs' market definitions defy commercial realities, and "coincidentally fit" the "precise circumstances" of this case. *It's My Party, Inc.* v. *Live Nation, Inc.* 811 F.3d 676, 683 (4th Cir. 2016). Plaintiffs have not done the required analysis of ad tech tools, and demand for those tools, based on their full feature set. Their proposed markets therefore fail. *See Virginia Vermiculite, Ltd.* v. *W.R. Grace & Co.-Conn.*, 108 F. Supp. 2d 549, 586-87 (W.D. Va. 2000) (finding vermiculite was not a product market where there were non-vermiculite substitute products for vermiculite for a variety of its most common uses; these substitutes should be included in the market even where they did "not cover all of the potential end uses" of vermiculite).

d. Plaintiffs Fail to Account for Supply-Side Substitution.

69. Plaintiffs' proposed markets fail for another, independent reason: their markets fail to account for the competitive constraint imposed by *supply*-side substitution. *Ohio* v. *Am. Express*, 585 U.S. 529, 543 (2018) ("The relevant market is defined as the area of effective competition. Typically this is the arena within which significant substitution in consumption or production occurs."); *Virtual Maint., Inc.* v. *Prime Comput. Inc.*, 11 F.3d 660, 665 (6th Cir. 1993) ("The relevant product market cannot be determined without considering the cross-elasticity of supply."). On the supply side, "if producers of product X can readily shift their production facilities to produce product Y, then the sales of both should be included in the relevant market." *Rebel Oil Co.* v. *Atl. Richfield Co.*, 51 F.3d 1421, 1436 (9th Cir. 1995); *see also Twin City Sportservice, Inc.* v. *Charles O. Finley & Co.*, 512 F.2d 1264, 1271 (9th Cir. 1975) ("Where the degree of substitutability in production is high, cross-elasticities of supply will also be high, and again the two commodities in question should be treated as part of the same market.").

70. By limiting their markets to "open-web display ads," Plaintiffs fail to capture that multi-functional ad tech tools could "readily shift" from transacting non-open web display ad impressions to transacting more open-web display ad impressions.

71. Here, because ad tech tools are generally designed to serve display ads programmatically, they shift production between ad types, including "open-web display ads," in-app ads, Connected TV ads, native ads, instream videos, and even more (like audio ads or digital out-of-home ads), without requiring a production facility to make changes allowing for the shift. This is because the tools are already multi-functional—i.e., have the ability to transact "open-web display ads," as well as in-app ads, Connected TV ads, native ads, or other types of ads—they can, by definition, shift production between ad types. FOF ¶¶ 309-314. To "shift production" between ad formats, they would not even need to build new capabilities. They could simply prioritize

marketing and product design improvements for serving a different ad channel or format. *See* Areeda & Hovenkamp, *supra*, ¶ 561 ("Two products produced interchangeably from the same production facilities are presumptively in the same market."); *see also Bepco, Inc.* v. *Allied-Signal, Inc.*, 106 F. Supp. 2d 814, 823-24 (M.D.N.C. 2000) (concluding two producers of truck air brakes are in the same market even if their products are different from the consumer's perspective due to " cross-elasticity of supply"). "In a world of rational economic actors," if Google actually raised prices above competitive levels for tools capable of facilitating "open-web display ads" or restricted output, "many, if not all," of Google's competitors could choose to shift their ad tech focus and capabilities to "open web display ads." *Gulf States Reorg. Grp., Inc.* v. *Nucor Corp.*, 721 F.3d 1281, 1287 (11th Cir. 2013).

72. For example, in *J.H. Westerbeke* v. *Onan Corp.*, plaintiff argued that a relevant product market consisted only of "marine diesel gensets in the 0 to 30 kilowatt range, adapted for pleasure boat use," in part based upon the argument premised on demand-side substitution that "the pleasure boat segment of the genset market has its own identifiable customers." 580 F. Supp. 1173, 1186 (D. Mass. 1984). There, the defendant argued the relevant market included "the broad range of gasoline and diesel gensets of all applications." *Id.* The court found it was clear that all gensets of all sizes "are produced in common facilities," *id.*, and held that the broader market was proper, because products "produced in common facilities should be included in the same market where the facilities are freely convertible from one product to the other," "regardless of whether or not it is likely that such increased production ever would be warranted." *Id.* at 1187.

73. Furthermore, there are numerous ad tech tools that, while they do not currently transact "open-web display ads," could readily shift to begin transacting "open-web display ads." *Twin City*, 512 F.2d at 1271 ("Substitutability in production refers to the ability of firms in a given

line of commerce to turn their productive facilities toward the production of commodities in another line because of similarities in technology between them."). Ad tech with multiple functions could also shift to increase supply of open-web display ads. In *Rebel Oil Co.* v. *Atl. Richfield Co.*, 51 F.3d 1421, 1434 (9th Cir. 1995), self-serve gasoline retailers argued the relevant market included "all retail sales of gasoline in Las Vegas, except for sales of full-serve gasoline." Defendant responded that the market consisted "of all sales of retail gasoline in Las Vegas, including full-serve gasoline." *Id.* at 1435. The Ninth Circuit affirmed the district court's finding that a "reasonable market definition must also be based on supply elasticity," and thus the relevant product market had to include sales of full-service gasoline, because the "ease by which marketers can convert their full-serve facilities to increase their output of self-serve gasoline requires that full-serve sales be part of the relevant market." *Id.* at 1436. Likewise, here ad tech competitors such as Meta and Amazon, could readily convert their tools to begin facilitating "open-web display advertising." Meta, for example, has already shown that it can supply the market with a tool that has "open web display advertising" capability. FOF ¶ 299.

3. Each of Plaintiffs' Markets Is Not a Proper Antitrust Market Because It Excludes Reasonably Interchangeable Substitutes.

74. Each of the component-specific product markets proposed by Plaintiffs is not a proper antitrust market because they are part of a single market matching ad buyers and sellers. In addition:

a. The Alleged "Advertiser Ad Network for Open-Web Display Advertising" Market Is Not a Proper Antitrust Market.

75. Plaintiffs' "advertiser ad network for open web display advertising" market fails because it excludes "reasonably interchangeable" substitutes discussed above. *It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 683 (4th Cir. 2016).

76. According to Plaintiffs' economic expert, the term "advertiser ad networks" in Plaintiffs' market for those networks refers to "bidding tools used by advertisers to purchase open-web display inventory." Advertisers use these networks to purchase ads and they also use other ad tech buying tools. The evidence shows that ad space buyers substitute spending between "advertiser ad networks" and other buying tools.

77. According to Plaintiffs, applying their very narrow definition of "advertiser ad networks for open-web display advertising," there have only been two competitors to Google Ads during the period for which they calculated market share: Criteo and (for the period of time that it sold third-party website inventory) Facebook Audience Network. But Plaintiffs do not identify documents analyzing competition among buying tools that list only Google and these two products as competitors or defining market shares for such a market.

78. Plaintiffs exclude ad buying tools that can be used to access "open-web display ads" as defined by Plaintiffs.

79. Demand-side platforms are the primary buying tools for many advertisers, including for "open-web display" inventory, but are excluded from Plaintiffs' "advertiser ad networks" market. Evidence of ad buyer spending patterns is consistent with ad buyers substituting spend away from Google Ads, an "advertiser ad network," to third-party buying tools like demand-side platforms. FOF ¶¶ 393-394.

80. Plaintiffs' expert contends that demand-side platforms are not reasonably interchangeable with advertiser ad networks because their pricing structures are different and because they are primarily used by large customers. Both distinctions are wrong.

80.1. Plaintiffs maintain that advertiser ad networks offer prices based on impressions (Cost per Impression) while demand-side platforms offer a cost-per-click

pricing structure. Many demand-side platforms do offer the cost structure that "advertiser ad networks" do. FOF ¶ 394. The evidence does not show any price differences from these two structures. In any event, "in a differentiated market, one would expect prices for two differentiated products to be different." *IGT* v. *Alliance Gaming Corp.*, 702 F.3d 1338, 1346 (Fed. Cir. 2012); *AD/SAT, Div. of Skylight, Inc.* v. *Associated Press*, 181 F.3d 216, 228 (2d Cir. 1999) ("significant price differences do not always indicate distinct markets."). Courts have "repeatedly rejected efforts to define markets by price variances." *Murrow Furniture Galleries, Inc.* v. *Thomasville Furniture Indus., Inc.*, 889 F.2d 524, 528 (4th Cir. 1989).

80.2. As to customers, Plaintiffs argue that demand-side platforms serve more "sophisticated" customers, so it is not a reasonable substitute for less "sophisticated" customers. But large ad buyers account for a majority of the ad spend on both "advertiser ad networks" and DSPs. FOF ¶ 394. Many smaller ad buyers use DSPs, and many larger ad buyers use "advertiser ad networks" like Google Ads. FOF ¶ 394.

81. Plaintiffs also exclude tools that can be used to access display inventory without an advertiser buying tool. For example, ad space sellers' self-service platforms, like Meta's Amazon's, and TikTok's, allow ad buyers to purchase owned-and-operated inventory directly from ad space sellers. FOF ¶¶ 404-409. Evidence also shows that ad space buyers shift spending out of "open-web display" into these integrated buying tools, which would require spending through tools excluded from Plaintiffs' "advertiser ad networks" market. FOF ¶¶ 406-407.

82. Plaintiffs also exclude ad buying tools that do not transact in "open-web display ads," such as tools for purchasing in-app or instream video ad space, even though Google Ads serves all of these ad channels and ad formats. Google considers buying tools that serve only in-app ads, for example, to compete with Google Ads, and advertisers shift spend between banner ads and online video ads in order to optimize performance. FOF ¶¶ 414-415. These tools are therefore also reasonable substitutes for "advertiser ad networks" that are not excluded from Plaintiffs' market.

b. The Alleged "Ad Exchange for Indirect Open-Web Display Advertising" Market Is Not a Proper Antitrust Market.

83. Plaintiffs' purported market of "ad exchanges for indirect open web display advertising" excludes various ad tech tools and ways to connect ad buyers and sellers in advertising that are "reasonably interchangeable."

84. Exchanges are not necessary for the transactions of ads. Plaintiffs' expert defines ad exchanges as tools that "allow publishers through their publisher ad servers to access advertiser demand through DSPs and networks." Lee Rpt. ¶ 335; Lee TT. Numerous tools, facilitating direct and indirect ads transactions, fulfill this function: "allow[ing] publishers . . . to access advertiser demand." Those tools are all reasonable substitutes for "ad exchanges for indirect" transactions.

85. For example, ad space sellers can sell their ad space and access advertiser demand through ad networks, without using ad exchanges. FOF ¶¶ 298-299. Such indirect sales through ad networks are reasonable substitutes for selling ad space and accessing advertiser demand through ad exchanges.

86. Ad space sellers also sell their ad space and access advertiser demand through direct contracts with ad buyers, facilitated by one or more ad tech tools, instead of through indirect, auction-based transactions on ad exchanges. For example, ad space sellers can negotiate direct

contracts with ad buyers and facilitate those ad placements with publisher ad servers, without using ad exchanges. FOF ¶ 425. Ad space sellers also can arrange such direct sales in an entirely automated fashion—called programmatic direct or guaranteed deals—using some combination of publisher ad servers, ad exchanges or DSPs (though not necessarily all of them), but notably without using the ad exchange auctions that Plaintiffs' case is focused on. FOF ¶ 424. Direct transactions are the predominant way of matching ad space sellers and buyers, accounting for 70% of U.S. display ad spending. FOF ¶ 277. Direct transactions facilitated by ad tech tools have become increasingly popular—particularly in recent years, as first-party data has become more valuable. FOF ¶ 279. And these ways for ad space sellers to directly transact with ad buyers are all competitive alternatives to ad exchange auctions. Indeed, ad space sellers use publisher ad servers specifically to create competition between such direct sales and indirect, auction-based sales through ad exchanges, and shift spend between those sales channels. FOF ¶ 282. Yet, Plaintiffs exclude all such direct sales alternatives to auction-based ad exchange sales from their proposed relevant markets.

87. Publisher ad servers have also become reasonable substitutes to ad exchanges, because much like ad exchanges, publisher ad servers enable ad space sellers to run auctions to sell their inventory and give access to advertiser demand. FOF ¶ 427. So the distinctions between publisher ad servers and exchanges have blurred over time. Plaintiffs' proposed market definition around ad exchanges for indirect sales ignores that evolution.

88. Finally, from the ad buyer's perspective, integrated tools, such as self-serve platforms offered by ad space sellers, also compete with "ad exchanges for indirect" deals. As explained above, ad buyers shift spending from ad exchanges to integrated tools, such as self-serve

platforms of social media sites like Facebook and TikTok, based on what performs better. FOF ¶¶ 405-407, 427.

c. The Alleged "Publisher Ad Server for Open-Web Display Advertising" Market Is Not a Proper Antitrust Market.

89. Plaintiffs' proposed "publisher ad servers for open web display advertising" market is flawed for similar reasons.

90. *First*, tools that facilitate sales of inventory other than "open-web display advertising" compete with "publisher ad servers for open-web display advertising." One key example is platforms, such as in-app mediation platforms, that manage inventory on mobile apps. FOF ¶ 446. As users have spent increasing amounts of time on mobile apps, ad space sellers, including ad space sellers with "open-web inventory," have also shifted their own content from websites to apps or created apps that display the same content. FOF ¶¶ 365-369. If a publisher ad server for open web display advertising were to do a poor job of monetizing content for an ad space seller, those sellers could just push more content and users to its apps and sell more ad space there. FOF ¶ 370.

91. *Second*, ad space sellers' ability to turn to in-house ad serving tools to manage and sell their ad inventory also competes with "publisher ad servers for open web display advertising." Ad space sellers use in-house ad serving tools for the same purpose and same ad formats and channels as they use ad servers provided by third-party vendors; the only difference is that in-house ad serving tools are built and maintained by the ad space seller. FOF ¶ 431. "Courts have generally recognized that when a customer can replace the services of an external product with an internally-created system, . . . the self-production of all or part of the relevant product[] should be included in the same market." *United States* v. *Sungard Data Sys., Inc.*, 172 F. Supp. 2d 172, 186 (D.D.C. 2001). It does not matter "whether the companies that currently use internal solutions

have the capacity to enter the market as vendors for others, but whether the customers that currently use [external products] would switch to an internal [one] in response to a SSNIP." *Id.* at 187 (internal disaster recovery computer systems are in the same market as shared systems); *see also Spectrofuge Corp.* v. *Beckman Instruments, Inc.*, 575 F.2d 256, 278 (5th Cir. 1978) (in-house service personnel compete with external service organizations); Areeda & Hovenkamp ¶ 535e ("If iron ore is the relevant market and if shares are best measured there by sales, internally-used ore—so-called captive output—is part of the ore market even though it is not sold as such.").

92. Ad space sellers can and do switch their inventory management from externally sourced publisher ad servers to in-house "publisher ad servers." The relevant inquiry is not whether an ad space seller's own in-house server can be used to sell inventory on third-party websites, but whether an ad space seller could switch to an in-house one. *Sungard*, 172 F. Supp. 2d at 187; *cf.* Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* ¶ 535e (5th ed. 2023) (noting that higher prices "may induce an integrated firm to expand its [] production–to supply others in direct competition with the alleged monopolist"–acting as a further constraint on the market). The most stark example of this is [redacted] in-house ad server. [redacted] literally substituted Google's ad server, which is in Plaintiffs' market, for its own in-house ad server, which is not. FOF ¶ 439. The transactions [redacted] in-house ad server continues to facilitate should be included in the market definition and market share calculations for ad servers. FOF ¶ 439. As another example, Disney previously used Google Ad Manager to serve its inventory, but built its own in-house ad server to manage some of its video inventory. A Disney document shows Disney's plan to shift more of its video inventory from Google Ad Manager to its own in-house server. FOF ¶ 439. In the other direction, IMDb (a major entertainment site owned by Amazon) was previously an Amazon owned and

operated company, which means that its inventory was deemed "inaccessible" by Google because it was served through Amazon's own tools. FOF ¶ 441. In 2023, IMDb switched to managing all of its indirect demand sources through Google Ad Manager, and its inventory became available through AdX. FOF ¶ 441. Other major ad space sellers that use their own in-house ad servers include Meta (Facebook and Instagram), Pinterest, Snapchat, and TikTok. FOF ¶¶ 437-438. Kevel offers a solution that enables ad space sellers such as Ticketmaster and Strava to build their own ad servers in months and at an affordable cost. FOF ¶ 435.

93. *Third*, through a tag on page, ad space sellers can also use ad networks or ad exchanges to access advertiser demand, sell their inventory, and serve ads on their web property, without use of a publisher ad server. FOF ¶ 444. There are many ad space sellers that use an ad network without a publisher ad server to sell display advertising space on their websites. FOF ¶ 443. That means that ad networks and ad exchanges are reasonable substitutes for publisher ad servers, yet Plaintiffs have carved those tools out of their proposed market for publisher ad servers.

d. Plaintiffs Fail to Apply a Proper HMT Analysis to Their Proposed Two-Sided Component Markets.

94. Setting aside the infirmity of Plaintiffs' expert's qualitative HMT, Plaintiffs' expert also failed to apply the test to his own alleged two-sided component markets. As Professor Lee recognizes, each of Plaintiffs' alleged markets exhibit indirect network effects and can thus be characterized as two-sided markets. Lee TT.

95. Yet, Professor Lee only examined the effect of a price increase on **one side** of the two-sided markets, which is directly contrary to how the HMT is to be applied in a two-sided market. *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 535-37 (2018) (explaining price changes must be evaluated on both sides of a two-sided market). While Professor Lee acknowledges that ad buyers

can, and do, easily substitute different ad tech tools, he claims that his markets nonetheless satisfy the HMT because "open-web publishers" have limited available substitutes.

96. For example, Prof. Lee opines that "the existence of substitution on the advertiser side of the market is not sufficient on its own to conclude that an HMT would fail (or that a firm does not possess significant market power) for any of the ad tech product markets at issue in this matter," Lee Rebuttal Rpt. ¶ 78, and that "as long as one side of the market does not have sufficiently close substitutes for an ad tech product, that side will not be able to substitute away in sufficient manner to constrain the exercise of market power," *id.* ¶ 50.

97. There is no support in the law or economics literature for Prof. Lee's opinion. To ensure sufficient participation, two-sided transaction platforms must be sensitive to the prices that they "charge each side" of the platform to avoid the phenomenon of "raising the price on side A" and losing participation on that side, which decreases the value of the platform to side B," which in turn risks losing participation on side B—and so on. *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 535-36 (2018). Two-sided platforms therefore often "cannot raise prices on one side without risking a feedback loop of declining demand." *Amex*, 585 U.S. at 544; *US Airways, Inc.* v. *Sabre Holdings Corp.*, 938 F.3d 43, 56 (2d Cir. 2019) Applying the HMT to only one side of the market fails to capture and account for this negative feedback loop. *See* Lapo Filistrucchi, et al., *Market Definition in Two–Sided Markets: Theory and Practice*, 10 J. Competition L. & Econ. 293, 331 (2014) ("the SSNIP test in a two-sided market should take into account the changes in profits on both sides of the market and all feedback between demands on the two sides of the market following the hypothetical monopolist' raise in price.").

98. Because the opinion of Plaintiffs' expert is inconsistent with the commercial realities of two-sided transaction platforms and unsupported by a proper HMT, Plaintiffs' market

definitions must be rejected. *E.g.*, *Belmora, LLC v. Bayer Consumer Care AG*, 338 F. Supp. 3d 477, 487 (E.D. Va. 2018), *rev'd in part on other grounds*, 987 F.3d 284 (4th Cir. 2021) ("The Fourth Circuit has recognized that the proponent of an antitrust claim must present expert testimony to establish its proposed market definition."); *Berlyn, Inc* v. *Gazette Newspapers*, 223 F. Supp. 2d 718, 727 (D. Md. 2002) ("Thus, to prove relevant market, expert testimony is of utmost importance, and that testimony, or any other evidence, must be based on specific facts pertaining to the proposed market."). Moreover, as explained above, *supra* § II.B.2.c, even if qualitative *Brown Shoe* factors were sufficient to establish a market, they do not here.

C. Geographic Market

99. Plaintiffs also bear the burden to define a relevant geographic market. *Satellite Television* v. *Continental Cablevision*, 714 F.2d 351, 355 (4th Cir. 1983). The relevant geographic market is "the area in which buyers or sellers of the relevant product effectively compete." *Consul, Ltd.* v. *Transco Energy Co.*, 805 F.2d 490, 495 (4th Cir. 1986). A geographic market must "correspond to the commercial realities of the industry and be economically significant." *Brown Shoe Co.* v. *United States,* 370 U.S. 294, 336-37 (1962).

100. When evaluating geographic markets, courts must keep in mind a core tenet of American antitrust laws: they "do not regulate the competitive conditions of other nations' economies." *Matsushita Elec. Indus. Co.* v. *Zenith Radio Corp.*, 475 U.S. 574, 582 (1986). The U.S. antitrust laws are concerned only with U.S. consumer welfare, not the welfare of foreign consumers. *See Vollrath Co.* v. *Sammi Corp.*, 1989 WL 201632, at *8 n.21 (C.D. Cal. Dec. 20, 1989) (noting that "harm to . . . Korean manufacturers could not form the basis of an antitrust claim").

101. Plaintiffs propose two geographic markets: one limited to the United States, and an alternative market based on worldwide impressions. The evidence demonstrates that Plaintiffs' proposed global market is legally untenable.

102. *First*, worldwide markets are not relevant to this case. Plaintiffs are all ad space buyers in the United States and represent citizens in the United States.

103. *Second*, competitive conditions are different in other countries, so a worldwide market is over-inclusive of geographic areas that do not share effective competition. Factors that are relevant to "whether a geographic market corresponds to commercial realities" include: "determinants that affect the behavior of market participants," such as regulatory constraints and and, most importantly, "the relationship between" elements such as "population, income, political boundaries, or geographic extent" and "the characteristics of competition in the relevant market within a particular area." *Apani Sw., Inc.* v. *Coca-Cola Enters., Inc.*, 300 F.2d 620, 626-27 (5th Cir. 2002). Here, those factors all weigh against combining country markets into one worldwide market.

103.1. The goal of digital advertising transactions is to reach Internet users. But Internet users vary across countries based on differences in language, income, and preferences. FOF ¶ 455. Advertising competition therefore varies along these metrics across countries.

103.2. Ad space buyers use different languages and otherwise adapt to the consumers of different nations and parts of the world. FOF ¶ 455. Ad space seller sites are generally in a single language and so ad space buyers worldwide compete for different ad space sellers. FOF ¶ 455. A worldwide market would mean

that an ad in French somehow competes against an ad in English and would also capture competition between ads in French and Spanish etc.

103.3. Different countries are also characterized by different regulatory landscapes that directly affect ad tech providers. For example, privacy regimes vary across regions and can affect how providers store and use user data—which is critical to facilitating ad transactions. FOF ¶ 457.

103.4. Empirical evidence demonstrates that the competitive conditions vary by country. The share of impressions accounted for by different buyers on AdX differs by geography. FOF ¶ 452. The shares of AdX and Google Ads for indirect non-video impressions is also different between the United States shares and worldwide shares. FOF ¶ 453. These statistics demonstrate that the success of competition in ad tech tools is not the same worldwide.

103.5. Industry participants recognize these realities. Internal documents from Google and competitors show that they analyzed ad tech performance by region or country, not worldwide. FOF ¶ 458.

104. Third, permitting Plaintiffs to tack on an alternative, worldwide market violates the rule that the relevant market is "a geographic area that is no bigger than necessary to satisfy [the hypothetical monopolist] test." *E.I. Du Pont De Nemours & Co*. v. *Kolon Indus.*, 683 F. Supp. 2d 401, 413 (E.D. Va. 2009), *rev'd on other grounds*, 637 F.3d 435 (4th Cir. 2011). This principle applies even to products, like technological tools, that can be "sold worldwide." *United States* v. *Bazaarvoice, Inc.*, 2014 WL 203966, at *27-28 (N.D. Cal. Jan. 8, 2014) (agreeing with the government that the United States is the relevant geographic market because, in part, of differences in language as well as recognition by market participants "that there are separate geographic

markets"). Having claimed the U.S. as the relevant geographic market, claiming an alternative worldwide market with its variations across regions in competitive conditions plainly violates the smallest market rule.

III. Plaintiffs Fail to Prove Google Has Monopoly Power in Any Relevant Market.

105. Plaintiffs' unlawful monopolization claims also fail because Google lacks monopoly power (or significant market power) in any market for digital ad transactions.

106. Monopoly power can be shown through either direct or circumstantial evidence. "Direct evidence" of monopoly power includes "evidence of restricted output and supracompetitive prices." *Rebel Oil Co*. v. *Atl. Richfield Co*., 51 F.3d 1421, 1434 (9th Cir. 1995); *see also R.J. Reynolds Tobacco Co.* v. *Philip Morris Inc.*, 199 F. Supp. 2d 362, 381 (M.D.N.C. 2002) (discussing direct evidence and citing *Rebel Oil*), *aff'd*, 67 Fed. App'x 810 (4th Cir. 2003); 2 J. Kalinowski, Antitrust Laws and Trade Regulation §25.03 (2d ed. 2024).

106.1. Proof of increasing prices does not demonstrate that competition has been injured because increasing prices are "fully consistent with a free, competitive market." *FTC v. Qualcomm Inc.*, 969 F.3d 974, 990 (9th Cir. 2020); *see Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 237 (1993) ("Where . . . output is expanding at the same time prices are increasing, rising prices are equally consistent with growing product demand."). Plaintiffs' case is devoid of evidence of rising prices unrelated to demand; rather the evidence shows increasing demand for display ads.

106.2. "Supracompetitive pricing, on its own, is not direct evidence of monopoly power." *Safeway Inc. v. Abbott Labs.*, 761 F. Supp. 2d 874, 887 (N.D. Cal. 2011). To prove monopoly power directly, supracompetitive pricing must be accompanied by restricted output. *Rebel Oil Co.* v. *Atl. Richfield Co.*, 51 F.3d

at 1421, 1434 (9th Cir. 1995). Both are required to prove monopoly power directly.

106.3. A "reasonable finder of fact cannot infer monopoly power just from higher prices—the difference may reflect a higher quality more costly to provide." *Blue Cross & Blue Shield United of Wisc*. v. *Marshfield Clinic*, 65 F.3d 1406, 1412 (7th Cir. 1995); *Harrison Aire, Inc.* v. *Aerostar Int'l, Inc.*, 423 F.3d 374, 381 (3d Cir. 2005) ("Competitive markets are characterized by both price and quality competition, and a firm's comparatively high price may simply reflect a superior product."); *Xerox Corp.* v. *Media Servs., Inc.*, 660 F. Supp. 2d 535, 549-50 (S.D.N.Y. 2009) (higher price "hardly supports a reasonable inference of supracompetitive pricing" without considering "potentially confounding variables"). An expert for Plaintiffs says that a comparison of prices to determine whether they are supra-competitive should be based on quality-adjusted prices. Lee TT. Despite this, Plaintiffs' experts have not done quality-adjusted price comparisons of the products in this case. *See* FOF ¶ 743 (failing to adjust prices for quality benefits such as increasing cost per click or increasing revenue per thousand impressions).

107. When viewing Google's fees across its products for advertising transactions, and without even accounting for demand and quality factors, Google's prices are below the majority of its competitors. Across the industry, fees as a percentage of spending were on average 42.3% in 2022. FOF ¶ 265. The fees for Google's products, by contrast, were closer to 35% on average during that same time period. FOF ¶ 265.

108. Looking at the combined fees for over 60 buying tools and exchange pairings, Google's combined fees for Google Ads-AdX and for DV360-AdX were both among the ten least expensive. FOF ¶ 265. The evidence supports that Google's integration of its ad tech results in lower prices for matching advertisers and publishers.

109. Moreover, both Google's fees and the industry's average fees went down from 2008 to 2022, underscoring the competitive pressures faced by Google and its rivals. FOF ¶¶ 734-738; *see United States* v. *Google LLC*, 2024 WL 3647498, at *88 (D.D.C. Aug. 5, 2024) ("That prices have remained flat . . . is inconsistent with the notion that Google has monopoly pricing power").

110. Plaintiffs have failed to show evidence of reduced output; to the contrary, the evidence shows dramatic increases in output. FOF ¶ 731-732. Digital display advertising output served by ad tech has increased eighteen-fold from 2008-2022, from $7.6 billion in 2008 to $136.7 billion in 2022. FOF ¶ 731. For example, exchange revenues for open-web display ads, according to Plaintiffs' expert, doubled from $50 million in January 2018 to over $100 million per month by the end of 2022. PTX-1239; PTX-1262. Notably, this output is not only growing but has consistently beat industry projections underscoring the dynamism of the market.

111. During this same time period, Google's share in a single market for ad tech tools steadily declined from its highest, 46% in 2012, to 25% in 2022. FOF ¶ 276.

112. This growth in output reflects not only a dramatic increase in the number of ad impressions being served but also the value and quality being delivered across the display advertising industry. Because of the numerous innovations in the industry, including ones that Google has helped introduce or advocate for, the quality and usefulness of advertising matches has improved significantly. As explained below, *see infra* ¶¶ 185-187, innovations like real-time

bidding have increased spending on digital advertising, helped ad space buyers reach more relevant users, and made ad space sellers more revenue.

113. Google's products in particular have offered ad space seller and buyer customers better quality matches. For ad space sellers, the data show that the average revenue such sellers generate from their inventory has trended upward between 2014 and 2022. FOF ¶ 743. Likewise, for advertisers, the average "cost per click" has trended downward and the average click-through rate for Google Ads advertisers has gone up during that period. FOF ¶ 743. Put simply, ad space sellers using Google products are making more money, FOF ¶ 743, ad space buyers using Google products are spending less money to place ads, and users are being served ads that they are more likely to actually click on.

114. Circumstantial evidence of monopoly power focuses on market structure. *See Kolon Indus.* v. *E.I. DuPont De Nemours & Co.*, 748 F.3d 160, 174 (4th Cir. 2014) ("Beyond percentage market share, some courts have also focused on the durability of the defendant's market power, particularly with an eye toward other firms' (in)ability to enter the market." (internal quotations and citations omitted)); *see also* ABA Section of Antitrust Law, Antitrust Law Developments 236 (8th ed. 2017) (structural characteristics indicating monopoly power include "the relevant size and strength of competitors, . . . probable development of the industry, . . . potential competition").

115. To show monopoly power using indirect evidence, a plaintiff must: "(1) define the relevant market; (2) show that the defendant owns a dominant share of that market; and (3) show that there are significant barriers to entry and show that existing competitors lack the capacity to increase their output in the short run." *Rebel Oil Co.* v. *Atl. Richfield Co.*, 51 F.3d 1421, 1434 (9th Cir. 1995). The "Supreme Court has never found a party with less than 75% market share to have

monopoly power." *Kolon Indus. Inc.* v. *E.I. DuPont de Nemours & Co.*, 748 F.3d 160, 174 (4th Cir. 2014). A plaintiff using market share to establish monopoly power also "'must show that new competitors face high market barriers to entry and that current competitors lack the ability to expand their output to challenge a monopolist's high prices.'" *Intell. Ventures I LLC* v. *Cap. One Fin. Corp*., 99 F. Supp. 3d 610, 624 (D. Md. 2015) (quoting *Image Tech. Servs., Inc.* v. *Eastman Kodak Co*., 125 F.3d 1195, 1208 (9th Cir. 1997)).

116. In a two-sided market, "indirect network effects thus limit the platform's ability to raise overall prices and impose a check on its market power." *Ohio* v. *Am. Express Co*., 585 U.S. 529, 536 n. 1 (2018).

117. A dominant market share does not alone prove monopoly power. *United States* v. *Microsoft*, 253 F.3d 34, 54 (D.C. Cir. 2001) ("because of the possibility of competition from new entrants, looking to current market share alone can be misleading."). "The relative effect of percentage command of a market varies with the setting in which that factor is placed." *U.S.* v. *Columbia Steel*, 334 U.S. 495, 528 (1948); *see Rebel Oil Co.* v. *Atl. Richfield Co.*, 51 F.3d 1421, 1439 (9th Cir. 1995) ("A mere showing of substantial or even dominant market share alone cannot establish market power sufficient to carry out a predatory scheme.").

A. Google Lacks Monopoly Power in Any Market for Ad Tech Tools.

118. "In the absence of a plausible market definition, courts are hard pressed to discern the nature or extent of any anticompetitive injury that plaintiff and other similarly situated parties may be suffering." *It's My Party, Inc*. v. *Live Nation, Inc*., 811 F.3d 676, 681 (4th Cir. 2016); *see also Ohio* v. *Am. Express Co*., 585 U.S. 529, 543 (2018) ("Without a definition of the market there is no way to measure the defendant's ability to lessen or destroy competition."). The failure to define proper antitrust markets, for reasons detailed above, defeats their claims of monopoly power. Further: "When the strength of the market's boundaries is more dubious, higher shares

should be required." Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* ¶ 801a1 (5th ed. 2023).

119. Had Plaintiffs properly accounted for the overall transactions market, the resulting market share calculations for Google would depict a vastly different competitive landscape. As a share of the total spending on display advertisements in the United States, Google's products never made up more than 46% of the market in the period between 2008 and 2022. FOF ¶ 276. Moreover, that share has been steadily declining since 2012, and was 25% in 2022, establishing that Google cannot have had any durable market power, with all the competitive alternatives to which ad space sellers and buyers can turn. *Id.*

120. The gerrymandered-nature of Plaintiffs' markets to generate high market shares is well illustrated by adding to Plaintiffs' component-based markets just some of the alternatives that impose competitive constraints on Google–alternatives to which ad space buyers and sellers are increasingly turning.

120.1. In an advertiser buying tool market that accounts for demand-side platforms, Google Ads' share of the U.S. indirect open web display (non-video) ad spending by advertisers would be no greater than 20 percent over the period from 2019 to 2022. FOF ¶ 402. And Google's share, including DV360 (Google's demand-side platform), would still be below 50%. *Id.*

120.2. In Plaintiffs' ad exchange market, even by Plaintiffs' own account, Google's share of the market is lower than 50%. FOF ¶ 419. In a market for connecting ad space sellers and buyers that includes direct deals, Google's share was no greater than 25% by ad spending from 2019 to 2022. FOF ¶ 426.

120.3. In an ad server market that includes just the subset of ad space sellers with in-house ad servers who produced data in this case (Meta, Pinterest, Snapchat, and TikTok), Google's share of the ad server market (including DFP, AdSense, and YouTube) was never higher than 45% from 2019 to 2022, and is only 36% in 2022.

121. The circumstantial evidence about the digital display advertising marketplace confirms that it is a highly competitive industry with new entrants and fast growing competition. Google faces pressures from a range of rivals who compete for its ad space seller and buyer customers. Meta has expanded from selling advertising on its own properties to connecting ad space buyers with third-party ad space sellers through the Meta Audience Network (tracking Google's strategy of going from selling advertising on Search and YouTube to connecting with third-party ad space sellers). Overall, Meta's U.S. ad revenues grew from $224 million in 2008 to approximately $50 billion in 2022. FOF ¶ 52. Likewise, Amazon's share of total U.S. display ad revenue has increased steadily from a tiny percentage to around 10% by 2022, and its move to in-house tools underscores the pressure Google faces to continue delivering high-quality, competitively priced products to major customers. FOF ¶ 382. Microsoft, through a series of acquisitions, is developing its own integrated ad tech stack. FOF ¶¶ 68-76. TikTok—which has become the most downloaded app in the U.S. and attracts nearly an hour of user attention a day—has also become another major competitor for advertising dollars. FOF ¶¶ 86-91.

122. There is also no evidence of decreased quality, in Google's products or in the relevant market. Google has introduced thousands of innovations that have improved quality. FOF ¶ 126. For ad space sellers on AdX, monthly revenue has increased steadily from 2014 to 2022. FOF ¶ 743. For ad space buyers on Google Ads, the average click-through rates have

increased from 0.2 percent to more than one percent between 2012 and 2022. *Id.* At the same time, cost-per-click for Google Ads customers has decreased. *Id*.

123. As the recent district court decision in *U.S.* v. *Google* concluded, in discussing Google's position in the market for search advertising, "the recent history of new entrants, the strength of those entrants, and their growth show that barriers to entry are not so high as to compel the conclusion that Google has monopoly power." *United States* v. *Google LLC*, 2024 WL 3647498, at *89 (D.D.C. Aug. 5, 2024). Despite high costs of capital, "well-resourced market entrants, and demonstrated growth by those entrants" such as Amazon, "belie a reality of unconstrained dominance." *Id.* As the court found in that case, this factor alone requires the conclusion that Google lacks market power in the alleged markets: "notwithstanding Google's leading market share, the recent history of new entrants, the strength of those entrants, and their growth show that barriers to entry are not so high as to compel the conclusion that Google has monopoly power." *Id.*

124. The increasingly significant role of artificial intelligence (AI) further demonstrates that even if Google had any market power, it lacks the requisite "durability" to sustain a monopolization claim. *Kolon Indus.* v. *E.I. Dupont de Nemours & Co*., 748 F.3d 160, 174 (4th Cir. 2014). The district court opinion in *United States* v. *Google LLC* noted that "new technologies may lower, or even demolish, barriers to entry" but found that AI would not sufficiently "change the market dynamic in the 'foreseeable future'" for the search advertising markets at issue in that case. 2024 WL 3647498, at *80 (D.D.C. Aug. 5, 2024) (quoting *United States* v. *Microsoft Corp*., 253 F.3d 34, 55 (D.C. Cir. 2001)). Here, however, there is evidence that rapidly evolving technology has already deteriorated the artificial distinctions between Plaintiffs' alleged markets, as AI tools offered by Google and its rivals automatically shift spending among formats and

channels without any input from advertisers. FOF ¶¶ 353-354. Plaintiffs offer no account of how their allegations of market power are likely to persist into the future given that technological change is not just in the "foreseeable future" but the present.

125. Plaintiffs' definition of the market as a narrowly drawn area of effective competition would mean that Google and Meta, or Google and Amazon, could merge their businesses of ad tech tools and advertising without impairing competition, a conclusion that fails to "recognize competition where, in fact, competition exists." *Brown Shoe Co.* v. *United States*, 370 U.S. 294, 326 (1962).

B. Google Lacks Monopoly Power Even in Plaintiffs' Artificially Constrained Markets.

126. Even accepting the three markets Plaintiffs delineated for purposes of this case, Plaintiffs fail to show monopoly power. In each of these purported markets, there is no evidence of restricted output or falling demand. There is also no analysis of quality-adjusted pricing. To the contrary, there has been explosive growth in display ad spending with more successful matches between ad space buyers and sellers than ever before–including using ad tech tools other than Google's. Further, in each of the alleged markets, Plaintiffs also fail to show supracompetitive prices. And, in each market, Plaintiffs fail to consider the "commercial reality" that places competitive pressures on Google and challenges the durability of any market share it possesses. *Oksanen* v. *Page Mem'l Hosp.*, 945 F.2d 696, 710 (4th Cir. 1991) (en banc). Rather, as demonstrated by the consistent inflow of major competitors, these are markets with limited barriers to entry and considerable capacity by competitors to expand output.

1. "Advertiser Ad Networks for Open-Web Display Advertising"

127. In the market for "advertiser ad networks for open-web display advertising" Plaintiffs have no direct evidence of monopoly power. Although Plaintiffs assert a high market

share in a gerrymandered market where Google allegedly has only two competitors–Criteo and (for a brief period) the "Facebook Ad Network"– if that market were accepted, Google would be the half-price discount competitor. Plaintiffs' own expert's fee calculations show that Google Ads' average fee is less than half of the average fees for the three tools that Plaintiffs consider to be "advertiser ad networks." DTX-1894 (Israel Report Figure 77: Prof. Lee's Estimates Illustrate That Google's Fees Are Not Systematically Higher Than Its Competitors' Fees). And, as just noted, output is up across the market and advertisers are receiving a greater return on their investment as their cost per click goes down and the click-through rate goes up.

128. Beyond these direct indicia, the market for advertiser buying tools is intensely competitive because advertisers multi-home. FOF ¶ 548; Lee TT; Israel TT; Simonson TT. Google's own data from AdX confirm that 84% of spending on the exchange was attributable to buyers using two or more buying tools. FOF ¶ 549. Given pervasive multihoming, there are considerably lower costs for those advertisers to switch buying tools and significantly greater capacity for competitors to expand their own output. *See United States* v. *Google LLC*, 2024 WL 3647498, at *89 (D.D.C. Aug. 5, 2024) (noting that the presence of "well-resourced market entrants" and "growth by those entrants, belie a reality of unconstrained dominance").

129. Plaintiffs counter that multihoming reveals that the tools do not have identical uses. But the evidence shows buyers multi-home to find the best return on investment and because it is relatively costless to do so. FOF ¶¶ 357, 361, 395. Further, even if there were some distinction among buying tools, products "need not be entirely the same." *United States* v. *Google LLC*, 2024 WL 3647498, at *67 (D.D.C. Aug. 5, 2024). "So long as 'consumers can substitute the use of one for the other, then the products in question will be deemed functionally interchangeable.'" *Id.* (quoting *FTC* v. *Arch Coal, Inc.*, 329 F. Supp. 2d 109, 119 (D.D.C. 2004)).

130. In addition to multihoming, the emergence of Supply Path Optimization places further competitive pressure on Google. Supply path optimization is the development in ad tech products to reduce the number of intermediaries that facilitate each transaction. Among these innovations are integrated products that give ad space buyers direct access to ad space sellers, rendering an advertiser buying tool superfluous. FOF ¶¶ 99-100, 287-295.

2. "Ad Exchanges for Indirect Open-Web Display Advertising"

131. Next, in the market for "ad exchanges for indirect open web display advertising," Plaintiffs have also failed to show monopoly power. By the calculation of Plaintiffs' own expert, Google's share of this market was less than 45 percent on a revenue basis each year during the 2018 to 2022 time period. FOF ¶ 419. Plaintiff's experts estimate revenue shares based on impressions, not revenues, which unlinks sales to market value, but even those shares were less than 50% in 2022. FOF ¶ 419. Given "the Supreme Court has never found a party with less than 75% market share to have monopoly power," Plaintiffs face a steep climb in proving monopoly power in this alleged component market. *Kolon Indus. Inc.* v. *E.I. DuPont de Nemours & Co.*, 748 F.3d 160, 174 (4th Cir. 2014).

132. With respect to prices, Plaintiffs claim that Google's AdX take rate of approximately an average 20% is supra-competitive. To support this, Plaintiffs' experts say that the Google revenue share is higher than the *average* market revenue share, and not the highest price. An above average price – a price less than some competitors and higher than others – cannot be labeled as a monopoly price. Google charges a revenue share for AdX that has been the same since 2008 and is consistent with the revenue shares charged by its competitors offering products of comparable value. FOF ¶¶ 220, 738. Plaintiffs' experts do no analysis of these prices on a quality-adjusted basis. Plaintiffs' experts (who are not product quality experts) instead contend,

contrary to *Trinko*, that Google's failure to deal with its rivals has degraded the quality of its products.

133. The average price calculations for exchanges also shows that average prices do not reveal supra-competitive prices. Looking at prices on a per-exchange basis, a number of exchanges charge *higher* than the average revenue shares. FOF ¶ 738. Further, the average revenue shares are being affected by a low price outlier. FOF ¶ 739.

134. Even setting aside Google's low market share, there is no other evidence of monopoly power. The number of exchanges has exploded, from less than 10 in 2010 to over 100 today. FOF ¶ 725. Output has increased as well: by Plaintiffs' own expert's calculations, exchange revenues doubled from $50 million in January 2018 to over $100 million per month by the end of 2022. FOF ¶ 732. There is also no indication of supracompetitive prices. AdX's 20 percent revenue share was set before Google acquired the exchange technology. FOF ¶ 220. Moreover, AdX's 20 percent average revenue share has been in line with or lower than competitors' revenue shares. FOF ¶ 738.

135. As with ad space buying tools, multihoming places significant constraints on Google's market power in the alleged ad exchange market. As one illustration, 87 of the top 100 ad space sellers in the U.S. list ten or more ad exchanges as authorized sellers of their inventory. FOF ¶ 421. Using Google's own data through DFP, two-thirds of all impressions served on DFP were to ad space sellers using four or more exchanges. *Id.* For much the same reason, ad space sellers who prefer to use an exchange other than with AdX can and do utilize alternative exchanges and competitor exchanges can readily expand output to capture Google's customers.

136. Another competitive constraint in this alleged market are products competitors have introduced to let ad space buyers and sellers fully bypass third-party exchanges. The Trade Desk,

for example, has launched a product to disintermediate ad exchanges and connect ad space buyers directly with ad space sellers such as Reuters, The Washington Post, Gannett, USA Today, Conde Nast, Forbes Media, and more. FOF ¶¶ 100, 291; *see United States* v. *Google LLC*, 2024 WL 3647498, at *89 (D.D.C. Aug. 5, 2024) (noting that the presence of rivals who "are not small firms likely to compete only at the margins" but instead "mega-retailers looking to aggressively expand" counsels against finding monopoly power).

3. "Publisher Ad Servers for Open-Web Display Advertising"

137. Finally, in the "publisher ad servers for open-web display advertising" market, Plaintiffs have also failed to show monopoly power. Prices are low (with less than 2% revenue share for DFP). FOF ¶ 740. Moreover, DFP charges no fees for ad space sellers who transact below a certain threshold of impressions. In 2022, that meant 86% of DFP ad space sellers paid nothing in ad serving fees. FOF ¶ 740. Against these consistently low prices, output is up and so is ad space seller average revenue. According to the estimates of Plaintiffs' expert, from 2018 to 2022, publisher ad server monthly impressions have risen from about 450 million impressions to almost 600 million impressions. FOF ¶ 732.

138. Plaintiffs make much of their claim that DFP's market share exceeds 90% but that assertion ignores market realities. As a leading antitrust treatise explains, when a firm with a dominant market share is "charging a price at the competitive level . . . Most likely, it has no market power: demand may be so responsive or entry so easy that lower output at higher prices would be immediately or quickly unprofitable." Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* ¶ 508 (5th ed. 2023); *see also Oahu Gas Service, Inc.* v. *Pacific Resources, Inc.*, 838 F.2d 360, 366-67 (9th Cir. 1988) ("A high market share, though it may ordinarily raise an inference of monopoly power, will not do so in a market

with low entry barriers or other evidence of a defendant's inability to control prices or exclude competitors."); Israel TT. The market realities for ad space sellers confirms precisely that point.

139. Plaintiffs' calculation of DFP's market share focuses on the share of "open-web display ads" that it transacts, failing to take into account the sharp decline in "open-web display advertising" compared to other forms of advertising. That decline exerts significant pressure on DFP, and competitors have successfully competed for ad space seller inventory management in other formats. FOF ¶449. The time that users are spending on traditional, non-video websites has dropped precipitously and now lags behind time spent on mobile apps or Connected TV. FOF ¶ 321-322. As user attention has shifted, so have advertising dollars. In 2022, display ad spend on the "open web" is down to 29% compared to 81% in 2013. FOF ¶ 326. Entrants compete successfully by enabling, or even specializing in, transactions in ad channels and formats other than "open-web display advertising" that have become areas of significant growth, compared to "open-web display advertising," which continues to experience a decline. FOF ¶ 315. As artificial intelligence makes cross-channel purchasing even easier and a more important part of advertiser strategy, other channels and formats of advertising will also become important. FOF ¶¶ 353-354.

139.1. Ad servers that focus on inventory management tools specific to in-app advertising are an increasingly important competitor to Google's DFP. Among in-app mediation platforms, Google's market share is less than 40%. FOF ¶ 446.

139.2. DFP, which itself serves more ads than just "open-web display ads," also competes with other tools that serve not just "open-web display," but also video, in-app, and other forms of display advertising. FOF ¶¶ 446-450.

140. As set forth above, many ad space sellers are also creating in-house solutions to manage and sell inventory, and those solutions compete with third-party ad tech such as Google's DFP offering. FOF ¶¶ 433-438.

141. Finally, even if Plaintiffs' could maintain their inflated market share calculations, the Fourth Circuit has cautioned that "big is not invariably bad." *It's My Party, Inc.* v. *Live Nation, Inc*., 811 F.3d 676, 690 (4th Cir. 2016). "An outsized market position may reflect nothing more than business success achieved through superior effort and sound strategy." *Id.* This is well the case when, as here, a firm has "invested heavily in developing . . . an infrastructure" to best serve its customers. *Id.*

IV. Plaintiffs Have Failed to Prove Any Anticompetitive Conduct.

A. The Challenged Acts

142. Google first entered the world of digital advertising in 2000, with a product (AdWords) to enable advertisers to place search ads on Google's search engine. FOF ¶ 127. Realizing that advertisers were interested in reaching users beyond just Google's own properties, Google launched a tool (AdSense) to build a network of vetted non-Google ad space sellers where ad space buyers could also place ads. FOF ¶ 128. As detailed in the Findings of Fact, since then, Google has undertaken thousands of innovations and select acquisitions to build on this basic value proposition: connecting Google's diverse advertiser customers with Google's vetted group of third-party ad space sellers in a seamless transaction.

143. Over the period of those thousands of innovations, across a sixteen-year period, the Complaint identified ten forms (or nine depending if one claim is divided into two parts or combined–as Plaintiffs' expert Robin Lee does–into one act, *see* Lee Rpt. ¶ 12(3)(3)) of conduct as alleged anticompetitive acts. FAC ¶¶ 312, 319, 326; Ex. 33, ¶ 478, Fig. 66. The acts forming the basis of Plaintiffs' claims shrunk further after expert discovery, with Plaintiffs' experts

concluding only that five of the nine acts were exclusionary. FOF ¶ 527. The gravamen of Plaintiffs' claims–according to their expert–is that Google established "a Google-only pipeline through the heart of the ad tech stack, denying non-Google rivals the same access." Put another way, Plaintiffs believe that the very infrastructure that Google has built to seamlessly and securely connect its two customer bases with tools that have increased value for customers on both sides of the equation and have driven immense growth across the industry must now in five instances be opened up to Google's rivals.

144. According to Plaintiffs' expert Robin Lee, the five specific acts that allegedly allow Google to keep its "Google-only pipeline" are as follows, Lee Rpt. ¶ 12(3); Lee TT:

(1) Providing unrestricted access to Google Ads' advertiser demand exclusively to its AdX ad exchange, and denying comparable access to rival ad exchanges;

(2) Providing access to and use of real-time bids from AdX exclusively to its DFP ad server, and denying comparable access to rival ad servers;

(3) Providing access to a feature known as "Dynamic Allocation" exclusively to AdX within DFP, granting AdX valuable "first-look" and "last-look" advantages over rival ad exchanges;

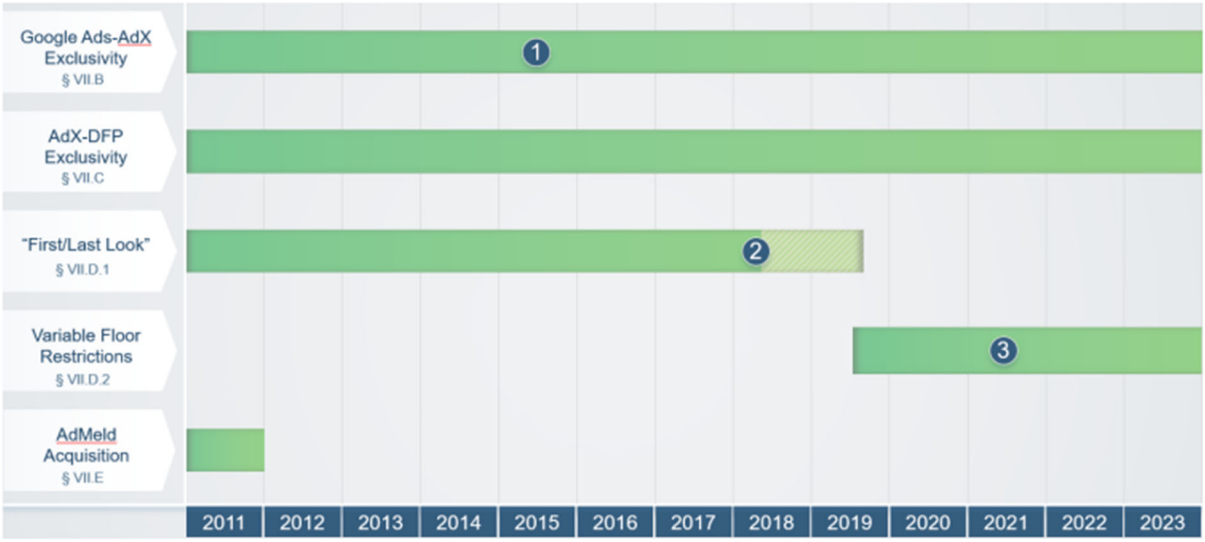
(4) Acquiring AdMeld; and

(5) Eliminating ad space sellers' ability to use variable pricing floors within DFP, impairing their ability to work with rival ad exchanges and exert competitive pressures on AdX.

Plaintiffs also have sometimes divided the third act, Dynamic Allocation, into two acts, referring to "first look" and "last look," and claimed six acts of anticompetitive conduct.

145. Plaintiffs' expert Prof. Lee also provides this illustration of the claims and relevant timeline:

Figure 62. Google exclusionary conduct timeline



Notes: Green indicates when conduct was in effect (or occurred in the case of the AdMeld acquisition).
1. AWBid exception fully launched in June 2015 (GOOG-AT-MDL-006218271, at -280 (01/06/2023)).
2. Google's Exchange Bidding product that opened up Dynamic Allocation within DFP to rival ad exchanges was launched in April 2018, but began alpha-testing in 2016 (GOOG-AT-MDL-006217592, at -592 and -606 (12/12/2022)). Last look advantages over header bidding exchanges were removed with the introduction of the Unified First Price Auction in September 2019 (GOOG-DOJ-11030354, at -354 (01/28/2019)). Light green shading reflects the period between Google's launch of Exchange Bidding and the introduction of the Unified First Price Auction.
3. Google's June 2021 commitment to the French Competition Authority involved changes to these restrictions "on (at least) an EEA-wide basis" (DOJ-ADS-0000046935, at -935 (06/07/2021)). *See* Section VII.D.2.

146. Of all of the acts mentioned in the Complaint and identified as anticompetitive by Plaintiffs' experts, only three are alleged to be ongoing: Google Ads bidding "exclusively" into AdX, making real-time bids from AdX available only to DFP, and the Unified Pricing Rules. See Lee Rpt. Fig. 62.

147. In addition, all the acts mentioned in the Complaint and identified as anticompetitive by Plaintiffs' experts—with the exception of only Unified Pricing Rules—began before 2015, which is the earliest year for which Plaintiffs' experts present an opinion that Google had monopoly power in any market. FOF ¶ 528.

148. Plaintiffs identified four additional acts in the Complaint but none of their experts have opined that they are anticompetitive, with their experts acknowledging that each of the features provided benefits to ad space sellers and/or buyers. Plaintiffs also have not come forward with any non-expert evidence demonstrating that any of these acts were anticompetitive individually or part of an explicit, concerted anticompetitive effort in the aggregate:

148.1. Acquisition of DoubleClick - Google announced its acquisition of DoubleClick, which offered an early version of DoubleClick for Publishers and a nascent ad exchange, in April 2007. FOF ¶ 648. The Federal Trade Commission, after reviewing the transaction, concluded that it was "unlikely to substantially lessen competition." FOF ¶ 649. In particular, the FTC noted that large ad space sellers "can and do switch ad serving firms when it is in their self-interest to do so" and that they could "exercise countermeasures, including the development or acquisition of alternative ad serving products and the securing of favorable contractual terms." FOF ¶ 652. After the acquisition, Google rebuilt DoubleClick's ad space seller products in significantly improved form on top of its own tech infrastructure, which was more robust, powerful, and reliable than DoubleClick's. FOF ¶¶ 195-196. Plaintiffs' experts do not opine that Google's acquisition of DoubleClick was anticompetitive or exclusionary. FOF ¶ 647.

148.2. Use of Project Bell to prevent multi-calling - Project Bell was a product design that protected ad buyers from overpaying for ads. Specifically, it discouraged "multi-calling," which was an ad space seller practice of repeatedly calling for bids for the same impression in hopes of receiving a higher bid. FOF ¶¶ 675-

680. Project Bell was one of several innovations Google (and its rivals) introduced to protect advertisers from overpaying for impressions. FOF ¶ 684 (describing comparable innovations from [redacted]). Plaintiffs' experts acknowledge that multi-calling hurt the ad tech ecosystem and there were valid business reasons to combat it. FOF ¶¶ 673, 676-678.

148.3. Use of Project Poirot to help advertisers win the same impressions at lower prices – Project Poirot was another optional feature that helped protect ad buyers from overpaying and was available only on DV360 (which is outside the relevant "advertiser ad network" market Plaintiffs allege). The feature detected when an exchange was not running a second-price auction and adjusted advertiser bids to prevent them from overpaying. FOF ¶¶ 691-696. Plaintiffs' experts acknowledge that this feature served the valid business reason of increasing ad buyer surplus and that it was "necessary" to protect advertisers from overpaying in first-price auctions. FOF ¶ 697. Moreover, numerous other ad buying tools offer the same features as Google's Project Poirot, confirming the procompetitive rationale. FOF ¶ 702. Plaintiffs maintain that Poirot injured specific competitor exchanges. However, it also benefited exchanges that were not running dirty auctions. FOF ¶ 700 (noting increased revenue to clean second-price auctions). In any event, the antitrust laws are concerned with harm to the competitive process and not, as discussed below, individual competitors.

148.4. Deployment of sell-side Dynamic Revenue Share ("DRS") to advantage AdX – Sell-side DRS was a feature that facilitated a greater number of matches

between ad space sellers and ad buyers. When an ad buyer's bid might not have cleared the ad space seller's floor price, sell-side DRS lowered Google's revenue share to ensure that the bid would still clear the ad space seller's floor price. FOF ¶¶ 656-658. Plaintiffs' experts do not opine that this feature, which increased ad space sellers' revenue and helped ad space buyers win more impressions, was anticompetitive. FOF ¶ 655. To the contrary, Plaintiffs' experts have testified that there were valid business reasons to implement this feature given that it increased ad space seller's revenue and the total number of successful transactions. FOF ¶¶ 656-658. Moreover, other sell-side tools like [redacted] offer similar features that dynamically vary revenue shares across impressions, confirming the procompetitive rationale. FOF ¶ 663.

149. Plaintiffs' objection to the five so-called exclusionary is an objection to Google's decision to develop an integrated ad stack. At each step, Plaintiffs insist that Google should open up its infrastructure to grant rivals greater access to Google's technology and customers.

150. Not only is interoperability not required by law (and integration is protected), over the years, Google has made its products more, not less, interoperable with rivals. And Google has done so when it served the interests of its customers and could be done in a manner that ensures quality, security, and reliability.

151. Even if Google had monopoly power in a relevant market, Plaintiffs' claims fail the second element of a Section 2 claim – the willful acquisition or maintenance of monopoly power – because all of the challenged acts are lawful refusals to deal under settled law and underlying

each of them were valid business reasons that account for the interests of ad space sellers, ad space buyers, and/or end users.

B. Plaintiffs Have Failed to Establish Any Exclusionary Conduct.

1. Refusal to Deal Law

152. As a general matter, a firm does not engage in exclusionary conduct merely because it elects not to deal with a competitor or on that competitor's preferred terms. *See Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004) (reiterating the "long recognized right of a trader or manufacturer engaged in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal").

153. This principle applies even where an alleged monopolist "denie[s] interconnection services to rivals in order to limit entry." *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 407-08 (2004). In *Trinko*, the Supreme Court considered a claim by a customer of Verizon's rival that Verizon had discriminated against its competitors by failing adequately to service its competitors' customers, thus discouraging them from doing business with Verizon's rivals. *Id.* at 404-05. The Supreme Court found that this did not give rise to an antitrust claim:

> Firms may acquire monopoly power by establishing an infrastructure that renders them uniquely suited to serve their customers. Compelling such firms to share the source of their advantage is in some tension with the underlying purpose of antitrust law, since it may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities. Enforced sharing also requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing—a role for which they are ill suited.

Id. at 407-08. Accordingly, the Court held that Verizon was under no obligation to design or implement "new systems. . . simply to make [rivals'] access possible." *Id*. at 410; *cf. Cavalier Tel., LLC.* v. *Verizon Va., Inc.*, 330 F.3d 176, 188, 190 (4th Cir. 2003) (similar); *Novell, Inc. v. Microsoft Corp.,* 731 F.3d 1064 (10th Cir. 2013) (Gorsuch, J.).

154. The Court in *Trinko* explained the reasons why the antitrust laws do not impose a duty on an alleged monopolist to deal with its rivals, all of which apply here. First, the Court recognized that compelling firms to share their competitive advantages would lessen the incentive of an alleged "monopolist, the rival, or both to invest in those economically beneficial facilities." *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004). (As applied here: Why would ad tech firms invest in developing and improving technology which must be shared or will have to be shared?) Second, "Enforced sharing also requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing—a role for which they are ill-suited." *Id.* (Here, the Court will be asked to become a czar of technology access between competitors.) And, third, "compelling negotiation between competitors may facilitate the supreme evil of antitrust: collusion." *Id.* (And here, one can only imagine Plaintiffs' reaction if Google announced technology sharing negotiations with its major rivals.)

155. As to *Trinko*, the Fourth Circuit has stated: "The [Supreme] Court observed that exceptions to the right to refuse to deal should be recognized with caution due to the uncertain virtue of forced sharing and the difficulty of identifying and remedying anticompetitive conduct by a single firm." *Loren Data Corp*. v. *GSX, Inc.*, 501 F. App'x 275, 283 (4th Cir. 2012).

156. Since *Trinko*, the Supreme Court has further emphasized that "a firm with no duty to deal in the wholesale market has no obligation to deal under terms and conditions favorable to its competitors." *Pac. Bell Tel. Co*. v. *linkLine Commc'ns, Inc*., 555 U.S. 438, 450-51 (2009); *Loren Data Corp.* v. *GXS, Inc.*, 501 F. App'x 275, 283 (4th Cir. 2012) (no Section 2 violation where competitors were "not satisfied" with terms of access); see *also Aerotec Int'l, Inc.* v. *Honeywell Int'l, Inc*., 836 F.3d 1171, 1184 (9th Cir. 2016). In *linkLine*, plaintiffs argued that the high fees Pacific Bell charged rival Internet providers to access Pacific Bell's infrastructure for

delivering an Internet connection created a "price squeeze" for competitors. 555 U.S. at 450-451. Although the lower courts "did not regard *Trinko* as controlling because the case did not directly address price-squeeze claims," the Supreme Court rejected that approach because the reasoning of Trinko still applied "with equal force." *Id*.

157. Consistent with the Supreme Court's admonition about the broad reach of *Trinko*, courts have consistently refused to require technology companies to make their products interoperable with their rivals across a wide array of contexts. *E.g.*, *New York* v. *Facebook, Inc*., 549 F. Supp. 3d 6, 33 (D.D.C. 2021), *aff'd sub nom. New York* v. *Meta Platforms, Inc*., 66 F.4th 288 (D.C. Cir. 2023) (rejecting claim that Facebook be more interoperable with competing social media applications); *Novell, Inc*. v. *Microsoft Corp*., 731 F.3d 1064, 1076 (10th Cir. 2013) (rejecting claim that Microsoft make it easier for rivals to develop word processing software to run on Microsoft's system); *United States* v. *Google LLC*, 2024 WL 3647498, at *129 (D.D.C. Aug. 5, 2024) (rejecting claim that Google must allow Microsoft Ads access to "auction time bidding" technology on Google's proprietary search engine management tool); *Dream Big Media Inc.* v. *Alphabet Inc.*, 2024 WL 3416509, at *5 (N.D. Cal. July 15, 2024) (rejecting claim that Google Maps must allow customers to place links on its maps offering that connect to rivals' navigational direction offerings); *In re Apple iPod iTunes Antitrust Litig.*, 796 F. Supp. 2d 1137, 1146 (N.D. Cal. 2011) (rejecting claim that Apple must make iPod music player interoperable with rival's music format).

158. Plaintiffs' economists recognize this issue only to minimize the amount of work required for interoperability by claiming that offering Google's technological features to its rivals would not be "unduly expensive or . . . technically infeasible." Ultimately, the question under the law is not whether Google could be obliged to deal with "feasible" technical work at little cost,

but whether Google has any such duty at all and whether the courts should make rulings on the amount of technical work that must have been done in order to avoid a claim of anticompetitive conduct. *See Goldwasser* v. *Ameritech Corp*., 222 F.3d 390, 400-01 (7th Cir. 2000) ("the antitrust laws do not impose that kind of affirmative duty, even on monopolists").

159. The only limited exception to the no duty to deal rule arises out of *Aspen Skiing Co*. v. *Aspen Highlands Skiing Corp*., 472 U.S. 585 (1985), which Plaintiffs do not invoke here.

160. *Aspen Skiing*, the Supreme Court has cautioned, "is at or near the boundary of § 2 liability." *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004). To fit within its "limited exceptions" to the general rule, the Supreme Court has looked to three factors: (1) "unilateral termination of a voluntary" and "presumably profitable course of dealing" with its competitor; (2) termination must reflect "a willingness to forsake short-term profits to achieve an anticompetitive end"; and (3) defendant must "already [be] in the business" of providing the products or services at issue. *Id.* at 409-10. The Fourth Circuit has looked to similar considerations in a recent case holding that a power company's unilateral termination of an agreement to build transmission lines should survive summary judgment because a jury could conclude that it "'[forsook] short-term profits to achieve an anticompetitive end.'" *Duke Energy Carolinas, LLC* v. *NTE Carolinas II, LLC*, 2024 WL 3642432, at *18 (4th Cir. Aug. 5, 2024) (quoting *Trinko*, 540 U.S. at 409).

161. The Supreme Court has taken a narrow view of this exception because compelled sharing risks undermining the "purpose of antitrust law" by reducing incentives to invest in resources generating a competitive advantage, *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 407-08 (2004), and it "requires antitrust courts to act as central

planners, identifying the proper . . . terms of dealing—a role for which they are ill suited," *id.* at 408.

162. Plaintiffs and their experts do not contend that these predicates for an *Aspen Skiing* claim have been or could be established here. For example, Plaintiffs do not offer evidence that Google had at any point offered rivals the features to which Plaintiffs now demand access–much less that it sought to terminate a profitable course of dealing. Far from a claim that Google "forewent a profitable arrangement," Plaintiffs' case rests on assertions that Google engaged in the challenged acts to ensure its profitability. *Compare Duke Energy Carolinas, LLC* v. *NTE Carolinas II, LLC*, 2024 WL 3642432, at *19 (4th Cir. Aug. 5, 2024) (holding defendant was not entitled to summary judgment because the factfinder "could reach the conclusion that [the defendant], like the defendant in *Aspen Skiing*, '[forsook] short-term profits to achieve an anticompetitive end' by unilaterally terminating the Reidsville Interconnection Agreement").

2. Valid Business Reasons

163. In order to prove that Google willfully acquired or maintained monopoly power, Plaintiffs bear the burden of proving that Google had "no valid business reason or concern for efficiency" when Google engaged in the challenged conduct. *Oksanen* v. *Page Mem'l Hosp.*, 945 F.2d 696, 710 (4th Cir. 1991) (en banc); *accord Imaging Ctr., Inc.* v. *W. Md. Health Sys., Inc.*, 158 F. App'x 413, 421 (4th Cir. 2005); *Berlyn, Inc.* v. *Gazette Newspapers*, 223 F. Supp. 2d 718, 735 (D. Md. 2002); *Thompson Everett, Inc.* v. *Nat'l Cable Advert., L.P.*, 850 F. Supp. 470, 482 & n.12 (E.D. Va. 1994).

164. In assessing the business reasons or justifications for challenged conduct, the Fourth Circuit has noted that a "monopolist does not violate § 2 by offering a superior product, service, or lower prices, as such conduct is procompetitive and thus increases consumer welfare." *Duke Energy Carolinas, LLC* v. *NTE Carolinas II, LLC*, 2024 WL 3642432, at *11 (4th Cir. Aug.

5, 2024). Courts also consider whether product design decisions improve a product, offering a new benefit to customers. *See Berkey Photo, Inc.* v. *Eastman Kodak Co.*, 603 F.2d 263, 281 (2d Cir. 1979) ("A monopolist is permitted, and indeed encouraged, by § 2 to compete aggressively on the merits, any success that it may achieve through the process of invention and innovation is clearly tolerated by the antitrust laws.").

165. To avoid chilling innovation and thereby competition, antitrust law recognizes that an alleged monopolist's "design change that improves a product by providing a new benefit to consumers does not violate Section 2 absent some associated anticompetitive conduct," even if the change "harms competitors as a result." *Allied Orthopedic Appliances Inc.* v. *Tyco Health Care Grp. LP*, 592 F.3d 991, 998- 1000 (9th Cir. 2010); *see also Leegin Creative Leather Prods., Inc*. v. *PSKS, Inc*., 551 U.S. 877, 896-97 (2007) (antitrust laws permit a manufacturer to "strive[] to improve its product quality"); *United States* v. *Nat'l Lead Co*., 332 U.S. 319, 359 (1947) (antitrust law should not "reduce the competitive value of the independent research of the parties"); *Goldwasser* v. *Ameritech Corp*., 222 F.3d 390, 397 (7th Cir. 2000) ("even a monopolist is entitled" to improve the "quality of its products"). This reflects "the undesirability of having courts oversee product design" because "any dampening of technological innovation would be at cross-purposes with antitrust law." *United States* v. *Microsoft Corp*., 147 F.3d 935, 948 (D.C. Cir. 1998). "The attempt to develop superior products is . . . an essential element of lawful competition." *Berkey Photo, Inc.* v. *Eastman Kodak Co*., 603 F.2d 263, 286 (2d Cir. 1979). "Any firm, even a monopolist, may generally bring its products to market whenever and however it chooses." *Id*.

166. Importantly, a product improvement does not violate antitrust law even if it has a negative impact on rivals. *See Foremost Pro Color, Inc*. v. *Eastman Kodak Co*., 703 F.2d 534, 544 (9th Cir. 1983) ("The introduction of technologically related products, even if incompatible with

the products offered by competitors, is alone neither a predatory nor anticompetitive act."). Courts have also cautioned against balancing "the benefits or worth of a product improvement against its anticompetitive effects" because that would be "unwise" and "unadministrable." *Allied Orthopedic Appliances Inc.* v. *Tyco Health Care Grp. LP*, 592 F.3d 991, 1000 (9th Cir. 2010); *see also Berkey Photo, Inc.* v. *Eastman Kodak Co*., 603 F.2d 263, 286-87 (2d Cir. 1979). Any other result would require the judicial redesign of products, but courts are not product designers and do not assess whether an improvement was the "right amount of innovation," as even an improvement that is "seemingly minor," *Allied Orthopedic*, 592 F.3d at 1000—or "less valuable" than "initially believed," *id.* at 1001—"can be adequately judged only by the market itself," *id.* at 1000.

3. All the Challenged Acts Are Lawful Refusals to Deal and Have Valid Business Reasons.

167. Plaintiffs' unlawful monopolization and attempted monopolization claims (Counts 1-3 of the Complaint) turn on only five challenged acts. *See supra* § IV.A. As noted above, Plaintiffs' basic theory of the case is that through these five acts, "Google established a Google-only pipeline through the heart of the ad tech stack, denying non-Google rivals the same access." Israel Rpt., ¶ 574; *see also id.* ¶ 12(3). The problem with Plaintiffs' case is that their claims all reduce to a demand that Google share its technology and even its customers with rivals.

168. Antitrust law has long cautioned against recognizing such claims because they often undermine the goals of competition that the law endeavors to promote. Deviating from that principle here is particularly ill-advised given that each of the challenged acts Plaintiffs identify was animated not simply by a desire to cut off competitors (though the law allows that) but to serve a particular customer or marketplace need. Ultimately, overriding the strong presumption that refusals to deal are not anticompetitive risks harming not only the future of innovation in digital advertising industry specifically but across technology markets more generally.

169. This case fits squarely within *Trinko*'s general rule. Plaintiffs' theory is essentially the same as the one advanced in that case: the denial of "interconnection services to rivals in order to limit entry." *Verizon Commc'ns., Inc*. v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004). There it was services to enable rivals to access Verizon's telecommunications network; here it is technical functionality that Plaintiffs want Google to develop to enable rival ad exchanges to access advertiser demand Google has cultivated and rival ad servers to access functionality Google has developed for its own ad exchange. Although Google has built "an infrastructure that renders [it] uniquely suited to serve [its] customers," Plaintiffs want to force Google "to share the source of [its] advantage" rather than asking rivals "to invest in those economically beneficial facilities." *Id.* at 407-08.

170. Plaintiffs' arguments that Google has acquired "scale" at the expense of its competitors illustrates the problem with Plaintiffs' case. The offense of monopolization is distinguished from "growth or development as a consequence of superior product, business acumen, or historical accident." Successful firms, whether or not monopolies, are free to exercise their discretion in deciding whether to begin dealing with rivals and to what degree. *Verizon Commc'ns., Inc*. v. *Law Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 405-08 (2004). By contrast to this settled law, Plaintiffs ask that Google's conduct be condemned if its competitors are not achieving substantial scale.

171. A recent decision involving a different Google advertising tool confirms precisely this point. In *United States* v. *Google LLC*, 2024 WL 3647498 (D.D.C. Aug. 5, 2024), one argument plaintiffs advanced was that Google engaged in anticompetitive conduct when it declined to provide a rival (there, Microsoft) access to a bidding feature on SA360 (Google's proprietary search engine marketing tool) while granting Google Ads access to that feature, *id.* at

*129. Like their allegations here, Plaintiffs argued that denying Microsoft comparable access hindered its ability to compete against Google Ads and harmed customers that opted to use Microsoft's buying tool. *Id.* The district court held that Plaintiffs' demand that Google share its bidding feature with Microsoft was foreclosed by *Trinko*, explaining that the theory "falters at the threshold because it conflicts with the settled principle that firms have 'no duty to deal' with a rival." *Id.*

172. In rejecting the duty-to-deal claim, the court emphasized two additional points that are relevant here:

172.1. First, the court explained that compelling Google to share the bidding feature "requires grappling with a host of questions that the court is ill-equipped to handle." *United States* v. *Google LLC*, 2024 WL 3647498, at *131 (D.D.C. Aug. 5, 2024). For example, how should Google decide when to invest the time to integrate the feature with a rival's tool (it took 2 to 3 years to build the feature on Google's own tool) or how much consumer interest warrants imposing a duty to deal. *Id.* Because "Any relief presumably would require Google to ensure feature parity on SA360 now and into the future . . . A favorable outcome for Plaintiff States thus would mire the court in Google's day-to-day operations." *Id.*

172.2. Second, the court warned that "to circumvent *Trinko*'s strict limits also would invite uncertainty as to when antitrust liability attaches to otherwise rational business conduct." *Id.* If the court ordered relief here, it would leave Google and other firms to engage in a standardless inquiry about "when it must integrate [the bidding feature] or other features for Microsoft Ads to avoid a Sherman

Act violation?" *Id.* In that case, one reason Google gave for declining to integrate the feature at issue for Microsoft was prioritizing work on other product launches. Such a "business decision," the court concluded "may have come at Microsoft's expense, but it does not give rise to Section 2 liability." *Id.*

173. In addition, each of the challenged acts was motivated by a business reason to improve the quality of Google's products, and the ad tech ecosystem, for Google's ad space seller and buyer customers and users of the Internet. As part of that effort, Google built interoperability between its tools and third parties only when it could do so safely, securely, and reliably. FOF ¶¶ 497-508. When that was not possible, Google prioritized preserving the quality of its own products—as, under *Trinko*, it is lawfully permitted to do. The evidentiary record further shows Google's decisions were driven by the competition it faces. Google has consistently faced significant competitive pressures to invest in the quality improvement and control measures that Plaintiffs have now put at issue, especially from providers of integrated "owned and operated" ad products and environments like Meta and Amazon. FOF ¶ 47. Although each of the challenged acts was driven by particular business reasons that are discussed below, a set of more general principles also animated not just the challenged acts but the thousands of other innovations Google introduced during the period at issue in this case:

173.1. Google balanced the interests of ad space sellers, ad space buyers, and users. Value in ad tech is created by reliably facilitating transactions that are relevant, quality matches for all stakeholders. Google made product design decisions that maximized value for ad space sellers, ad space buyers, and users combined, including by prioritizing ad safety and security, user privacy, and ad space seller and buyer choice in its own products.

173.2. Google promoted investment and innovation in the ad tech industry. Google is uniquely positioned to lead in making decisions that benefit or set the standard for the entire ecosystem, such as by promoting transparent, clean auctions that compare all available advertiser bids fairly. That is because Google's larger business depends on a safe, accessible, and open Internet, and its ad tech business serves all stakeholders, not just one side of the transaction.

173.3. Google is able to offer customers quality tools at low prices because of the efficiencies created by integration. Integration allows Google to lower prices by joining complementary products and reducing the contracting frictions that arise from negotiating agreements with third parties. *See* FOF ¶¶ 262-265 (showing lower prices for Google's integrated offering over the majority of other mix-and-match intermediaries). Building the technological integrations, processing power, and safety and security mechanisms needed to expand beyond Google's integrated stack would require Google itself to pay for considerable investment and resources. FOF ¶¶ 34-41. When done without adequate planning, it could raise prices for customers and harm the overall industry.

173.4. Google's decisions were consistent with the trend across the ad tech industry in favor of supply path optimization, which reduces connections between and among ad tech intermediaries because that promotes efficiency and security. FOF ¶ 99. Plaintiffs' argument that Google should have implemented more connections (to rivals) conflicts with this industry-wide view and would require

less efficiency and security in Google products (and, as noted above, the higher prices that go with mixing and matching different ad tech intermediaries).

a. Rival Ad Exchanges' Access to Google Ads

174. Plaintiffs object to Google "providing unrestricted access to Google Ads' advertiser demand (that is, access to Google Ads' advertiser customers) exclusively to its AdX ad exchange, and *denying comparable access to rival ad exchanges*," Lee Rpt. ¶ 12(3)(1). Contrary to the Supreme Court's rulings, this claim would require Google to provide access to competitor exchanges to Google advertiser customers. Firms that are required to share their customers with rivals have no incentive to build a customer base through innovation and quality products, and their rivals have reduced incentives to build their own customer base when they can wait for mandatory sharing. *Verizon Commc'ns., Inc*. v. *Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407-08 (2004). Mandatory sharing of customers also means that competitors would risk crossing the line by violating the antitrust prohibition against allocating customers among competitors. *Id.* at 408 (compelling rivals to deal "may facilitate the supreme evil of antitrust: collusion").

175. The required dealing with competitors here is not a simple matter of Google making its customers available to its competitors. Providing "comparable access" to Google Ads to rival exchanges would have required Google to build technical connections to its rivals to achieve interoperability. FOF ¶¶ 536-537, 541-542. If claims such as this become antitrust claims, courts would be required to review technical connections to determine whether they were sufficient to permit competition.

176. Plaintiffs also fail to grapple with the fact that managing the link between Google's ad space buying customers (the "advertiser demand") and the ad space seller inventory available

to those ad space buyers has been central to Google's value proposition for customers from its earliest days.

177. When Google Ads first launched more than two decades ago, it enabled advertisers to purchase inventory only from Google's owned-and-operated properties, and a set of third party ad space sellers vetted by Google. FOF ¶¶ 127-128. Since then, Google has prioritized providing its ad space buyer customers on Google Ads with curated ad inventory that is high-quality and secure. When Google has a relationship with the ad space sellers that Google Ads purchases from, it can protect against, detect, and remediate ad quality issues such as fraud and spam. FOF ¶ 133. That was no different when Google rebuilt and launched AdX with real time bidding capabilities on Google's ad tech infrastructure after the DoubleClick acquisition. AdX offers a source of inventory where Google can guarantee ad space sellers have agreed to Google's safety policies, were vetted by Google, and are monitored by Google for invalid traffic and other security or safety violations. FOF ¶¶ 534.

178. The ability to access vetted ad space sellers is part of what makes Google Ads in particular attractive to customers. Advertisers who seek more inventory–and require less assurance about that inventory–can choose alternative buying tools (including Google's DV360, a buying tool that enables advertisers to connect with many rival exchanges). FOF ¶ 167. By that same measure, channelling Google Ads' advertiser demand to AdX makes AdX more attractive to ad space sellers by enabling them to monetize their inventory through a large number of vetted ad space buyers. FOF ¶ 218, 533.

179. Despite this, Plaintiffs believe that the customer base Google has attracted and cultivated by building a high quality buying tool is so valuable that rival ad exchanges must be allowed "comparable access" to those customers. This is precisely what *Trinko* cautioned against

when it noted that "compelling such firms to share the source of their advantage . . . may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities." *Verizon Commc'ns., Inc*. v. *Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407-08 (2004)

180. Not only do Plaintiffs want Google to share the source of its advantage, they want Google to build the technology that would connect Google's advertiser customers to Google's competitors. Notably, Google's advertiser customers are not subject to any contractual restrictions that prevent them from working with rival buying tools or exchanges (the record shows the opposite, with many buyers multi-homing by using multiple buying tools and exchanges). But enabling rivals to access these customers through Google's own infrastructure requires addressing challenging engineering, technical, processing power, and security issues, as evinced by Google's decade-long effort to develop and expand AwBid (a feature to enable Google Ads to bid into competitors' ad exchanges). FOF ¶¶ 145-160, 537-538.

181. Plaintiffs' claim that Google's decision to restrict rival ad exchanges' access to Google Ads demand had anticompetitive effects in the alleged ad exchange market fails to account for the fact that Google's design decisions ensured that it could enforce its high safety and security standards. FOF ¶¶ 534, 541-543. Google's commitment to security is evident through several industry-wide security initiatives such as ads.txt—projects that make ad transactions safer and more reliable not just on Google's tools, but also on competitors' tools. Through Google's leadership, these innovations have become industry standards. FOF ¶¶ 510-519. Safety and security efforts are critical drivers of industry output because the advertising ecosystem thrives only when participants trust each other. If ad space buyers spend money on invalid inventory, revenue is directed away from legitimate ad space sellers. As a result, ad space buyers experience

worse results and may bid lower even on valid impressions, all of which would shrink the industry. Moreover, ad space buyers, ad space sellers, and users value safe ads. When users view harmful ads or ads placed on harmful content, they lose trust in digital advertising.

182. Over time, even though not required by law, Google has undertaken the work to make Google Ads interoperable with rival exchanges. This includes integrating bidding systems, building new inventory quality filtering systems that can work on third-party exchanges, and negotiating new contracts and billing agreements with third-party exchanges. Google has taken a careful and iterative approach to expanding Google Ads bidding. Since the launch of AwBid, Google has steadily increased the number of exchanges and types of targeting available as it determines which exchanges can offer consistently quality inventory and builds the systems needed to integrate with other exchanges. FOF ¶¶ 145-160, 162 (discussion of Google's development of AwBid to interconnect with third-party exchanges). Spending on AwBid has increased by over twenty-fold between 2015 to 2022. Under the law, Google is entitled to make those choices; the antitrust laws do not dictate when or how those choices are made.

b. Rival Ad Servers' Access to AdX Real-Time Bids

183. Plaintiffs also object to Google "Providing access to and use of real-time bids from AdX exclusively to its DFP publisher ad server, and denying comparable access to rival publisher ad servers." Lee Rpt. ¶ 12(3)(2). Here, too, Plaintiffs are demanding that Google share the "source of its advantage." *Verizon Commc'ns., Inc*. v. *Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407-08, 409-10 (2004).

184. This claim would again have required Google to provide access to Google advertiser customers to competitors, in this case rival publisher ad servers. The required dealing with competitors would likewise require Google to build technical connections to its rivals to achieve interoperability. FOF ¶ 566-567.

185. Although Plaintiffs hardly acknowledge it, real-time bidding is an actual technological innovation pioneered by Google (among others) to improve how ad impressions are sold online. FOF ¶¶ 221-226. Google made significant investments and efforts to rebuild AdX with real time bidding capabilities on its high performance infrastructure after the acquisition of DoubleClick. FOF ¶ 211-215, 558. Prior to the advent of real-time bidding, impressions were sold through a static "waterfall" process where each impression was offered in sequence to demand sources that were generally ordered by what they were expected to bid based on past historical bids. The result was that buyers in lower tranches might never be offered the impression even though they would have bid higher than a buyer in the higher tranche. Google dramatically changed the digital advertising landscape when it made it possible for advertisers to submit bids based on their real-time valuation of any given ad impression. The results over time speak for themselves: the market produces more matches between buyers and sellers, ad space sellers make more money, and ad space buyers buy ads that users are more likely to click on. FOF ¶ XX. This is precisely the sort of innovation the law protects Google from having to turn over to its rivals.

186. Google's decision to build and maintain an integration enabling delivery of real-time bids from its ad exchange only for its ad server was made to preserve the value of this offering due to the superior integration made possible by both products being built on the same technological base. FOF ¶¶ 560-563. In particular, the real-time bidding integration between DFP and AdX reduces latency–critical for transactions that must clear in a fraction of a second. FOF ¶ 561. This gives more time to run an auction, to identify the buyer willing to pay most, to allow the system to recover if there is some failure, and to deliver the ad promptly to the user before they scroll away. FOF ¶¶ 562-563. Moreover, this integration allows Google to increase the value of

features such as Dynamic Allocation and Enhanced Dynamic Allocation, which boost ad space seller revenue. FOF ¶ 227-228.

187. Real-time bidding radically improved matching between ad space buyers and sellers by making the match at the last moment possible before an ad was served. FOF ¶ 224. This permitted both ad buyers and sellers to transact with maximum information about the user who would be reached and the inventory available. FOF ¶ 224. Following the widespread adoption of real-time bidding, the number of ad transactions—and revenue driven by ad buyers to ad sellers—exploded. FOF ¶ 225-226. By building real-time bidding on the integrated AdX-DFP stack, Google was able to ensure it delivered consumers a fast and effective product that encouraged publishers to move over from the less efficient waterfall-method of selling ad impressions.

188. Although the law does not require it, Google did explore the possibility of doing the engineering work to enable third-party ad servers to receive real-time bids from AdX. It ultimately concluded that there was no business case because third-parties were unwilling to share in the cost of doing the work and there was a lack of clarity about how to resolve the technical challenges that would arise with such an effort (e.g., controlling for spam and the quality of inventory). FOF ¶¶ 568. Nonetheless, Google has still enabled some integration by enabling ad space sellers using other ad servers to access AdX demand through the use of AdX Direct tags. FOF ¶ 571. Although Plaintiffs complain this is not "comparable" access, controlling law makes clear it is for Google, not its rivals, to determine the "terms and conditions" under which it will integrate. *Pac. Bell Tel. Co*. v. *linkLine Commc'ns, Inc*., 555 U.S. 438, 450-51 (2009).

189. Plaintiffs also consider this claim a "tying" claim. In Plaintiffs' Fourth Claim for Relief, Plaintiffs allege a tie between Google's Ad Exchange software (AdX) (the tying product) and Google's ad server (DFP) (the tied product). FOF ¶¶ 245-250 (explaining Google Ad

Manager). But Plaintiffs do not challenge the integration of AdX and DFP but, rather, the decision not to grant rivals access to the real-time bidding innovation on Google's own ad exchange. FOF ¶ 248. As Plaintiffs' expert explained, invoking a duty to deal, the conduct is allegedly objectionable because Google provides access to "real-time bids from AdX exclusively to its DFP publisher ad server, and denies comparable access to rival publisher ad servers." FOF ¶ 527, 557.

190. Plaintiffs cannot avoid Supreme Court law on a duty to deal by alleging that the denial of access to rivals is a tying claim. "A challenged arrangement is not a tie-in unless the alleged foreclosure can be eliminated by instructing the defendant to disaggregate what it sells to its customers," "rather than by an order to sell something . . . to would-be rivals." Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* ¶ 1700j1 (5th ed. 2023). In other words, if the claim is tying, "the proper remedy" is "to enjoin the tie, not to create a duty to deal." *Authenticom, Inc.* v. *CDK Glob., LLC*, 874 F.3d 1019, 1026 (7th Cir. 2017).

191. By Plaintiffs' own account, a ruling ordering AdX and DFP be sold to consumers separately would not satisfy their claim. "Plaintiffs do not challenge the integration of AdX and DFP 'itself.'" Pls.' Opp. to Google's Mot. for S.J. at 23, ECF No. 669. Rather, Plaintiffs believe that third-party ad servers should be granted "comparable" access to real-time bids from AdX. But the law protects Google's ability to make decisions about who can access its own systems and customers and on what terms. *See Pac. Bell Tel. Co*. v. *linkLine Commc'ns, Inc*., 555 U.S. 438, 448 (2009) ("businesses are free to choose the parties with whom they will deal, as well as the prices, terms, and conditions").

192. Courts have consistently rejected tying claims seeking forced sharing of technology and customers. *E.g.*, *Service & Training, Inc.* v. *Data General Corp*., 963 F.2d 680, 686 (4th Cir.

1992) (rejecting plaintiff's tying claim where the evidence "showed nothing more than" the defendant's "unilateral decision" to selectively license its product); *It's My Party, Inc*. v. *Live Nation, Inc*., 88 F. Supp. 3d 475, 501 (D. Md. 2015), *aff'd*, 811 F.3d 676 (4th Cir. 2016) (construing tying claim that defendant "forc[ed] artists to use its promotion services at its venues" as non-actionable refusal-to-deal claim).

193. Not only is Plaintiffs' tying claim barred by refusal-to-deal precedent, it does not otherwise meet the elements of such a claim. Tying is "defined as an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product." *N. Pac. Ry. Co*. v. *United States*, 356 U.S. 1, 5 (1958). "What causes these anticompetitive harms and distinguishes tying from ordinary market behavior is not the mere bundling of two products together but rather the coercion of the consumer." *It's My Party, Inc*. v. *Live Nation, Inc.,* 811 F.3d 676, 684-85 (4th Cir. 2016). In a tying arrangement, a party conditions the sale of one product (the tying product) on the buyer's purchase of a second product (the tied product). *Id.* at 684. "[T]he essential characteristic of an invalid tying arrangement lies in the seller's exploitation of its control over the tying product to force the buyer into the purchase of a tied product that the buyer either did not want at all, or might have preferred to purchase elsewhere on different terms." *Jefferson Par. Hosp. Dist. No. 2* v. *Hyde*, 466 U.S. 2, 12 (1984); *accord It's My Party*, 811 F.3d at 684. "[I]n all cases involving a tying arrangement, the plaintiff must prove that the defendant has market power in the tying product." *Ill. Tool Works Inc.* v. *Indep. Ink, Inc.*, 547 U.S. 28, 46 (2006).). And Plaintiffs must show that the alleged tie "has a substantial anticompetitive effect that harms consumers" in the relevant tied product market. *FTC* v. *Qualcomm Inc.*, 969 F.3d 974, 991 (9th Cir. 2020).

194. Tying arrangements are evaluated under Section 1 of the Sherman Act using either per se or rule of reason analysis. *See Jefferson Par. Hosp. Dist. No. 2* v. *Hyde*, 466 U.S. 2, 29 (1984). The per se rule that applies to tying claims is distinct from the per se rule that applies to other antitrust claims. Courts have "c[o]me to see that arguable tie-ins are to be found everywhere, [and] that most of them serve legitimate objectives without threatening competitive vitality in the second market or anywhere else and without even harming buyers." Philip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* ¶ 1701c (5th ed. 2023). As a result, application of a per se rule in the context of a tying claim is "most peculiar," and "the Supreme Court has almost always been willing to consider a defendant's offered justifications." *Id*. ¶¶ 1701c, 1760(b); *see also Mozart Co.* v. *Mercedes-Benz of N. Am., Inc.*, 833 F.2d 1342, 1348 (9th Cir. 1987) ("We have recognized that antitrust defendants may demonstrate a business justification for an otherwise per se illegal tying arrangement.").

195. Under the *per se* rule, "a plaintiff must prove (1) the existence of two separate products, (2) an agreement conditioning purchase of the tying product upon purchase of the tied product (or at least upon an agreement not to purchase the tied product from another party), (3) the seller's possession of sufficient economic power in the tying product market to restrain competition in the tied product market, and (4) a not insubstantial impact on interstate commerce." *Serv. & Training, Inc*. v. *Data Gen. Corp*., 963 F.2d 680, 683 (4th Cir. 1992). If a tying claim does not fall within the *per se* framework, it is analyzed under the rule of reason. *Jefferson Par. Hosp. Dist. No. 2* v. *Hyde*, 466 U.S. 2, 29 (1984). *Ill. Tool Works Inc.* v. *Indep. Ink, Inc.*, 547 U.S. 28, 46 (2006).

196. The principal distinction between the *per se* rule and the rule of reason is that under the *per se* rule, if the plaintiff establishes the four requisite elements, the tie is unlawful unless the

defendant's justifications are sufficient to establish an affirmative defense. But under the rule of reason, establishing the same four elements satisfies only the plaintiff's burden at the first step of the burden-shifting framework. The burden then shifts to the defendant "to show a procompetitive rationale for the restraint." *FTC* v. *Qualcomm Inc.*, 969 F.3d 974, 991 (9th Cir. 2020) (quoting *Ohio v. Am. Express Co.*, 585 U.S. 529, 541 (2018)).

197. Not only is Plaintiffs' tying claim barred by refusal-to-deal precedent, it does not otherwise meet the elements of such a claim. Two elements in particular bear mention. First, a tying arrangement is "defined as an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product." *N. Pac. Ry. Co*. v. *United States*, 356 U.S. 1, 5 (1958). "What causes these anticompetitive harms and distinguishes tying from ordinary market behavior is not the mere bundling of two products together but rather the coercion of the consumer." *It's My Party, Inc*. v. *Live Nation, Inc.,* 811 F.3d 676, 684-85 (4th Cir. 2016). Second, "in all cases involving a tying arrangement, the plaintiff must prove that the defendant has market power in the tying product." *Ill. Tool Works Inc*., 547 U.S. 28, 46 (2006).

198. Plaintiffs' tying claim stems from its providing access to real-time bids from AdX in the product Google Ad Manager, which also includes the publisher ad server DFP. Plaintiffs' tying claim fails because they have not shown the element of coercion: that the "sale of the desired ('tying') product is conditioned on purchase of another ('tied') product." *Aerotec Int'l, Inc*. v. *Honeywell Int'l, Inc*., 836 F.3d 1171, 1178 (9th Cir. 2016). If "the buyer is free to decline the tied product or to purchase the two products separately, then by definition there is no unlawful tying." *It's My Party, Inc*. v. *Live Nation, Inc.,* 811 F.3d 676, 684 (4th Cir. 2016); *see also* Philip E. Areeda & Herbert Hovenkamp, *Antitrust Law: An Analysis of Antitrust Principles and Their Application* ¶ 1752b (4th ed. 2020) (defining a tie as the improper imposition of "conditions that explicitly or

practically require buyers to take the second product if they want the first one"). Ad space sellers are not required to buy GAM and also can access AdX (the alleged tying product) without the tied product (DFP) by using AdX direct tags, without using DFP. FOF ¶ 571. To be sure, if customers want real-time bids from AdX, they have to use DFP but merely optimally integrating two tech products is not a tie.

199. Plaintiffs have failed to prove an anticompetitive effect from the joint sale of AdX and DFP. Plaintiffs' experts have not opined that the joint sale of AdX and DFP has had an anticompetitive effect apart from their concerns with Google "denying comparable access" to real-time bids on AdX to rival ad servers. *Supra* COL ¶ 144.

200. Plaintiffs' argument also fails because they do not adequately define a market for the tying product, which depends on a claim about power in an undefined market of "advertiser demand." *Infra* § IV.D. Google has also shown business justifications for the joint sale of AdX and DFP. Integrating the technologies improved efficiency for customers and provided a desirable common user interface for customers, which customers wanted. FOF ¶¶ 245-246.

c. Limiting Dynamic Allocation to AdX

201. Plaintiffs challenge Google's decision to limit "Dynamic Allocation" to Google's ad exchange AdX, and the allegation that this gave AdX "'first-look' and 'last-look' advantages over rival ad exchanges." Lee Rpt. ¶ 12(3)(3). Plaintiffs' allegations about "first look" and "last look," which ceased to exist after 2019, boil down to a complaint that Google's DFP ad server granted AdX exclusive "access" to Dynamic Allocation and denied rival ad exchanges "the ability to bid alongside AdX in realtime and obtain access to the advantages associated with dynamic allocation." FOF ¶¶ 573-574. This is an allegation that Google should have shared with its rivals the Dynamic Allocation technology that it continued to develop and enhance following the DoubleClick acquisition.

202. Dynamic Allocation was an innovative feature in DFP developed by DoubleClick—and enhanced and continued by Google. It benefited ad space seller customers by providing them with higher returns in a risk-free way. FOF ¶ 586-591. When combined with real-time bids from AdX, Dynamic Allocation in DFP increased ad space seller revenue by asking AdX whether any AdX buyers had real-time bids that would exceed the prices the ad space seller expected to get from other demand sources based on negotiated contracts or the publisher's estimates. Plaintiffs call this mechanism for soliciting real-time AdX bids that were higher than what the ad space seller could expect to receive from other sources "first look." As a result of this feature, ad space seller revenues went up 136%. FOF ¶ 203. For ad space sellers who wanted to use header bidding—which emerged long after DoubleClick first designed Dynamic Allocation—they could set up Dynamic Allocation to operate after running an initial header bidding auction to see if any ad space buyer was willing to beat the header bidding price. This set up, sometimes referred to as "last look," led to greater revenues for ad space sellers than header bidding alone and the opportunity for the ad space buyers who valued the potential impressions more to win the bid.

203. Plaintiffs claim that restricting Dynamic Allocation functionality to AdX had anticompetitive effects in the alleged ad exchange market fails to account for the ways in which Google's innovations in Dynamic Allocation and Enhanced Dynamic Allocation further improved the quality of ad matches. Both increased ad space seller revenue by allocating each individual impression to the ad space buyer who would value the impression the most. FOF ¶¶ 577-583. As a result, ad buyers won more relevant impressions that they were willing to spend more money on. *Id*. These benefits fueled ad space buyers and sellers to use ad tech tools to sell more inventory and purchase more advertising.

204. Plaintiffs' claim would have required Google to permit rival ad exchanges to bid alongside AdX customers on the AdX exchange or otherwise provide rivals the same advantages that Plaintiffs maintain Google and Google customers had from Dynamic Allocation's "first look" and "last look. The required dealing with competitors would again require Google to build technical connections to its rivals to achieve interoperability. FOF ¶ 593.

205. When Dynamic Allocation was first introduced on DFP, real-time bidding was not yet widely adopted in the industry. As the number of exchanges offering real-time bids increased, Plaintiffs argue that Google should have made Dynamic Allocation in DFP work with real-time bids from rival exchanges, too. Plaintiffs argue that Google should either have modified Dynamic Allocation so that ad space sellers could set up Dynamic Allocation with other ad exchanges so that a different ad exchange (rather than AdX) would have a "first look" or "last look," or, alternatively, that Google should not have permitted any "first look" or "last look" set up at all. Again, the law does not require Google to design or modify its products to extend their benefits to rivals.

206. Dynamic Allocation was previously only built for AdX because there was no secure, fast way for other exchanges to provide real-time bids to DFP. Once ad space sellers started seeking to compare real-time bids from multiple exchanges against each other, Google built and launched Open Bidding, which was a secure, efficient, and reliable way to compare real-time bids across exchanges. With Open Bidding, now that Google had the technological infrastructure to compare real-time bids from multiple exchanges, many of the benefits of Dynamic Allocation were expanded to real-time bids from other exchanges. FOF ¶ 585. As technology and the industry evolved, Google transitioned in 2019 to a Unified First Price Auction ("UFPA"), which allowed real-time bids from all sources (including third-party exchanges via header bidding and Open

Bidding, as well as AdX) to compete at the same time. Following the transition to UFPA, Dynamic Allocation (and with it, "first look" and "last look") no longer existed. FOF ¶ 592.

d. AdMeld Acquisition and Integration

207. Plaintiffs next object to Google acquiring AdMeld but declining post-acquisition to incorporate and build out an AdMeld server-side integration to provide third-party ad servers access to real-time bids from AdMeld. FOF ¶¶ 622, 624. In essence, Plaintiffs' AdMeld claim is the same as their claim that it was anticompetitive for Google to "provide access to and use of real-time bids from AdX exclusively to its DFP publisher ad server, and deny comparable access to rival publisher ad servers," and fails for much the same reason.

208. Google acquired AdMeld to provide its ad space seller customers with an ad network yield optimization feature that such sellers requested at the time. Yield optimization refers to functionality that allows publishers to optimize revenue between different sources of demand, and AdMeld's yield management technology is not the technology that Plaintiffs are complaining that Google did not incorporate post-acquisition. As early as 2009, Google had concluded that a product to optimize predicted yield between various ad networks was less efficient than a real-time bidding tool–a conclusion shared by competitors who offered yield management tools but shifted focus to real-time bidding. FOF ¶¶ 629, 640. Nonetheless, Google moved forward with the acquisition to serve ad space sellers who still relied on yield management. FOF ¶¶ 630-632.

209. Plaintiffs complain that Google did not rebuild into AdX one feature that a "small handful" of AdMeld users used, called server-side integration, which enabled AdMeld's ad exchange to provide real-time bids to third-party ad servers. In order to integrate that feature, Google would have had to undertake significant technical work to rebuild the feature so that it could offer real-time bids from *Google's* ad exchange. FOF ¶ 642. But building such an integration raised "engineering concerns associated with spam detection and inventory quality

controls." FOF ¶ 644. By AdMeld's own account, its pre-acquisition server-side integrations had been "plagued with ongoing issues." FOF ¶ 644. Given these challenges and the limited customer interest, Google had valid business justifications for not undertaking the endeavor. Further, the only reason that Plaintiffs offer for why Google should have done this work was to enable third-party ad servers to have comparable access to Google's ad exchange as DFP, which the law does not require.

210. Both before and after Google acquired AdMeld, other large supply-side platforms (like PubMatic and Rubicon, which both still exist today) offered the same yield management services that AdMeld did. As real-time bidding became more widely adopted and traditional yield management receded in importance, these supply-side platforms also transitioned to ad exchange offerings based on real-time bidding.

211. At the time of the AdMeld acquisition, the Department of Justice reviewed the transaction and did not challenge it. FOF ¶ 623. In particular, it noted that "web publishers often rely on multiple display advertising platforms and can move business among them in response to changes in price or the quality of ad placements." FOF ¶ 623. The reality that ad space sellers "multi-home" was true then, *id.*, and it remains so today, FOF ¶ 421.

212. Plaintiffs have not submitted evidence that the AdMeld acquisition was anticompetitive apart from its claim that it was anticompetitive not to incorporate and build out technology to provide rival exchanges access to real-time bidding on Google ad tech.

e. Unified Pricing Rules

213. Plaintiffs challenge Google's decision to "eliminate publishers' ability to use variable price floors within DFP, impairing their ability to work with rival ad exchanges" Lee Rpt. ¶ 12(3)(5). Prior to 2019, an advertiser bidding on the exact same impression offered through

different exchanges could receive differing floor prices for the exact same ad space based on the exchange; after 2019, Google's DFP moved to using uniform price floors. FOF ¶¶ 598-599.

214. Directly contrary to *Trinko* and other decisions, this claim would have required Google to establish rules for price floors in DFP (or any Google ad tech) that affirmatively enable Google customers to advantage rivals and disadvantage Google on Google's own systems. Contrary to Google's determination that Unified Pricing Rules best serve its customers on both sides of its transaction platform, Plaintiffs believe that Google's ad server should enable rival ad exchanges to be subjected to lower price floors than Google's ad exchange so that those rivals can win more business from Google's ad space seller customers. According to Plaintiffs, Google should modify its products and build a feature that would require its own AdX customers to pay a higher price for the same inventory than ad space buyers using other buying tools and bidding through other exchanges. Perhaps rivals would prefer these terms but as now-Justice Gorsuch explained in *Novell*, the "Supreme Court and this one, however, have long and emphatically rejected this approach . . . . Forcing monopolists to 'hold an umbrella over inefficient competitors' might make rivals happy but it usually leaves consumers paying more for less." *Novell*, 731 F.3d at 1072 (quoting *Olympia*, 797 F.2d at 375).

215. Variable price floors created complexity for ad space sellers and buyers. Ad space sellers had to set different price floors manually for different exchanges and adopt "complex strategies" to fish for higher prices and revenue. Meanwhile, ad buyers "struggled to optimize" their bidding to account for these differential price floor strategies by ad space sellers. The complexity was only magnified by the number of options ad space sellers had to sell inventory, including direct deals, programmatic guaranteed deals, real-time bidding, header bidding, open or exchange bidding, first price auctions, and second price auctions. FOF ¶ 596-597.

216. In the face of this complexity, Google recognized the benefits to ad space buyers and sellers of offering a simpler, more transparent marketplace for advertising. FOF ¶ 601-602. Google therefore developed the Unified First Price Auction, which enabled ad space sellers to run an "auction of auctions" that would compare bids from all demand sources at once. And, under the Unified Pricing Rules, all demand—whether from AdX, header bidding, or non-Google exchanges—competed on the same first-price basis, with the highest bidder winning the impression. FOF ¶ 607. Notably, this innovation rendered obsolete prior features like Dynamic Allocation because all bids were compared simultaneously. UFPA made clear that Google was willing to continually update its offering to meet customers' needs.

217. Plaintiffs and their experts acknowledge that the Unified Pricing Rules benefited advertisers (including buyers bidding into Google's AdX) by simplifying the bidding process, lowering effective price floors, and protecting advertisers from overpaying for ad impressions. FOF ¶¶ 609-610. Unified Pricing Rules prevented ad space sellers from using tactics that exploited variable price floors and the fragmentation of auctions in order to fish for higher bids for the same impression. FOF ¶ 610. From the ad seller perspective, most benefited from—or at worst were unaffected by—the Unified Pricing Rules, which could increase ad space seller revenue by ensuring that an ad space buyer willing to pay more for a particular impression would not artificially lose an auction because it bid through an exchange subject to a variable price floor. FOF ¶¶ 611, 618. Given these procompetitive rationales, Unified Pricing Rules are now viewed as an industry best practice. FOF ¶ 620.

218. At bottom, each of the challenged acts were undertaken with valid business justifications and making Google change course would require overcoming the Supreme Court's clear pronouncements on a firm's broad right to choose with whom and on what terms it will deal.

Further, remedying each of these acts would require Google to share its technological innovations with its rivals by undertaking considerable engineering work, renegotiation of contracts, and additional investment in technological infrastructure–all of which reinforces that Plaintiffs' claims are demands to deal.

4. Plaintiffs' Efforts To Evade Refusal To Deal Case Law Are Unavailing.

219. Plaintiffs previously argued that the refusal to deal framework does not apply because this is a case about "conditions" on customers. Opposition to Motion for Summary Judgment at 22. The cases Plaintiffs invoke only reinforce the conclusion that Google was engaged in a lawful refusal to deal with rivals. In *Lorain J. Co.* v. *United States*, 342 U.S. 143, 152 (1951), for example, the Supreme Court held that a local newspaper could not refuse to accept ads from customers who advertised with other local media outlets. That case is entirely inapposite here. Google places no such restriction on ad space sellers or buyers nor prohibits them from doing business with its rivals. There is no evidence of long-term or exclusive contracts between Google and its customers limiting their transactions with Google rivals. Google customers routinely "multihome" across Google's and rivals' ad tech tools. Ad space buyers use multiple tools to purchase ads across channels and formats, FOF ¶¶ 548, 549, and ad space sellers use multiple avenues to sell ad space including through direct deals, third-party exchanges, and header bidding tools, FOF ¶¶ 364-370, 421.

220. Plaintiffs cannot claim that Google told its customers they may not deal with rivals (as in *Lorain Journal*). Plaintiffs instead focus on Google's refusal to provide rivals with comparable access to its technology and customers. But to fall within the *Lorain Journal* line of cases, the defendant must have "conditioned access" to its product on a customer "agreeing not to deal with" the defendant's competitors. *New York* v. *Facebook, Inc.*, 549 F. Supp. 3d 6, 32 (D.D.C. 2021) (rejecting the same argument made by Plaintiffs here). That is true of all the other cases

Plaintiffs look to for support. *See Chase Mfg., Inc.* v. *Johns Manville Corp.*, 84 F. 4th 1157, 1173 (10th Cir. 2023) (threatening "to cut off" customers who bought rival's product); *Viamedia, Inc.* v. *Comcast Corp.*, 951 F.3d 429, 444, 449 (7th Cir. 2020) (denying access to those who dealt with rival); *see also FTC* v. *Facebook, Inc.*, 560 F. Supp. 3d 1, 29 (D.D.C. 2021) (noting *Lorain Journal* involved "a very special form of exclusive dealing . . . a refusal to sell to end-user customers who purchase[d] from the monopolist's competitor").

221. Google does not condition access to its ad tech tech products on whether a customer is doing business with any competitor. Customers, whether ad space buyers or sellers, may do business with Google and also do business with and use the ad tech of Google's competitors. FOF ¶ 262. Unlike the newspaper in *Lorain Journal*, Google does not say: to do business with us, you cannot do business with our competitors.

222. Nonetheless, Plaintiffs object on the ground that DFP is the only way to access real-time bids from AdX, which in turn is the only way to gain access to Google Ads demand. Even if that were the case (it is not, given that ad space sellers multi-home and can be reached through other means), allegations that Google restricted how its own products interoperate with rivals do not run afoul of *Lorain Journal* because customers may (and frequently do) deal with those rivals outside of Google's systems. *See New York* v. *Meta Platforms, Inc.*, 66 F.4th 288, 304 (D.C. Cir. 2023) (declining to apply *Lorain Journal* where Facebook's "policy limit[ed] only how canvas apps on Facebook operate, and [left] app developers entirely free to develop applications for Facebook's competitors"); *Novell, Inc.* v. *Microsoft Corp.*, 731 F.3d 1064, 1072, 1074 (10th Cir. 2013) (differentiating interference with "the abilities of third parties to deal with rivals (exclusive dealing)" from a firm's unilateral decision to "keep [technology] to itself"). Plaintiffs' interpretation of *Lorain Journal* would have required the newspaper there, as an alleged powerful

local platform for advertisements, to place ads for its rivals alongside the ads of its own advertiser customers, a view inconsistent with both *Lorain Journal* and *Trinko.* To the contrary, the law permits Google to design well-integrated products that render it "uniquely suited to serve" its customers. *Verizon Commc'ns Inc. v. L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004).

223. *United States* v. *Microsoft Corp.*, 253 F.3d 34 (D.C. Cir. 2001) (en banc), is instructive on this point. Microsoft had developed software to operate Java programs faster on Microsoft's system than on its competitors' systems, and these programs were incompatible with rivals' versions. *Id.* at 74-75. Rejecting the view that developing and promoting this software was "exclusionary conduct," the D.C. Circuit held that "a monopolist does not violate the antitrust laws simply by developing a product that is incompatible with those of its rivals." *Id.* at 75.

224. Similarly, Plaintiffs' expert couches some claims as "exclusivity" or "exclusionary conduct" claims because Google is not providing its rivals access to Google ad tech (DFP or AdX) on terms "comparable" to what Google enjoys on its own products. "Generally, a prerequisite to any exclusive dealing claim is an agreement to deal exclusively." *ZF Meritor, LLC* v. *Eaton Corp.*, 696 F.3d 254, 270 (3d Cir. 2012) Even exclusive dealing contracts are not and have never been illegal *per se. Tampa Elec. Co. v Nashville Coal Co.*, 365 U.S. 320, 333 (1961). Absent anti-competitive market effects, an exclusive contract "may well be of economic advantage to buyers as well as to sellers." *Id.* at 334 (quoting *Std. Oil Co. v. United States*, 337 U.S. 293, 306 (1949)).

225. Here, there are no exclusive agreements between Google and its customers, requiring customers to do business only with Google. The evidence shows the opposite, with Google's ad tech customers multi-homing, also using the ad tech tools of other providers. FOF ¶ 395-399, 421. *E.g. Spinelli v. Nat'l Football League*, 96 F. Supp. 3d 81, 117 (S.D.N.Y. 2015) (contracts with "exclusivity periods of no more than three years . . . do not foreclose competition

and are not anticompetitive as a matter of law"); *Mazda v. Carfax, Inc.*, 2016 WL 7231941, at *14 (S.D.N.Y. Dec. 9, 2016), *aff'd sub nom. Maxon Hyundai Mazda, et al. v. Carfax, Inc.*, 726 F. App'x 66 (2d Cir. 2018) (no reasonable factfinder could find that three to five year exclusive website contracts were anticompetitive or even "particularly long-term"). Instead of exclusive agreements, customers can leave Google for competitors freely. FOF ¶ 262.

226. Plaintiffs also suggest this court can simply ask if Google acted with "anticompetitive intent." Setting aside that there is no such intent given the significant procompetitive rationales for Google's conduct, *see supra* § IV.B.3; *infra* § IV.E.2, Plaintiffs' approach would be squarely at odds with *Trinko*, which noted that the alleged monopolist "denied interconnection services to rivals in order to limit entry," yet analyzed the case through the *Aspen Skiing* factors. *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004). Courts have rejected time and again Plaintiffs' "anticompetitive intent" test. *E.g.*, *Aerotec Int'l, Inc.* v. *Honeywell Int'l, Inc.*, 836 F.3d 1171, 1184 (9th Cir. 2016) (rejecting argument that refusal to deal is unlawful because it was motivated by "intent to foreclose competition"); *Novell, Inc.* v. *Microsoft Corp.*, 731 F.3d 1064, 1078 (10th Cir. 2013) (Gorsuch, J.) (same); *Facebook, New York* v. *Facebook, Inc.*, 549 F. Supp. 3d 6, 31 (D.D.C. 2021), *aff'd sub nom. New York* v. *Meta Platforms, Inc.*, 66 F.4th 288 (D.C. Cir. 2023) (plaintiffs cannot establish a duty-to-deal violation by pointing to a mere "intent to harm—or, the flip side of the same coin, to avoid helping—a rival or rivals"); *see generally* 2 J. Kalinowski, Antitrust Laws and Trade Regulation §25.04 (2d ed. 2024) ("proof of intent alone will not suffice to establish the wrongful conduct element of the monopolization offense.").

227. Plaintiffs also try to circumvent the obligation to prove that the individual challenged acts were unlawful by suggesting that it suffices to show a "broader anticompetitive

enterprise." However, when Plaintiffs allege acts that are *per se* lawful under controlling case law, aggregating them does not make them unlawful. *Duke Energy Carolinas, LLC* v. *NTE Carolinas II, LLC*, 2024 WL 3642432, at *11 (4th Cir. 2024). "[W]hen anticompetitive conduct is alleged to be typical . . . refusing to deal," for example, "0 + 0 = 0 — is a proper approach." *Id.*

228. As the Fourth Circuit recognized, this approach follows from the Supreme Court's decision in *linkLine*, which evaluated plaintiffs' claims "under . . . two relevant tests" (there predatory pricing and duty to deal). *Duke Energy Carolinas, LLC* v. *NTE Carolinas II, LLC*, 2024 WL 3642432, at *11 (citing *Pac. Bell Tel. Co.* v. *linkLine Commc'ns, Inc.*, 555 U.S. 438, 449 (2009)); *see also linkLine*, 555 U.S. at 452 (rejecting "amalgamation" of two "meritless" claims of anticompetitive conduct). Other appellate courts and district courts have adopted the same approach. *See, e.g.*, *United States* v. *Google LLC*, 687 F. Supp. 3d 48, 70 (D.D.C. 2023) (explaining "the court must disaggregate the exclusionary conduct into its component parts"); *In re EpiPen Mktg., Sales Practices & Antitrust Litig.*, 44 F.4th 959, 982 (10th Cir. 2022) ("courts disaggregate the exclusionary conduct into its component parts before applying the relevant law"); *Retractable Techs., Inc.* v. *Beckton Dickinson & Co.*, 842 F.3d 883, 891-93 (5th Cir. 2016); *Facebook*, *New York* v. *Facebook, Inc.*, 549 F. Supp. 3d 6, 47 (D.D.C. 2021), *aff'd sub nom. New York* v. *Meta Platforms, Inc.*, 66 F.4th 288 (D.C. Cir. 2023) (lawful refusals to deal are "not the sort of lawful conduct that the monopoly-broth theory is designed to account for and, to the extent that theory is viable, should be excluded from its reach").

229. Nor is this the sort of case where Plaintiffs allege "a complex or atypical exclusionary campaign" with components that are not amenable to "pre-established categories" and where the focus on those categories would "prove too rigid." *Duke Energy Carolinas, LLC* v. *NTE Carolinas II, LLC*, 2024 WL 3642432, at *11 (4th Cir. 2024). Rather, all of Plaintiffs' alleged

conduct is squarely a lawful refusal to deal that can be assessed under controlling Supreme Court law. *Id*. Furthermore, even if Plaintiffs' allegations were to be assessed "holistically," they would still fail to demonstrate a Section 2 violation. "[C]ourts must take care not to aggregate acts that are procompetitive to produce only a semblance of an exclusionary effect when considered together," especially when those aggregate acts are lawful individually. *Id.* at *12.

230. Unlike *Duke Energy,* there is no indication that any of the alleged acts were explicitly "executed simultaneously and *to the same [anticompetitive] effect*" or were part of a targeted, "singular, coordinated anticompetitive effort" more generally. *Duke Energy Carolinas, LLC* v. *NTE Carolinas II, LLC*, 2024 WL 3642432, at *20, *30 (4th Cir. 2024) (emphasis in original). There, a series of interrelated events were "timed . . . to achieve anticompetitive ends": to drive a major competitor out of an important deal. *Id.* at *20. Here, each of the challenged acts was undertaken for "procompetitive" reasons to ensure product quality, respond to an evolving ad tech landscape, and address changing customer needs. Thus, when the alleged conduct is considered together, the result is no different: there has been no "foreclosure to competition . . . [t]hat Section 2 seeks to proscribe." *Id.*

C. Plaintiffs' Claims of Anticompetitive Conduct Based on Google Ads Advertiser Demand Are Improper Tying Claims and Otherwise Meritless.

231. In the alternative, Plaintiffs argue that ad space sellers are coerced—as a practical matter—to use AdX or DFP. According to Plaintiffs, Google coerces ad sellers by controlling access to unique or important advertiser demand through Google Ads. That argument fails legally and factually.

232. Legally, Plaintiffs' argument is an improper attempt to assert a tying claim without defining a market in the tying product. *See It's My Party, Inc.* v. *Live Nation, Inc.*, 811 F.3d 676, 681 (4th Cir. 2016) (tying claim faces "the initial challenge of identifying exactly what market

defendant is accused of monopolizing"). Plaintiffs argue that Google has used its market power in one market—"advertiser demand"—to foreclose and diminish the competitiveness of rivals' products in another (ad servers). Even assuming Plaintiffs' factual assertions are correct, a plaintiff cannot allege anticompetitive conduct based on market power in an undefined market. *See Ohio* v. *Am. Express*, 585 U.S. 529, 543 (2018) ("Without a definition of the market there is no way to measure the defendant's ability to lessen or destroy competition."). Plaintiffs have done no work to define a market in "advertiser demand." That ends the inquiry.

233. Because they have not defined a market for the alleged tying product, Plaintiffs are unable to establish, as a matter of law, any of the elements required to support their claim. Plaintiffs have no way to demonstrate that Google Ads customers, whether small or large, are actually a "unique" demand source that creates market power. There is no evidence regarding what portion of all ad space buyers advertise solely through Google Ads. And Plaintiffs have no way to show anticompetitive effects in the ad exchange and ad server markets based on market power in an undefined market. *It's My Party, Inc.* v. *Live Nation, Inc. II*, 811 F.3d 676, 681 (4th Cir. 2016) ("In the absence of a plausible market definition, courts are hard pressed to discern the nature or extent of any anticompetitive injury that plaintiff and other similarly situated parties may be suffering."); *F.T.C.* v. *Qualcomm Inc.*, 969 F.3d 974, 992 (9th Cir. 2020) ("harms, even if real, are not anticompetitive" if they are not "exclusionary conduct in the area of effective competition" (quoting *Ohio* v. *Am. Express*, 585 U.S. 529, 543-44 (2018))). Finally, regardless of whether Google has market power in some market for "advertiser demand," antitrust law does not require that Google share its lawful advantage—its own customer list—with rivals. *Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004) Plaintiffs cannot repackage a

refusal to deal claim, which lies at the core of conduct protected by *Trinko*, as a *de facto* tying claim.

234. As a factual matter, the record evidence demonstrates that—had Plaintiffs attempted to define a market in advertiser demand and assess market power there—Google Ads does *not* have control over some unique and important set of advertiser demand.

234.1. Large ad space buyers account for the vast majority of spend on Google Ads, and they multi-home across buying tools. FOF ¶¶ 549. As a result, the vast majority of spending on Google Ads is by ad buyers who can be found through other buying tools, other exchanges, and other pathways that connect ad buyers to ad space sellers (such as direct deals, Supply Path Optimization, self-service platforms, and more). FOF ¶¶ 548-549.

234.2. The limited set of smaller ad space buyers on Google Ads who may be purchasing only on Google Ads accounts for a vanishingly small percentage of advertising spend. Ad buys by the bottom 99.5 percent of advertisers on Google Ads account for just 3.6 percent of the overall spending on DFP transactions. FOF ¶¶ 550. Even assuming all those ad space buyers bid exclusively through Google Ads, there is no basis to conclude that ad space sellers would feel compelled to use DFP in order to access just 3.6 percent of spending. Indeed, in reality, ad space sellers do not. Ad sellers make their inventory available through many different pathways other than just AdX and DFP. FOF ¶¶ 421, 439, 449.

235. Even if Google did control some set of "unique and important" ad space buyers on Google Ads, it is also not true that ad sellers could only reach those ad buyers through AdX and DFP.

235.1. While many ad space buyers and sellers choose to use Google's products because of their quality—including return on investment, revenues, Google's ad security and ad fraud policies, and the control that Google gives customers over their use of Google's products—Google does not require any customer to use Google tools to the exclusion of others. Nor does Google require advertisers to do a minimum amount of business on Google Ads to maintain access to its tools. Ad buyers may (and frequently do) purchase with other tools, which bid onto other exchanges. FOF ¶¶ 141, 394-395, 408, 549.

235.2. Further, ad space buyers who use Google Ads can bid on third-party exchanges using AwBid. FOF ¶ 162. And even bids that are entered into AdX are available on other ad servers or ad seller platforms through AdX Direct tags. FOF ¶ 572.

235.3. In addition, ad space buyers who use either Google Ads or DV360 to purchase app inventory can connect to a range of third-party exchanges using gBid–a particularly valuable integration given the shifting user attention to mobile apps. FOF ¶ 163-165.

235.4. By that same measure, ad space sellers who sell their inventory onto AdX are not required to do so using DFP. FOF ¶ 571-572. Ad sellers who sell their inventory through DFP may use DFP to sell onto non-Google exchanges. FOF ¶ 250. Ad sellers who use AdX or DFP are also free to manage as much of their

inventory as they want through other tools, such as in-house ad servers, other ad servers, or other tools entirely. FOF ¶ 249.

236. Plaintiffs' argument that Google uses "unique" advertiser demand from Google Ads to hurt competitors makes no economic sense. At bottom, their argument is that Google is denying competitors access to its small advertiser customers who use Google Ads and do not multi-home while also building access to its large advertisers (who account for the bulk of revenue) through its DV360 tool (which undisputedly enables bidding into third-party exchanges). FOF ¶¶ 163-165. On top of that, Google is building access to the full range of customers for mobile app publishers through gBid. It is hard to conceive how these facts sustain a conclusion that Google is harming competitors with a monopolistic intent. It defies logic to think Google set out to harm its rival by cutting them off from small customers while building connections for them to large customers.

237. The reality, as explained above, is that one of these products (Google Ads) was designed to connect ad space buyers with vetted, curated inventory and the other (DV360) was acquired to provide access to a wider array of inventory but with fewer quality assurances. FOF ¶¶ 127, 167. Google had a valid business reason for designing each of those products. The distinctions between the two products also emphasize the artificiality of the market definitions in this case where Plaintiffs exclude DV360 on the grounds that it is a demand-side platform. The result is that Plaintiffs' gerrymandered markets allow them to focus on conduct to which they object–that Google allegedly restricts rivals' access to its (small) advertiser customers–and attempt to exclude conduct that would undermine their claim–that Google provides rivals access to its (large) advertiser customers.

D. Plaintiffs' Alternative Claim for Attempted Monopolization of the Ad Exchange Market Also Fails Because It Is a Lawful Refusal to Deal and There Is No Dangerous Probability of Google Achieving Monopoly Power.

238. At Count II of the Complaint, Plaintiffs' tack on a claim "in the alternative" for attempted monopolization of the "Ad Exchange Market. *See* FAC ¶¶ 324-329. "A plaintiff seeking to establish attempted monopolization under § 2 of the Sherman Act must show three things: (i) the defendant formed a specific intent to monopolize the market, (ii) the defendant engaged in anticompetitive or predatory conduct designed to further that intent, and (iii) a dangerous probability of success." *Abcor Corp.* v. *AM Int'l, Inc.*, 916 F.2d 924, 926 (4th Cir. 1990).

239. Both monopolization and attempted monopolization claims have been interpreted to require similar showings of "predatory or anticompetitive conduct." *Imaging Ctr., Inc.* v. *W. Md. Health Sys., Inc.*, 158 F. App'x 413, 421 (4th Cir. 2005). Plaintiffs' alternative attempted monopolization claim fails because all the challenged acts at issue here were lawful refusals to deal. *Supra* § IV.A.1. And, even if Plaintiffs were able to evade the conclusion required by *Trinko* and its progeny, the claim also fails because the challenge acts lack anticompetitive effect and have procompetitive justifications. *Infra* § IV.E.

240. Plaintiffs also fail to prove the elements that are unique to an attempted monopolization claim. First, Plaintiffs have not shown "a specific intent to destroy competition or build monopoly." *Times–Picayune Pub. Co*. v. *United States*, 345 U.S. 594, 626 (1953). As the Fourth Circuit has cautioned, "a desire to increase market share or even to drive a competitor out of business through vigorous competition on the merits is not sufficient." *Abcor Corp.* v. *AM Int'l, Inc.*, 916 F.2d 924, 927 (4th Cir. 1990) (citing *United States Steel Corp.* v. *Fortner Enters.* 429 U.S. 610, 612 n.1 (1977)). To the contrary, considerable evidence demonstrates that Google introduced each of the challenged features to benefit the ad tech ecosystem–and its participants. *Infra* § IV.A.3. Plaintiffs even equate increasing customers or market share with anticompetitive

conduct because of the acquisition of scale, but all firms are allowed and expected to compete for more success and scale.

241. Second, Plaintiffs have failed to show a dangerous probability of successful monopolization. The Fourth Circuit has reasoned that, where a defendant's "market share" has "been in steady decline," it counsels against a conclusion that there is a "dangerous probability" a defendant will achieve monopoly power. *Kolon Indus. Inc.* v. *E.I. DuPont de Nemours & Co.*, 748 F.3d 160, 178 (4th Cir. 2014). That is precisely the case here with Google.

242. Google's ad tech tools account for less than 40 percent of the U.S. spend on digital advertising, with Google's share 37 percent in 2022 and declining. FOF ¶ 206. That is insufficient to establish an attempted monopolization claim. *See M & M Med. Supplies & Serv., Inc.* v. *Pleasant Valley Hosp., Inc.*, 981 F.2d 160, 168 (4th Cir. 1992) (attempted monopolization "claims involving between 30% and 50% shares should usually be rejected, except when conduct is very likely to achieve monopoly or when conduct is invidious, but not so much so as to make the defendant per se liable"); *Advanced Health-Care Servs.* v. *Giles Memorial Hosp.,* 846 F. Supp. 488, 497 (W.D. Va. 1994) (similar).

243. Even accepting Plaintiffs' flawed definition for the "ad exchange market," the highest U.S. market share from 2018-2022 that Plaintiffs calculated is 45% in 2020. FOF ¶ 419. AdX's U.S. market share fallen to 36% in 2022. *Id*. AdX not only has a declining market share, the decline occurred in a period of tremendous growth for ad exchanges. As Plaintiffs agree, the number of ad exchanges has grown from less than 10 in 2010 to over 80 in 2019 and has continued to grow to over 100 today. FOF ¶ 42. These facts foreclose Plaintiffs' attempted monopolization claim. *See Arthur S. Langenderfer, Inc.* v. *S.E. Johnson Co.*, 917 F.2d 1413, 1432 (6th Cir. 1990)

(collecting cases rejecting attempted monopolization claims where market share was approximately 50% or lower).

E. Plaintiffs Have Not Proven a Claim for Monopolization.

1. Plaintiffs Have Made No Effort to Establish Anticompetitive Effects in any Market for Ad Tech Tools.

244. When "assessing alleged antitrust injuries, courts must focus on anticompetitive effects 'in the market where competition is [allegedly] being restrained.'" *FTC* v. *Qualcomm Inc.,* 969 F.3d 974, 992 (9th Cir. 2020) (quoting *Am. Ad Mgmt., Inc*. v. *Gen. Tel. Co. of Cal*., 190 F.3d 1051, 1057 (9th Cir. 1999)); s*ee United States* v. *Google LLC*, 2024 WL 3647498, at *95 (D.D.C. Aug. 5, 2024) ("the next step in the analysis is to determine whether Google has engaged in exclusionary conduct with respect to" the specific markets in which the court determined that Google had monopoly power).

245. Evidence of anticompetitive effects includes "proof of actual detrimental effects on competition, such as reduced output, increased prices, or decreased quality in the relevant market." *Ohio* v. *Am. Express Co*., 585 U.S. 529, 542 (2018) (internal citation omitted). Courts "will not infer competitive injury from price and output data absent some evidence that tends to prove that output was restricted or prices were above a competitive level." *Id.* at 531 (internal quotations omitted).

246. In markets that include two-sided transaction platforms, courts must consider "indirect network effects and interconnected pricing and demand." *Ohio* v. *Am. Express Co*., 585 U.S. 529, 545–46 (2018).

247. To the extent Plaintiffs are claiming that competitors have been injured by the success of Google's ad tech, Plaintiffs' claims also fail to state a Sherman Act violation for failure

to show any anticompetitive effect. *Dickson* v. *Microsoft Corp.*, 309 F.3d 193, 211 (4th Cir. 2002) ("The offense of monopolization requires a showing of anticompetitive effect.").

248. The antitrust laws "were enacted for the protection of competition, not competitors." *Brunswick Corp.* v. *Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 488 (1977) (internal quotations omitted). Conduct is actionable only if it "excludes rivals on some basis other than efficiency," so that it "either does not further competition on the merits or does so in an unnecessarily restrictive way." *Aspen Skiing Co*. v. *Aspen Highlands Skiing Corp*., 472 U.S. 585, 605 & n.32 (1985).

249. As explained above, the relevant market is a two-sided one for ad tech tools. Plaintiffs make no attempt to analyze—or present evidence about—competition in a market involving the tools taking into account the transactions they facilitate. *Ohio* v. *Am. Express Co.*, 585 U.S. 529, 547 (2018). That alone dooms their claims.

250. Even in the gerrymandered markets constructed for this lawsuit, Plaintiffs have not met their burden to show anticompetitive effects.

251. *First*, as discussed above *supra* § III.B, there is no evidence of reduced output or increased prices. Moreover, ad tech fees are not fully representative of the value advertising matches provide to ad space sellers, ad space buyers, and users, but even if they were, across the industry ad tech fees as a percentage of display ad spending have been flat or declining from 2014 to 2022. FOF ¶ 734. Even in *U.S.* v. *Google*, where prices remained flat in only 40 percent of the market, not as here the entirety of the market, the court found no monopoly power in a search ad market. 2014 WL 3647498, at *88 (D.D.C. Aug. 5, 2024).

252. Google competes fiercely with its competitors for customers both in a market for ad tech tools and Plaintiffs' ad exchange market, including by offering price rebates in order to

entice customers. FOF ¶ 207. In Plaintiffs' ad exchange market, when a growing number of competitor exchanges lowered their revenue shares below AdX's, AdX lost market share. FOF ¶ 738.

253. *Second,* the evidence of business justifications for each of the alleged challenged acts discussed above shows that the conduct at issue here had pro-competitive benefits for publishers and advertisers. *See supra* § IV.A.3

254. As a company, Google is incentivized to develop and advocate for innovations that benefit not only ad space buyers and sellers, but also Internet users. FOF ¶¶ 104-112. Its investments and innovation in the ad tech industry have helped achieve that mission by funding a democratized Internet in which small and large ad buyers and ad sellers alike can reach users. FOF ¶¶ 114-124. And Google has consistently been at the forefront of efforts to develop products in the ad tech industry, such as the Ads Transparency Center and My Ad Center, that give users control and transparency about their ads while protecting their privacy. FOF ¶¶ 492-496.

255. As explained above, *supra* §§ III.A, III.B, the resulting ad tech tools market has the hallmarks of a healthy, competitive market. Throughout the entire time period Plaintiffs allege Google engaged in anticompetitive conduct, Google has faced dynamic, intense competition that pushes it to innovate and invest in competing on product quality. The display advertising landscape has been described—not just by Google, but also by its competitors and industry bodies—as "increasing," "crowded," "strong," "complex," and "intense." FOF ¶¶ 45, 48.

256. *Third,* competitor ad tech tools are constantly emerging to exert competitive pressures on Google. As a result, Google often loses display advertising spend to competitors that develop ways to serve the new needs of ad space buyers and sellers and users. FOF ¶¶ 382-383. Larger trends in the ad tech ecosystem also demonstrate the continuing innovation—not just by

Google, but also its competitors—in order to more effectively compete for advertising dollars. *E.g.*, FOF ¶¶ 229-231 (header bidding), 285-88 (supply path optimization). The success of these competitive initiatives demonstrate that Google's conduct has not foreclosed competition in the ad tech industry. To the contrary, competition has pushed the ad tech industry forward.

257. Plaintiffs argue that the ad tech market has nonetheless been harmed because Google's conduct has prevented rival ad tech providers from attaining scale. But Plaintiffs fail to distinguish effects on rivals from effects on competition. Contrary to the arguments of Plaintiffs, growth in customers and scale are not anticompetitive effects because they involve harm to competitors from legal competitive conduct by Google, including innovation and enhanced product quality. *See Verizon Commc'ns Inc.* v. *L. Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 414 (2004) ("false condemnations are especially costly, because they chill the very conduct the antitrust laws are designed to protect" (internal quotation marks omitted)).

258. Further, Plaintiffs have not shown that Google's competitors lack necessary scale to compete; rather competitors have substantial scale and substantial data to compete. FOF ¶¶ 706-728. The evidence shows that, notwithstanding any competition from Google, numerous ad tech rivals have successfully competed for business. FOF ¶¶ 729-730. Hundreds of tools now serve as buying tools for ad space buyers, inventory management tools for ad space sellers, or otherwise connect ad sellers to ad buyers. FOF ¶ 43. Google competes vigorously against competitors, and loses business or deals to them. FOF ¶¶ 45-47, 77, 382-383. Scale of a certain size is not necessary to compete successfully, as shown by the multitude of new entrants in the market. Further, ad space buyers, ad space sellers, and ad tech providers have numerous ways to accumulate valuable user targeting data and to use that data to facilitate transactions. FOF ¶¶ 706-728.

2. Google's Product Innovations Were Procompetitive, Taking into Account the Interests of the Digital Advertising Ecosystem.

259. Plaintiffs' failure to show anticompetitive effect ends the case under well-settled antitrust law. *Supra* § IV.E.1. If, however, the court finds that Plaintiffs have made the required showing of anticompetitive effect, their claims still fail because each of the challenged acts was motivated by a procompetitive justification.

260. In the Fourth Circuit, the burden to show that a factfinder "'could find no valid business reason or concern for efficiency'" in a defendant's actions falls on the plaintiff as part of its burden to prove a defendant "willfully acquired [monopoly] power or sought to maintain it." *Oksanen* v. *Page Mem'l Hosp*., 945 F.2d 696, 710 (4th Cir. 1991) (quoting *White* v. *Rockingham Radiologists, Ltd*., 820 F.2d 98, 105 (4th Cir. 1987)). Where there are valid business reasons, Plaintiff cannot "demonstrate the monopolistic intent necessary for a section two claim." *Id.*

261. Other circuits have adopted a burden-shifting framework that requires a plaintiff to show "anticompetitive effect" and then shifts the burden to the defendant to "proffer a procompetitive justification for its conduct." *FTC* v. *Qualcomm Inc*., 969 F.3d 974, 991 (9th Cir. 2020). If the defendant puts forward procompetitive justifications, the burden then shifts back to plaintiff to "rebut an asserted business justification by demonstrating either that the justification does not legitimately promote competition or that the justification is pretextual." *Image Technical Servs., Inc.* v. *Eastman Kodak Co*., 125 F.3d 1195, 1212 (9th Cir. 1997).

262. Although Fourth Circuit law places the burden to show the lack of a procompetitive justification on Plaintiffs, we note the variation in the interest of thoroughness. Here, the distinction is ultimately academic given the significant evidence Google has put forward of non-pretextual procompetitive justifications for each of the challenged acts.

263. Examples of procompetitive justifications include, among other things, "safety and quality of [] products," *Cont'l T. V., Inc. v. GTE Sylvania Inc.*, 433 U.S. 36, 55 n.23 (1977); "improv[ing] device security," *Epic Games, Inc.* v. *Apple*, 67 F.4th 946, 986-89 (9th Cir. 2023); "concern for accountability, efficiency, and sound business practices," *White* v. *Rockingham Radiologists, Ltd*., 820 F.2d 98, 105 (4th Cir. 1987); fostering a "novel business practice . . . that was beneficial to consumers in the long run," *FTC* v. *Qualcomm Inc*., 969 F.3d 974, 1003 (9th Cir. 2020); improving product performance, *United States* v. *Microsoft*, 253 F.3d 34, 67 (D.C. Cir. 2001); and winning a counterparty's business by "guarantee[ing] a stable source of supply" at "a stable, favorable price," *Barry Wright Corp*. v. *ITT Grinnell Corp*., 724 F.2d 227, 237 (1st Cir. 1983).

264. As explained, above, *supra* § IV.B.3, each of the five challenged acts (and the acts Plaintiffs have abandoned) involved product design decisions that were made to improve the quality of Google's products, and the ad tech ecosystem, for Google's ad space buyer and seller customers and users of the Internet. As part of these efforts, Google built interoperability between its tools and those of third parties, but only when it could do so safely, securely, and reliably without undermining the quality of its own products. When that was not possible, Google prioritized preserving the quality of its own products—as, under *Trinko*, it is lawfully permitted to do. In brief, these justifications include:

264.1. Acquiring DoubleClick and rebuilding on Google's ad tech stack to significantly expand inventory for ad space buyers and sellers, while maintaining quality, minimum latency, and security. FOF ¶¶ 187-198.

264.2. Ensuring that Google Ads bid into environments with vetted ad space sellers and quality inventory, so as to protect Google Ads customers, which meant only

gradually expanding its AwBid capability to bid into third-party exchanges. FOF ¶¶ 155-162.

264.3. Limiting real-time bids from AdX exclusively to Google's ad server in order to provide the benefits of integration such as ensuring low latency, maintaining the safety and validity of ad space seller inventory, and offering revenue-increasing innovations like Dynamic Allocation, FOF ¶¶ 560-564, when other third-party ad servers showed reluctance to invest in integrations without being paid and building spam and quality controls would have required challenging engineering, FOF ¶¶ 568.

264.4. Introducing Dynamic Allocation to increase revenue for Google's ad space seller and limiting the feature to AdX because Google had not yet developed a secure, fast, reliable way for other exchanges to provide real-time bids to DFP. FOF ¶¶ 585. Once Google launched Open Bidding, which was a secure, efficient, and reliable way to compare real-time bids across exchanges, Google expanded Dynamic Allocation to other exchanges. FOF ¶¶ 585.

264.5. Acquiring AdMeld to provide ad space seller customers with an optimization feature that they requested, integrating the AdMeld team into AdX's core team, and declining to integrate a server-side integration feature that AdMeld's own former CEO said was plagued with security and reliability issues. FOF ¶¶ 632-637, 642-646.

264.6. Adopting a Unified First Price Auction, including Unified Pricing Rules, to protect ad space buyers from price-fishing and improve matches by simplifying the increasingly confusing ad tech bidding landscape. FOF ¶¶ 596-603, 606-

610. This innovation also enabled ad space buyers and sellers to participate in an auction that compared all demand sources against each other fairly, ultimately increasing revenue for most ad space sellers. FOF ¶¶ 615-619.

264.7. Developing features that prevent ad space buyers from overpaying for ads. Project Bell combats multi-calling, an ad space seller tactic to artificially increase the price of impressions at auctions. FOF ¶¶ 675-683. Similarly, Plaintiffs' expert agrees that Project Poirot was "necessary" to combat dirty auctions and increased surplus for ad space buyers. FOF ¶¶ 690-701.

264.8. Building a feature, sell-side Dynamic Revenue Sharing, that increases the number of successful matches so that sellers make more revenue and buyers win more impressions that are valuable to them. FOF ¶¶ 656-662.

265. To rebut a business justification as pretextual, the plaintiff must adduce evidence that directly undermines the veracity of the defendant's proffered justification. *See Image Technical Servs*. v. *Eastman Kodak Co*., 903 F.2d 612, 618–19 (9th Cir. 1990); *see also ACT, Inc*. v. *Sylvan Learning Sys., Inc*., 296 F.3d 657, 668 (8th Cir. 2002) (evaluating whether the "declared business reasons for [the conduct] were pretext for [the defendant's] true goal"). It is not sufficient to show that the challenged conduct was motivated only in part by anticompetitive intent—if the evidence "at most shows that a secondary motivation of the [challenged conduct] was to disadvantage the competition," the existence of other procompetitive justifications for the conduct precludes a Section 2 claim. *Universal Analytics, Inc*. v. *MacNeal-Schwendler Corp*., 914 F.2d 1256, 1259 (9th Cir. 1990). Plaintiffs have identified no evidence that demonstrates the justifications for Google's conduct were pretextual.

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