IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

UNITED STATES OF AMERICA
U.S. Department of Justice
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Washington, DC 20530

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JURY TRIAL DEMANDED

STATE OF RHODE ISLAND
150 South Main Street
Providence, RI 02903

and

STATE OF TENNESSEE
P.O. Box 20207
Nashville, TN 37202

Plaintiffs,

v.

GOOGLE LLC
1600 Amphitheatre Parkway
Mountain View, CA 94043

Defendant.

COMPLAINT

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I. INTRODUCTION

1. An open, vibrant internet is indispensable to American life. But today's internet would not exist without the digital advertising revenue that, as a practical matter, funds its creation and expansion. The internet provides the public with unprecedented access to ideas, artistic expression, news, commerce, and services. Content creators span every conceivable industry; they publish diverse material on countless websites that inform, entertain, and connect society in vital ways. Yet the viability of many of these websites depends on their ability to sell digital advertising space. Just as newspaper, radio, and television organizations historically relied on advertising to fund their operations, today's online publishers likewise rely on advertising revenue to support their activities and reach. But unlike historical media advertising, today's online ads are bought and sold in enormous volumes in mere fractions of a second, using highly sophisticated tools and automated exchanges that more closely resemble a modern stock exchange than an old-fashioned, bilateral contract negotiation for newspaper ad space.

2. Website publishers in the United States sell more than 5 trillion digital display advertisements on the open web each year—or more than 13 billion advertisements *every day*. The sheer volume of these online ads make the offline advertisements of yesteryear pale in comparison. To put these numbers in perspective, the daily volume of digital display advertisements grossly outnumbers (by several multiples) the average number of stocks traded each day on the New York Stock Exchange. The digital display advertising business is also lucrative. Collectively, these advertisements generate more than $20 billion in revenue per year, just for publishers based in the United States.

3. To meet this demand, sophisticated technological tools, informally known as "ad tech," have developed to automate advertising matchmaking between two key groups: website

publishers and advertisers.[1] These tools have evolved such that today, every time an internet user opens a webpage with ad space to sell, ad tech tools almost instantly match that website publisher with an advertiser looking to promote its products or services to the website's individual user. This process typically involves the use of an automated advertising exchange that runs a high-speed auction designed to identify the best match between a publisher selling internet ad space and the advertisers looking to buy it.

4. But competition in the ad tech space is broken, for reasons that were neither accidental nor inevitable. One industry behemoth, Google, has corrupted legitimate competition in the ad tech industry by engaging in a systematic campaign to seize control of the wide swath of high-tech tools used by publishers, advertisers, and brokers, to facilitate digital advertising. Having inserted itself into all aspects of the digital advertising marketplace, Google has used anticompetitive, exclusionary, and unlawful means to eliminate or severely diminish any threat to its dominance over digital advertising technologies.

5. Google's plan has been simple but effective: (1) neutralize or eliminate ad tech competitors, actual or potential, through a series of acquisitions; and (2) wield its dominance across digital advertising markets to force more publishers and advertisers to use its products while disrupting their ability to use competing products effectively. Whenever Google's customers and competitors responded with innovation that threatened Google's stranglehold over any one of these ad tech tools, Google's anticompetitive response has been swift and effective. Each time a threat has emerged, Google has used its market power in one or more of these ad

[1] Internet advertisers include businesses, agencies of federal and state governments, charitable organizations, political candidates, public interest groups, and more. The money these advertisers spend on digital advertising creates an important stream of revenue for websites to use in creating, developing, and publishing website content.

tech tools to quash the threat. The result: Google's plan for durable, industry-wide dominance has succeeded.

6. Google, a single company with pervasive conflicts of interest, now controls: (1) the technology used by nearly every major website publisher to offer advertising space for sale; (2) the leading tools used by advertisers to buy that advertising space; and (3) the largest ad exchange that matches publishers with advertisers each time that ad space is sold. Google's pervasive power over the entire ad tech industry has been questioned by its own digital advertising executives, at least one of whom aptly begged the question: "[I]s there a deeper issue with us owning the platform, the exchange, and a huge network? The analogy would be if Goldman or Citibank owned the NYSE."

7. By deploying opaque rules that benefit itself and harm rivals, Google has wielded its power across the ad tech industry to dictate how digital advertising is sold, and the very terms on which its rivals can compete. Google abuses its monopoly power to disadvantage website publishers and advertisers who dare to use competing ad tech products in a search for higher quality, or lower cost, matches. Google uses its dominion over digital advertising technology to funnel more transactions to its own ad tech products where it extracts inflated fees to line its own pockets at the expense of the advertisers and publishers it purportedly serves.

8. Google's anticompetitive behavior has raised barriers to entry to artificially high levels, forced key competitors to abandon the market for ad tech tools, dissuaded potential competitors from joining the market, and left Google's few remaining competitors marginalized and unfairly disadvantaged. Google has thwarted meaningful competition and deterred innovation in the digital advertising industry, taken supra-competitive profits for itself, and

prevented the free market from functioning fairly to support the interests of the advertisers and publishers who make today's powerful internet possible.

9. The harm is clear: website creators earn less, and advertisers pay more, than they would in a market where unfettered competitive pressure could discipline prices and lead to more innovative ad tech tools that would ultimately result in higher quality and lower cost transactions for market participants. And this conduct hurts all of us because, as publishers make less money from advertisements, fewer publishers are able to offer internet content without subscriptions, paywalls, or alternative forms of monetization. One troubling, but revealing, statistic demonstrates the point: on average, Google keeps at least ***thirty cents***—and sometimes far more—of each advertising dollar flowing from advertisers to website publishers through Google's ad tech tools. Google's own internal documents concede that Google would earn far less in a competitive market.

10. The United States and Plaintiff States bring this action for violations of the Sherman Act to halt Google's anticompetitive scheme, unwind Google's monopolistic grip on the market, and restore competition to digital advertising.

II. NATURE OF THIS ACTION

11. The seeds for Google's eventual march toward a monopoly in ad tech were sown in the early 2000s, when it capitalized on its well-known search engine to start a profitable search advertising business. In 2000, Google launched **Google Ads** (then called AdWords[2]), a tool that allowed businesses to buy advertisements that could be seen by Google search users right alongside Google's popular search engine results. Businesses quickly learned the power of

[2] Over the period addressed by the Complaint, Google has renamed its ad tech products a number of times and has either shifted certain functions between products or combined its products in ways intended to obscure Google's dominance across the ad tech stack.

this instantaneous, highly-targeted advertising technique, and they flocked to Google Ads as a result.

12. By the early 2000s, Google realized that these same advertisers would buy digital advertisements on third-party websites as well. So Google stepped in to profit (as a middleman) on digital advertising transactions having nothing to do with Google or its search engine by creating an advertiser ad tech tool for Google Ads' customers that wanted to buy ad space on third-party websites.

13. But Google was not satisfied with its dominance on the *advertising* side of the industry alone; Google devised a plan to build a moat around the emerging ad tech industry by developing a tool that would be used by website *publishers* as well.

14. Google sought to develop an ad tech tool called a **publisher ad server** that publishers would use to manage their online advertising sales. Google recognized that because publisher ad servers set the rules for how and to whom publisher advertising opportunities are sold, owning a publisher ad server was key to having visibility into, and control over, the publisher side of digital advertising. By controlling the *publisher* ad server on the other end of the transaction, Google could further entrench its *advertiser* customer base by giving advertisers access to more advertising opportunities and pushing more transactions their way.

15. Of course, by becoming the dominant player on both sides of the digital advertising industry, Google could also play both sides against the middle. It could control both the publishers with digital ad space to sell, as well as the advertisers who want to buy that space. With influence over advertising transactions end-to-end, Google realized it could become "the be-all, and end-all location for all ad serving." The outsized influence it could obtain by having a dominant position on both sides of the industry would give Google the ability to charge supra-

competitive fees and also enjoy an abiding dominance sufficient to exclude rivals from competition. Google would no longer have to compete on the merits; it could simply set the rules of the game to exclude rivals.

16. The only problem with Google's plan was that Google's publisher ad server failed to gain traction in the industry. So, Google pivoted to acquiring the market-leading publisher ad server from an ad tech firm called DoubleClick. In early 2008, Google closed its acquisition of DoubleClick for over $3 billion. Through the transaction, Google acquired a publisher ad server ("**DoubleClick for Publishers**" or "**DFP**"), which had a 60% market share at the time. It also acquired a nascent **ad exchange** ("**AdX**") through which digital advertising space could be auctioned. The DoubleClick acquisition vaulted Google into a commanding position over the tools publishers use to sell advertising opportunities, complementing Google's existing tool for advertisers, Google Ads, and set the stage for Google's later exclusionary conduct across the ad tech industry.

17. After the DoubleClick acquisition, Google enhanced and entrenched DFP's already-dominant market position. Google internally recognized that publisher ad servers are "sticky" products, meaning that publishers rarely switch because of the high costs and risks involved. As DoubleClick's former CEO observed, "Nothing has such high switching costs. . . . Takes an act of God to do it." Thus, in order to lock more publishers into DFP and to reinforce its stickiness, Google forged an exclusive link between Google Ads and DFP through the AdX ad exchange. If publishers wanted access to exclusive Google Ads' advertising demand, they had to use Google's publisher ad server (DFP) and ad exchange (AdX), rather than equivalent tools offered by Google's rivals. In effect, Google positioned itself to function simultaneously as buyer, seller, and auctioneer of digital display advertising.

18. Google's strategy paid off. This arrangement has had a profound effect on the evolution of digital advertising. First, it tilted the industry in Google's favor, driving publishers to adopt and stay on Google's DFP publisher ad server in order to have access to Google Ads' advertiser demand. Second, it cut off the possibility that Google Ads' advertiser spending could sustain, or encourage the entry of, a rival ad exchange or publisher ad server by providing critical advertising demand. For the vast majority of webpage publishers, this arrangement made DFP the only realistic publisher ad server option. Indeed, by 2015, Google estimated that DFP's publisher ad server market share had grown to a remarkable 90%. Google's durable monopoly over the publisher ad server market has allowed it to avoid innovation and competition by controlling the very rules by which the game is played. As a result, other publisher ad servers have left the market altogether, refocused on related markets, or faded into insignificance; no new publisher ad servers have entered the market.

19. Around the same time that Google tied its exclusive Google Ads' advertiser demand to its publisher ad server (DFP) through AdX, Google took two additional steps to make it more difficult for rivals to compete.

20. *First*, Google configured Google Ads to bid on Google's AdX ad exchange in a way that actually *increased* the price of advertising, to the benefit of publishers and the detriment of Google's own advertiser customers. As one Google employee observed, Google Ads was effectively sending a "$3bn yearly check [to publishers] by overcharging our advertisers to ensure we're strong on the pub[lisher] side." In the short-term, this conduct locked publishers into Google's publisher ad server by providing them a steady stream of intentionally-inflated prices for certain inventory, at the cost of Google's own advertiser customers. But in the long run, Google's actions harmed publishers as well by driving out rival publisher ad servers and

limiting competition in the publisher ad server market. In effect, Google was robbing from Peter (the advertisers) to pay Paul (the publishers), all the while collecting a hefty transaction fee for its own privileged position in the middle. This conduct turned the entire purpose of the digital advertising industry on its head. Rather than helping to fund website publishing, Google was siphoning off advertising dollars for itself through the imposition of supra-competitive fees on its platforms. A rival publisher ad server could not compete with Google's inflated ad prices, especially without access to Google's captive advertiser demand from Google Ads.

21. *Second*, Google used its captive advertiser demand to thwart legitimate competition by giving its AdX ad exchange an advantage over other ad exchanges through a mechanism known as dynamic allocation. Dynamic allocation was a means by which Google manipulated its publisher ad server to give the Google-owned AdX (and only AdX) the opportunity to buy publisher inventory before it was offered to any other ad exchange, and often to do so at artificially low prices. Google also programmed DFP, its publisher ad server, to prevent publishers from offering preferential terms to other ad exchanges or allowing those exchanges to operate in the same way with DFP. Google knew that dynamic allocation would inevitably steer advertising transactions away from rivals, denying them critical scale needed to compete, and would advantage AdX, where Google could extract the largest fees. Google's scheme predictably reinforced publishers' dependence on both AdX and DFP. Publishers were effectively precluded from using rival ad servers or ad exchanges that might better suit their needs while Google was given a free pass from having to compete on the merits with those rivals.

22. By at least 2010, other ad tech companies had recognized that Google's platforms were not working in the best interest of publishers, and they attempted to develop innovative

technologies to introduce more competition. Some companies began offering "yield management" functionality that helped publishers identify on a real-time basis better prices for their inventory outside of Google's products. Google recognized that yield managers posed a major threat to the increasingly closed system Google sought to establish, in which only its ad exchange was able to compete based on real-time pricing. So, in response, Google employed a familiar tactic: acquire, then extinguish, any competitive threat.

23. In 2011, Google acquired AdMeld, the leading yield manager, folded its functionality into Google's existing products, and then shut down its operations with non-Google ad exchanges and advertiser tools. Google soon thereafter changed its AdX contract terms to prohibit publishers from using any other platform (such as another yield manager) that would force AdX to compete in real time with other ad exchanges. As a Google product manager wrote: "Our goal should be all or nothing – use AdX as your [exchange] or don't get access to our [advertising] demand." Unsurprisingly, this unabashed, anticompetitive conduct had a profound effect on the market, denying rival ad tech competitors the scale necessary to compete and depriving publishers the benefits of free market competition and real choice.

24. Not long after, in 2013, Google launched **Project Bernanke**, a secret scheme to manipulate the bids that Google Ads submitted into Google's ad exchange, AdX, in order to win more competitive transactions and solidify AdX's dominance in the industry. Project Bernanke allowed Google to suppress competition by preventing rival ad exchanges from achieving the transaction volume and scale necessary to compete. Unless another ad exchange developed both its own unique source of captive advertiser demand—where it could potentially manipulate advertiser bids—and a widely-adopted publisher ad server—where it could see the same advertising inventory and bid data as Google—competition on the same terms as Google was

nearly impossible. Once again, by controlling all sides of the ad tech industry, Google has been able to manipulate the system in ways unique to itself so that, in the end, it did not have to compete on the merits for customers and volume.

25. Publishers and competing ad tech providers, increasingly wary of Google's bullying behavior, have continued to look for new ways to circumvent Google's dominance. Between 2012 and 2013, market participants began using a technique called "**header bidding**" as a partial workaround to Google's self-preferential algorithms and ad tech restrictions. As one Google employee explained, "Publishers felt locked-in by dynamic allocation in [Google's ad server] which only gave [Google's ad exchange] the ability to compete, so HB [header bidding] was born."

26. Publishers used header bidding to take back some degree of power over their own advertising transactions. They inserted header bidding computer code onto their own websites to allow non-Google advertising exchanges an opportunity to bid for advertising inventory before Google's hard-coded preferences for its own ad exchange were triggered. Header bidding allowed publishers to ensure that multiple advertising exchanges—not just Google's AdX—could bid on their inventory, thereby increasing the chances that they could find the best match.

27. Google has refused to tolerate this new form of competition, even though it has acknowledged in internal emails that header bidding had grown naturally out of Google's being "unwilling[] to open our systems to the types of transactions, policies and innovations that buyers and sellers wish to transact." Indeed, Google privately admitted that "header bidding and header wrappers are BETTER than [Google's platforms] for buyers and sellers," and that increased competition between AdX and publishers using header bidding would increase publisher revenues by 30 to 40%, and would provide additional transparency to advertisers. Not

only would header bidding enable rival exchanges to compete more effectively against Google's ad exchange, it might also allow them or others to enter the publisher ad server market if Google no longer had exclusive access to unique advertiser demand.

28. Google executives described header bidding as an "existential threat." They worried that wider adoption of header bidding practices could lead to Google's ad exchange having to compete with other ad exchanges on a level playing field, where Google could no longer set the rules in its own favor. If that were to happen, those rival ad exchanges might actually succeed in eroding, or even breaking up, Google's advertiser juggernaut, and the entire industry could be opened up for competition. Google feared the worst: the entire moat of anticompetitive protections that Google had built around the ad tech industry could be breached.

29. Faced with this "existential" threat, Google sought to stem the rising tide toward header bidding by promoting a Google-friendly analog of header bidding that Google deceptively titled "Open Bidding." Google has promoted Open Bidding as an answer to the industry's call for wider participation by rival ad exchanges and increased competition. In fact, Open Bidding was a Trojan Horse that Google used to further cement its own monopoly power.

30. As a condition to using Google's Open Bidding, Google has required that publishers and participating ad exchanges give Google visibility into each auction (including how rival exchanges bid), allow Google to extract a sizeable fee on every transaction (even where another exchange won), and limit the pool of advertisers allowed to bid in the auctions. In doing so, Google's ad exchange has retained a guaranteed seat in every auction, regardless of whether Google's ad exchange offers the best match between advertisers and publishers.

31. Google also sought to co-opt what it perceived to be its two biggest threats (Facebook and Amazon) into Open Bidding. In internal documents, Google concluded that while

it "[c]annot avoid competing with FAN [Facebook]," it could, through a deal with Facebook, "build a moat around our demand." Internal documents recommending a deal with Facebook revealed Google's primary motive: "[f]or web inventory, we will move [Facebook's] demand off of header bidding set up and further weaken the header bidding narrative in the marketplace." Thus, for these reasons, Google ultimately agreed to provide preferential Open Bidding auction terms to Facebook in exchange for spend and pricing commitments designed to push more of Facebook's captive advertiser spend onto Google's platforms. Google sought to head off Amazon's investment in header bidding technology with a similar offer, albeit without the same success.

32. Google also adjusted its auction mechanisms across its ad tech products to divert more transactions to itself and away from rivals that might deploy header bidding. On the publisher side, Google allowed AdX—and only AdX—to change its auction bid by altering Google's own fee after seeing the price to beat from another exchange.

33. On the advertiser side, Google first considered outright blocking its advertiser buying tool from buying inventory made available via header bidding. The goal: "dry out HB [header bidding]." When Google decided that strategy would be too costly for Google, it pivoted to a different and more insidious strategy with the same effect.

34. Google recognized that "instead of stop[ping] bidding on HB [header bidding] queries, we could bid lower on HB queries," and win the same impressions on Google's ad exchange instead. No rival exchange was in a position to compete with this strategy because no rival had the scale necessary to compete against the industry giant, especially considering the built-in advantages that Google afforded its own ad exchange and publisher ad server. Google, and Google alone, had control over both the leading source of advertiser demand and the

dominant publisher ad server. So, Google programmed its advertiser buying tool to advantage its ad exchange.

35. Google's bidding strategy on header bidding transactions proved remarkably effective in stunting the growth of header bidding, but Google still worried that its moat was not fully secure. Google learned that some publishers were using price controls within Google's own DFP publisher ad server to sell advertising inventory to rival exchanges outside of Google's closed-wall system, even in instances where Google's own AdX exchange had offered to pay more for the inventory. Publishers did so for a variety of reasons, including considerations related to ad quality, volume discounts, diversification of demand sources, data asymmetries, or other factors.

36. When Google identified this threat, it simply removed the feature from DFP and instead imposed competition-stifling Unified Pricing Rules. Under these new rules, publishers could no longer use price floors to choose rival exchanges or other buyers over AdX or Google Ads, no matter the reason. Google effectively took away their own customers' right to choose what buyer or ad exchange best suited their needs. In doing so, Google once again bought itself a free pass on competition.

37. Google's exclusionary, anticompetitive acts have severely weakened, if not destroyed, competition in the ad tech industry. In decision after decision, year after year, Google has repeatedly done what was necessary to vanquish competitive threats, including by enacting policies that took choices away from its own customers. And despite what Google may claim, it did not do so to protect the privacy interests of Google users. Indeed, Google intentionally

exploited its massive trove of user data to further entrench its monopoly across the digital advertising industry.[3]

38. Due to Google's conduct, ad tech tools that should have evolved to better serve website publishers and advertisers in a competitive environment have instead evolved to serve the interests of Google alone, to the detriment of Google's own customers. The results have been catastrophic for competition. Today, major website publishers have a single viable choice for publisher ad servers—Google's DoubleClick for Publishers. Google routes transactions from its publisher ad server to its more expensive ad exchange—AdX—and away from rival platforms, all of which are less than a quarter of AdX's size.

39. Advertisers and publishers, the key players in this market, have had scant visibility into the scope and extent of Google's anticompetitive conduct. As the lone conflicted representative of both buyers and sellers, Google has created a deliberately-deceptive black box where Google sets the auction rules to its own advantage. Diminished competitive pressure has reduced Google's incentive to innovate, and Google's control of these key ad tech tools has inhibited rivals' ability to introduce efficiency-enhancing innovations. Publishers and advertisers suffer from reduced competition for both ad tech products and advertising inventory. Google's conduct undermines the very purpose of digital advertising in the first place: to achieve optimum terms and pricing for digital advertisements so website publishers can continue to serve their

[3] At the time of the DoubleClick acquisition, Google's privacy policies prohibited the company from combining user data obtained from its own properties, e.g., Search, Gmail, and YouTube, with data obtained from non-Google websites. But in 2016, as part of Project Narnia, Google changed that policy, combining all user data into a single user identification that proved invaluable to Google's efforts to build and maintain its monopoly across the ad tech industry. Over time, Google used this unique trove of data to supercharge the ability of Google's buying tools to target advertising to particular users in ways no one else in the industry could absent the acquisition of monopoly—or at least dominant—positions in adjacent markets such as Search.

vital purposes in society. Indeed, Google's own documents show that Google has siphoned off ***thirty-five cents*** of each advertising dollar that flows through Google's ad tech tools:

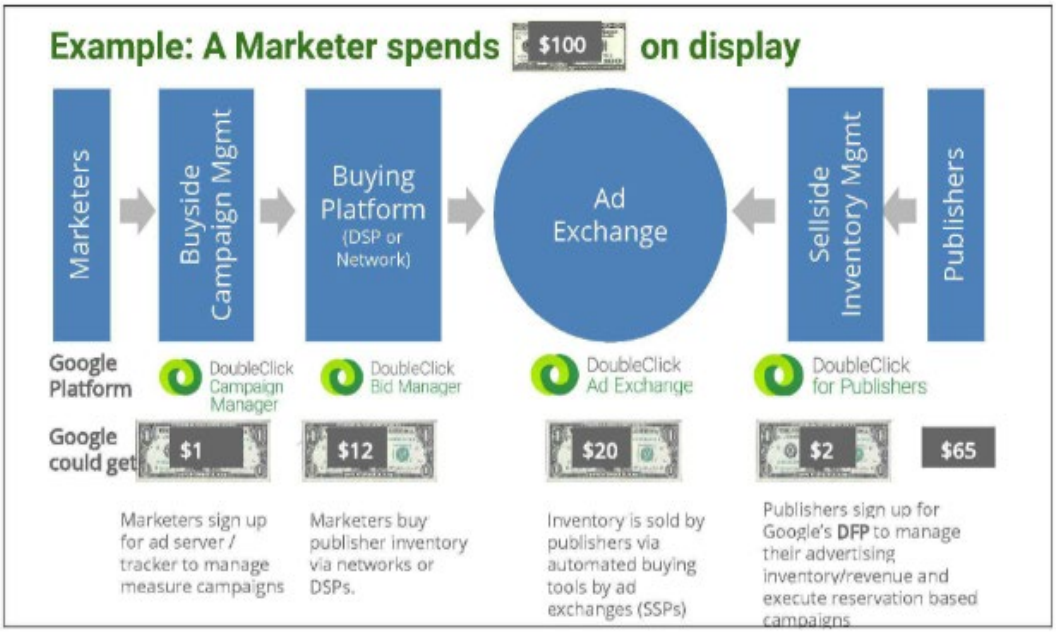

Fig. 1

40. The cumulative impact of Google's anticompetitive conduct is more than simply the sum of each harm Google has caused. As new threats have arisen, Google has spread its actions across wide-ranging ad tech products knowing the synergistic, multiplier effect that its actions would have across the industry. Because Google has such a powerful hand in each aspect of the ad tech industry, it alone has the power to use and deploy hidden levers to manipulate the overall system to its advantage.

41. It is critical to restore competition in these markets by enjoining Google's anticompetitive practices, unwinding Google's anticompetitive acquisitions, and imposing a remedy sufficient both to deny Google the fruits of its illegal conduct and to prevent further harm to competition in the future. Absent a court order for the necessary and appropriate relief, Google will continue to fortify its monopoly position, execute its anticompetitive strategies, and thwart

the competitive process, thereby raising costs, reducing choice, and stifling innovation in this important industry.

III. DISPLAY ADVERTISING TRANSACTIONS

42. When an internet user opens a website, a complex series of transactions—nearly instantaneous and invisible to the user—determines which ad to show to that user in each available ad space on the webpage. The set of technological tools that connect website publishers selling advertising opportunities to the advertisers wishing to buy those advertising opportunities ("ad inventory") is referred to as **ad tech**. Below is a schematic depicting some of the important ad tech tools used in online digital advertising:

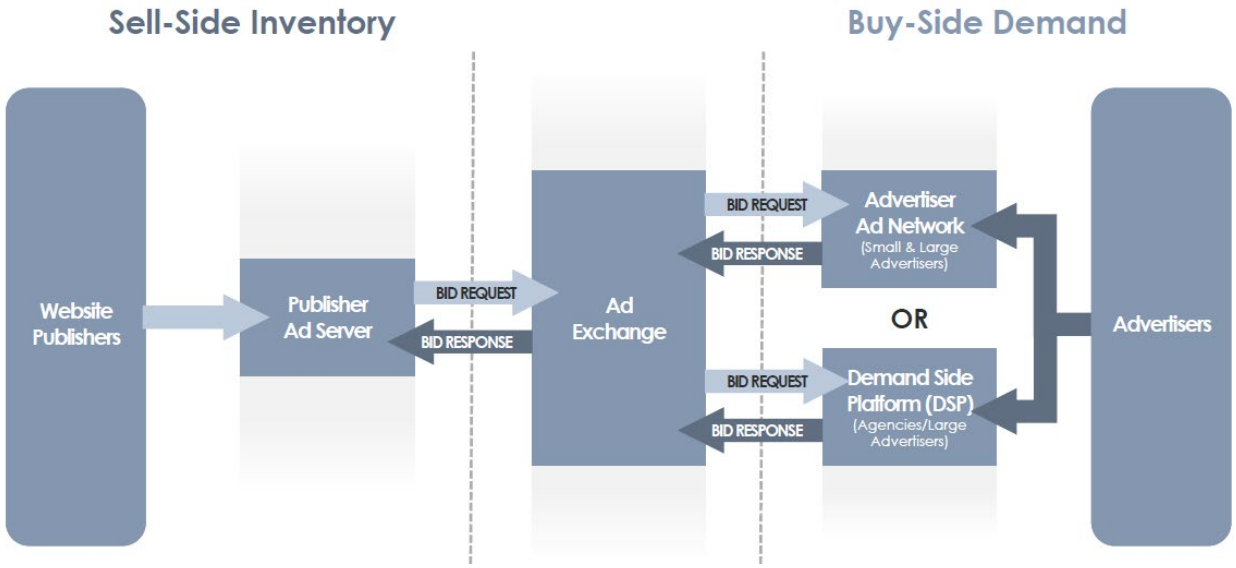

Fig. 2

A. How Ad Tech Tools Work[4]

43. The content creator or owner of a website is called a **publisher**. Each website can be programmed by its publisher to create slots where ads can be displayed. A graphical ad

[4] The process described herein governs the sale of display ads on the "**open web**," meaning websites whose inventory is sold through ad tech intermediaries that offer inventory from

displayed on a website that is viewed in an internet browser is called a **display ad**. A display ad may contain images, text, or multimedia. A single display ad shown to a single user on a single occasion is called an **impression**.

44. An ad tech transaction begins when a user opens a website. While the website's content loads, the website uses a **publisher ad server** to select which ads will fill each ad slot on the page. The publisher ad server is an ad tech tool that evaluates potential ads from different advertising sources and applies a decision-making logic to determine which ad will be displayed to the user opening the website. Since 2008, Google has owned the industry's leading publisher ad server, **Google Ad Manager**, which is often still referred to by its former name, **DoubleClick for Publishers ("DFP")**.

45. For a typical medium-to-large website, the publisher ad server first determines whether the ad spaces on the webpage opened by the user have already been sold to a specific advertiser directly by the publisher. Such **direct sales** result from one-on-one negotiations between website publishers and advertisers and typically involve premium ad placements (e.g., ads at the top of a webpage) that command the highest prices from advertisers. For any ad space not filled through direct sales, the publisher ad server then tries to sell the ad space through indirect sales channels. **Indirect sales** allow publishers to sell remaining or "remnant" ad space

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multiple websites. Some websites, especially social media companies like Facebook and Snapchat, operate under a different "closed web" (or "walled garden") model in which inventory is sold directly to individual advertisers using a proprietary tool employed by that website. Other types of advertising distinct from open web display advertising include search ads (e.g., sponsored results in a search engine), video ads (e.g., commercials that play before, during, or after a streaming video), and mobile app ads (e.g., ads shown within a game or other non-browser app downloaded from an app store to a user's mobile device). The focus of this Complaint is on Google's anticompetitive conduct in the market for open web display advertising transactions.

(i.e., space not sold through direct sales). Many website publishers, especially smaller ones, only sell ad space through such indirect sales.[5]

46. Indirect sales are typically made via a series of interactions between ad tech tools. These technologies allow website publishers and advertisers to transact through lightning-fast automated processes, known as **programmatic** buying. Today, most programmatic transactions take place on an ad exchange. An **ad exchange** (sometimes called a supply-side platform or SSP) is a software platform that receives requests—often from a publisher ad server—to auction ad impressions on a particular webpage. The ad exchange solicits bids on the impression from advertiser buying tools, chooses the winning bid, and transmits information on the winning bid back to the publisher ad server. Google presently owns the industry's leading ad exchange, called **AdX** (now packaged as part of **Google Ad Manager**).

47. When a publisher ad server sends an auction request to an ad exchange, the publisher ad server provides certain information about the impression for sale. This can include information about the website itself, the ad space on the webpage (e.g., where the ad is placed), and the user that will view the impression.[6] After receiving this information from the publisher ad server, the ad exchange may supplement the information with any additional information the ad exchange might independently have about the user viewing the ad, including information about the user's browsing history, location, and age.[7] The ad exchange then transmits the bid

[5] For both direct and indirect sales, ad impressions are generally priced on a **CPM** basis, referring to cost-per-thousand (in Latin, "mille") per impression. For example, an impression with a $1 CPM would cost $0.001, or one-tenth of a cent.

[6] Because the publisher ad server historically transmitted this information to the ad exchange, the publisher ad server controlled what information was sent to prospective advertisers and in what form.

[7] Information concerning the user's location and browsing history can be gleaned through "cookies" set in place by the user's web browser. These cookies allow the web browser to collect

request, along with information gathered about the user and the website, to various advertiser buying tools, described below. The detailed information concerning the user's location and browsing history is highly valuable to advertisers because it helps advertisers assess the value of the particular impression to its overall advertising campaign. For example, if the information tells a particular retail advertiser that the user had previously browsed that retailer's website but did not complete a sale, then that retailer may be willing to pay a premium for the particular impression.

48. Advertisers receive and respond to bid requests using **advertiser buying tools**. These advertiser buying tools assist advertisers with connecting to ad exchanges, selecting impressions to bid on, submitting bids, and tracking the purchased impressions against the advertiser's advertising campaign goals.

49. Large ad buyers, such as major ad agencies or large businesses, frequently use a type of advertiser buying tool called a **demand side platform**. Demand side platforms provide sophisticated and customizable tools that allow the ad agency or business to manage their advertising purchases. Advertisers using demand side platforms have extensive control over where and how they bid for ad inventory. They often use their own data, or data purchased from other entities, to target particular users for their ad campaign. Google owns the United States' leading demand side platform, **Display & Video 360 ("DV360")**.

50. Smaller advertisers often rely on a type of advertiser buying tool with fewer, simpler options that are less customized. These advertiser buying tools are called **advertiser ad**

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information about a user's internet location and browsing history which can then be passed along, or sold, to interested parties.

networks.[8] Today, most ad networks bid for and buy advertising space on an impression-by-impression basis, submitting bids alongside other ad networks and demand side platforms. Advertiser ad networks offer a self-service, easy-to-use technology solution, which as a practical matter is the only viable option for smaller advertisers, advertisers that prefer a simple "hands-off" approach, or advertisers that need the ad network's targeting data to buy ads effectively. Google offers the industry's leading ad network, **Google Ads**.

51. Most ad networks, including Google Ads, are a "black box" to advertisers. Advertisers have almost no control over the process by which the ad network bids for impressions. Nor do the networks provide advertisers with information about how or why the network bids for particular impressions on particular websites at particular times. Most ad networks charge advertisers primarily on a "cost per click," or "CPC" basis. The advertiser thus has no insight into how much the ad network spent to purchase a particular impression; the advertiser is charged a fee only when an internet user clicks on the ad. Google's ad network, Google Ads, sets this fee based on the actual cost incurred to buy advertising inventory plus a markup. This prevents Google's advertising customers from knowing how much Google is charging them, over and above Google's costs, for the inventory.

52. These ad networks are particularly important to businesses that do not have the expertise, advertising budget, or targeting data required for a demand side platform to be a viable option. Ad networks are also critical to website publishers. These ad networks are the only way for publishers to reach and sell ad space to smaller businesses that rely exclusively or primarily

[8] These advertiser networks are referred to as "networks" because they originally operated on a network model whereby the ad network would agree to buy a portion of a publisher's advertising space in bulk at a pre-set price. The ad network would then distribute the publisher's advertising space among a network of advertisers. The prices charged to those advertisers were not necessarily derived from the bulk price the network paid to acquire the space.

on ad networks to buy ad space. Further, the type of advertising space these ad networks seek to purchase from website publishers is often distinct from the advertising space sought by other advertising tools. That is because the advertisers using these networks often have unique advertising objectives. Further, these ad networks, and in particular Google Ads, have access to unique user data that allow them to target very specific advertising opportunities.

53. The flow of display ad transactions through these platforms—collectively called the **ad tech stack**—is depicted again below.

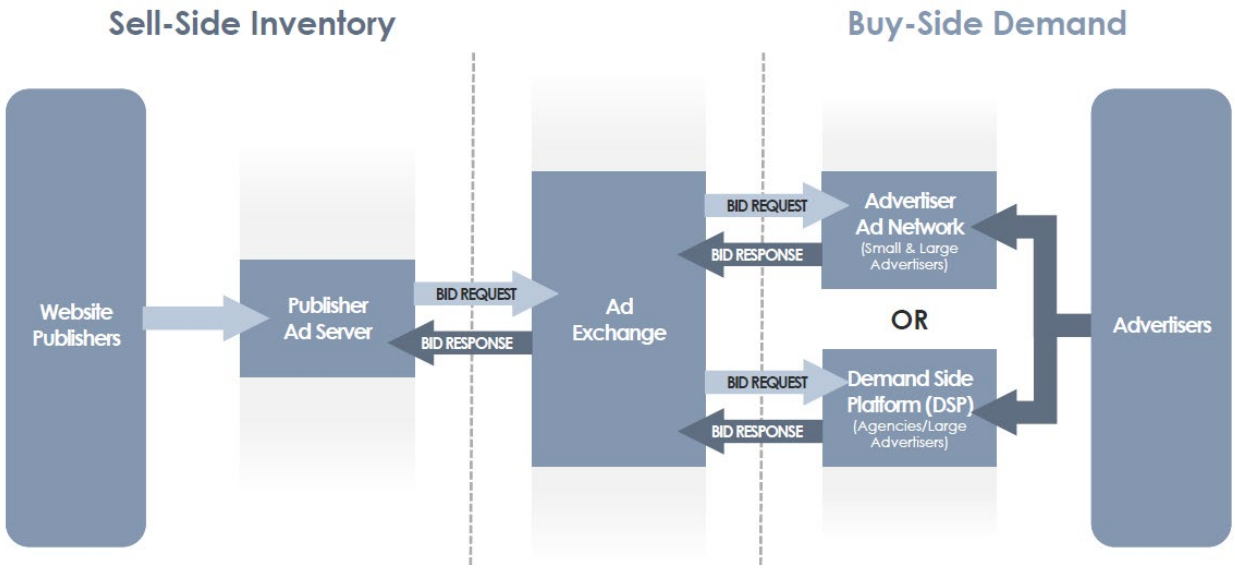

Fig. 3

54. The publisher ad server is referred to as the "**sell-side**." The advertiser buying tools are referred to as the "**buy-side**." Impressions offered for sale by publishers are referred to as publisher "**inventory**" and advertisers' interest in buying impressions is referred to as advertiser "**demand**."

55. Whether the advertiser uses a demand side platform or an ad network as its advertiser buying tool, the tool evaluates the bid request received from the ad exchange and, if the impression meets the advertiser's criteria (e.g., targeted audience, website category), the tool

determines an amount to bid on the impression. Because each impression is filled within fractions of a second while the website loads for the user, an advertiser could never evaluate each impression individually. Instead, advertisers rely on these automated advertiser buying tools to evaluate impressions and bid on their behalf based on parameters pre-configured by the advertiser ahead of time. The advertiser buying tool then sends its highest bid for the impression—as calculated by the tool—back to the ad exchange for consideration.

56. After receiving bids from multiple advertiser buying tools, the ad exchange holds an auction to determine the winning bidder. Historically, most ad exchanges ran a second-price auction in which the winning bidder paid a price one cent higher than the bid of the second-highest bidder. Today, however, most ad exchanges run first-price auctions where the highest bidder simply pays the price of its winning bid. The ad exchange sends information about its winning bid back to the publisher ad server, which evaluates the ad exchange's bid under a set of rules defined by the publisher ad server. The publisher ad server then makes the final decision regarding which ad to "serve" to the user. The publisher ad server sends a message to the winning advertiser to provide the content of the ad to be displayed.

B. How Ad Tech Intermediaries Get Paid

57. Once the winning bid has been chosen, the advertiser pays the website publisher for the impression, but a portion of the payment is retained by each intermediary along the way as payment for its services. The advertiser buying tool and the ad exchange supplying the winning bid each collect a portion of the purchase price for the impression, which is referred to as a "**revenue share**" or "**take rate**." The publisher ad server generally charges the publisher a fee based on the number of impressions served. Unlike a revenue share, the publisher ad server fee typically does not vary based upon the price paid for each particular impression.

58. The total percentage of advertiser spend extracted by ad tech intermediaries can have a substantial impact on the revenue website publishers earn from advertising and on the return on investment that advertisers receive from their advertising campaigns. But this percentage is typically not fully transparent to advertisers or publishers; some fees are disclosed only to publishers or advertisers while other fees are obscured or not disclosed at all. According to Google's internal documents, when a transaction passes through each of Google's ad tech tools (including Google's campaign manager product, which helps advertisers manage ad content and track campaign spending), Google estimates that it gets to keep about 35% of every dollar spent on digital advertising (as shown in Figure 4 below).

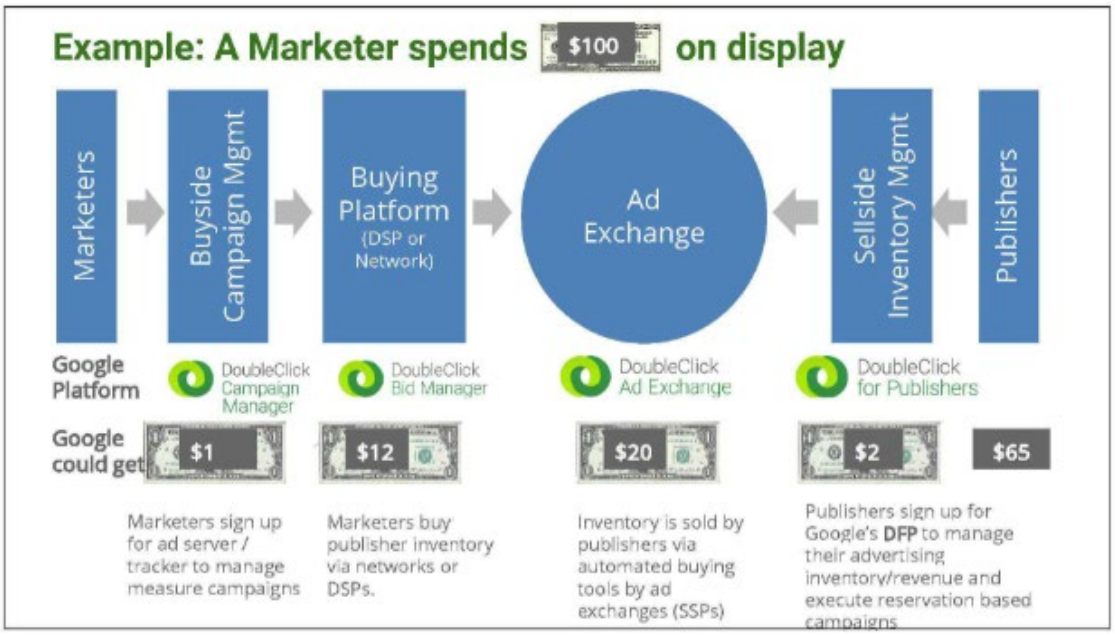

Fig. 4

59. These technology platforms have provided essentially the same services for over a decade. During that time, Google's monopoly positions and the restrictions it has imposed across these technologies have diminished the incentive and ability for Google or others to innovate. This reduced innovation is compounded by high prices: despite publishers' and advertisers'

interests in reducing the amount of advertising spending siphoned off by intermediaries, Google's take rate has remained remarkably stable over time. In particular, Google has consistently charged a roughly 20% fee for impressions bought through its ad exchange, the link in the chain where the highest fees are charged.

C. How Publishers and Advertisers Select Ad Tech Tools

60. Publishers and advertisers try to optimize their use of ad tech to meet their revenue or advertising goals. As a general matter, publishers use only one publisher ad server to manage ad inventory in order to avoid discrepancies in tracking revenue or impressions and to minimize the burden of having employees oversee two largely duplicative systems. Ultimately, there can only be one publisher ad server acting as the final decision-maker as to which advertisement will fill each impression.

61. Sizeable publishers generally prefer to offer their inventory for sale through more than one ad exchange (a practice called "**multi-homing**"). This increases the likelihood that an advertiser on one or more of the ad exchanges will be able to "match" the advertising opportunity offered by the publisher to a user or category of user that an advertiser particularly values and therefore is willing to compete to buy. When publishers are able to offer their inventory for sale through multiple ad exchanges simultaneously, it causes ad exchanges to compete with each other to provide the best "match" or the lowest revenue share. However, there are integration, contracting, and other costs associated with the publisher adding each additional ad exchange.

62. Likewise, advertisers often connect with multiple ad exchanges through their advertiser buying tools, hoping that exposure to as much advertising inventory as possible will increase the likelihood of reaching the advertisers' intended targets for their advertising campaigns at the lowest cost. Using multiple ad exchanges also allows advertisers to compare

performance between ad exchanges. Similarly, when advertisers are able to freely multi-home among ad exchanges, it forces ad exchanges to compete with each other to provide advertisers the best return on their advertising expenditures.

63. Although there are a number of factors that advertisers consider when deciding which ad exchanges and/or ad buying tools to use, one key driver is access to especially valuable advertising inventory. Some ad tech products can be used to buy or sell both open web display advertising—the focus of this Complaint—as well as other types of advertising, such as advertising inventory that is "owned-and-operated" ("O&O") by the company offering the ad tech product.

64. For example, some of Google's ad tech products allow advertisers to buy both open web display advertising on third-party websites as well as advertising on Google's O&O properties. Google's O&O properties include several market-leading sources of non-open web display advertising inventory, such as Google Search, YouTube, Gmail, and Android's Google Play Store, among others. Advertisers and advertising agencies looking to advertise on these O&O properties often must adopt at least one of Google's advertising tools to do so effectively. For example, many larger advertisers and ad agencies seeking to promote their brands through online video advertising on the market-leading YouTube website generally must use Google's advertising tools to do so; so for them, as well, adoption of Google's ad tech tools is considered a must.

65. If an advertiser or advertising agency believes it needs Google's tools for purposes of Google O&O advertising, it is less likely to adopt another buying tool—or tools—to advertise on the open web. Among other considerations, the adoption of multiple ad tech tools typically costs more (in time and money) and limits the ability of the ad tech tools to share

important performance data across these tools. As a result, companies with especially valuable O&O advertising—such as Google—may be able to take advantage of existing, sizeable advertising bases already locked into their advertising tools.

D. Why Scale and the Resulting Network Effects are Necessary to Compete in Ad Tech

66. Scale is a critical factor in the long-term success of each of the key products that comprise the ad tech stack. Scale and related network effects are cumulative; they reinforce market power for incumbents and raise barriers to entry and competition for nascent and smaller rivals. There are at least three important dimensions of scale at play in online digital display advertising.

67. *First*, scale in ad tech means having a significant number and variety of publishers or advertisers using a particular ad tech product. For example, an ad exchange that has significant scale enjoys large numbers and varied types of (i) publisher advertising inventory, on the one hand; and (ii) advertisers that bid through the ad exchange, on the other hand. This scale is key to attracting both publishers and advertisers to the ad exchange because ad exchanges are characterized by strong network effects (meaning that the value of an ad exchange to its users increases as more users adopt the tool). An ad exchange with access to more inventory—especially more sought-after inventory—will be more attractive to advertisers. Likewise, an ad exchange with more advertisers—and more unique advertisers—will be more attractive to publishers. This aspect of scale plays out in similar but less pronounced ways for publisher ad servers. For example, larger and more valuable inventory justify an ad exchange incurring the cost to integrate with a particular ad server. Publisher ad servers are also relatively more expensive to build and relatively less expensive to run, so a larger publisher base allows the publisher ad server to spread the fixed costs over more publishers. With respect to advertising

buying tools, more advertisers and more overall advertising spend will attract publishers to a particular tool. Moreover, to the extent that an advertiser buying tool has access to data from a related sell-side product, the advertiser buying tool can gain unique targeting abilities.

68. *Second*, scale includes the number and quality of impressions that publishers have offered for bidding through the ad tech product, the number of bids advertisers have made, and the number of transactions that have been completed—as well as the associated revenue for those transactions. The more business the ad tech provider has done, the more data that provider has, and the greater the ability the provider has to increase the value of its services. For example, an ad tech provider that is able to see a larger swath of advertising inventory made available for auction will have greater insights into the universe of inventory available, and can adjust—or suggest adjustments to—its customer's bidding behavior accordingly. Additionally, an ad tech provider that is able to see at scale who ultimately buys or bids on inventory and at what prices can create bidding strategies that can be used to predict more accurately future auctions for similar inventory. For example, the ability to observe the depth and distribution of bids for different advertising inventory can provide valuable data on how demand might change based on price and other factors. In addition, data concerning advertisers' buying strategies, and how all of this information changes over time, is incredibly useful. Without access to this type of inventory, bidding, and transaction information at scale, an ad tech provider is less able to offer a competitive ad tech tool to publishers or advertisers.

69. *Third*, scale includes the depth of targeting data that an ad tech product has available and can use to identify the most valuable matches between particular pieces of publisher inventory and advertisers. This aspect of scale in the ad tech ecosystem is influenced both by an ad tech provider's access to relevant targeting data from seeing and winning more

digital advertising transactions (which can provide important information on an internet user's characteristics and behavior) as well as from other parts of its business (e.g., Google's access to website contextual data and detailed user profiles on its customers using Search, Chrome, Android, or Gmail).

70. The ability of an ad tech product to achieve scale along these dimensions is important to its long-term success. For an ad exchange, increasing publisher inventory and advertiser demand, understanding the likely bid landscape based on prior consummated transactions, and having access to detailed user targeting and contextual data all increase the ad exchange's chances of being the supplier of the advertiser bid ultimately selected by the publisher ad server. This is key because ad exchanges only collect a revenue share on *winning* bids—even though the ad exchange incurs costs (for personnel, equipment, and processing power) for every bid request and response, whether won or lost. An ad exchange lacking sufficient access to these various dimensions of scale may not be able to compete effectively, innovate, or even operate.

E. How Multi-Homing Enables Competition in the Ad Tech Stack

71. The purpose of the ad tech stack is to bring together publishers and advertisers. Publishers benefit when there are more advertisers to bid on their inventory, and advertisers benefit when there are more impressions available to buy. As a result, the various markets that make up the ad tech stack exhibit strong "indirect network effects," i.e., the value of the services provided by these ad tech tools increases as the number of participants on both sides of the product increases.

72. Additionally, because each possible advertising opportunity (or impression) is unique based on a variety of factors (e.g., the identity of the user, the substance of the website, the location on the webpage), the value of a particular impression opportunity can vary

significantly across advertisers. For example, a banner ad at the top of an automotive website would be highly valuable to a car dealership located in the same zip code as the user; that same banner ad space would be less valuable to a home improvement store located in another state. Digital advertising technology, when operating in a healthy, competitive environment, attempts to create the most value for its customers by matching publisher advertising opportunities with the advertisers willing to pay the most for them. By multi-homing across ad exchanges, both website publishers and advertisers are able not only to seek the best possible match for a given advertising opportunity, they are also able to contribute to, and benefit from, competition more generally.

73. Ad exchanges compete for publisher inventory and advertiser demand at two distinct but related levels. First, they compete for adoption by publishers and advertisers, i.e., the opportunity to see a publisher's inventory or submit an advertiser's bid. Second, once an exchange has been adopted, it competes with other exchanges to win the ability to process a particular advertising transaction (i.e., to win individual advertising auctions). At both levels of competition, ad exchanges compete not only on price but also on quality and access. Generally, an ad exchange with more advertisers will be more valuable to publishers, and vice versa. When both sides in a market single-home (i.e., only connect with a single ad exchange), sellers (publishers) tend to flock to the ad exchange with the most buyers (advertisers), all else being equal. Advertisers likewise prefer the ad exchange that has the most advertising inventory from publishers. Google's dominance of scale on both sides of the ad tech stack thereby strengthens Google's dominance overall in the industry and weakens its rivals' ability to compete. Conversely, when participants on both sides actively multi-home, there may be multiple exchanges that offer access to the other side of the market, applying competitive pressure to

decrease fees or increase quality in order to win business. Thus, actions that impair the ability of one or both sides to multi-home are invariably corrosive to competition.

IV. GOOGLE'S SCHEME TO DOMINATE THE AD TECH STACK

74. Over the past fifteen years, Google has acquired and maintained mutually reinforcing monopoly positions in tools across the ad tech stack. Google's scheme has involved a range of conduct, whereby it—often surreptitiously—has wielded its market power in various ad tech tools to undermine attempts by publishers, advertisers, and rivals to introduce more competition for digital advertising transactions. Individually and in the aggregate, Google's anticompetitive acts have deprived rivals of critical scale and contributed to Google's dominance by erecting substantial barriers to entry and competition.

75. Google also has used its dominant position time and again to prevent publishers—its own customers—from efficiently and effectively multi-homing across ad exchanges, and to prevent rival ad tech providers from deploying technology that would have improved the process by which advertisers and publishers find the best advertising matches in real time for each impression. In the face of potential competitive threats, Google has resisted innovation and chosen not to compete on the merits. Instead, it has used acquisitions and market power across adjacent ad tech markets to quash the rise of rivals, tighten its control over the manner and means through which digital advertising transactions occur, and prevent publishers and advertisers from

working effectively with Google's rivals. As the figure below demonstrates, Google's dominance across the ad tech industry is unparalleled.

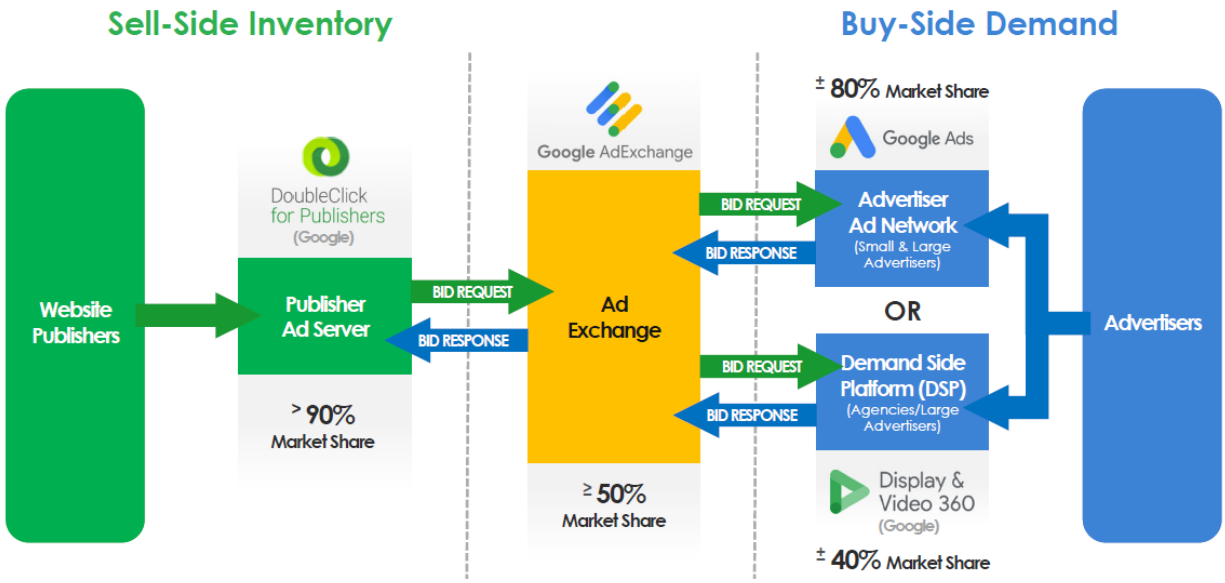

Fig. 5

A. Google Buys Control of the Key Tools that Link Publishers and Advertisers

76. Google entered display advertising on the back of its early strength in search and search advertising. In 2000, Google launched **Google Ads** (then called "AdWords"), a self-service buying tool for advertisers. At the time, advertisers could use Google Ads to purchase advertising on the webpage displaying Google search results.

77. As Google's search engine dominance grew, it attracted large numbers of small and large businesses that considered advertising on Google's search results page to be critical to reaching customers searching for their products or services. After amassing this pool of advertisers, Google realized it could not only sell them advertising space on Google's search results page, but also step in as an intermediary to sell them advertising space on non-Google websites as well. Thus in 2003, Google changed the default setting on Google Ads so that businesses were automatically opted into using Google Ads to advertise on third-party websites

through what became known as **Google Display Network**, or "**GDN**." Today, Google Ads has grown to represent over two million advertisers, spending about $11 billion worldwide on open web display inventory per year. Google Ads is a substantial, unique source of advertising demand and revenue for publishers.

78. In 2006, Google found itself without sufficient access to non-Google premium advertising inventory to meet its advertisers' demand. Effectively integrating Google Ads with existing publisher-facing platforms would have benefited both Google Ads advertisers—by increasing their access to inventory—and Google—by increasing advertising sales, and in turn Google's total revenues as a percentage of those sales. Instead, Google sought to maintain more control over advertising purchases made by its Google Ads' advertisers. In particular, it limited the ability of its Google Ads' advertisers to buy inventory from Google's rivals. Google recognized that if it could secure access to its own pool of publisher inventory, it could control the entire transaction, end-to-end, and become the "the be-all, and end-all location for all ad serving." To that end, Google built and launched its own publisher ad server, but the product failed to gain traction.

79. Rather than innovate and compete, Google found a shortcut. In 2007, Google announced that it would buy DoubleClick for $3.1 billion. DoubleClick offered the industry-leading publisher ad server, called DoubleClick for Publishers or "DFP", which at the time had an estimated 60% market share. DoubleClick also was developing a nascent ad exchange, called AdX.

80. The DoubleClick acquisition was a pivotal moment for Google's display advertising technology business and its strategy to dominate the ad tech stack. The deal provided Google with direct access to website publishers (and their inventory) on DoubleClick's publisher

ad server and, for the first time, a significant presence on both the advertiser and publisher sides of the ad tech stack. Google feared that if a rival acquired DoubleClick, Google would not control all the tools that link Google's advertisers with publisher inventory; in short, a rival could "disintermediate" Google. Disintermediation risked allowing another company to control how and where publishers sell impressions to advertisers, something Google would not tolerate because it would limit Google's ability to generate monopoly profits. Setting the stage for what was to come, the DoubleClick acquisition provided Google the unilateral power to implement a series of anticompetitive restraints, using its dominance on both the publisher and advertiser sides of the market to inhibit competition across the entire ad tech stack.

81. The Federal Trade Commission ("FTC") investigated Google's proposed acquisition of DoubleClick. The FTC considered "the possibility that Google could leverage DoubleClick's leading position in third party ad serving to its advantage in the ad intermediation market" and whether Google could "exclusively bundle AdWords [advertiser demand] with [its publisher-side platforms] AdSense and DFP."

82. The FTC ultimately declined to challenge Google's acquisition of DoubleClick for the reasons set out in its public closing statement. The FTC concluded that "DoubleClick does not have market power despite its high market share"—over 60% at the time—and that "firms can and do switch ad serving firms when it is in their self-interest to do so." Based on these assumptions, the FTC believed any anticompetitive conduct by Google "would likely be defeated by customers switching to one of the other third-party ad serving products."

83. Google's contemporaneous business documents paint a very different picture, however. Six months after the FTC closed its investigation without taking action, one senior Google executive wrote about the importance of controlling access to publisher inventory

through the DFP publisher ad server, stating "the thing we want 'secured' is the DFP platform adoption" because "if we have this" then Google would "have a +20% monetization advantage." In other words, Google believed it could sustainably charge a higher price on advertising transactions than its competitors because it controlled the process and rules by which publisher inventory could be sold.

84. Google knew the emerging ad tech market better, and acknowledged in internal documents that "due to [the publisher ad server's] position as the operating system for ad sales, switching costs are very high." Because of this "stickiness" of publisher ad servers, Google knew it could manipulate the system in its favor—and to the detriment of competition—without fear that publishers would switch to other publisher ad servers. After the acquisition was completed, the former DoubleClick CEO explained at an internal Google strategy meeting, "My view is nothing really matters but the platform [publisher ad server]. Nothing has such high switching costs. If there's a better network or exchange, you can just switch to it. Switching platforms is a nightmare. Takes an act of God to do it."

85. Following the DoubleClick purchase, Google cemented its position as the dominant intermediary between advertisers and publishers through a series of additional acquisitions that eliminated potential competitors and further bolstered Google's position in open digital advertising. For example, in 2009, Google paid $750 million to purchase AdMob, a technology system that allowed publishers of mobile apps to sell ads as well. While Google's conduct in the distinct market for mobile app advertising is outside the scope of this Complaint, Google's anticompetitive conduct in the mobile apps market is consistent with the conduct alleged in the market for display advertising.

86. In 2010, Google acquired Invite Media for approximately $81 million. Invite Media offered a demand side platform. Google subsumed Invite Media into a demand side platform it was developing, Display & Video 360 (at the time, known as "DoubleClick Bid Manager"). By capturing an increasingly large share of bigger, more sophisticated advertisers and advertising agencies, Display & Video 360 complemented Google Ads and expanded Google's control over advertiser demand.

87. In 2011, Google bought AdMeld for approximately $400 million. As discussed further below, AdMeld had developed technology to provide "yield management" functionality to publishers. Yield managers like AdMeld helped publishers manage inventory and optimize revenue by comparing offers from multiple advertiser demand sources at the same time. This comparison feature made it easier for new ad exchanges and advertiser demand sources to enter the ad tech industry because it gave publishers the incentive and ability to switch between ad exchanges and advertiser demand sources in response to better prices and service.

88. The DoubleClick, Invite Media, and AdMeld acquisitions helped Google achieve dominant positions at each level of the open web ad tech stack and set the stage for Google to control and manipulate the process by which publishers sell and advertisers buy open web display inventory.

B. Google Uses Its Acquisitions and Position Across the Ad Tech Stack to Lock Out Rivals and Control Each Key Ad Tech Tool

89. After amassing a position as the dominant intermediary for display advertising, Google used its monopoly power over each level of the ad tech stack to reinforce its dominant positions and limit where and how other ad tech providers could compete. Most notably, Google made its Google Ads' demand available only through its AdX ad exchange. In turn, Google effectively made its ad exchange available only to publishers using its publisher ad server (DFP).

This benefited Google's long-run aspirations of dominating the publisher ad server market, at the expense of Google Ads' advertisers seeking access to the widest variety of publisher inventory at the lowest price. By allowing only its own publisher ad server effective access to important, unique Google Ads' demand, Google could force publishers to adopt and remain on its publisher ad server; other ad servers could not compete to offer a similar product. But this restriction meant Google Ads' advertisers could not buy inventory available only on other ad exchanges or via non-Google publisher ad servers, and they could not take advantage of fee competition that might make that advertising inventory less expensive. The restriction also was contrary to Google's short-term financial interests, which turned on buying more and more-valuable advertisements from as many publishers as possible.

90. Google introduced several policies and auction changes to force more transactions to flow through its platforms and make it more difficult for publishers to switch ad servers. These restrictions collectively stifled competition by artificially preventing rivals from competing on the same terms as Google's products, thereby impeding publishers' and advertisers' ability to work effectively with rivals and allowing those rivals to obtain scale. Google implemented these restrictions even though it knew that it would have been better for Google Ads' advertisers (and far more profitable for Google Ads in the short run) to multi-home across ad exchanges. And, likewise, publishers would have benefited from being able to effectively access advertiser demand through multiple ad exchange intermediaries. These restrictions had the effect of taking Google's publisher ad server from a market leader to a monopoly—currently with no credible competition—and catapulting its nascent ad exchange into a monopoly position that dwarfs all other ad exchanges.

1. Google Thwarts Fair Competition by Making Its Google Ads' Advertiser Demand Exclusive to Its Own Ad Exchange, AdX

91. The DoubleClick acquisition was a first step in Google's march to monopoly. After purchasing DoubleClick, Google restricted Google Ads' purchasing of display inventory to sources controlled by Google (inventory owned by Google or by publishers using Google's monetization products, including its newly acquired publisher ad server). The goal was ultimately to lock publishers into its ad exchange and publisher ad server, and block competing ad exchanges and publisher ad servers from accessing Google's valuable pool of advertiser demand. Google implemented this restriction when it launched "AdX 2.0" on September 17, 2009. At the time, Google identified one of AdX's two differentiators from other ad exchanges as unique "access to AdWords advertisers."

92. Google has continued to sacrifice profits and act against the interests of its own advertisers by blocking its Google Ads' customers from buying almost any inventory through non-Google platforms, such as rival ad exchanges and networks, even if those competitors offered more valuable inventory or the same inventory at lower prices. Google estimated that by 2017, Google Ads was forgoing $863 million per year in revenue by not purchasing inventory from rival ad exchanges and networks. But Google believed this forgone revenue was worth it in the name of advancing its growing moat and protecting its monopoly positions across the ad tech stack. Exclusive access to Google Ads' demand compelled most publishers to adopt whichever ad tech tools Google required to effectively access that demand.

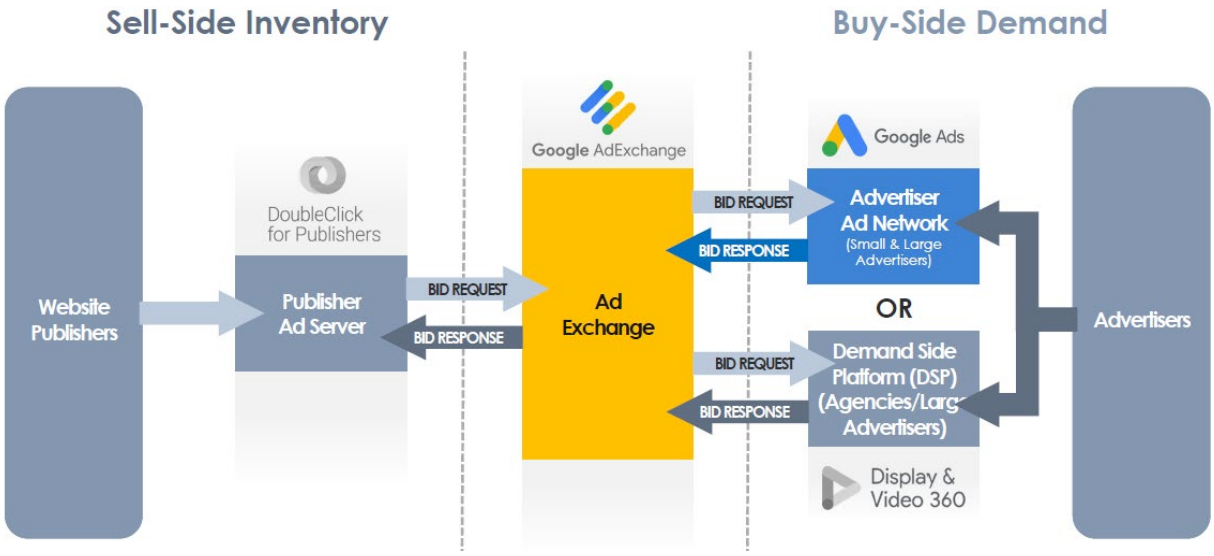

Fig. 6[9]

93. Google Ads' unique and sizeable advertiser demand is what makes Google's ad exchange unavoidable for most website publishers. Google Ads' demand is unique both in its volume and diversity of advertisers (now with more than two million) and in its ability to attract advertisers at scale who cannot effectively use any other digital display advertising tool to purchase ads on the open web. Even for Google Ads' advertisers who can use alternative buying tools, many of them are pushed into Google Ads in order to buy other forms of critical advertising inventory that Google makes available effectively only through its buying tools, such as portions of YouTube, Gmail, and Search ad inventory. Together, these characteristics mean that Google Ads has a significant scale advantage by controlling a unique demand group (that spends about $11.5 billion on display inventory each year).

94. Google Ads is also differentiated from other sources of advertising demand because Google's data-targeting advantages allow it to identify inventory that is uniquely

[9] Diagrams are provided throughout to highlight the location within the ad tech stack where the conduct predominantly occurred. They are not intended to identify all areas where the identified conduct impacted the competitive process or other market participants.

valuable to Google Ads' advertisers. Google Ads' targeting data is derived from a wide array of user data that Google compiles across its many market-leading or monopoly products (e.g., Chrome, Gmail, Google Search) as well as data that Google requires its publishers to share with it through a data pool called the "ICM Coop."[10] Google Ads combines this targeting data with contextual data Google extracts while crawling publisher websites. These sources of data fuel the immense network effects that raise barriers to entry and insulate Google from competitive pressure.

95. The advertiser make-up and data advantages of Google Ads lead it to buy large swaths of inventory that otherwise would go unsold. Certain inventory is valuable only to advertisers that use Google Ads exclusively; other inventory is undervalued without the user targeting and contextual data that Google makes available only to Google Ads. Google does not simply limit access to this data to its own advertiser buying tools. It also has exercised its market power to undercut rivals' ability to compete using the same or similar data. For example, after the DoubleClick acquisition, Google "hashed" (i.e., masked) the user identifiers that publishers previously were able to share with other ad technology providers to improve internet user identification and tracking, impeding their ability to identify the best matches between advertisers and publisher inventory in the same way that Google Ads can. Of course, any purported concern about user privacy was purely pretextual; Google was more than happy to exploit its users' privacy when it furthered its own economic interests.[11]

[10] The ICM Coop is not a real cooperative among website publishers. Rather, it is a data pool over which Google has sole control that publishers must participate in in order to receive competitive bids from Google Ads. Google estimated the value of this data to Google Ads was $4 billion in 2015.

[11] *See supra*, n. 3.

96. Google recognized the power it wielded in Google Ads and used it to prop up and insulate its other ad tech products from competition. According to a 2011 internal analysis, Google found that allowing Google Ads to buy inventory on rival ad exchanges would cause serious losses to its publisher platforms (DFP and AdX) because many publishers and advertisers would prefer to transact through rival platforms. Google estimated that in such a scenario its ad exchange would lose 20 to 30% of its impressions, and its publisher ad server would lose 20% of its publishers. Later internal studies confirmed Google Ads' stranglehold. A 2014 Google experiment found that more than half of the impressions that publishers offered on its ad exchange would go unsold without the critical Google Ads' demand. If the Google Ads' demand was removed from the ad exchange, Google's publishers would experience a 65% drop in revenue because no advertisers outside of Google Ads were interested in buying the unique impressions available or able to do so in light of the auction restrictions described below. Google congratulated itself on having effectively locked out meaningful competition. At one Google strategy meeting, Google executives applauded the fact the "unique Google Display Ad demand" allowed it to justify "why we can charge 20%" fees for open auction transactions won on AdX, even on transactions that did not use Google Ads' buying tools.

97. By preventing publishers from accessing this incredibly valuable demand through rival ad exchanges that publishers otherwise would prefer, Google distorted the way in which website publishers partner with Google's competitors. As Google's former head of global strategy and commercialization explained: "When [advertiser] demand can only be found through certain sources, it compels publishers to work with that product." Because Google owns both DFP and Google Ads, and publishers needed to use DFP to access Google Ads' demand

effectively, Google had no incentive to operate DFP for its own publisher customers' benefit in the way that DoubleClick did.

98. For Google Ads' single-homing advertisers, Google has made it impossible for any rival ad exchanges to compete for the opportunity to link them with publisher inventory. As a result of this restraint, single-homing advertisers have more limited access to advertising inventory (less "reach"). Google recognizes that while this exclusivity locks in publishers, it harms Google Ads' advertisers, which have no reasonable alternatives to which they can turn. As explained in one 2012 internal document, the policy amounts to a "buyside-subsidizes-sellside model" that "artificially handicap[s] our buyside (GDN [Google Ads]) to boost the attractiveness of our sellside (AdX [ad exchange])." Later, in 2014, one Google employee complained about Google Ads' sending Google's publisher platforms a "$3bn yearly check by overcharging our advertisers to ensure we're strong on the pub[lisher] side." These complaints by Google's own employees working on Google's advertiser tools reflect the artificiality of the restrictions imposed on Google Ads, and make clear that the restrictions are what they seem: blatant exclusionary conduct designed to obtain and maintain monopoly power rather than efforts to build a viable, vibrant ad exchange. Deliberately overcharging its own advertisers is also clear evidence of monopoly power over the advertising side of the ad tech industry. No other competitor could engage in such conduct and expect to stay in business.

99. In response to pressure from within Google's own ranks, including by employees managing Google Ads, and only after it shored up its market position across the ad tech stack, beginning in 2015, Google allowed limited categories of advertising demand to bid for some inventory on rival ad exchanges. This was something that Google's engineering team had previously considered and viewed as technically possible, but which its product leadership had

refused to allow. Google's buy-side employees championed this new feature as in the interest of Google Ads' advertisers and Google Ads itself, as a standalone product.

100. Even for the limited subset of demand that Google finally allowed Google Ads to bid on rival ad exchanges, Google disadvantaged those bids. Specifically, Google refused to allow Google Ads' advertisers to submit bids to rival exchanges using the same bid modelling and targeting data that Google Ads used to generate bids for Google's own ad exchange. Likewise, when submitting Google Ads' advertisers' bids to rival exchanges, Google submitted only the single highest bid, whereas when Google submitted the same advertisers' bids to Google's own ad exchange, AdX, Google submitted its two highest bids to improve the revenue payout to publishers.

101. In effect, Google systematically decreased the payout that Google Ads provided to publishers by extracting higher fees on the transactions (now ranging from 32% to 50%). In aggregate, Google understood "32% margin and no 2nd price makes [Google Ads demand] less desirable to access via a middle-man." Once again, Google acted to preserve its own monopoly power rather than its customers' best interests.

102. Google implemented these changes not because it was interested in helping its advertisers achieve the best return on their advertising investment; rather, by submitting two bids, Google was able to redirect sales back to AdX, ensuring AdX's "must have" status in the industry and making it difficult for rivals to have the scale necessary to compete. In fact, Google has gone so far as to enter into non-disclosure agreements with these rival ad exchanges to prohibit them from telling publishers that even this limited form of Google Ads' demand could be found outside of Google's ad exchange. Google imposed these restrictions because it understood that "when our competition is able to say that they have access to [Google Ads],

whether it is equal or not, our sales and marketing teams will have to be prepared for significant competitive pressure." Rather than face that competitive pressure, Google simply restricted rival exchanges' ability to market their capabilities to their publisher customers.

103. Google's coupling of Google Ads' demand to its budding ad exchange was significant in Google's plan to dominate the market and exclude competition. Google took its existing scale advantages in Google Ads and extended those to Google's other ad tech products, by driving more opportunities and transactions through them and away from rival marketplaces. As predicted, Google's nascent ad exchange grew exponentially after its relaunch in 2009. In the wake of the DoubleClick acquisition and the implementation of these restrictive policies, Google's ad exchange display revenue grew 283% in 2009 and an astounding 844% in 2010. By June 2011, Google executives boasted about becoming the "#1 player" in U.S. display advertising, a substantial jump for a company that had failed to gain traction with its own publisher ad server just five years earlier. Today, because of this exclusionary conduct, 95% of Google Ads' spend flows through Google's own AdX ad exchange, while less than 5% flows through rival ad exchanges. The combination of Google's acquisitions with its anticompetitive business practices has suppressed, or altogether eliminated, the necessary growth for rivals to compete.

2. In Turn, Google Makes Its Ad Exchange's Real-Time Bids Exclusive to Its Publisher Ad Server

104. At the same time, Google used what most publishers saw as AdX's must-have status to reinforce and grow its already dominant publisher ad server, DFP, ultimately pushing remaining publishers to adopt Google's ad server and forcing rivals to exit the market. With its relaunch of the ad exchange after the DoubleClick acquisition, Google required publishers to use its ad server to obtain real-time bids from its ad exchange. If a publisher chose not to use DFP, it

was relegated to selling impressions to AdX at a floor price based on historical average prices, which were often much less than the real-time, impression-specific bids AdX made through DFP. As a 2018 Google presentation bluntly noted, "[DFP] is the only way to access [AdX] as a publisher."

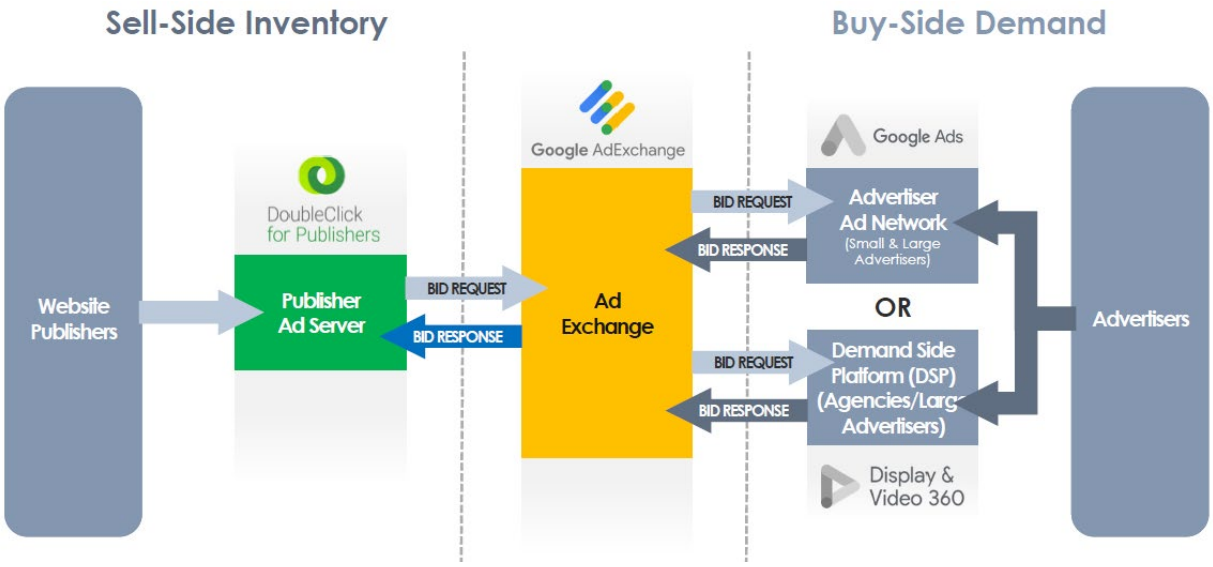

Fig. 7

105. Google did not need to make AdX exclusive to DFP in this way, but nevertheless decided to pursue the most restrictive alternative. In 2011 and 2012, Google developed a feature that would enable AdX to compete for inventory in the same way on other publisher ad servers. The feature was available in beta to some partners and required only "minimal effort" to roll out commercially. But Google saw that this feature risked taking away a "key differentiator for DFP": access to real-time AdX demand. As one Google employee explained in September 2012, "it is too early to give AdX to non-XFP [DFP] partners. . . . This is an amazing time to 'lock in' impressions by offering XFP [DFP] to publishers . . . . AdX can serve as a tool to pull publishers onto XFP [DFP]. . . . Ad Servers are sticky, and hard to replace. The next 12 months are a very good time to switch publishers over." By 2013, Google decided to end this experiment in

openness, with Google's lead product manager for AdX declaring: "[O]ur goal should be all or nothing – use AdX as your SSP or don't get access to our demand."

106. By limiting Google Ads' demand to the AdX ad exchange, and limiting real-time access to the ad exchange to publishers using Google's publisher ad server, Google compelled publishers to adopt its ad server for effective access to Google Ads' demand. Recognizing the importance of real-time competition for ad inventory—which priced an advertisement based on the particular characteristics of a webpage user at that specific point in time—Google blocked publishers using rival ad servers from connecting to Google's ad exchange in the same way. Google knew that its Google Ads' advertisers provided a unique, rich source of advertiser demand, and that no other publisher ad server (or ad exchange) could offer similar access to such a lucrative pool of advertiser demand. Many publishers could not afford to use a rival publisher ad server because they could not afford to lose the revenue that Google's exclusively-linked platforms could provide. In essence, Google dictated publishers' choice of each key ad tech tool used to sell their inventory: publishers must make their inventory available through Google's publisher ad server and ad exchange to get the opportunity to sell a portion of it to Google's extremely valuable Google Ads' advertisers.

107. By 2015, these restrictions had virtually eliminated competition between publisher ad servers, driving rivals to abandon the market completely. Google's market share for publisher ad servers soared from 60% in 2008 to 90% by 2015. In a 2016 customer presentation, Google described DFP as the "defacto [sic]" publisher ad server with a "90% market share." At the same time, it guaranteed to Google Ads—via Google's ad exchange—preferential access to an unrivaled swath of publisher inventory, as well as the associated contextual and user targeting data, which supported Google Ads' remaining a dominant, scaled ad network.

108. To this day, Google's restrictions and conduct essentially foreclose the possibility of entry into the publisher ad server market. To enter the publisher ad server market, a competitor not only would need to offer a full-featured ad server, but also would need to be able to link it to an ad exchange and advertiser demand source of the same size and scale as Google's ad exchange and Google Ads' advertiser demand. Without such a full-stack offering, a competitor would need to convince publishers to sacrifice effective access both to Google's ad exchange as well as access to Google Ads' unique advertiser demand, an ask that is simply not economically feasible given Google's successful exclusionary conduct to date.

3. Finally, Google Uses Its Control of Publisher Inventory to Force More Valuable Transactions Through Its Ad Exchange

109. Google's ownership of the leading publisher ad server, DFP, allowed it to set the rules that governed how most publisher inventory in the market is sold. Google internally referred to publisher ad servers as the "ad revenue operating system for publishers" because they decide who is offered a chance to buy publisher inventory and on what terms. Not content to operate in a free and competitive market, Google altered its publisher ad server rules to force more transactions—and more high-value transactions—through its ad exchange and advertiser platforms. The changes did not allow Google's ad exchange rivals to compete in the same way or

on the same terms, largely leaving them with the leftover scraps of inventory that Google's advertisers did not want, even at artificially discounted prices.

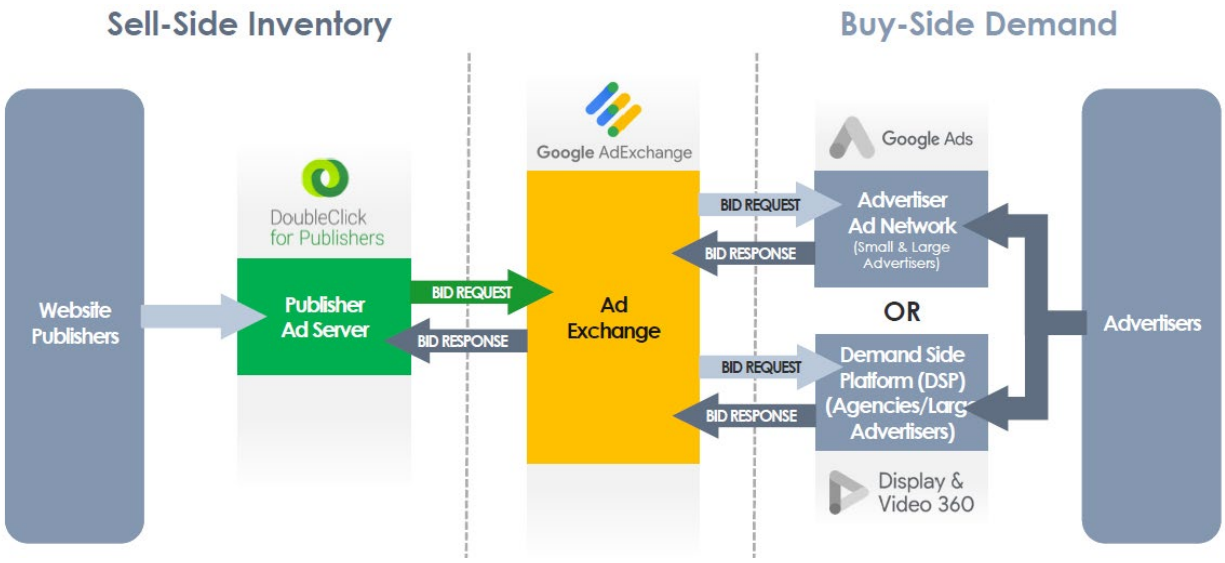

Fig. 8

110. Until at least the advent of header bidding between 2012 and 2013 (and for many publishers not until at least 2018), publishers that wanted to offer inventory to multiple ad exchanges via Google's publisher ad server had to use a system known as the "waterfall." Even though this system plays a smaller role now than it once did,[12] it played a pivotal role in establishing Google's dominance in the ad exchange market, was a critical predicate to certain other Google conduct, and helped to create the market monopoly that Google enjoys today.

111. Under the waterfall process, the publisher ad server would send offers to sell advertising inventory to ad exchanges and advertiser ad networks one at a time in sequence until it found an eligible buyer. To set up the waterfall, publishers had to manually enter into the publisher ad server the average price they expected to be paid by each ad exchange based on

[12] Because of the difficulties and costs of utilizing newer alternative systems in Google's ad server, many publishers are still forced to use the waterfall system today.

historical averages. Because these were average prices, they did not necessarily reflect what an ad exchange would pay for any individual impression at any particular time. The publisher ad server then ranked each ad exchange from highest to lowest based on average historical price. Then when a user opened a publisher's webpage and an ad impression became available for sale, the ad server offered the impression to the ad exchange ranked highest in the waterfall. If that ad exchange had an advertiser willing to pay more for the impression than the minimum price set by the publisher (the "price floor")—which could differ from the average prices of that ad exchange—the ad exchange won the impression, and its advertiser was able to display the ad. The ad was not submitted to any of the other ad exchanges in the waterfall, even if one of them might have been willing to pay more for the impression. Alternatively, if the first ad exchange did not have an advertiser willing to pay at least the publisher's price floor, the ad server called the next ad exchange in the list. This process continued until someone purchased the impression or the last ad exchange in the waterfall was called.

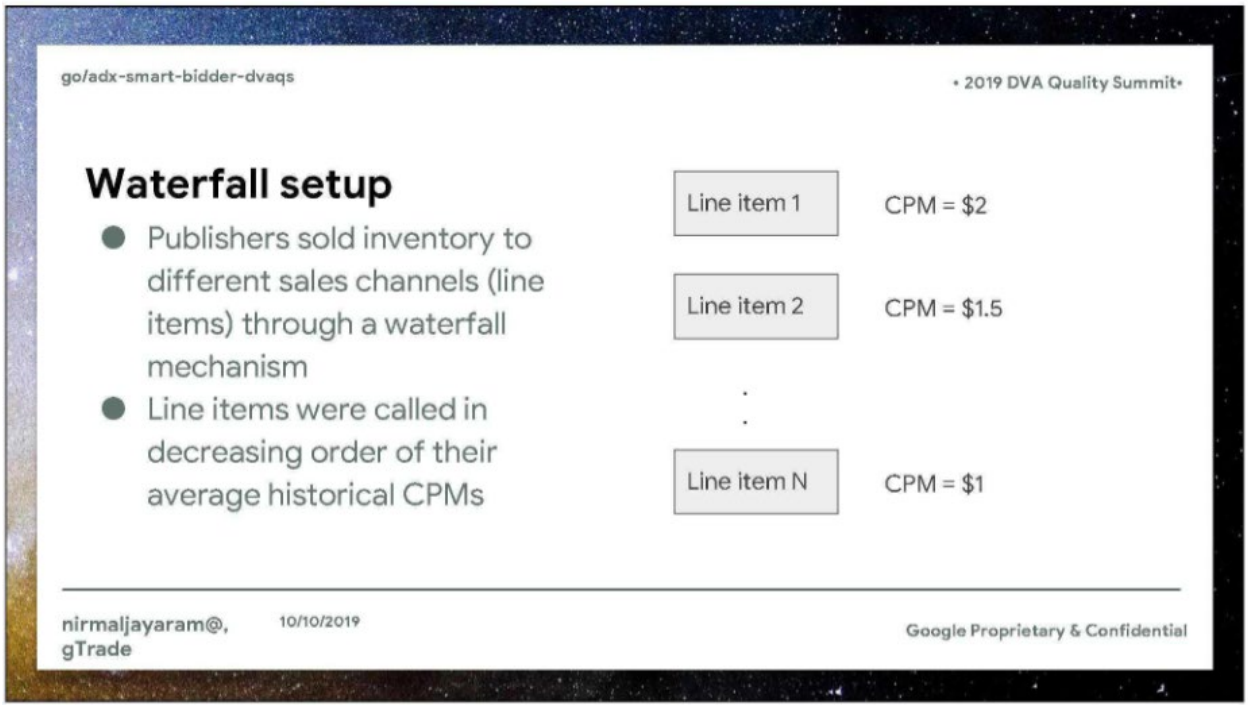

Fig. 9

112. The inefficiencies associated with the waterfall system are obvious: ad exchanges at the bottom of the waterfall might never get a chance to bid, even if they could supply a lucrative bid. In those instances, publishers received less revenue than they could have. But while this inefficiency plagued how inventory was sold to rival ad exchanges, Google used its control over the process to allow its ad exchange—and only its ad exchange—to compete outside of the waterfall process.

113. As part of its post-acquisition relaunch of AdX, on a "system written from scratch" on Google's platform, Google redeployed "dynamic allocation." Dynamic allocation provided AdX a prized position over all other indirect sources of advertising demand, which allowed AdX to both "see more" and "win more" valuable publisher inventory.

114. *First*, Google configured its publisher ad server to afford Google's ad exchange a "first look" at all inventory the ad exchange was eligible to buy. Google's publisher ad server

always called Google's ad exchange for a real-time bid before offering inventory to rival ad exchanges. This placed Google's ad exchange at the top of every waterfall, regardless of where it would otherwise be ranked based on its average historical prices. In practice, it meant that Google's ad exchange saw more publisher inventory than any other ad exchange and could offer advertisers the ability to obtain the most valuable impressions by simply paying slightly more than a static historical *average* price paid by rival ad exchanges.

115. *Second,* before Google's ad exchange competed for an impression, Google's publisher ad server shared with its ad exchange the highest competing price from the waterfall, i.e., the highest *average* price of a rival ad exchange. This set the auction floor price within Google's ad exchange and provided bidders on Google's ad exchange with two key advantages: (1) buyers on Google's ad exchange could see the floor price (i.e., the minimum price to win) and adjust their bids accordingly; and (2) buyers on Google's ad exchange often had to pay only that *average* price of the rival ad exchange. The latter of these advantages was a function of Google conducting a second-price auction on its ad exchange. Under this auction format, if only one bid on Google's ad exchange was higher than the price floor, that bid won the inventory at the floor price that had been set by the rival ad exchange's average price. In this way, Google's ad exchange was able to win high-value impressions without paying the price advertisers on other ad exchanges were actually willing to pay.

116. *Third*, Google configured the ad server to allow its ad exchange to compete on the basis of real-time pricing derived from its internal auction for a particular impression shown to a particular internet user. Unlike rival ad exchanges, Google's ad exchange was not relegated to competing on the basis of historical average prices. Combined with Google's treasure trove of user targeting and webpage contextual data, Google's control over the ad server allowed it to

tailor its bids more carefully; that is, it could bid high for a more valuable impression and low for a less valuable impression. For example, it could offer a publisher $10 CPM to show a car dealer's advertisement to a user who recently clicked through several car manufacturer websites while offering the same publisher only $1 CPM to show the same ad to a 14-year-old user who resides in a state where the dealer does not operate. Google's publisher ad server would not permit other ad exchanges to compete in this way. Instead, all other ad exchanges were forced to compete on the basis of the "waterfall" method using historical, average prices, even though the industry quickly developed a technology standard to bid in real time in this way.

117. This two-tiered arrangement denied rival ad exchanges the opportunity to gain the scale needed to compete effectively with Google by diverting bidding opportunities and transactions to Google's ad exchange and away from rivals who did not have a chance to compete at all or to compete on the same terms. It also harmed publishers in the form of lower revenues, limited the ability of advertisers to identify publisher inventory they valued most at the best prices, and decreased the overall quality of matches between publishers and advertisers.

118. Under the waterfall setup, rival ad exchanges never had the opportunity to bid on most impressions. If an ad exchange earlier in the waterfall sequence submitted a bid above the publisher's price floor, the ad server never offered the inventory to ad exchanges lower in the waterfall. The rules that Google's publisher ad server applied to Google's ad exchange, however, provided Google's ad exchange the opportunity to bid on every eligible impression, armed with substantial data on the publisher's inventory and the competitive landscape. Because rival ad exchanges were relegated to the waterfall process, unlike Google's ad exchange, they had limited windows into the universe of publisher inventory available and lacked the valuable data on available inventory and competition that Google harvested. By preventing publishers from freely

multi-homing and seeing real-time bids from multiple ad exchanges, Google deprived publishers of the benefits of full competition between ad exchanges. Likewise, by providing Google's ad exchange with a preferential—and for many impressions, sole—opportunity to buy publisher inventory, Google discouraged advertisers from multi-homing among ad exchanges and provided a substantial competitive advantage to buyers on Google's ad exchange, the largest buyer being Google Ads.

119. In addition, through dynamic allocation, Google's ad exchange had the opportunity to win impressions whenever it matched a rival's average price. This permitted Google's ad exchange (and its largest buyer, Google Ads) to win more impressions than its rivals, especially higher-value impressions. But for dynamic allocation, a rival ad exchange might have won the impression because it could offer a higher price or better match. Over time, this distortion of the auction process meant that advertisers were more likely to win the impressions they most wanted through Google's ad exchange as compared to a rival ad exchange. As a result, rival exchanges struggled to attract advertiser ad campaigns, which in turn made it difficult for them to amass publishers willing to offer their inventory through the ad exchange. Of course, dynamic allocation also hurt Google's own publishers, by sacrificing the fees they paid Google to maximize the value of their advertising inventory.

120. In 2014, Google expanded and further entrenched its artificial advantages by introducing "enhanced" dynamic allocation, which remains in place today. This update allowed Google's ad exchange to obtain the benefits of dynamic allocation over inventory potentially covered by direct contracts between publishers and advertisers. Historically, this inventory was not offered to ad exchanges at all because qualifying inventory was set aside to fill the direct contract; only after the direct contract was filled did otherwise qualifying inventory become

available for auction. Enhanced dynamic allocation afforded Google's ad exchange a right of first refusal over this inventory regardless of whether the publisher had yet fulfilled the terms of the direct contract. Enhanced dynamic allocation allowed Google's ad exchange to win the impression as long as it was willing to pay more than Google's own estimate of the "value" of fulfilling the terms of the direct contract at that moment, which Google calculated through an opaque process that predicted the likelihood the publisher would still be able to satisfy the terms of the direct contract through future impressions even if Google's exchange filled the one currently available. At the same time, Google ensured that "[i]t [was] not possible for publishers . . . to deactivate Enhanced Dynamic Allocation" within the publisher ad server.

121. Combined, dynamic allocation and enhanced dynamic allocation push more transactions through Google's ad exchange by unfairly tilting the playing field in Google's favor, driving additional scale benefits available only to Google. Because of the exclusive link between Google's ad exchange and its market-leading publisher ad server, no rival can offer publishers or advertisers the same terms as Google. The benefits to Google, and only Google, are plain.

122. *First*, Google has been able to apply its substantial 20% revenue share fee at the ad exchange level over more transactions, boosting Google's revenues and profits. This fee has been earned not only on transactions where Google Ads won, but also on transactions where other Google and non-Google advertiser buying tools won. Because Google could capture these higher revenues at the ad exchange level, Google was able to forgo or heavily discount the fees it otherwise might charge for publisher ad server services—historically much smaller than ad exchange fees. Indeed, for many customers, Google completely waived publisher ad server fees on a given transaction if it was able to charge its 20% ad exchange fee. By extracting higher fees at the ad exchange level than at the publisher ad server level—which Google needed to control to

force more transactions to its ad exchange—Google has also able to maintain low ad serving fees while still achieving its margin goals across the ad tech stack. This fee structure discourages entry by potential ad server competitors, because entry could only be economically feasible by replicating Google's overall strategy: building dominant positions at each level of the ad tech stack and forcing more transactions to flow through those tools.

123. *Second*, by forcing more transactions through Google's ad exchange and away from rivals, Google has distorted the pathways through which publishers and advertisers transact and impeded the ability of competitors to gain the scale necessary to compete effectively in the ad exchange market. Google's dynamic allocation and enhanced dynamic allocation programs have decreased the likelihood that a rival ad exchange could win a transaction, even if it had an advertiser willing to pay the most for an impression. In turn, this has diminished the ability of ad exchanges to attract additional publishers and advertisers to their platforms and has deprived them of valuable transaction data that could improve their competitiveness.

124. *Third*, by giving Google's ad exchange (and only Google's ad exchange) a "first look" option of purchasing publisher impressions offered for sale through DFP, Google has limited the ability of publishers to freely and effectively offer their impressions for sale on multiple ad exchanges. Dynamic allocation and enhanced dynamic allocation has resulted in a two-tiered system—a special auction where Google's AdX competed and a secondary, inferior auction potentially available to rival exchanges. Publishers are unable to partner with Google's rival ad exchanges on the same terms as Google's AdX. Those rivals cannot integrate with DFP via a mechanism equivalent to dynamic allocation, even if they had the technological capability to do so.

125. Even though Google modified the way dynamic allocation operated in late 2019, the effects of the decade-long program persist. Over that period, Google has amassed substantial scale within its ad exchange while undercutting rivals' ability to do the same. The flywheel network effects of that scale continue to advantage Google's ad exchange, especially when combined with the new algorithmic bidding programs described below that largely replicated the effect of dynamic allocation. Even today, Google continues to use enhanced dynamic allocation to favor buyers transacting through Google's platforms. Only those buyers can bid with knowledge of the Google-determined price floor that Google sets through enhanced dynamic allocation.

4. Google's Dominance Across the Ad Tech Stack Gives It the Unique Ability to Manipulate Auctions to Protect Its Position, Hinder Rivals, and Work Against Its Own Customers' Interests

126. In addition to restricting vital Google Ads' demand to website publishers using Google's publisher ad server and ad exchange, Google realized it also could manipulate Google Ads' bidding strategy to further entrench its publisher ad server and make entry by competing ad servers unworkable. Google Ads ostensibly bought inventory on behalf of its advertisers using price and budget limitations decided by each advertiser. But Google chose to do so in ways that served Google's long-term goal of dominating publisher platforms.

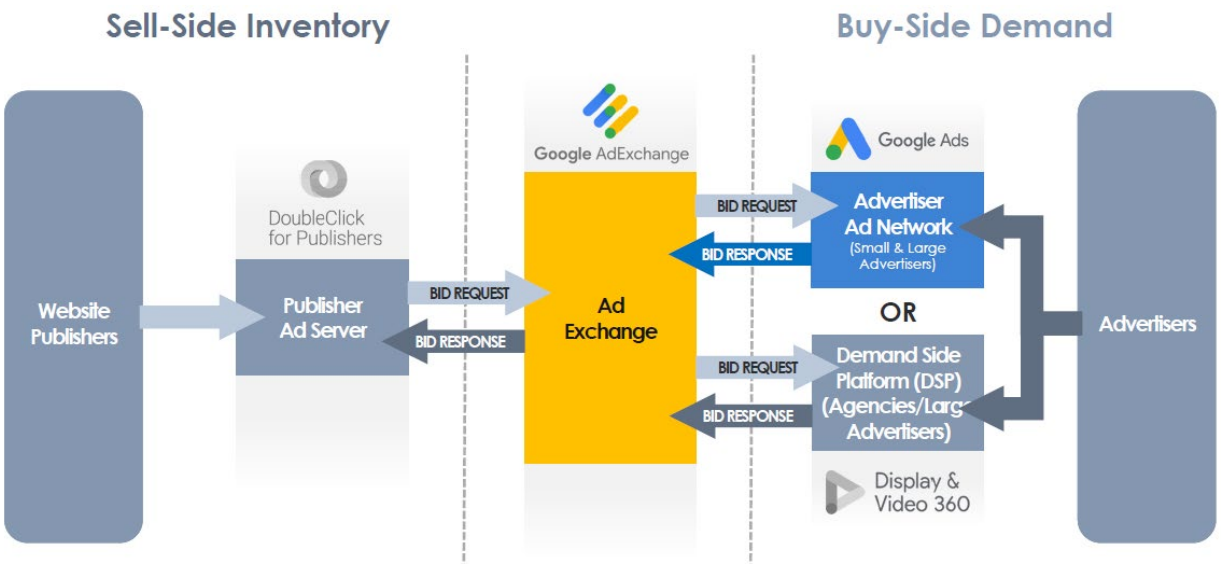

Fig. 10

127. Google Ads' advertisers set maximum prices,[13] budgets, and other parameters for their campaigns, but Google Ads is otherwise a "black box" to advertisers. Google has nearly full control over when, where, and how Google Ads bids for its advertiser customers. Using that control, Google designed a system intended to force Google Ads' two million advertisers to pay higher advertising prices. The goal and effect are clear: increase payouts to publishers using Google's platforms—the only place Google Ads' demand was available—to make Google Ads' advertising demand and Google's publisher ad server and ad exchange even more indispensable to publishers (while also allowing Google to maintain its supra-competitive take rates). In doing so, Google foreclosed the ability of rivals to compete effectively against its publisher ad server business and further propelled Google's DFP ad server from a dominant platform to a monopoly.

128. Over time, as Google's monopoly over the publisher ad server was secured, Google surreptitiously manipulated its Google Ads' bids to ensure it won more high-value ad

[13] Although advertisers set a maximum price for advertising (generally on a per click basis), Google actually charges advertisers the lower of 1) their maximum price or 2) Google's cost plus a set margin.

inventory on Google's ad exchange while maintaining its own profit margins by charging much higher fees on inventory that it expected to be less competitive. In doing so, Google was able to keep both categories of inventory out of the hands of rivals by competing in ways that rivals without similar dominant positions could not. In doing so, Google preserved its own profits across the ad tech stack, to the detriment of publishers. Once again, Google engaged in overt monopoly behavior by grabbing publisher revenue and keeping it for itself. Google called this plan "Project Bernanke."

a) Google Works Against the Interests of Its Google Ads' Customers By Submitting Two Bids Into AdX Auctions

129. Google Ads determines how to bid on behalf of its advertisers using price and budget maximums decided by the advertiser. For each piece of available inventory, Google Ads runs an internal auction of Google Ads' advertisers, based on an algorithm that considers eligible advertisers' specified maximum cost-per-click prices, Google's predictions of the likelihood of a user clicking an ad, and a number of other factors. These bids are then converted into a cost-per-impression ("CPM") bid, which, until 2013, Google then adjusted downward to ensure Google Ads would charge an expected 14% take rate on each impression—in addition to the 20% take rate charged by Google's ad exchange. If Google Ads then won the impression—and the user ultimately clicked on the ad—the Google Ads' advertiser would pay the amount paid for the impression plus Google's fee.

130. Until late 2019, AdX operated what was known as a second-price auction. In a second-price auction, the advertiser with the highest bid wins the right to display its ad on the publisher website. The winning advertiser, however, only pays one cent more than the price of the second-highest bid, and gets to keep the difference between the two as an "auction discount."

If the advertiser is the only bidder, then it must pay only the minimum price the publisher agreed to accept, known as the price floor.

131. Because of this auction dynamic, advertiser buying tools have an incentive to submit only one bid into an ad exchange's auction. If an advertiser buying tool submits two bids into a second-price auction, the higher bid might win the auction while the lower bid sets the price; without the second bid, the inventory might have been sold to the winning advertiser at a lower cost (possibly even at the floor price set by the publisher). In essence, the second bid into the auction only serves to drive the final auction price upwards, while conveying no real increased chance of winning.

132. To avoid driving up the cost of advertising, non-Google advertiser buying tools only submitted a single bid into AdX auctions. But Google took a different approach for Google Ads and, unknown to advertisers, submitted *two* bids from Google Ads' advertisers into the AdX auction. This was contrary to the interests of Google Ads' advertisers—who benefited when Google Ads paid less for impressions resulting in clicks—but furthered Google's goal of locking publishers into its ad exchange and publisher ad server. These higher payouts for publishers on Google's platforms were a key part of Google's overall strategy to prevent new publisher ad servers from entering the market and to increase the stickiness of Google's own publisher ad server by raising publishers' switching costs. The strategy allowed Google to extract additional margins across the ad tech stack through the two-tiered auction structure described above. A publisher that left Google's platform not only lost access to all of the unique advertiser demand available only on Google Ads, but also lost access to an advertising buying tool willing to overcharge its advertisers to benefit its publishers.

133. Google generally did not disclose to Google Ads' advertisers the fees that Google extracted from their ad purchases. Even when it did publicly disclose average fees from the perspective of the revenue received by publishers, it did not disclose that those fees came on top of advertising prices that were inflated by virtue of Google Ads' bidding practices. This obscured the total "take rate" Google was keeping for itself, making it difficult for advertisers to compare Google Ads to any potential competitor.

134. Google's internal analyses confirm the purpose and effect of Google Ads' double-bid policy. A 2013 study found that Google Ads submitted the top two bids in ***85%*** of the auctions it won, meaning its bids set the price in the vast majority of auctions it won. Because Google Ads did not face meaningful competition for its advertising customers, however, this statistic did not lead Google to reduce its advertisers' bids or otherwise adjust its bidding strategy. Rather, the study confirmed Google's understanding that it had full control and pricing power over a unique pool of advertiser demand that was often interested in inventory other advertisers did not or could not value in the same way. As Google itself acknowledged, Google Ads had "no margin or inventory sourcing constraints" so it was able to "establish[] processes to tune margins in the backend," outside auctions. As usual, what mattered most was Google's own dominance, not its customers' best interests.

135. Years later, little had changed when Google revisited the question of what would happen if Google Ads submitted only one bid into the AdX auction.[14] The answer: the 30 to 40% boost in publisher revenue from Google's two-bid strategy would disappear. Strikingly, the same analysis showed that if Google Ads submitted only one bid on AdX—and thereby was able to

[14] On the limited occasions where Google Ads bids on inventory on third-party exchanges, it submits only one bid.

buy inventory at lower prices—its profits on Google Ads would increase by an astonishing 50% in the short run.

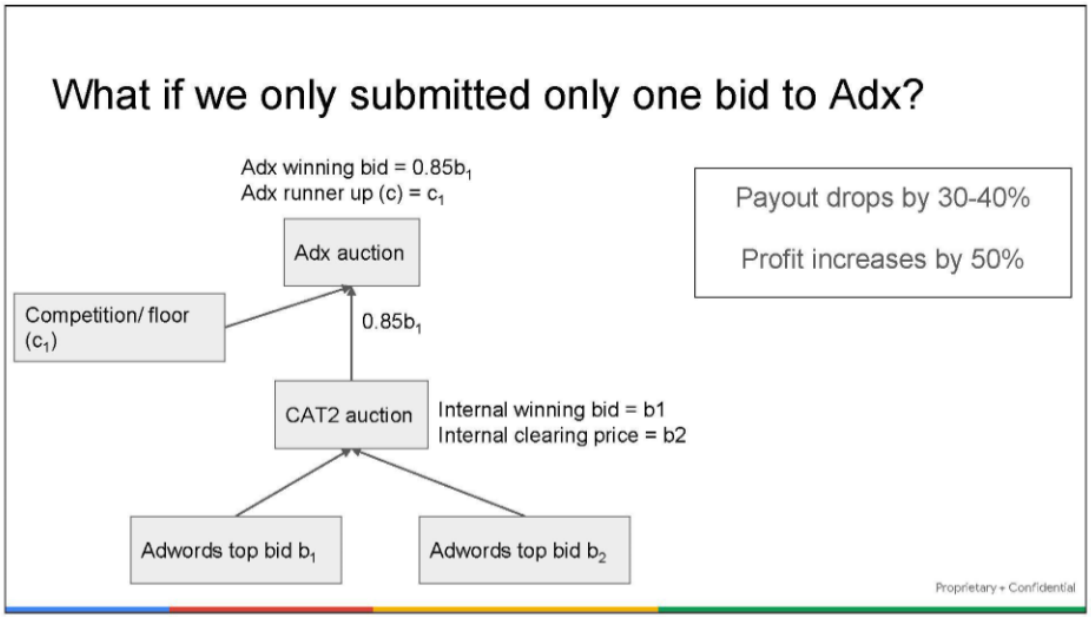

Fig. 11

136. But Google simply could not risk a change that weakened its ability to keep publishers locked into its publisher ad server and ad exchange. The loss of inflated publisher revenues on Google's platform might finally make a rival publisher ad server an attractive alternative and threaten Google's monopoly. If publishers switched, Google would lose control over the ad selection process and be forced to interoperate with those rival products for inventory.

b) Google Manipulates Its Fees to Keep More High-Value Impressions Out of the Hands of Rivals

137. As Google's publisher ad server monopoly was being cemented, Google's focus shifted to ensuring its ad exchange rebuffed growing challenges from rival ad exchanges. Recognizing that Google Ads still faced little competition for most impressions it won on AdX, over time Google adjusted its fees—and in turn its bids—to ensure it could win more high-value

transactions while paying less for lower-value transactions. By owning both the dominant publisher ad server and the dominant ad exchange, Google had unique access to the price data it needed to make these adjustments in a way that ensured more transactions, revenue, and profits flowed to Google—and in particular its Google Ads' ad network and ad exchange—with minimal risk to Google.

138. First, in January 2013, through a program called Dynamic Revenue Share, Google adjusted the way Google Ads took its revenue share fee from a fixed 14% take rate on each impression sold to a changing, or dynamic, fee that averaged 14% per publisher over time. This allowed Google Ads to effectively increase its bids in competitive auctions (by taking a lower expected fee) and make up the losses by setting a higher expected fee on non-competitive auctions. This change reinforced Google's ability to win more transactions on its ad exchange than could rival ad networks or demand-side platforms, augmenting the advantages Google already afforded its ad exchange through dynamic allocation, without the need to compete by reducing its fees.

139. Second, later in 2013, Google implemented Project Bernanke,[15] which doubled-down on Dynamic Revenue Share by subsidizing bids (i.e., bidding above the advertiser's willingness to pay) on competitive impressions, thereby sacrificing any profit on the transaction. Of course, Google ensured that its own margins would be maintained. Google offset any loss on a given transaction by charging much higher fees (i.e., 50% or more) on impressions where Google Ads faced no competition—the majority of impressions Google Ads had already been winning. In doing so, Google Ads and AdX were able to win more impressions over their

[15] Project Bernanke was named after former Federal Reserve Chairman Ben Bernanke because it resembled "quantitative easing on the Ad Exchange."

respective rivals, increasing Google Ads' spend by 20% and profits by 30%, and increasing overall ad exchange revenue by 8%. A Google simulation of the program confirmed that advertisers using non-Google buying tools won fewer of the coveted high-value impressions, decreasing their relatively smaller spend on AdX by 14%.

140. Finally, in 2014, Google implemented Project "Global Bernanke" which changed the method by which Google calculated the Google Ads' take rate (sometimes referred to as "margin"). Instead of applying the same take rate to each publisher's ad inventory, Google took an average take rate at the ad exchange level. Google took a higher cut of advertiser spend for some publishers while taking less for others. The effect was to further shift the publisher benefits of Google Ads' two-bid system to the most important publishers and away from "non-competitive" publishers (i.e., publishers whom Google believed were unlikely to risk switching to a rival ad server). Google candidly acknowledged that by 2014 it was not worried it might lose "non-competitive publishers." As one document explained, it is "unlikely they can do better on another network (which doesn't have any [Google Ads] demand)."

141. The Google-generated graphic below shows Dynamic Revenue Share and Project Bernanke in practice. After running its internal auction (as described above), Google Ads calculates its two highest bids on a CPM basis as $1.00 and $0.96 (the gray bars). These bids might be similar because they are based on the same Google targeting data. Applying a uniform 14% take rate (or "margin") would result in bids equal to $0.86 CPM and $0.83 CPM. With dynamic revenue share, Google adjusted the bids to $0.95 CPM and $0.83 CPM (the red bars in the Figure). For Bernanke, Google raised the first bid even further (sometimes substantially), as the first bid determines the winner of the auction. By raising the first bid (here from $0.95 CPM

to $1.20 CPM, the green bars), Google Ads won more auctions, either clearing publishers' reserve price more often or winning against a rival's bid for competitive impressions.

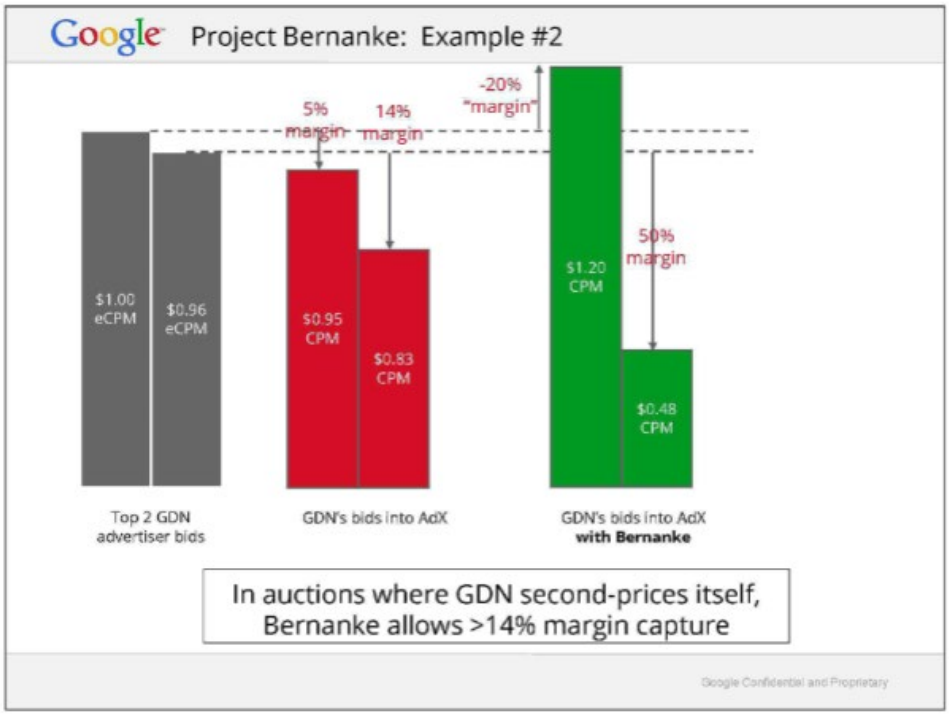

Fig. 12

142. By manipulating the auctions in this fashion, Google was able to subsidize the inflated advertiser bids by dropping the price of the runner-up's bid (here from $0.83 CPM to $0.48 CPM). Where an auction was not competitive—the majority of auctions that Google Ads won—the lower price was the one Google Ads paid for the impression. Google then kept the margin (an estimated 50% in the example) to subsidize competitive queries. In this example, instead of the website publisher receiving $0.83 CPM for the advertisement, it received only $0.48 CPM for the impression under Bernanke, assuming only Google Ads' advertisers submitted bids. A similar drop in price would occur for other "non-competitive" impressions. At the advertiser level, Google aimed for the same average take rate for each Google Ads' advertiser: a 32% difference between what the advertiser paid to Google and what Google ended

up paying to publishers for all of the impressions that the advertiser purchased.[16] Bernanke increased the number of transactions that Google won through its platforms, and in turn increased Google's overall revenues and profits while denying scale to competing ad exchanges.

143. Project Bernanke allowed Google Ads to continue to pass along additional revenue to publishers on Google's platforms (the only place it ran) but did so disproportionately relative to the competitiveness of the publisher. In doing so, it won more high-value impressions on Google's ad exchange and reinforced the stickiness of Google's ad server for key publishers. Other ad exchanges and ad servers that lacked a captive source of advertiser demand whose bids they could manipulate were unable to subsidize important publishers in the same way, presenting another roadblock to entry or expansion in the publisher ad server and ad exchange markets. For their part, while Google Ads' advertisers won some additional competitive impressions, they did not receive the full benefit of the lower prices Google Ads paid for non-competitive inventory. Moreover, Google did not disclose to advertisers that it was shifting savings away from them to increase its own margins. In effect, Google fended off competition that could have challenged its monopoly power to force advertising transactions through its own ad tech products and limited publishers' and advertisers' ability to multi-home with rival products while still being able to maintain its high overall margins. In essence, a win-win, but only for Google.

144. In terms of its impact on competition, Google's dynamic allocation and dynamic revenue sharing programs functionally made price competition among rival ad exchanges obsolete because no rival had sufficient scale across the ad tech stack to compete against Google.

[16] Google Ads' advertisers specify a maximum cost-per-click they are willing to pay. Google charges advertisers a fee on top of the price that Google pays for publisher inventory. The result is often less, and "sometimes much less," than the advertiser's specified maximum.

Google could effectively afford to charge nothing where it wanted to obtain high-value inventory because it had the ability to make up the difference on the back end with less valuable inventory.

C. Google Buys and Kills a Burgeoning Competitor and Then Tightens the Screws

145. By 2010, Google's rivals had begun to design and market technology in an attempt to circumvent the limitations on competition that Google imposed through its publisher ad server. Google's response was forceful, extinguishing the leading innovator via acquisition and tightening its restrictions to head off similar potential threats. Google continued to impede its rivals' ability to offer real-time competition for publisher inventory on the same playing field as Google's ad exchange. Google used anticompetitive means to keep customers on both sides of the stack (i.e., publishers and advertisers) locked in to its ad tech tools, while ensuring that competitors for those valuable customers were locked out.

1. Google Extinguishes AdMeld's Potential Threat

146. In 2011, Google acquired a competitor, AdMeld. In doing so, Google removed from the market what it viewed as a "critical threat" to its ad exchange and publisher ad server businesses. AdMeld's yield management technology could receive bids in real time from multiple ad exchanges and other demand sources. This could allow other ad exchanges to compete in the same way Google's publisher ad server allowed Google's ad exchange to compete through dynamic allocation, utilizing in part a real-time bidding standard. Publishers quickly moved to adopt the yield management technology because it allowed them to multi-home more effectively among ad exchanges and ad networks. It also gave publishers the ability to connect with the advertisers who especially valued their inventory. In contrast, Google's publisher ad server did not permit connections to any advertising demand source other than the buyers on the AdX ad exchange, which of course included Google Ads' advertiser base. Quite simply, AdMeld threatened to destroy the advantage Google had created for itself in its

exclusionary publisher ad server by allowing website creators to offer their digital advertising inventory to multiple ad exchanges in order to find the best available match.

147. Externally, AdMeld described itself as "the largest, independent practitioner of RTB [Real Time Bidding] behind Google," "connect[ing] to more than 200 ad networks, & 35 Demands Side Platforms (DSP) and process[ing] more than 11 billion bids daily" with links to 20 leading data providers. Relying on its "core functionality" of real-time bidding, AdMeld proposed becoming its customers' "central ad decision hub," the key role Google reserved for its own publisher ad server product.

148. In a 2010 strategy discussion, Google executives noted that "Yield Managers are a threat we need to take *very* seriously" with "AdMeld [being] the largest concern" and one of three "Key competitors." Specifically, if AdMeld continued to attract publishers to its technology, Google worried about the possibility of having to "pass real-time AdX pricing into a non-DFP ad server." If Google were forced to do so, it would eliminate DFP's exclusive access to AdX, which Google believed would be—and which ultimately was—the key to DFP's growth and enduring dominance.

149. AdMeld typically charged only a 7% revenue share compared to Google's 20% revenue share on AdX. So rather than compete with AdMeld, what did Google do? It bought and buried it. In a presentation outlining the "Strategic Rationale" for the deal, Google executives explained that the acquisition would "reduce [the] risk of disintermediation," i.e., the possibility publishers and advertisers would transact through rivals. Disintermediation at any level of the ad tech stack was a serious threat to Google's entire strategy of being the sole entity with end-to-end control over digital advertising transactions.

150. In other documents evaluating whether to buy a yield manager like AdMeld, Google candidly acknowledged that the underlying "technology is irrelevant to us." Google already had in place the only yield management tool it wanted publishers to use: dynamic allocation's real-time bidding integration with Google's ad exchange. Google also recognized that its customer base already largely overlapped, "so we aren't buying customers." Only one real question remained open for Google: "How does the competitive landscape change if we buy one?"

151. The Antitrust Division investigated the AdMeld deal before it closed. Like the FTC considering the DoubleClick acquisition, the Antitrust Division declined to challenge the deal based on assumptions about the ad tech market that, with the benefit of hindsight, were incorrect—in no small part due to Google's subsequent anticompetitive conduct. At the time, the Antitrust Division cited multi-homing among display advertising platforms as a factor that "lessens the risk that the market will tip to a single dominant platform." But Google's increasing scale and dominance across the ad tech stack, coupled with its subsequent exclusionary conduct, destroyed the ability of advertisers and publishers to effectively multi-home among alternative ad exchanges. As a result, the market tipped and AdX became the dominant ad exchange.

152. Shortly after the AdMeld deal closed, Google combined the yield management functionality of AdMeld into DFP and migrated all AdMeld customers to AdX. Critically, it then shut down AdMeld's nascent real-time bidding technology, quashing a competitive threat that otherwise might have challenged Google's market position and forced Google to move toward a more open system that allowed publishers to utilize AdMeld's innovative technology to facilitate real-time competition among non-Google ad exchanges and advertisers.

153. By acquiring AdMeld, Google eliminated the existing competition between AdMeld and Google's sell-side products, foreclosed any potential competition, and helped eliminate the leading yield management technology that Google knew might displace its dominant market positions.

2. Google Doubles Down on Preventing Rival Publisher Ad Servers from Accessing AdX and Google Ads' Demand

154. After acquiring and killing AdMeld's innovative technology in order to prevent publishers from having the opportunity to experience real-time competition between Google and rival ad exchanges and publisher ad servers, Google clamped down on similar attempts by publishers to allow Google's ad exchange to integrate with rival publisher ad servers.

155. By 2015, Google's publisher ad server, DFP, had reached a 90% market share and had snuffed out most meaningful competition. In part because of the scale that Google's publisher ad server had achieved by excluding competitors, Google's ad exchange was large and growing quickly; Google Ads likewise remained the dominant advertiser ad network and an especially valuable source of advertising demand for many publishers. Emboldened by its success, in 2014 Google changed the AdX terms of service to further entrench its market power. Those changes prohibited publishers from using non-Google ad servers, or the remaining yield management solutions, to compare bids from Google's ad exchange with bids from other ad exchanges in real time, notwithstanding the increased access to inventory such an integration could provide to advertisers buying on AdX. In effect, Google decreed that any publisher that wanted real-time competition involving AdX would have to use Google's publisher ad server,

DFP, formally cementing in policy what Google had intended from the outset of its relaunch of AdX in 2009.

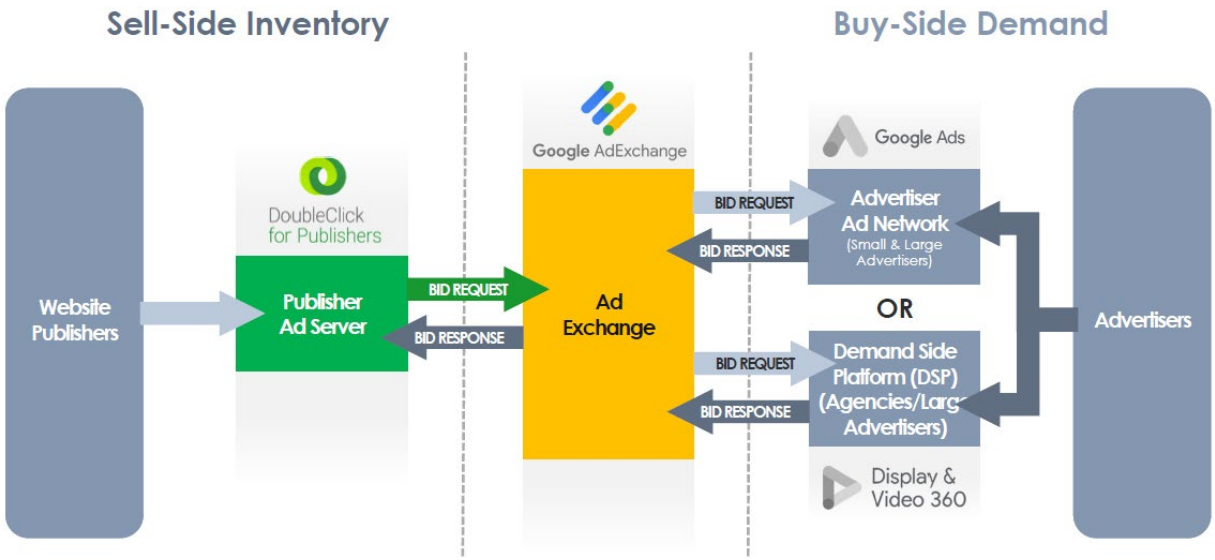

Fig. 13

156. Google's decision was bad for publishers, locking them into a less innovative publisher ad server with artificial limitations on real-time price competition for advertising inventory. It was also bad for any would-be publisher ad server rivals—effectively sounding the death knell for future publisher ad server competition. Google's exclusionary policy effectively prohibited a competing publisher ad server from offering any form of real-time competition that included Google's ad exchange and the unique advertiser demand that came with it. Forgoing such competition was a non-starter for nearly all publishers. This restriction is still in place today, an insurmountable obstacle for any nascent publisher ad server competitor.

157. Google built a wall around its exclusive link between its publisher ad server and ad exchange because it feared competition. In particular, Google feared a rival could offer a more attractive publisher ad server by simply allowing all advertiser demand to compete in real time on a level playing field for publisher inventory. More demand competing in real time for

publisher inventory generally increases the likelihood that the advertiser that is willing to pay the most for an impression will have a chance to buy it. Rivals that offered technology upending this policy would be seen as offering a better publisher ad server. As one Google employee wrote, if another publisher ad server could place Google's ad exchange in real-time competition with other ad exchanges, that ad server could offer publishers a "super set of demand" and "[n]o one would sign up for AdX directly" through Google's publisher ad server.

158. Even though both publishers and advertisers benefit from real-time competition between AdX and other ad exchanges, by policy, Google limited real-time competition from rival ad exchanges to maintain its dominant positions at both ends of the ad tech stack and to further insulate its growing position in the ad exchange market. Google's decision was based on business, not technology. As the lead architect of AdX explained in an internal email about the policy, "Our goal should be all or nothing – use AdX as your SSP [ad exchange] or don't get access to our demand." Indeed, Google had already worked quietly to develop the technology that might allow AdX to integrate in real time with non-Google publisher ad servers. But Google made a "strategic decision" to prohibit such integrations via contract; it terminated its internal projects and blocked efforts by rivals and publisher customers to implement such integrations. That prohibition endures today, and both publishers and advertisers are paying the price for Google's anticompetitive refusal to innovate or integrate.

159. Now, the only way a publisher can access Google's ad exchange outside Google's publisher ad server is by placing an "AdX Direct" tag on the publisher's website. Even though these tags could benefit buyers on Google's ad exchange by providing access to additional publisher inventory, Google designed the tags to discourage publishers from using them. They offer only the most rudimentary functionality: publishers can send a request to Google's ad

exchange with a price floor, and if there is an advertiser on AdX willing to pay that price or higher, Google's ad exchange wins the inventory. No other competing bids are considered, and Google's bid cannot be compared to other ad exchanges' bids.

160. Recognizing that AdX Direct is an antiquated relic in comparison to real-time bidding, Google even planned to eliminate the tag entirely in 2019. Google later paused that project as antitrust enforcers focused their gaze on the company's digital advertising business. But Google has not retained AdX Direct because it is a competitive product offering valued by publishers. Rather, in the words of a Google employee, it merely serves as "a concept for antitrust"—something Google's antitrust lawyers could claim offers rival ad servers some remote chance of competing on the merits with Google's ad server. Google's internal analyses of AdX Direct, however, reflect publishers' reality: Google's restrictions make impossible any reasonable substitute for the real-time integration with Google's ad exchange available exclusively through Google's ad server.

3. Google Manipulates Google Ads' Bidding Strategy to Block Publisher Partnerships with Rivals

161. Google also took the opportunity to tweak its Project Bernanke algorithm to further lock in publishers who considered using innovative bidding technology offered by Google's rivals. Some publishers attempted to partner with rival ad exchanges to offer them "first look" access to inventory—an opportunity to bid in real time for inventory before it was offered to Google's AdX. "First look" could potentially prop up rival ad exchanges by giving them effective access to some of the most valuable inventory.[17]

[17] Previously, Google used dynamic allocation in its publisher ad server to exclude rival exchanges from meaningful competition. By only permitting Google's own ad exchange to bid in real time—ahead of any other exchange—for impressions, Google was unfairly advantaged and competitors were effectively stymied from competing.

162. Beginning in 2014, Google recalibrated the earlier Project Bernanke to decrease Google Ads' bids on AdX for publishers that allowed rivals an opportunity to buy inventory ahead of AdX. Google called this "Project Bell." Where publishers tried to partner with rival sources of advertising demand for "first look" access to inventory, Google reduced bids—without any input from or awareness of the underlying advertiser—by about 20%. According to Google's documents, it explicitly warned publishers that utilizing innovative "first-call" technology from rivals would cause publisher yield to drop 20 to 30%. Of course, only a company like Google with substantial market power across the entire ad tech stack would have the incentive or ability to implement such a program. Project Bell both insulated Google's ad exchange from this new form of competition and preserved preferential access for buyers on Google's ad exchange, including Google Ads.

D. Google Responds to the Threat of Header Bidding by Further Excluding Rivals and Reinforcing Its Dominance

1. The Industry Attempts to Rebel Against Google's Exclusionary Practices

163. By 2015, Google's publisher customers and ad exchange competitors had grown so frustrated with Google that they attempted to implement a form of open, real-time competition with Google's ad exchange that evaded Google's exclusionary restrictions. This innovative technology was called header bidding.

164. Header bidding worked as follows: publishers inserted certain computer code into the "header" section of the HTML code of a web page. This code triggered a real-time auction among ad exchanges *before* the publisher's web page called the publisher ad server.[18] The highest bid from the header bidding auction was then sent to the publisher's ad server. Because

[18] Because early versions of the header code were run on the device of the user, or client, they were referred to as "client-side" header bidding.

of the way Google configured DFP, the winning bid from the header bidding auction was then sent to Google's ad exchange to see if it could beat that price. Critically, through dynamic allocation, Google's ad exchange always received this "last look" advantage, essentially a right to buy any impression as long as it had at least one advertiser willing to match the competing bid price from the header bidding auction.

165. As originally designed, header bidding had limitations that stemmed from Google's restrictions on how publishers could sell their inventory through Google's publisher ad server. For example, publishers had to configure thousands of entries into the publisher ad server and recode their pages to implement a workaround to enable header bidding. Web pages also ran somewhat more slowly because publishers had to run multiple auctions sequentially: the header bidder auctions first, and then Google's ad exchange auction, which always ran last. Despite these limitations, for the first time, Google's ad exchange was forced to compete, at least in some fashion, against real-time bids from rival ad exchanges rather than against static, historical average prices from those ad exchanges. In assessing the impact of header bidding, a 2016 Google internal presentation noted "header bidding and header wrappers are BETTER than [Google's platforms] for buyers and sellers." Google explained that competition between AdX and buyers using header bidding increased publisher revenues by 30 to 40%, and provided additional transparency to advertisers. In essence, header bidding allowed publishers, advertisers, and Google's rivals an opportunity to at least partially circumvent Google's restrictions against real-time competition. Market participants had demonstrated their preference for improved choice, flexibility, and competition, even if it came at the cost of burdensome computer workarounds and slower load times for end users.

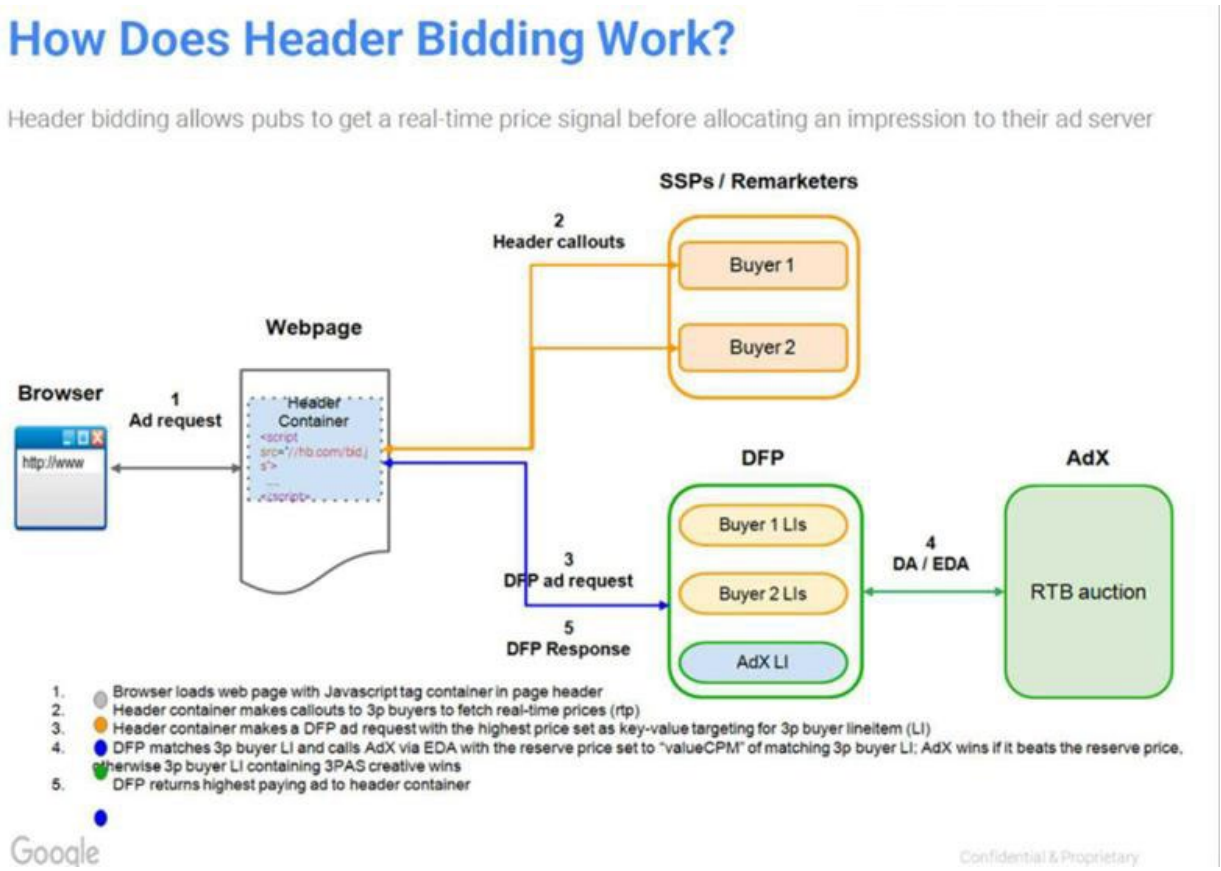

Fig. 14[19]

166. In practice, header bidding dramatically improved the competitiveness of rival ad exchanges. Header bidding provided a real opportunity for rival ad exchanges to see and compete for more publisher inventory, and potentially gain scale to compete effectively with Google. By allowing a publisher to call multiple ad exchanges in real time—effectively multi-homing at the ad exchange level—header bidding vastly increased the amount of inventory rival ad exchanges could offer their advertisers. In turn, advertisers had the opportunity to see and bid on more inventory—potentially through lower-cost channels than Google's ad tech tools—increasing their chances of winning inventory. By improving the ability of advertisers and publishers to connect, these rival ad exchanges were able to clear more transactions, increase

[19] "SSPs" refers to non-Google ad exchanges.

revenues for publishers, and improve the quality of matches. In turn, header bidding had the potential to attract more advertisers and publishers to these rival ad exchanges by increasing the incremental value they could offer.

167. Due to this increased competitiveness, non-Google affiliated buyers began to buy more advertising inventory through third-party ad exchanges using header bidding. Google's internal analysis showed a deceleration in spend by non-Google advertiser buying tools on AdX as "header bidding removed AdX inventory exclusivity . . . [and] buyers shift[ed] spend as other inventory sources delivered equal/better value." A large buyer explicitly indicated to Google that they were "shifting spend over to HB partners" because they were "seeing better performance."

168. More transactions flowing through rival ad exchanges made it easier for those ad exchanges to offset the massive cost of processing billions of ad requests each day; ad exchanges are only compensated for requests that result in a won transaction. These new transactions also provided ad exchanges with additional data on the universe of publisher inventory, user targeting data, and the competitive landscape.

169. Building on the success of early client-side header bidding, several companies invested to develop new innovative free or low-cost tools (called "wrappers") that enabled "server-side" header bidding. This new form of header bidding allowed the header of a web page to call a single server, which then sent calls to multiple ad exchanges, each of which returned a bid to the server, which in turn passed on the winning bid to the web page. Server-side header bidding turbocharged the scale benefits of header bidding by decreasing integration costs and improved the internet user experience by reducing latency introduced by header bidding.

170. Internally, Google recognized that header bidding substantially benefited every market participant except one: Google. For that reason, Google refused to participate and instead

chose to stifle any competitor that dared employ header bidding. As one Google employee explained, "[Header bidding] gives many publishers better yield, so it's a no-brainer for a publisher to adopt it." A late 2015 internal discussion somberly noted that Google "[did] not have incredibly robust arguments to discourage header bidding" and conceded that header bidding offered the competition Google had publicly preached but privately precluded:

> With AdX we've always advocated the more competition a pub has being considered with real time price competition the better the yield. Our competition is using this same argument for why header bidding makes sense. If they can submit a near real time price into DFP the[] competition with AdX is improved.

As another Google employee observed, "[Google's ad server] has historically made it difficult for [ad exchanges] to compete on a level playing field with AdX."

171. Google viewed header bidding—and particularly server-side header bidding—as a direct and, in the words of a 2016 internal strategy paper, "existential threat" to the market power Google had amassed. Internal Google documents confirm that Google understood header bidding to be a direct response by its customers and competitors to counteract Google's increasing dominance and its "unwillingness to open our systems to the types of transactions, policies and innovations that buyers and sellers wish to transact." Header bidding was an attempt to "circumvent dynamic allocation," one Google employee noted in late 2015. Another employee recognized that "[p]ublishers felt locked-in by dynamic allocation in [Google's ad server] which only gave [Google's ad exchange the] ability to compete, so HB was born." Another described header bidding as a "world of true, multi-sourced [real-time bidding]" without Google as the "authoritarian intermediary."

172. Beyond breaking the restrictions Google had put in place, header bidding also represented a pervasive threat to Google's market power stemming from its unique and

substantial advertiser demand. If header bidding could bring together a critical mass of non-Google advertising demand into a single real-time auction (e.g., a server-side header bidding auction), it might be able to undermine the power Google wielded through its Google Ads' advertising demand, thereby weakening the need for publishers to use Google's publisher ad server and ad exchange in the first place.

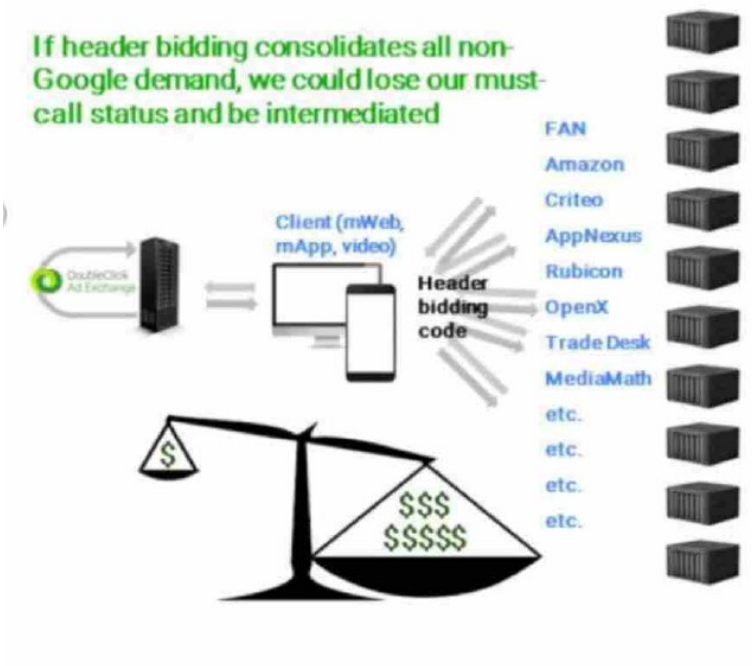

Fig. 15

173. While header bidding was an important step toward more competition among ad exchanges, it could not displace Google's dominance overnight. Google had hard-coded into the ad selection rules of its publisher ad server several advantages for its own ad exchange that would prevent rival ad exchanges from competing. Absent toppling Google's monopoly position in the publisher ad server market, header bidding could offer publishers and advertisers only incremental gains. Thus, in the wake of header bidding, Google implemented still further measures to limit the growth of both header bidding and the rival ad exchanges deploying this technology.

2. Google Blunts Header Bidding By "Drying Out" the Competition

174. Google moved swiftly to respond to the perceived threat header bidding posed to its ad exchange dominance and publisher ad server monopoly. Instead of leaning into the increased real-time competition between ad exchanges spurred by header bidding—which would have led to higher revenue for publishers, lower ad tech fees, and better return-on-investment for advertisers—Google adopted a multi-prong strategy to forestall the adoption of header bidding by publishers and, as a Google partnership strategist phrased it in an internal email, "dry out" rival ad exchanges that adopted header bidding.

175. In doing so, Google aimed to return to a more outdated, closed, two-tiered system of competition for advertising transactions. Header bidding represented a real opportunity for the market to move to a more open system where publishers could effectively multi-home their inventory across competing ad exchanges and varied sources of advertising demand. Although Google realized that its original vision of all display advertising transactions flowing through Google's ad exchange was no longer realistic, Google also recognized it could take advantage of its dominance at each layer of the ad tech stack to impede publishers, advertisers, and rival ad tech providers from further opening up the ad tech ecosystem and loosening Google's control over where transactions flowed.

a) Google Develops So-Called Open Bidding, Its Own Google-Friendly Version of Header Bidding To Preserve Its Control Over the Sale of Publisher Inventory

176. Employees working on Google's publisher-facing platforms responded to the threat of header bidding by developing a limited way for rival ad exchanges to finally compete in real time within Google's platforms, but on terms dictated by Google. Although Google could not return to a fully closed system of real-time bidding—one Google previously reserved for its own ad exchange via dynamic allocation—it could create a system over which it retained control

to dictate the terms on which competition occurred. The mechanism, internally referred to as "Jedi," came with a number of limitations designed to dampen competition and insulate Google's ad exchange from vigorous competition. To that end, as explained by Google's lead product manager for DFP and AdX, Google intentionally designed this new form of integration to be just "slightly better" than early versions of header bidding.

177. Google called this mechanism "Exchange Bidding," later renamed "**Open Bidding**" (for simplicity, referred to herein as "Open Bidding"). Google started testing Open Bidding in 2016 and formally launched the program in April 2018. Externally, Google portrayed Open Bidding as an improvement to header bidding that created a real-time bidding auction with multiple ad exchanges, similar to header bidding, but on Google's servers to reduce latency. It represented the first time that Google's ad exchange competed in real time against other ad exchanges, as Google had previously refused to participate in any header bidding auctions.

178. Internally, however, Google understood that the purpose of Open Bidding was to "stem[] the bleeding" and "combat the risk of header bidding." Google understood that if it could blunt header bidding's momentum, it could maintain its "control point and advantage" gained through its publisher ad server monopoly and ultimately "[g]et pub[lishers] to move away from header bidding back into our platform."

179. Google outwardly portrayed Open Bidding as a more publisher-friendly way for participating ad exchanges to bid in real time on publisher inventory, as Open Bidding substantially reduced a publisher's cost to integrate an ad exchange other than Google's AdX within DFP. By contrast, to utilize header bidding, publishers had to configure thousands of lines of pricing rules in the publisher ad server and update each webpage with new code. Google also

offered to share with participating Open Bidding ad exchanges its "last look" advantage over header bidding that dynamic allocation previously had provided only to Google's ad exchange.

180. But Open Bidding also came with major drawbacks for both publishers and participating ad exchanges. Google handicapped rival ad exchanges to impair their chances of winning impressions through Open Bidding, which otherwise might increase their overall attractiveness to publishers. Google did so in four pivotal, mutually reinforcing ways.

181. *First*, Google extracted for itself an additional fee on every transaction won by a rival exchange, reducing the net payout publishers received from integrating with other ad exchanges. Google imposed a 5% fee on rival ad exchanges' transactions through Open Bidding, effectively lowering the net bid of Open Bidding ad exchange participants by 5% relative to AdX's bid. This additional 5% charge effectively amounted to a 25% or more increase in the average ad exchange fee, making bids from rival ad exchanges much less attractive to publishers.

182. *Second*, even if a rival ad exchange won an auction, the rival ad exchange paid Google, and Google paid the publisher. Publishers received payments and reporting related to Open Bidding-won advertisements from Google, not rival ad exchanges, decreasing the number of touchpoints between rival ad exchanges and publishers. By taking control over the payment and reporting functions, Google effectively disintermediated rival ad exchanges from their own publisher customers and, in the long-run, made it less likely publishers would view those rival ad exchanges as valuable partners and continue to use them.

183. *Third*, if a rival ad exchange also owned an advertiser buying tool (as Google did), that exchange could not allow its own advertiser buying tool to participate in Open Bidding auctions. This decreased the competitiveness of those ad exchanges from the perspective of publishers.

184. *Fourth*, through Open Bidding, Google was able to increase its data advantage by obtaining access to the bids of its rivals for each impression, which it could not see in header bidding auctions. Thus, even when other ad exchanges opted to participate in Open Bidding, they initially did not have access to the same data: they were forced to share their bids with Google without any reciprocity.[20] Although Open Bidding provided an additional avenue for rival ad exchanges to participate and potentially to win inventory, those ad exchanges were forced to cede control over the transaction to Google and take steps that diminished their overall competitiveness. By contrast, alternative forms of server-side header bidding offered by market participants without Google's market power have much lower—or no—fees and do not include the restrictions and limitations that Google incorporated into Open Bidding. Notwithstanding these benefits, Google's conduct has stunted adoption and growth. Thus, in the end, Open Bidding fulfilled Google's intent to counter header bidding in a manner that ultimately protected Google's publisher ad server monopoly, and in turn, Google's ad exchange, AdX.

185. Despite Google's success in using Open Bidding to blunt the impact of header bidding, Google came to fear that a header bidding wrapper (code designed to run a multi-exchange header bidding auction), such as Prebid or Amazon's Transparent Ad Marketplace ("TAM"), could one day supplant the publisher ad server as the ultimate decision-maker of which ad to serve. Doing so would threaten the means by which Google had given its ad exchange an unfair advantage over rival ad exchanges. If header bidding were able to aggregate enough advertiser demand, Google believed publishers might be willing to risk adoption of a

[20] Only recently has Google begun to share some bidding information with Open Bidding participants—but not header bidding ad exchanges—in a form that has largely proven unworkable.

header-bidding-focused ad server, because of the diminished importance of advertiser demand exclusively available through Google Ads.

186. In light of this fear, Google set out to lobby other unique sources of advertising demand (such as Facebook) or potential aggregators of advertising demand (such as Amazon) to adopt Google's Open Bidding rather than invest in header bidding infrastructure.

b) Google Further Stunts Header Bidding by Working to Bring Facebook and Amazon into Its Open Bidding Fold

187. Even before the rise of header bidding, Google had identified Facebook as a potential competitive threat. Facebook had at one point shown ambitions to challenge Google as a full-stack ad tech competitor, acquiring a publisher ad server in 2013 and a video advertising SSP in 2014, though both products were later shuttered. Years later, Facebook recognized that any full-stack ad tech strategy "is subject to one bottleneck and intermediary—Google. They 'own' the Ad Server, and hence the last mile relationship with publishers." Facebook further observed that "[o]ther players in the market, such as Amazon, recognize that unseating Google, and its relationships with publishers is hard, and are also choosing to build on top of Google's rails."

188. Though it had abandoned its efforts to be a full-stack competitor, Facebook still aimed to grow its advertising business beyond its owned and operated ("O&O") digital properties (e.g., Facebook Blue and Instagram apps), which were increasingly supply-constrained. As the number of advertisers on these properties grew, demand threatened to outpace available inventory; Facebook sought publisher inventory outside Facebook to satisfy this unmet advertising demand. In 2014, it launched Facebook Audience Network ("FAN"), which Facebook described as the "power of Facebook ads, off-Facebook." FAN allowed

Facebook advertisers to extend their campaigns outside of Facebook O&O properties with a one-click, opt-in button.

189. At launch, FAN primarily worked with mobile app advertisers to place ads in other mobile apps in order to drive app installs and engagement. It later expanded to open web on mobile devices. By 2016, FAN was participating in the growing header bidding movement, partnering with header bidding wrappers to submit real-time, simultaneous bids, and eventually launching full-scale header bidding in 2017.

190. As a large ad network connected to millions of Facebook advertisers, FAN also competed with Google to lock up available publisher inventory for its advertisers. Prior to joining Open Bidding, Facebook executives foresaw a status quo of "hand-to-hand combat" between the companies to secure access to sufficient inventory from publishers. Google feared such competition with Facebook would end up "eat[ing] margin," and that Google might "respond identically" through deals with top publishers, thus "driving a price war." Facebook was equally leery of such a future, with one executive fretting that the "significant investment required to lock up inventory through direct deals" with publishers would "[l]ikely start a race to the bottom on margin."

191. Google took note of FAN's launch and kept a wary eye on FAN as it grew, describing Facebook as "a unique competitive challenge for us, both short- and long-term" because of its "strength in ad formats and targeting." Google understood Facebook's reach with over a billion users, and it understood that just as Google had valuable targeting and demographic data from its O&O properties—including Search, Gmail, YouTube, Android, and Play Store—Facebook, too, had a massive amount of valuable data from its O&O properties. Even though Facebook had largely given up on building a direct competitor to Google's

publisher ad tech stack, Google saw looming "[d]isintermediation [t]hreats" to DFP from "[l]arge [n]etworks with unique data and advertiser scale seek[ing] direct inventory access[,] [g]oing direct to pubs or using existing [third-party] channels like Header Bidding." By contrast, Google characterized full-stack competitors as "historical competition" of little concern: "This is a short-term threat and we are well positioned here."

192. As FAN began to test and use header bidding, Google grew increasingly alarmed at "the existential threat posed by Header Bidding and FAN." Google strategized over how to respond to FAN's entry into header bidding, and in September 2016, Google laid out a plan to bring FAN into Google's Open Bidding program. Significantly, Google concluded that bringing FAN demand into Open Bidding was a better alternative to slow publisher adoption of header bidding than "[a]ggressively mak[ing] [Open Bidding] much better than [header bidding]."

193. Rather than making a better product and competing on the merits, Google sought a deal with Facebook to bring FAN into Google's Open Bidding—away from rival exchanges' header bidding auctions—to "dry out" the nascent threat posed by header bidding. If competition with Facebook was inevitable, it would be better for Google to compete on a field it still controlled, with the many advantages it had constructed for itself, thus protecting DFP's market dominance. Indeed, Google concluded that while it "[c]annot avoid competing with FAN," it could, through a deal with Facebook, "build a moat around our demand." And as Google's product leadership would ultimately recommend to CEO Sundar Pichai, with a Google-Facebook deal, "[f]or web inventory, we will move [FAN's] demand off of header bidding set up and further weaken the header bidding narrative in the marketplace." Facebook, meanwhile, was frank in its assessment of Google's motivation for the deal: "What Google wants: To kill header bidding (us baptizing [Open Bidding] will help significantly)."

194. Ultimately, in September 2018, after a long negotiation and approvals by each company's top brass—including Pichai, Mark Zuckerberg, and Sheryl Sandberg—Google and Facebook entered into a "Network Bidding Agreement" ("NBA"). The deal provided Facebook with unique terms, including a contractual promise of no last look and direct remittance to publishers, ensuring that Facebook would continue to maintain its publisher-facing relationships. In exchange, Facebook committed to a minimum annual spend on Open Bidding and was incentivized, through an all-units, tiered volume discount, to shift spend to Open Bidding and away from possible alternative header bidding avenues.

195. Having tried and failed to challenge Google as full-stack competitor—in part because of Google's anticompetitive conduct described above—Facebook ultimately resigned itself to operating on top of Google's rails. While the NBA satisfied Facebook's need for increased access to publisher inventory, Facebook recognized that it would also "reduce our future optionality to build our own ad tech and the likelihood of a newbie like Amazon[, which had introduced a header bidding wrapper,] succeeding." Facebook believed that, while perhaps "inevitable," the deal would nevertheless "accelerate Google's stranglehold on ad tech." Facebook's then-VP of Partnerships opined that "by doing this deal, we will cement [Google's] position of power."

196. Amazon's TAM posed a different competitive threat to Google's dominance. It allowed publishers to solicit bids from multiple ad exchanges via a single call from a webpage to Amazon's extensive network of servers. And Amazon took only a small one cent CPM fee—much lower than Open Bidding's 5% fee—for every transaction that flowed through TAM. Google initially feared TAM could aggregate advertising demand in a way that challenged Google's ad exchange and publisher ad server, leading Google to ask Amazon what it would take

for Amazon to stop investing in its header bidding product. However, Amazon rebuffed such requests and continued to develop and deploy TAM. But as with other header bidding solutions, TAM could not fully circumvent all of the restrictions and preferences baked into Google's ad tech products, which website publishers still relied upon. For example, TAM remained subject to a "last look" by Google's ad exchange, allowing Google's ad exchange to win any impression that would otherwise flow through TAM by matching the competing price from TAM.

197. Google's Open Bidding—and Google's efforts to shift the focus of other major ad tech companies like Facebook from header bidding toward Open Bidding—stunted header bidding's adoption, leaving header bidding unable to pose a true threat to Google's monopoly power. In doing so, Open Bidding achieved its goal of blunting the growth of header bidding and protecting Google's publisher ad server. Today, Google still has its publisher ad server monopoly. Header bidding persisted, but its adoption stagnated. And Google turned to other, more surreptitious methods to restrain competition and "dry out" ad exchanges using header bidding.

c) Google Manipulates Its Publisher Fees Using Dynamic Revenue Sharing in Order to Route More Transactions Through Its Ad Exchange and Deny Scale to Rival Ad Exchanges Using Header Bidding

198. Emboldened by its success in manipulating advertiser fees under Project Bernanke, Google implemented a similar program for the ad exchange fees it charged publishers. The goal was the same: push more high-value transactions through the Google ad exchange and away from rival ad exchanges, including those engaged in header bidding. Google did not simply lower its publisher fees across the board to compete aggressively on the merits. Rather, Google again used the competitive data it alone obtained through its publisher ad server monopoly to adjust its fees—and in turn its ad exchange's bids—in a manner calculated to increase the

number of competitive transactions won by Google's ad exchange, while preserving Google's margins and increasing Google's revenues and profits. In doing so, Google again was able to cherry-pick the most valuable transactions out of the hands of rival ad exchanges, further sabotaging their ability to build scale and compete effectively, all without compromising Google's rich bottom line because Google deftly made up the difference in its take rate on other, less valuable, transactions.

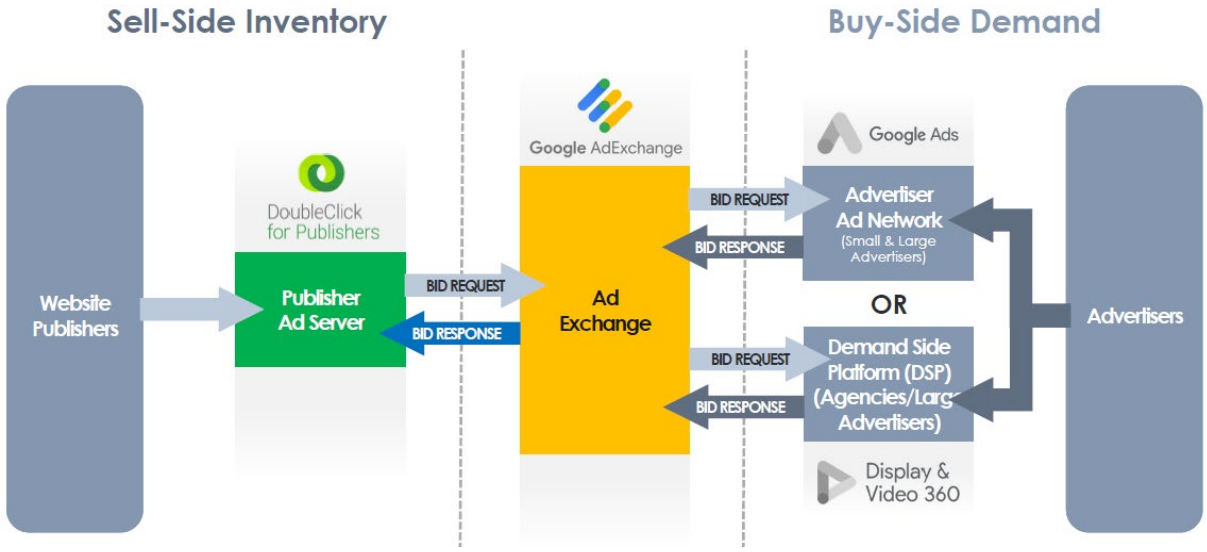

Fig. 16

199. Google called this program sell-side dynamic revenue share. It altered the standard 20% ad exchange fee (revenue share) charged to publishers (sell-side) on an impression-by-impression basis (dynamic). At a high-level, the program doubled down on the benefits Google afforded its ad exchange through dynamic allocation. With dynamic allocation, Google's ad exchange already had the ability to see and use the competing price of its competitors before bidding, while rivals were forced to compete in the equivalent of a blind, sealed-bid auction. Advertisers on Google's ad exchange were able to observe the rival ad exchange's offer price and bid accordingly. Google's ad exchange also used the rival ad

exchange's price as a floor, only charging the winning advertiser on Google's ad exchange more when other advertisers on the exchange also had higher bids.

200. Dynamic revenue share created an additional advantage for Google's ad exchange: after Google's ad exchange ran its auction, Google could adjust the winning bid up or down—by as much as 20%—to beat the price offered by a rival ad exchange. This ensured Google's ad exchange won even more transactions at a cost equal to or only slightly above the highest bid of Google's ad exchange rivals, recouping any discount of ad exchange fees by raising the fees it charged on other less competitive transactions. Only by virtue of Google's control of the dominant publisher ad server and the advantages that ad server afforded Google's ad exchange, such as last look, could Google implement such an anticompetitive program.

201. Since its launch in 2009, Google's AdX ad exchange has consistently charged nearly all publishers a 20% revenue share fee for all "open auction" transactions—auctions not limited to a small set of buyers—on its ad exchange. This means that for transactions on Google's ad exchange, Google could withhold 20% of what the advertiser buying tool paid before passing the balance to the publisher (on top of any fee Google charges advertisers using its advertiser buying tools). Beginning in 2014, Google changed the way it applied AdX's fee. Instead of taking a 20% cut on every individual transaction, Google allowed its take rate to fluctuate across transactions with the goal of averaging a 20% fee for each publisher over the course of the month, which continues today.

202. Google implemented the sell-side dynamic revenue share program with the competitive data it was able to obtain through its publisher ad server monopoly. Through dynamic allocation, buyers on Google's ad exchange, including Google Ads, were able to see the highest rival bid before competing. After running its own internal auction, Google's ad exchange

compared its highest bid to the highest rival bid, which set the price floor of the Google ad exchange auction. When comparing bids, Google considered the "net bid" to the publisher, i.e., the amount the publisher would receive after all ad exchange fees were deducted. If Google's ad exchange would have lost a transaction because Google's ad exchange fee brought its net bid below the rival bid, Google could adjust its fee for that impression to win the transaction. Depending on the rival bid and the publisher at issue, Google could reduce its ad exchange fee to 0%, essentially boosting its ad exchange's bid by 20%. If no rival ad exchange's bid was competitive, Google's ad exchange charged the full 20% fee, *or more*.

203. Because Google's publisher ad server provided its ad exchange—and only its ad exchange—the ability to effectively open the sealed bids of its rivals before bidding and adjust its bid accordingly, only Google's ad exchange could win more transactions this way without substantial decreases in margins. All other ad exchanges had to compete based either on static average prices in the waterfall or bid for impressions via header bidding without any information on competitors' bids. Because of the way dynamic allocation operated, rival ad exchanges were disincentivized from lowering their own ad exchange fees to boost their bids. If they did so, they were not particularly more likely to win additional transactions. Instead, Google's ad exchange could still swoop in afterwards and win the transaction by matching the rival ad exchange's bid. By contrast, Google could adjust its ad exchange fee (1) only when necessary and (2) by the exact amount needed, given its privileged position in the publisher ad server space.

204. Google later went a step further, allowing its revenue share fee to go negative for some transactions (i.e., subsidizing its advertisers' bids), as it had with Project Bernanke. Google offset these subsidized transactions by charging more than a 20% ad exchange fee on transactions where there were no competitive bids from rivals.

205. The program, which continues today, substantially improved Google's position while further depriving other ad exchanges of scale. With the launch of the initial version of the program, Google saw an increase of more than 11% in the number of transactions flowing through its ad exchange, providing an additional $105 million in annual revenue to Google, almost entirely at the expense of rival ad exchanges. The more aggressive version of the program launched in 2016 resulted in an estimated increase of almost 5% in Google's ad exchange profits while reducing the amount of advertiser dollars that were ultimately paid to publishers.

206. Google did not allow publishers to make an informed choice about whether to provide Google's ad exchange with these advantages. Rather, Google pushed through sell-side dynamic revenue share in the same way as many of its other programs: it imposed the changes on publishers by default with virtually no transparency for publishers or advertisers into what Google was doing. Even when one large publisher asked for an explanation, its Google client representative declined to provide any details, indicating the change likely would have little to no impact on the publisher.

207. Of course, Google did not disclose that the program further stacked the deck in favor of Google's ad exchange or that it was designed to further concentrate high-value transactions on Google's platforms at the expense of competition by rival ad exchanges.

d) Google Launches Project Poirot to Manipulate Its Advertisers' Spend to "Dry Out" and Deny Scale to Rival Ad Exchanges That Use Header Bidding

208. By the fall of 2016, Google worried that it needed to take additional steps to stem the competitive threat from header bidding. As such, Google considered options "for mitigating [the] growth of header bidding infrastructure."

209. The first place Google turned was the substantial volume of advertiser spend that flowed through its large advertiser demand side platform, Display and Video 360 ("DV360"). By

2016-17, Google's DV360 was already one of the largest demand side platforms in the market with a nearly 30% share of gross digital advertising revenue flowing through demand side platforms. Google was familiar with wielding the power stemming from the advertiser spend locked into Google Ads, but it had previously allowed the larger, more sophisticated advertisers and ad agencies on DV360 greater control over where and how they bought advertising inventory. As a result, these advertisers frequently transacted on rival ad exchanges that provided lower-cost or more valuable inventory. As of early 2017, more than half of total advertising spend by DV360 advertisers flowed through rival ad exchanges.

210. Google became increasingly concerned that spend from DV360 advertisers was driving header bidding's growth and helping rival ad exchanges compete. As one of Google's product management leaders for publisher ad products reported to his colleagues, "I think you know this, but I am told regularly that [DV360] is the top buyer on every other ad exchange, so a huge chunk of publisher HB [header bidding] revenue is Google demand going outside our ecosystem and then coming back via 3PE/HB [third-party ad exchanges/header bidding]." DV360 advertisers often represented the largest buyers on rival ad exchanges engaged in header bidding.

211. If header bidding was left unchecked, Google feared its own advertisers' spend would continue to shift to rival ad exchanges and thereby allow those rival ad exchanges to gain the scale and network effects needed to become serious competitors. Google could not allow that to happen.

212. In October 2016, Google employees responsible for DV360 reached an "overall consensus" that Google did not "want to compete on [header bidding] queries." To that end, Google engaged in a series of projects designed to reduce the flow of DV360 advertiser spend to

rival ad exchanges engaged in header bidding and redirect that spend back to Google's ad exchange, regardless of the cost to publishers and advertisers. Hence, even though DV360 was supposed to be a tool that enabled advertisers to bid most effectively for the inventory they wanted, in Google's hands, DV360 was weaponized to stifle competition. Not only was this conduct against the best interests of Google's own advertisers, it was against the best interests of DV360 itself because it harmed the very quality and profitability of the tool Google had created and promoted to customers.

213. As Google's Managing Director for Global Publisher Solutions and Innovation explained in response to news that a competing ad exchange had lowered its fees, the overarching goal for Google was not for DV360 advertisers to benefit from reduced fees on other exchanges but for advertiser spend flowing through Google's tools to "only buy on AdX impressions that are [available both] through AdX and multiple" ad exchanges in order to "dry out HB [header bidding]" ad exchanges.

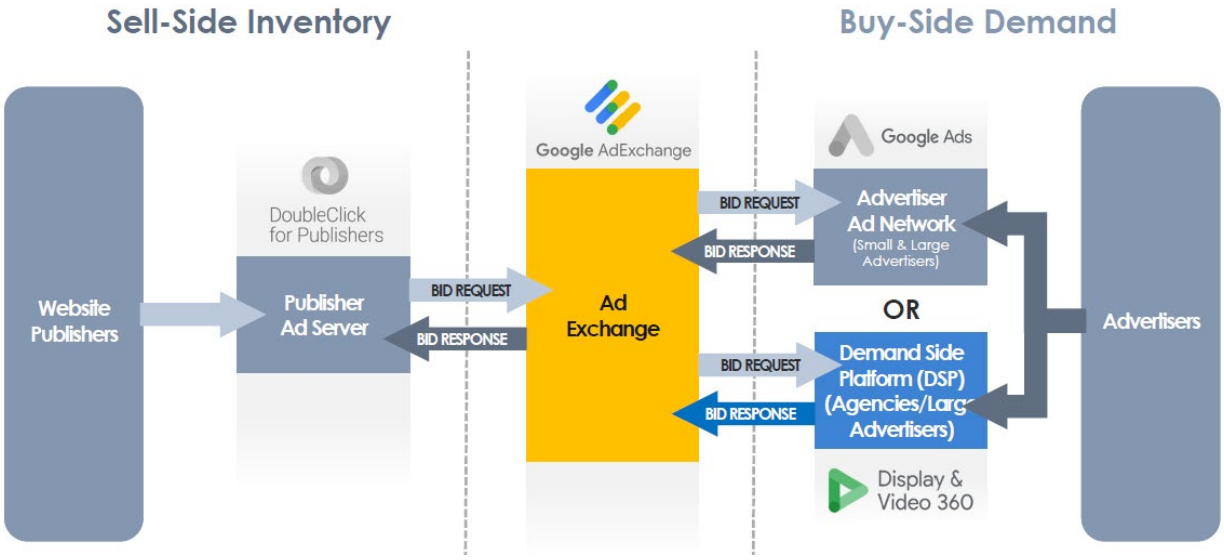

Fig. 17

214. Google's initial proposed strategy was to go all in—simply block DV360 advertisers from buying on rival ad exchanges any inventory offered by publishers Google believed used header bidding. In late 2016, Google experimented with creating a "white list" of publishers that did not use header bidding, retaliating against publishers that dared embrace innovative technology that could improve publisher revenue. Google's DV360 advertiser tool would permit advertisers to submit bids on rival ad exchanges only for inventory from such white-listed publishers; it refused to allow its advertisers to submit bids on rival ad exchanges if Google suspected the relevant publisher used header bidding. The intended effect was obvious: "move a lot of rev[enue] to AdX and put pressure on HB [header bidding] infra[structure]." Unfortunately for Google, experiments testing such an extreme strategy showed that the approach would not only harm advertisers and publishers but also Google. The experiments predicted Google's DV360 buying tool would lose approximately 30% of both impressions and revenue.

215. At a meeting discussing the experiments' results, however, a Google Product Manager suggested an alternative solution to surgically target the threat of header bidding on rival ad exchanges while minimizing losses to Google: "instead of stop bidding on HB [header bidding] queries, we could *bid lower* on HB queries." When combined with the various advantages Google had afforded its ad exchange within Google's publisher ad server, this approach potentially could achieve all of Google's goals: inhibit advertisers from transacting through rival ad exchanges engaged in header bidding while allowing Google to redirect revenue and transactions back to Google's ad exchange, where it could charge supra-competitive fees.

216. Google's product and engineering teams quickly turned to implementing this plan of attack under the code name **Project Poirot**.[21] The purpose of the project was straightforward: Google would shift transactions away from ad exchanges using header bidding and to Google's AdX by artificially manipulating the bids sent to rival ad exchanges so that Google's AdX could win those transactions more often (even if that meant harming Google's own advertisers). Or, as Google put it: "for HB [header bidding] we should win back more on AdX." By July 2017, Google changed the settings of DV360 so that by default all advertising campaigns were opted into Project Poirot; only 1% opted out.

217. Project Poirot worked by systematically lowering all DV360 bids to rival ad exchanges that no longer employed second-price auctions—a proxy for identifying ad exchanges using header bidding. For each ad exchange, Google set a percentage by which it reduced all DV360 bids to that ad exchange. Initially, Google reduced advertiser bids by 10% to 40%; later Google reduced bids for some ad exchanges by as much as 90%. Because Google's AdX did not participate in header bidding, none of DV360's bids on Google's ad exchange were decreased, even where DV360 bid on the same impression on both a rival ad exchange and Google's ad exchange. This manipulation of advertiser bids virtually ensured that Google's ad exchange would win the relevant auction by virtue of the deliberately decreased bids supplied to rival ad exchanges for the same impression.

218. In important ways, the Project Poirot advertiser bid manipulation scheme was both more insidious and more profitable for Google than Google's initial proposal of not bidding at all into rival ad exchanges using header bidding. *First*, by allowing its DV360 advertisers to

[21] Project Poirot was named after Agatha Christie's iconic master detective character, Hercule Poirot. Project Poirot was designed to identify and respond effectively to ad exchanges that had adopted header bidding technology.

bid on all inventory on rival exchanges, albeit at substantially lower levels that won fewer transactions, advertisers could still buy the limited set of inventory that publishers chose not to make available at all to Google's ad exchange, as well as inventory that only appeared particularly valuable in light of targeting data available through a rival ad exchange. However, reduced bids designed to win fewer transactions went against the interests of DV360 advertisers and DV360 itself as a platform. Both would have benefited from winning more inventory on rival ad exchanges at prices advertisers were willing to pay, but for Google surreptitiously lowering their bids.

219. *Second*, for inventory available to DV360 on both a rival ad exchange and Google's ad exchange, Poirot and dynamic allocation worked together to ensure that Google's ad exchange often won the transaction. To do this, Google used its control over the bids of advertisers using its DV360 product. While these large, sophisticated advertisers set general parameters for bidding, especially after the launch of Poirot, Google alone determined the particular bid made on behalf of the advertiser on each of the millions or billions of pieces of inventory an advertiser bid on within each ad exchange; Google opted advertisers into the program while affording them no meaningful visibility into this level of bidding. Through Project Poirot, Google used this power to lower DV360 advertisers' bids on rival ad exchanges, and in turn, that ad exchange's winning bid. Through dynamic allocation, the winning bid on the rival ad exchange—now lowered by Poirot—served as the price floor for Google's ad exchange auction. DV360 could then win the same impression on Google's ad exchange by matching that price. Working together, Poirot and dynamic allocation has led to reduced price competition for Google's ad exchange and has ensured that more transactions flow to Google's ad exchange, even if Google charges higher ad exchange fees. Google has only been able to implement this

scheme by virtue of its control throughout the ad tech stack: advertisers and ad agencies using DV360, the AdX ad exchange, and the publisher ad server.

220. A hypothetical illustrates Project Poirot in action. An advertiser using DV360 might configure an ad campaign to pay a maximum price (for example, $1 CPM) for a particular type of advertising impression. Under Poirot, Google would lower that maximum bid when bidding on rival ad exchanges that used header bidding by applying an ad exchange-level multiplier, for example, bidding $0.38, $0.42, and $0.40 on three rival ad exchanges. In this example, the $0.42 bid is the highest and wins the header bidding auction; that bid is then passed to the publisher's ad server after the ad exchange deducts its revenue share fee (assumed here to be 15%, reducing the net bid to $0.36). Next, the ad server sends that price along with a request for a bid to Google's ad exchange via dynamic allocation. The $0.36 serves as a price floor and is shared with bidders on the ad exchange. On behalf of the *same advertiser* as before, DV360 now bids the advertiser's maximum bid ($1) and wins the impression. Because Google's ad exchange ran a second-price auction, however, the publisher receives only the floor price, $0.36. Google charges the advertiser this price plus the applicable ad exchange revenue share (20%), which translates to $0.45.[22] Ultimately, this means the advertiser pays more for the impression than it would have paid bidding via a rival ad exchange, Google is able to profit by extracting its revenue share fee at the ad exchange level, and the rival ad exchange that otherwise would have won (because it would have charged a smaller revenue share fee than Google's ad exchange from the same DV360 bid) is denied the transaction.

[22] Google also charges an additional fee for use of its DV360 service (on average 9%), which is the same regardless of the ad exchange where the inventory is purchased.

221. Google's prelaunch experiments found that Project Poirot would reduce publisher display revenue from DV360 by over 10%. By contrast, the predicted "surplus"—additional revenue shared between Google and advertisers—was only about 1%. The total number of impressions DV360 purchased would drop by almost 5%. In particular, Google recognized that some advertisers would no longer be able to buy certain impressions only offered on rival ad exchanges, because even if those advertisers were willing to pay the minimum price set by the publisher, Poirot reduced their bids below the minimum. Poirot prevented these advertisers from spending their full advertising budgets and resulted in some ad inventory going unfilled—a loss for the display advertising market as a whole.

222. Project Poirot formally launched in July 2017 under the name "Optimized Fixed CPM Bidding." Google did not afford its advertisers a meaningful opportunity to choose whether Google could systematically lower their bids on rival ad exchanges. Instead, Google imposed these changes while providing virtually no information to its advertisers on the nature or extent of the program. Over 99% of advertising campaigns were subject to Poirot: all "automated bidding" campaigns on DV360 incorporated Poirot automatically, and Google opted in by default all "fixed CPM bidding" campaigns.

223. Internally, Google sometimes justified Poirot as benefiting advertisers, but such justifications were pretextual. Google designed Poirot to lower DV360's bids into third-party ad exchanges ostensibly to account for "non-second-price auctions," such as where a publisher uses soft floors that are set above the second-highest bid or uses floors that change based on bidding history. But Poirot did not apply the same rules to Google's ad exchange that it applied to its competitors. Poirot did not adjust DV360's bids into AdX even though AdX was not a true second-price auction: AdX itself used features such as Reserve Price Optimization ("RPO")

that—like those used in purported non-second-price auctions—similarly adjusted floors based on what bids Google expected to receive. As one document explained, RPO went live in 2015 (before Poirot) and "move[d] Google away from a 2nd price auction." Google employees discussed the interaction between RPO and Poirot and noted that RPO was designed to go undetected by Poirot, and they concluded that if AdX continued to develop more aggressive versions of RPO then DV360 would adjust Poirot to avoid detecting this auction dynamic within AdX. Poirot intentionally did not target all non-second-price auctions; it gave the auctions Google conducted a pass.

224. As Google's Director of Product Management for Display and Video Ads noted, Poirot's initial implementation in 2017 was "quite effective, resulting in [DV360] spending 7% more on AdX and reducing spend on most other ad exchanges." One employee on Google's team explained that with Poirot, "spend on 3PEs [third-party ad exchanges] dropped by a whopping 32%." Poirot shifted approximately $200 million of DV360 advertiser spend away from rival ad exchanges and toward Google's. This spend was subjected to Google's 20% ad exchange revenue share fee—one of the highest in the industry—resulting in an additional $40 million in profit for Google.

225. This substantial shift in advertising spend by the largest demand side platform in the market, combined with the systematic drop in bid price, had real consequences for competition between ad exchanges. DV360's lowered bids reduced the competitiveness of header bidding auctions, which in turn lowered the win rates of ad exchanges relying on header bidding. The win rate on Google's ad exchange increased even though Google had made no improvements to its ad exchange, offered no additional benefits to publishers, and reduced advertisers' reach (without their knowledge). Because publishers consider win rates before

investing the time and resources necessary to integrate with ad exchanges, Poirot's hit to rival ad exchanges made it even less likely publishers would continue to offer inventory to these ad exchanges and less likely that new publishers would integrate with these ad exchanges through header bidding.

226. Google's success with Poirot was possible because of Google's ability to control the auction process run by its monopoly publisher ad server and Google's last-look advantage stemming from its ad server's dynamic allocation function. Google was able to lower DV360's bids into rival ad exchanges without fear of losing impressions—even if DV360's reduced bid lost in the rival ad exchange's auction—because for the majority of impressions, it would get another bite at the apple when Google's ad exchange was later called for a bid. And because Poirot generally reduced the clearing price of header bidding auctions, Google's ad exchange could win the impression at a lower price, thereby decreasing the revenues ultimately paid to publishers. Without the systemic advantages that Google's publisher ad server forced publishers to afford to Google's ad exchange, and without Google's dominant position among advertiser buying tools, Poirot could not have been nearly as successful in halting the potential rise of rival ad exchanges.

227. Seeing Poirot's initial success, Google doubled down on the strategy. Google was unconcerned about any potential blowback from publishers (who had no meaningful alternative to DFP) or advertisers (who had no insight into the changes). In September 2018, Google launched "Poirot 2.0." Under this new version of the program, Google reduced DV360 advertiser bids further, by as much as 90% to some ad exchanges.

228. Google's prelaunch experiments indicated that Poirot 2.0 would significantly affect rival ad exchanges, even more than the initial iteration. Google anticipated Poirot 2.0

would further decrease DV360 advertiser spend on rival ad exchanges by another 20%, lower publisher payouts from auctions DV360 won by 20%, and lower rival ad exchanges' win rates by 10%. The estimated impact of Poirot 2.0 on the most vocal proponents of header bidding technology was even more pronounced: AppNexus/Xandr would lose 31% of DV360 advertiser spend, Rubicon would lose 22%, OpenX would lose 42%, and Pubmatic would lose 26%. For Google's ad exchange, on the other hand, Poirot increased revenue, publisher payouts, and win rates, through a sleight of hand forcing a shift in advertiser spend. As Google's Director of Engineering—and chief architect of Poirot—explained to colleagues, Poirot had largely achieved in practice Google's earlier plan to boycott header bidding auctions: "lowering bids may have a similar effect" to stopping all bidding on rival ad exchanges. Poirot 2.0 also accomplished Google's strategic goal to "dry out" header bidding without the need for Google to take the significant hit to its revenues and profits that initial experiments suggested might be necessary.

229. Rival ad exchanges lost significant transaction volume from Poirot, undercutting efforts to gain scale. Immediately after the launch, OpenX experienced a 30% year-over-year decline in DV360 advertiser spend, and Google internally identified Poirot as the "biggest culprit." As a result of the loss, OpenX was forced to lay off approximately 100 employees. Other ad exchanges also felt significant drops in DV360 spend and complained to Google. Google's internal discussions confirmed that Poirot 2.0 was the cause.

230. Poirot's success enabled Google to maintain the 20% revenue share fee it has charged on its ad exchange since 2009. Before Poirot, Google employees believed such a high fee was no longer sustainable, as header bidding risked commoditizing ad exchange services; if header bidding continued, Google's employees expected the fee to drop to 5%. By 2019, after Poirot 2.0 was fully implemented, Google's Americas Partnership Finance Lead noted that on

Google's ad exchange fee, "we should continue to hold the line, esp. given currently healthy growth levels, since project Poirot." Poirot, which continues in some form today, shifted spend to Google's ad exchange with its higher revenue share fee; deprived competing ad exchanges of scale, auction pressure, and higher win rates; lowered publisher payouts; and limited advertisers' ability to fully and effectively spend their budgets—all without any improvements to Google's own ad exchange.

e) Google Imposes So-Called Unified Pricing Rules to Deprive Publishers of Control and Force More Transactions Through Google's Ad Exchange

231. Poirot was incredibly effective at redirecting DV360 advertiser spend away from rival ad exchanges, and putting Google's ad exchange back on the road to acquiring monopoly power, notwithstanding the opening that header bidding had briefly created for competition between ad exchanges. The fraction of DV360 spend on AdX increased from approximately 40% to 70% due to Project Poirot. An internal Google document fretted that "Adx is now dominant to the point where we need to communicate to advertisers (and sometimes even to ad exchanges) why over 70% of [DV360] spend happens on Adx."

232. But Google was not satisfied. Despite the dramatic shift of DV360 spend to AdX and away from rival ad exchanges, Poirot was not quite as effective as they thought it should be, given how much Google had stacked the deck in favor of its ad exchange. One Google Engineering Director noted that while Poirot had made progress on shifting spend to Google's ad exchange and away from rival ad exchanges, "we need to do more." A review of publisher data from Google's ad server and Open Bidding—information effectively covering the sale of nearly all open web ad inventory—quickly identified the problem: Google's publisher customers. Google employees realized that publishers were using pricing controls built into the publisher ad server to set the terms on which their inventory was sold to advertisers, including by setting

different minimum price floors for different buyers. Google perceived publishers' ability to steer ad sales to rival ad exchanges, and to control who bought their ads and at what price, as a threat to Google's ability to control the flow of transactions.

233. Within Google's publisher ad server, publishers were able to set different price floors for specific exchanges or advertiser buying tools. For example, a publisher could set a price floor of $2 for Google's ad exchange and $1.80 for the competing ad exchange, OpenX. If OpenX submitted a winning bid of $1.85, and Google's ad exchange had a buyer willing to pay $1.90, the inventory would still be sold to the OpenX advertiser because Google's AdX ad exchange failed to clear the minimum price set by the publisher for AdX.

234. There are many reasons why publishers might want to set non-uniform price floors for different exchanges or advertiser buying tools. Publishers have relationships and deals with advertisers, agencies, and ad exchanges that have implications beyond the sale of a single impression. For example, a publisher might want to boost an ad exchange's chances of winning a particular impression in order to reach previously negotiated volume discount thresholds. Additionally, some publishers might set a higher price floor for Google's ad exchange than for a rival ad exchange to account for publisher-specific preferences for a particular ad exchange, the quality of advertiser demand, better advertisement load rates, and data advantages. Some publishers also wanted to mitigate risk from overexposure to a single exchange (such as Google's ad exchange) or to avoid conflict with direct sales channels. For all of these reasons and others, the ability to set different floors for different ad exchanges or advertiser buying tools was an important tool that publishers used to manage these partner relationships and direct the sale of their own inventory to maximize their overall business objectives.

235. Google recognized that the ability to choose different floors for different ad exchanges or buying tools was a DFP feature that publishers valued. One Google Senior Product Manager explained to his colleagues: "The general idea is that the pub[lisher] doesn't care about maximizing revenue on every individual query – they want to maximize revenue for their overall business, and that might mean sacrificing a few pennies of lost indirect revenue" on a single transaction. Similarly, Google's Director of Global Partnership and Publisher Solutions explained: "Pub[lishers] are also rational[] when they decide to diversify their source of revenues" using floors given that "[i]t help[s] them to keep Google at bay and put pressure on us (similar to any industry)." By using different price floors, publishers expressed a willingness to occasionally accept a slightly lower price from a rival ad exchange than from Google's ad exchange for the same inventory. But publisher controls and goals mattered little when they conflicted with Google's desire for increased market share and profits. Google refused to tolerate a system in which publishers exercised control over their own inventory.

236. Even before Poirot, Google had noticed that some publishers used price floors to direct the flow of certain transactions to rivals. In response, Google had insisted on "equal footing" clauses in certain publisher contracts, which ostensibly prevented publishers from offering inventory to competitors on more favorable terms or at lower prices than those offered to AdX. However, these contractual provisions were difficult to monitor and enforce even for the small number of publishers for which they applied. Confronted with a broader concern about the operation of price floors in the wake of Poirot, Google developed an alternative approach that was blunt but effective: Google simply removed the existing feature in its publisher ad server that allowed publishers to set different floor prices and preference rival ad exchanges or buying

tools. Going forward, only Google, not its customers, would be permitted to dictate preferences, and only those preferences that advanced Google's strategic ambitions would be tolerated.

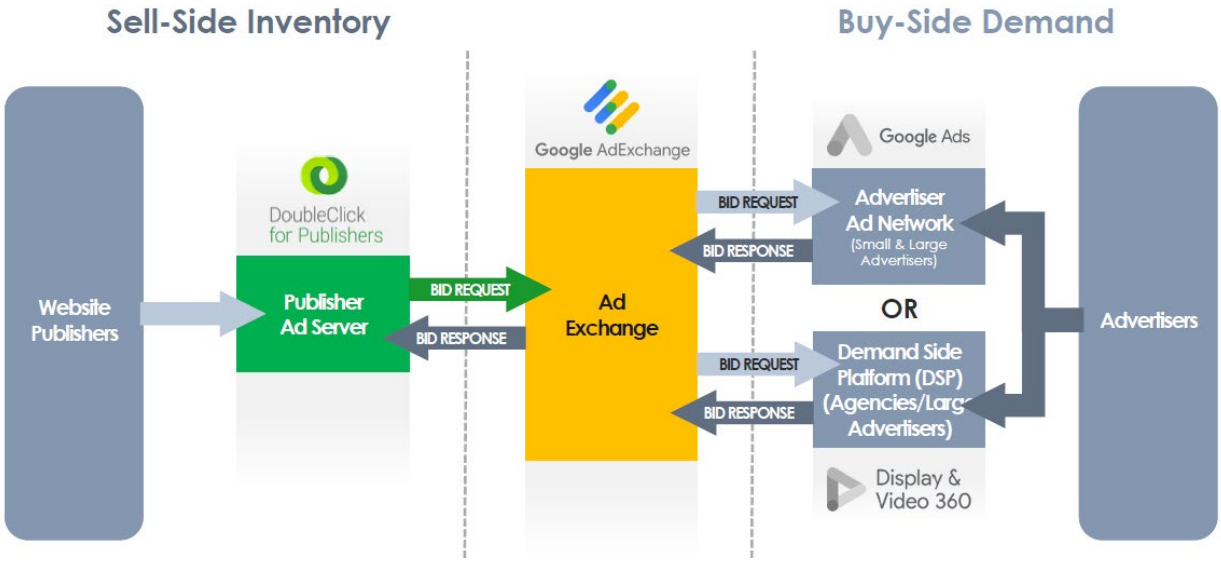

Fig. 18

237. Recognition of the flooring "problem" was widespread within Google's display advertising leadership. When one Google employee asked why DV360 was still winning inventory through rival ad exchanges, Google's Project Poirot architect explained that "the best guess is that the AdX [price] floors are higher." He went on to note that "[t]his is one big problem for the Adx team to try fixing so that more of the [DV360] buying will switch to Adx." He suggested that "if we figure out how to equalize floors (i.e., get the Adx floors down), as a buyer, we will start seeing benefits in terms of buying more through Adx and decreasing incrementality on 3PE" (third-party ad exchanges). As usual, Google did not care what was best for its customers; Google insisted on doing whatever was necessary to decrease spend on AdX's competitors, thereby denying them the scale and competitive position to threaten Google's AdX monopoly.

238. Google's internal analyses of the pricing floor practice demonstrated the extent of the "problem." Google believed its AdX ad exchange was already winning 66% of auctions where an ad exchange used header bidding, but for a little less than half of the inventory it did not win, Google's AdX had a higher bid than the rival ad exchange that did win. The AdX ad exchange was losing these auctions because publishers had configured price floors that awarded the inventory to a rival ad exchange or rival demand source at lower per-impression prices than AdX and/or Google Ads offered in certain auctions. In response, Google went to work to block publishers from setting price floors that disadvantaged its AdX business.

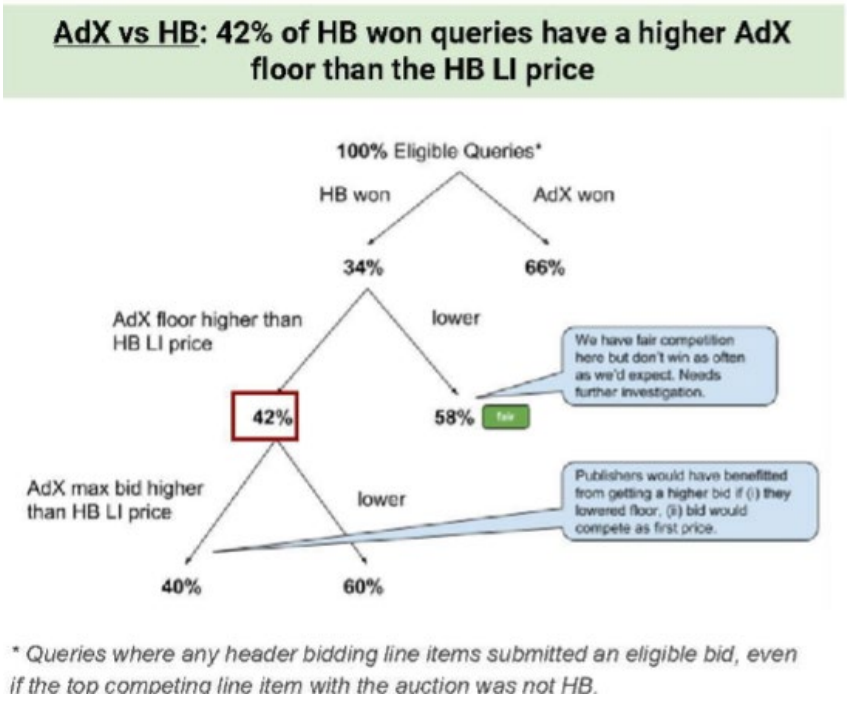

Fig. 19

239. In March 2019, Google announced a number of changes to its publisher ad server and ad exchange. Among the notable changes were the removal of granular publisher price controls from the ad server. In their place, Google required publishers to set a single floor price for inventory that applied to all ad exchanges and advertiser buying tools. Google called these

degraded pricing controls Unified Pricing Rules, or UPR. Unified Pricing Rules were the culmination of Google's work to stop publishers from using ad exchange-specific or buyer-specific price floors to steer transactions to rival ad exchanges and away from Google's ad exchange and buying tools. Under Unified Pricing Rules, publishers were no longer allowed to set different price floors for Google's ad exchange or advertiser buying tools versus other ad exchanges or advertiser buying tools.

240. Google recognized this product change came with a number of "major risks," including "(1) revenue drop for some pub[lishers][23] (2) negative pub[lisher] reaction (loss in ability to set per-buyer floors) (3) negative adv[ertiser] reaction (potential for DV3[60] spend share ↑ on AdX)." Internal experiments found that UPR increased DV360 and Google Ads' spend on AdX and decreased spend on rival ad exchanges. One analysis found that UPR caused DV360 to win approximately 32% more impressions on AdX and led to a 6% increase in AdX revenue.

241. Google bundled its imposition of Unified Pricing Rules with other changes to provide cover. As one employee explained, Google "bundled . . . a bunch of contentious changes," such as the "overhauled pricing rules," with less objectionable changes "to make the contentious ones more stomachable." For example, Google changed its ad exchange from a second-price auction to a first-price auction, which altered some of the ways price floors impacted auctions. Google used the auction format change to contend that the only legitimate reason for differential price floors in its view—to increase the clearing price of a second-price auction—had been eliminated. Google also claimed that the granular price control feature of its

[23] Some publishers were able to achieve greater total revenue by flooring different ad exchanges and demand sources at different prices.

ad server only confused its publisher base—even the sophisticated publishers most likely to use price floors. Google asserted that it was doing those customers a favor by eliminating the function.

242. In reality, Google's internal documents demonstrate that these were pretextual justifications for the true driver of Unified Pricing Rules: preventing publishers from preferencing rival ad exchanges. Google employees candidly acknowledged that the change in auction format alone "would have achieved most of what we desperately need to fix our ecosystem," irrespective of changes to price floors. But the Google ad exchange "team wanted to use this migration [to a first-price auction] as an opportunity to significantly limit the ability of publishers to set floor-prices per buyers (which is a good goal to have)." Externally, Google told publishers and others that the combined changes would "simplify programmatic buying," "reduce complexity and create a fair and transparent market for everyone." Internally, Google acknowledged that getting rid of higher price floors for Google's ad exchange was the "primary internal objective for the entire launch" of bundled changes and its "key driver." Internal Google documents explained that the changes "will be a shift in DV360 spend patterns away from [third-party ad exchanges]." Not surprisingly, internal Google documents identified the "winner" of the new rules to be AdX, its own ad exchange, and accurately listed rival ad exchanges to be the "losers" under the new rules.

243. Publishers were livid when Google announced the change. At an April 18, 2019 meeting with Google, publisher customers lashed out. Google's meeting notes reflect that publishers reiterated what Google already knew: "optimizing yield is important but CONTROL is also important." Publishers "laugh[ed]" when Google employees tried to push the farce that "we [Google] don't want to take control away" from publishers. Publishers informed Google that

"we can give you 1,000 reasons why we want buyer rules" and pointed out that "maybe flooring doesn't have to do with 'pure yield' but might be needed for 'business reasons.'"

Notwithstanding the clear value the pricing rules provided publishers, Google's own desire to prevent publishers and rival ad exchanges from circumventing the effects of Poirot won the day. Google refused to make any changes to the proposed Unified Pricing Rules. Because it had a publisher ad server monopoly, Google did not need to be responsive to its publisher customers' needs; Google was confident that there was nowhere else for them to turn.

244. By 2019, effectively all viable publisher ad server competitors had exited or were in the process of exiting the market. Even if an alternative publisher ad server had remained, it could not have provided publishers access to the substantial and unique Google Ads' advertiser demand that remained available almost exclusively through Google's ad exchange.

245. With Unified Pricing Rules, Google exercised its market power to intentionally degrade the quality of its publisher ad server at the expense of publisher customers. It did so to prevent publishers from choosing to transact more through rival ad exchanges, further inhibiting the ability of these smaller ad exchanges to gain needed scale and compete effectively. Google reduced the share of other ad exchanges not by making its own ad exchange more attractive to publishers but, rather, by preventing publishers from preferencing other ad exchanges and by refusing to allow rival ad exchanges to compete for transactions on any dimension other than per-impression price. At the same time, Google shifted those transactions to its own ad exchange, further boosting Google's profits derived from its supra-competitive revenue share fees, at the expense of both advertisers and publishers. Likewise, publishers could no longer set lower price floors for particular demand source partners, such as non-Google advertiser ad networks, which reduced the possibility that publishers could partner with a rival to challenge

Google Ads' dominance. Publishers were—and today still are—powerless to respond given the lack of viable substitutes to Google's publisher ad server monopoly. They are locked into Google's publisher ad server and subject to Google's dictates about how they should monetize their own inventory.

246. Google fully launched Unified Pricing Rules in September 2019. As expected, UPR succeeded in shifting transactions away from rivals and to Google's ad exchange. The market share of Google's ad exchange increased by approximately 6% in 2019 following the announcement and ramp-up period. Google's advertiser business also benefited: the average floor price faced by Google Ads' advertisers on Google's ad exchange dropped from a little over $3 to about $1. Of course, had Google Ads bid for inventory through ad exchanges other than AdX, Google Ads' advertisers might never have faced the higher floors applicable to Google's ad exchange in the first place. They would have faced the floors that publishers chose to apply to rival ad exchanges. Google's internal modeling found that the Unified Pricing Rules created the "primary benefit" of Google's bundled auction changes, and the "best guess" of the impact was an annual increase of $430 million in Google's gross revenues and $118 million in Google's net revenues.

247. Most importantly for Google's overall strategy, Unified Pricing Rules had a "negative effect on 3P SSP [ad exchange] spend." For example, one ad exchange competitor complained to Google that its win rate had decreased 6% during the launch of Unified Pricing Rules. Internally, Google employees attributed the decrease to Unified Pricing Rules and warned others not to share this "extremely sensitive" information externally. By the end of 2019, Google's ad exchange was "still retaining [the] largest and growing share of spend" for inventory sold via open auction.

f) Google Outright Blocks the Use of Standard Header Bidding on Accelerated Mobile Pages

248. Project Poirot and the imposition of Unified Pricing Rules are both examples of Google wielding its power on both sides of the ad tech stack to stymie competition in the middle for ad exchanges. Google could not directly block publishers from adding header bidding code to their own webpages, so it had to resort to these indirect methods of limiting the growth of header bidding. But when given the opportunity to do just that—outright block adoption of client-side header bidding—in one corner of the internet, Google leaped at the opportunity, consistent with its broader strategy to stop header bidding in its tracks and thereby stifle competition from rival ad exchanges.

249. Beginning in 2017, Google recognized it could use its monopoly power in the general search market—specifically its ability to rank websites that appear in search results—to force at least certain publishers to forgo traditional, client-side header bidding and instead adopt Google's more limited and self-serving version it named Real Time Config ("RTC"). To do so, Google launched a project known as Accelerated Mobile Pages ("AMP") in an effort to push parts of the open web into a Google-controlled walled garden, one where Google could dictate more directly how digital advertising space could be sold.

250. A year earlier, in 2016, Google began to prioritize within its Google Search results websites that implemented an alternative webpage format known as AMP, which purported to allow faster loading times and a better mobile web experience. It also conditioned access to the News Carousel—the ribbon at the top of certain Google Search pages that highlights relevant news stories—on the adoption of AMP. Technically, AMP was an open-source project; in reality, Google and its engineers tightly controlled the AMP project through at least late 2020; its engineers still have an outsized influence in the project today.

251. Although AMP's faster loading and improved user experience goals appeared altruistic, Google also recognized that its control over AMP opened the door to advancing Google's financial interests, including its desire to quell the rising tide of header bidding. Google's Vice President of Product for Mobile App Advertising drafted a proposal for "wall[ing] off AMP" with "All-in-one Monetization, fully Google controlled and branded: All 'monetization' of content build on these technologies goes through Google." The proposal explained: "Given AMP is open-source, we propose the walled garden to include pages cached and served by Google" and to "[u]se the power of Google Search to prioritize traffic built on these technologies. 'Point our biggest most important pipe there.'"

252. For the first 18 months of AMP's existence, the AMP standard fully supported header bidding, luring in publishers vying to appear at the top of Google's Search listings or in the News Carousel. Early on, Google's AMP Ads Steering Committee formally considered and decided not to deprecate the mechanism for traditional header bidding in AMP because doing so would hurt publishers' ability to sell their advertisements. Instead, the committee agreed in March 2017 that "[i]f a [publisher] implemented such a thing [header bidding], AMP has very little influence from a policy perspective and business perspective - even if we, as Google, don't like it from a business perspective. AMP will look at it from an engineering standpoint and if it meets the standards, accept it."

253. However, just a few months later, Google abruptly changed course, overriding the view of the committee and shifting the open AMP framework into a Google-controlled closed environment where Google decided how digital advertising could be sold. Only a Google-dictated and Google-driven version of "header bidding" would be allowed: one that provided Google's ad exchange a preferred position and restricted publishers' ability to connect with their

preferred ad exchange partners. Publishers could not use traditional header bidding (i.e., client-side header bidding) that could provide higher quality advertising matches and additional revenue, and could only call directly a limited number of ad exchanges and data providers. Google formally launched its version of header bidding for AMP pages, RTC, in August 2017.

254. While Google told the world that its removal of traditional header bidding was based on page latency and a desire to improve user experience, its internal documents painted a different picture. Several Google employees shared their views that any concerns about user experience or latency were a smokescreen to mask Google's real motivation: further propping up its ad tech monopoly and profits. As a key software engineer explained, "If DFP wants to say 'We refuse to serve an ad onto your AMP page if we've been intermediated [by header bidding]', then we can certainly choose to do so. But that's a DFP business decision, not an AMP platform one." He added, "You product folks are welcome to make whatever decision you want about header bidding. But on the justification front, . . . your 500ms-delay-is-bad explanation really doesn't hold water." He went on to say: "If publishers can make more money on AMP pages via something that causes ads to load a little later, but that doesn't harm the [user experience] of the non-ad portion of the page, I think the AMP ecosystem should absolutely support it. I acknowledge that incentives here might not align, and I am indeed saying that AMP should embrace proposals that give more money to publishers even if it results in less money for DRX [DFP and AdX]." Similarly, Google's Vice President for News wrote, "AMP is under pressure to increase revenue and, specifically, to effectively support dynamic bidding. We need a solution. Also, please be cognizant of criticism that our reluctance on header bidding is driven by business self interest, not principle."

255. AMP adoption ultimately proved to be relatively limited, especially outside of news websites. As part of Google's grand strategy to combat the growth of header bidding, however, it served as yet another mechanism to deter publishers from adopting the technology. It was a new tool in Google's toolbox to use its monopoly power in adjacent markets to prop up and protect its growing ad tech monopolies. It also demonstrated that Google was more than willing to make misleading claims about performance as a pretext for stifling competition.

g) Google Replaces Its Last Look Preference from Dynamic Allocation with an Algorithmic Advantage and Degrades Data Available to Publishers

256. The shift of transactions from rival ad exchanges to Google's ad exchange as part of Unified Pricing Rules came at the same time that Google relinquished one of the substantial preferences it had previously given its ad exchange: the "last look" advantage of dynamic allocation. Its reason for doing so was not altruistic. Maintaining last look would have given publishers a path to effectively floor AdX higher than other ad exchanges notwithstanding Unified Pricing Rules. And as with the shift to a first-price auction, Google believed that removing last look "allows bundling of other valuable changes, that can be positioned as pro-competitive." Google Engineering Director explained that Google "paired this change [dropping last look] with other benefits to Google (fair access and uniform reserve prices), rather than being forced by regulators to remove last look under disadvantageous terms."

257. But even this concession was a mirage. Although eliminating "last look" might have resulted in a small decline in transactions on Google's ad exchange—partially offset by the benefits of Unified Pricing Rules—Google deployed a replacement that was effective in replicating the prior advantage. Relying on its massive trove of data from its monopoly publisher ad server and dominant ad exchange, Google developed an algorithmic model to predict the bids of rivals for each impression. In this way, Google could still predictively "peek" at its rivals' bids

before submitting its own. Specifically, Google's unique access via dynamic allocation to years of data on multiple bids per auction for trillions of auctions allowed Google to estimate the *distribution* of predicted prices necessary to replicate "last look." Google's technical documents explain that for accurate predictions "[w]e need to predict the full distribution of competition, not just the point estimate." Only Google had the data to do so by virtue of its dominant position across the ad tech stack. Moreover, the effects of years of a last look advantage did not disappear overnight. Google had already obtained the benefits of preferential access and continued to realize the enduring flywheel effects of scaling its ad exchange while eclipsing rivals.

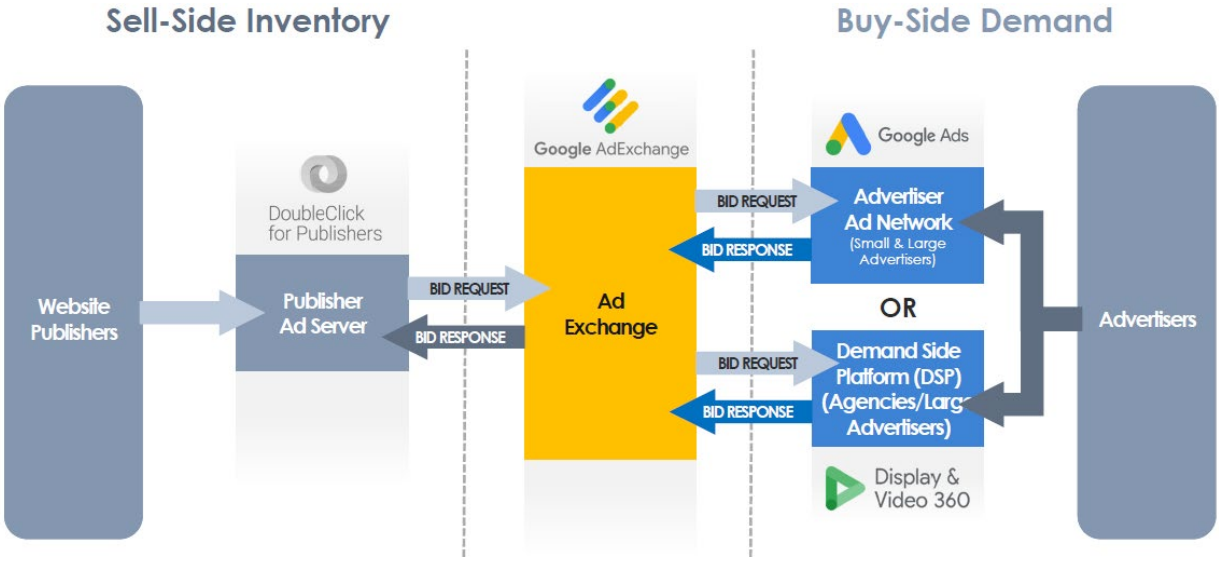

Fig. 20

258. Google delayed giving up last look for months while it fine-tuned the "Smart Bidding" algorithm that would replace it. When Smart Bidding launched, it fully offset the 30% drop in Google Ads' revenue that Google expected from the loss of last look (without Smart Bidding) and turned an expected 10% drop in DV360 revenue into a revenue increase of 3%.

259. Beginning in late 2019, Google made some of the data used in Smart Bidding available to rival ad exchanges, but important limitations applied. Google only shares data with

rival ad exchanges that bid on the impression via Open Bidding (not header bidding); data is limited to the winning price for an auction (where the rival ad exchange lost) or the second-highest bid (where the rival ad exchange won); and data is shared in a format that many ad exchanges could not use. This is insufficient for rival ad exchanges to replicate the broader data trove to which Google has access and against which it was able to train its bidding algorithms for years. For their part, publishers have no ability to block Google from continuing to have access to this pricing data or to allow rival ad exchanges access to similar data outside the parameters dictated by Google.

260. At the same time that it rolled out Smart Bidding, Google degraded the data it made available to publishers that previously allowed them to monitor how Google's ad exchange was competing against rival ad exchanges. Prior to late 2019, Google made available to publishers a "data transfer file" that allowed eligible publishers to see on an impression-by-impression basis the individual bids from competition among ad exchanges and certain advertising demand sources for the publishers' inventory. Publishers could then respond to changes in the nature of competition by tweaking the way in which they made their inventory available to their ad tech partners. Commenting on the earlier version of the data transfer files, Google acknowledged their value was to create a "more transparent auction marketplace" and "enabl[e] publishers to find opportunities for incremental revenue."

261. Following the shift to Unified Pricing Rules and the introduction of Smart Bidding, Google altered the files to prevent publishers from linking the bids from Google's advertising products to those from rivals using header bidding for the same impression. This has made it more difficult for publishers to make informed choices about how and where to make

inventory available and to monitor Google's bidding behavior for potential anticompetitive conduct.

V. ANTICOMPETITIVE EFFECTS

262. Google's course of conduct has corrupted the competitive process by which publishers and advertisers select, and then use, pivotal ad tech tools. In doing so, Google has undermined publishers' and advertisers' ability to make optimal matches for advertising inventory on mutually agreeable terms. Google also has interfered in rivals' attempts to partner successfully with Google's publisher and advertiser customers, thereby limiting the competitive benefits that would otherwise flow from customers' ability to effectively multi-home across competing ad tech products. Instead of fostering a competitive and innovative market, Google has wielded its market power to dictate the terms on which publishers and advertisers do business, ensuring those terms advance Google's anticompetitive ends and bottom line rather than its customers' best interests.

263. Google's conduct, described above, consists of a series of interrelated and interdependent actions, which have had cumulative and synergistic anticompetitive effects, the full scope and effect of which could not be fully recognized in real time by anyone outside of Google. Google's anticompetitive conduct includes, but is not limited to:

(1) Google's acquisition of DoubleClick to obtain not only a dominant publisher ad server, DFP, but also a nascent ad exchange, AdX, in order to pursue its goal of dominance across the entire ad tech stack;

(2) Google's restriction of Google Ads' advertiser demand exclusively to AdX;

(3) Google's restriction of effective real-time access to AdX exclusively to DFP;

(4) Google's limitation of dynamic allocation bidding techniques exclusively to AdX;

(5) Google's providing AdX with a "last look" auction advantage over rival exchanges;

(6) Google's acquisition of AdMeld to stop its yield management technology from promoting multi-homing across ad exchanges;

(7) Google's use of Project Bell, which lowered, without advertisers' permission or knowledge, bids to publishers who dared partner with Google's competitors;

(8) Google's deployment of sell-side Dynamic Revenue Share to manipulate auction bids—without publishers' knowledge—to advantage AdX;

(9) Google's use of Project Poirot to thwart the competitive threat of header bidding by secretly and artificially manipulating DV360's advertiser bids on rival ad exchanges using header bidding in order to ensure transactions were won by Google's AdX; and

(10) Google's veiled introduction of so-called Unified Pricing Rules that took away publishers' power to transact with rival ad exchanges at preferred prices.

264. Google's anticompetitive scheme spans nearly two decades and continues to the present. Moreover, the flywheel effects of even the earliest conduct are lasting, enabling and amplifying the impact of subsequent conduct, and setting in motion Google's march to an ever-increasingly dominant position across the ad tech industry that persists today. Google has distorted the competitive market forces that would otherwise determine prices and output and would incentivize innovation, efficiency, customer choice, and control. Google's conduct has preserved Google's dominant market positions at all levels of the ad tech stack and allowed

Google to siphon away a supra-competitive portion of advertiser dollars before they can reach website publishers.

265. Collectively, by hamstringing rivals' abilities to compete on the merits, Google's conduct has stifled innovation and limited publisher and advertiser choice. Google's conduct has harmed internet users as well. Fewer advertising dollars reach website publishers—because of higher ad tech fees and less efficient advertising matches—meaning those publishers have fewer resources to create content for internet users. These harmful effects are not just historical; rather, Google's anticompetitive conduct continues to affect the marketplace on an ongoing basis.

266. ***Higher Prices and Higher Margins for Google.*** The overarching goal of much of Google's conduct has been to force as many transactions as possible (especially high-value transactions) to flow through its own ad tech products, with Google taking a cut of the advertising spend at each step of the way. The focal point of Google's monetization strategy has been its ad exchange, where it charges its highest revenue share fees: consistently around 20% for open auction transactions since 2009, while its rivals charged only a fraction of that amount. Google's documents admit that ad exchange technology largely became commoditized years ago, and but for Google's ability to build and defend a moat around its ad tech products, competition would have driven prices down for most transactions by as much as 75%, especially where that same advertising demand is otherwise available on rival ad exchanges. Instead, Google has succeeded in defending its supra-competitive prices for all transactions flowing through its ad exchange without ceding—and indeed growing—its market share even today.

267. The revenue share fees Google charges come directly out of advertisers' advertising budgets and ultimately out of website publishers' bottom-line revenues. This means that advertisers are able to buy fewer ad impressions at the prices at which publishers are willing

to sell, less advertiser spend makes it to the publishers that internet users rely upon to generate and disseminate important content, and ultimately fewer publishers are able to offer internet users content for free (without subscriptions, paywalls, or alternative forms of monetization).

268. ***Scale, Flywheel Effects, and Diminished Multi-Homing.*** Google's strategy to shift additional transactions to its ad exchange and inhibit the ability of publishers and advertisers to transact effectively through rivals was not merely to charge supra-competitive fees. Google was also concerned that too many transactions flowing through alternative pipes—other ad technology platforms—could allow rivals to gain scale and challenge Google's competitive moat. The growth of alternative ad tech tools posed a risk of increased competition via more effective multi-homing, leading to pressure to reduce prices and increase choice and quality for publishers and advertisers.

269. Scale plays a critical role in a company's ability to offer a competitive ad tech platform at a low price and high quality. Scale would bestow many advantages on Google's potential competitors. These include indirect network and feedback effects to attract more advertisers and publishers, more data to improve the efficiency of their transactions, and the opportunity to spread their fixed costs over a larger number of transactions. Google's conduct had the purpose and effect of depriving rivals of sufficient scale to meaningfully compete in the ad exchange, publisher ad server, and advertiser ad network demand markets. Even for conduct Google ostensibly has discontinued, the effects are persistent and ongoing. Scale builds on itself and is self-reinforcing. Google's conduct denying scale to rivals has had a lasting impact that continues to affect today's marketplace.

270. Google has accomplished this objective in a number of ways. Collectively, Google's conduct has allowed its ad exchange to win more impressions by providing it with

more opportunities to win transactions on preferential terms, initially through programs like dynamic allocation and later through the implementation of Project Poirot and Google's so-called Unified Pricing Rules. By using Google's control of the publisher ad server to give its ad exchange preferential access to publisher inventory, Google has been, and continues to be, able to drive up rival ad exchanges' and advertiser ad networks' costs; impede publishers' attempts to identify high-quality, real-time matches through those ad exchanges and networks; limit the ability of ad exchanges to win transactions at sufficient scale; and diminish rival ad exchanges' ability to attract publishers and advertisers to their platforms.

271. Rival ad exchanges have incurred costs to process and respond to each bid request from a publisher, but have been unable to effectively compete on the same terms as Google's ad exchange to win the impression. Because ad exchanges are compensated only on transactions they win, an ad exchange's win rate is critical to the long-term financial viability of the ad exchange and its ability to innovate.

272. Moreover, strong network effects operate in the publisher ad server, ad exchange, and advertiser ad network demand markets, which are driven largely by scale. Due to indirect network effects, both advertisers and publishers are attracted to ad exchanges with more parties on the other side. A rival ad exchange that has less scale due to Google's anticompetitive conduct is less able to attract and maintain additional publishers and advertisers; it swims against the strong current of indirect market effects that benefit Google's larger ad exchange. Similarly, for an advertiser ad network to rival Google Ads' dominance, it must be able to benefit from network effects and have sufficient access to publisher inventory at scale. A competing advertiser ad network would additionally benefit from the associated contextual and user targeting data that provide a competitive advantage. Google's actions inhibiting rival ad

networks from accessing inventory on the terms that publishers prefer has the effect of impeding competition. The result in both cases is a feedback loop that continues to inhibit the growth of rivals while preserving Google's dominant positions.

273. Additionally, Google's conduct has succeeded in locking publishers into Google's publisher ad server. Google's restrictions have rendered its publisher ad server the only viable means to obtain meaningful access to the unique, sizeable Google Ads' advertising demand available almost exclusively on Google's ad exchange, as well as the other advertising demand Google made preferentially available there. Because publishers must as a practical matter single-home with one publisher ad server, this exclusivity essentially compelled publishers to use Google's publisher ad server and inhibited rivals from entering or remaining in the market. As a result, a potential competitor to Google's publisher ad server would need to enter both the publisher ad server and the ad exchange market, both at scale, in order to compete. Only a rival ad exchange operating at scale together with a publisher ad server would likely attract publishers to switch away from Google's highly restrictive publisher ad server. Google perceived that header bidding posed an existential threat to its publisher ad server monopoly because header bidding could allow a potential rival to generate sufficient scale in the ad exchange market and, subsequently, enter the publisher ad server market (or facilitate the entry of a new publisher ad server). Google quashed that threat and deprived its rivals of the ability to gain such scale via header bidding or other innovations.

274. ***Lack of Choice and Control for Publishers and Advertisers Alike.*** Google's anticompetitive conduct has narrowed publishers' and advertisers' choices about how to do business with one another in several ways. Dynamic allocation prevented publishers from effectively offering their inventory on the same terms—or any terms of their choosing—through

multiple ad exchanges. Through the Unified Pricing Rules, Google disabled the function in its publisher ad server that previously allowed publishers to specify the terms on which they wished to transact with ad exchanges and other sources of advertising demand. And unbeknownst to advertisers, Project Poirot surreptitiously discounted their advertising spend on the ad exchanges they selected and directed that spend toward Google's ad exchange instead.

275. More broadly, Google's march to monopoly in the publisher ad server market has left publishers today with basically no choice when selecting a publisher ad server. And because the publisher ad server determines how publisher ad inventory is awarded to an advertiser, publishers have no choice but to acquiesce to Google's will as to how that process should work. Competition no longer constrains Google's ability to write the rules in its favor.

276. ***Information Asymmetries.*** Because Google's ad tech products face little or no meaningful competition, Google has been able to operate its products within a black box, affording publishers and advertisers limited visibility into how, why, and even at what price, website advertising inventory is sold. One industry report suggests that approximately 15% of all digital advertising spend is simply unaccounted for, with publishers and advertisers unable to determine which intermediary may have siphoned this spend off for its own gain. Reduced transparency diminishes the ability of publishers and advertisers to make informed choices in selecting their ad tech products and hampers their ability (and rivals' as well) to serve as a competitive constraint.

277. ***Less Innovation.*** Competitive pressure drives innovation, as competitors are incentivized to develop new ways to outperform one another to attract customers. The lack of any meaningful competition for publisher ad servers has severely dampened innovation in that market. Reflecting on Google's dominant sell-side market position, Google executives noted the

weakness that Google "often play[s] fast follow vs first movers." A more competitive market would have fostered greater innovation. For instance, if not for Google's acquisition of AdMeld and subsequent deprecation of its yield optimization technology, real-time bidding among ad exchanges may have become available to publishers several years before the advent of header bidding, and well before Open Bidding. Similarly, had Google not had a monopoly of the publisher ad server market, a rival publisher ad server may have introduced a tool for server-side real-time bidding among ad exchanges similar to Open Bidding. Instead, the industry was forced to rely on header bidding, which, although useful, is limited because it serves as a partial workaround that was not integrated into a publisher ad server. Moreover, rival ad exchanges have been limited in their ability to introduce any innovation that requires the cooperation of a publisher ad server, even where such cooperation would improve both products. In the absence of serious competitive pressure, Google has a diminished incentive to improve its publisher ad server or ad exchange products.

278. The United States is among the advertisers harmed by Google's anticompetitive conduct. United States departments and agencies, including ones in this district such as the Army, purchase open web display advertising using Google and non-Google ad tech tools. Since 2019, the United States has purchased in excess of $100 million in open web display advertising. The United States has incurred monetary damages as a result of Google's anticompetitive conduct by virtue of the supra-competitive fees, manipulated advertising prices, and lower quality advertising matches described above.

VI. RELEVANT MARKETS

279. Google's conduct at issue in this Complaint implicates three relevant antitrust markets in the United States: publisher ad servers, ad exchanges, and advertiser ad networks.

A. Geographic Markets

280. The United States is a relevant geographic market for publisher ad servers, ad exchanges, and advertiser ad networks. Market participants recognize this in the ordinary course of business. While Google and certain other market participants offer publisher ad servers, ad exchanges, and advertiser ad networks internationally, there are differences in publisher and advertiser preferences, language, and regulatory frameworks depending on the country to which the publication and/or advertising is intended to be viewed.

281. In the alternative, a relevant geographic market for publisher ad servers, ad exchanges, and advertiser ad networks is worldwide (excluding countries such as the People's Republic of China that substantially restrict international internet access).

B. Product Markets

1. Publisher Ad Servers

282. Publisher ad servers for open web display advertising is a relevant antitrust product market. For simplicity, this Complaint refers to these products as "publisher ad servers" or "ad servers." Google offers DoubleClick for Publishers, now part of the Google Ad Manager suite, as a product in this relevant market.

283. A publisher uses a publisher ad server to manage the sale of display ads on its webpages. Publisher ad servers provide functionality such as ad delivery, reporting, and forecasting of availability across direct deals and indirect advertising sales. Publisher ad servers evaluate potential sources of advertising demand and are the final arbiters of which ad is selected to fill designated inventory slots on a publisher's webpage.

284. Other ad tech products are not reasonable substitutes for publisher ad servers. As compared to publisher ad servers, alternative products—such as publisher ad networks (including Google's AdSense product), ad exchanges, closed web platforms, or mobile app ad mediation

platforms—offer different functionality, serve distinct needs for publishers, use different pricing structures, and/or monetize different types of digital ad inventory. Thus, there are no reasonable substitutes for publisher ad servers, and a publisher ad server monopolist would be able to maintain prices above the level that would prevail in a competitive market and/or maintain quality below the level that would prevail in a competitive market.

285. Google has maintained a monopoly in publisher ad servers in the United States since at least 2015. As confirmed by Google's internal assessments, Google's share of the publisher ad server market in the United States, measured by either revenue or impressions, has remained above 90% for many years. Its worldwide market share is similar.

286. Importantly, Google's dominance of open web inventory sold via open auction also gives Google a dominant position with respect to the sale of other types of valuable inventory transacted through its publisher ad server. These include directly sold advertisements and advertisements sold outside of open auctions via programmatic advertising tools, e.g., programmatic guaranteed and programmatic direct. Although these transactions are not substitutes for open auction transactions, they give Google substantial sources of additional revenue and data concerning some of the most sought-after publisher inventory. For example, in 2021, direct advertisement sales through DFP represented over $11 billion in gross revenues to publishers, with programmatic guaranteed and programmatic direct representing approximately $1 billion in gross revenue.

287. Google has exploited its monopoly power over DFP. In 2015, Google developed technology within the publisher ad server that was able to support large volumes of programmatic direct transactions. Google initially planned to enable third parties to implement the technology via API protocols. By early 2016, Google recognized that some third-party

exchanges were ahead of AdX in developing programmatic direct technologies. To forestall the development of these competing products, Google developed guidelines which prohibited DV360 from engaging in any engineering work to support competing products before a similar integration was already developed between DV360 and AdX. As a result, competitive product development and innovation was impeded until Google's programmatic direct technologies became the *de facto* market standard.

288. Google's durable monopoly power in publisher ad servers is protected by significant barriers to entry. The cost to build a publisher ad server and achieve the scale necessary to compete effectively are significant. Publishers typically can only use one publisher ad server at a time and rarely incur the costs to switch from one to another due to engineering integration costs and significant disruptions caused by switching. The cost to build a publisher ad server is significant, and barriers to entry are reinforced by Google's anticompetitive conduct in the market.

289. Google's monopoly power in publisher ad servers is further evidenced by Google's ability to engage in conduct that benefits itself at the expense of publishers without inducing them to switch to an alternative publisher ad server. Moreover, Google's monopoly power in publisher ad servers is protected by Google's anticompetitive conduct described herein.

2. Ad Exchanges

290. The market for ad exchanges for indirect open web display advertising is a relevant antitrust product market. For simplicity, this Complaint refers to these products as "ad exchanges." Google offers AdX, now part of the Google Ad Manager suite, as a product in this relevant market.

291. Publishers use ad exchanges to auction display ad inventory, and advertisers (through advertiser buying tools) use ad exchanges to purchase that inventory. Alternative

methods and products for transacting ad inventory are not reasonable substitutes for advertisers and publishers. As compared to ad exchanges, alternative methods and products for selling ad inventory—such as direct deals, programmatic guaranteed, traditional ad networks (those not relying on real-time bidding), closed web platforms, or other ad tech tools for other types of digital advertising—are distinct in terms of inventory type, use cases, functionality, inventory constraints, and/or monetization. Thus, there are no reasonable substitutes for ad exchanges, and an ad exchange monopolist would be able to maintain prices above the level that would prevail in a competitive market and/or maintain quality below the level that would prevail in a competitive market.

292. Google enjoys substantial and growing market share with respect to ad exchanges in the United States. Google's AdX is the largest ad exchange in the market; it is approximately four times larger than the next largest ad exchange, whether measured by impressions won or by revenue, and has been for at least several years. For open web advertisements sold via open auctions, Google's ad exchange is the direct winner of more than 50% of all ad impressions and revenue. Its worldwide market share is higher.

293. In addition, Google also controls the Open Bidding system through which other ad exchanges may purchase publisher ad inventory, but only by paying Google a 5% revenue share fee, sharing important bid data with Google, and restricting the demand used to compete in the auction. Open Bidding presently represents another approximately 7% of all U.S. advertising impressions won via open auction. As a result, Google has either full (AdX-won impressions) or partial (Open Bidding-won transactions) control over, and visibility into, most open auction transactions.

294. Through the conduct described above, including enhanced dynamic allocation and the integration of AdX into Google Ad Manager, Google has ensured that AdX is used as an ad exchange by publishers representing more than 90% of all open web display advertisements available for auction. Google estimates that AdX is able to see and bid on 77% of open web impressions and that it could profitably force publishers to use AdX by default. By contrast, all other ad exchanges must compete to be adopted by publishers as a secondary ad exchange before they are able to see inventory on which to bid.

295. Google's share in the ad exchange market, if anything, understates AdX's competitive significance. Many ad exchanges still compete for publisher ad inventory via the "waterfall" method, which does not allow for real-time competition among exchanges and is not a close substitute. Excluding transactions that occur via the waterfall method would significantly increase Google's share of the ad exchange market. Additionally, because AdX has superior access to unique sources of demand from Google Ads, it is a must-have ad exchange for nearly all website publishers; other ad exchanges do not have access to similar sources of unique demand. And AdX is also one of the only exchanges connected to both a publisher ad server and advertising buying tool owned by the same company.

296. Google's monopoly power in ad exchanges is further evidenced by Google's ability to engage in conduct that benefits itself at the expense of publishers and advertisers without inducing them to switch away from AdX and relying exclusively on alternative ad exchanges. This conduct has denied scale to rivals and has allowed Google to maintain a supra-competitive revenue share for its ad exchange for over a decade, despite internal documents suggesting a competitive price would be much lower. In addition, Google's monopoly power in ad exchanges is protected by its anticompetitive conduct described herein.

3. Advertiser Ad Networks

297. Advertiser ad networks for open web display advertising is a relevant antitrust market. An advertiser ad network provides easy-to-use, self-service bidding tools that facilitate ad placement on open web display ad inventory. Advertiser ad networks are accessible to less sophisticated advertisers, although sophisticated advertisers may also use them. Advertiser ad networks typically configure their simple bidding tool with proprietary targeting data that uniquely values website publisher inventory based on a combination of data sources, including information about the website, where the ad will be displayed, and the particular user visiting the website. Advertiser ad networks typically charge advertisers on a cost-per-click basis rather than a cost-per-impression basis. Because advertiser ad networks generally purchase advertising inventory on a cost-per-impression basis, they must have substantial data and scale to successfully predict the likelihood the user will click on the advertisement and thereby effectively arbitrage the difference between their cost to acquire inventory and the cost-per-click price charged to advertisers.

298. Google's advertiser ad network for open web display ads has been called the Google Display Network ("GDN"), and is a portion of Google's Google Ads product (formerly known as AdWords).

299. Many advertisers that use advertiser ad networks continue to be significantly limited in their abilities to substitute all or most of their advertising spend to demand side platforms (or "DSPs"), the other major advertiser buying tool for accessing open-web inventory. DSPs require the buyer to directly manage their advertising campaigns, are not reasonably accessible to less sophisticated advertisers, and often require buyers to utilize their own proprietary data to effectively bid on advertising inventory. Google has described the distinction

between advertiser ad networks like Google Ads and demand side platforms like Google's Display & Video 360 (DV360) as follows:

Why do Google Ads and Display & Video 360 charge different amounts?

- Google Ads is a broad offering used by a range of advertisers across a diverse base from small businesses to larger brands. DV360 is specifically used by large global advertisers and their agencies to execute complex marketing campaigns, and as such is priced as an enterprise-level solution.

Fig. 21

300. Advertising networks that facilitate the sale of digital advertising on search, social media, or app platforms do not purchase inventory from such open web website publishers and have distinct, more limited reach.

301. Google has monopoly power in the relevant market for advertiser ad networks. Google built the open web display advertising component of Google Ads by providing easily accessible bidding tools for advertisers, including less sophisticated advertisers. Google documents state that Google Ads provides access to over 2 million websites and reaches over 90% of internet users. Google Ads' United States and worldwide shares of the market for advertiser ad networks for open web display advertising has not dropped below 70% (measured by impressions) since 2015; it currently stands at around 80%. Google experimented with increasing the revenue share charged on advertising demand available through Google Ads, and found that it could profitably impose an increase in excess of 5%. This demonstrates that advertisers would not substitute away from Google Ads to any alternative ad buying tool in sufficient volume to defeat such a price increase.

302. Google's market power in advertiser ad networks for open web display ads is protected by significant barriers to entry. Google was able to build Google Ads' large pool of unique, often small, advertisers through its search product, as it was able to opt search advertisers

into extending their campaigns into open web display. Few companies have such a product available, nor could one be readily built for this purpose.

303. Any advertiser ad network seeking to compete meaningfully with Google Ads would need to build a large enough pool of advertiser demand to be attractive to ad exchanges and publishers. Building such a pool is difficult, even for well-funded market participants.

VII. JURISDICTION, VENUE, AND COMMERCE

304. The United States brings this action pursuant to Section 4 of the Sherman Act, 15 U.S.C. § 4, to prevent and restrain Google's violations of Sections 1 and 2 of the Sherman Act, 15 U.S.C. §§ 1, 2.

305. Plaintiffs California, Colorado, Connecticut, New Jersey, New York, Rhode Island, Tennessee, and Virginia by and through their respective Attorneys General, bring this action pursuant to Section 16 of the Clayton Act, 15 U.S.C. § 26, to prevent and restrain Google's violations of Sections 1 and 2 of the Sherman Act, 15 U.S.C. §§ 1, 2.

306. This Court has subject matter jurisdiction over this action under Section 4 of the Sherman Act, 15 U.S.C. § 4, and 28 U.S.C. §§ 1331, 1337(a), and 1345.

307. The Court has personal jurisdiction over Google; venue is proper in this District under Section 12 of the Clayton Act, 15 U.S.C. § 22, and under 28 U.S.C. § 1391 because Google transacts business and is found within this District.

308. Google is a limited liability company organized and existing under the laws of the State of Delaware and is headquartered in Mountain View, California. Google is owned by Alphabet Inc., a publicly traded company incorporated and existing under the laws of the State of Delaware and headquartered in Mountain View, California. Google's display advertising business is part of its "Ads" unit, which consists of Google's YouTube, search, shopping, and

non-search display advertising businesses. In 2021, Alphabet recorded nearly $260 billion in revenue, a 41% increase over 2020. Alphabet's "Google Network" revenue, which represents non-search display advertising revenue from Google's AdMob, Ad Manager, and AdSense products, among others, generated $31.7 billion in 2021, a 37% increase over 2020 revenue.

309. Google engages in, and its activities substantially affect, interstate trade and commerce. Google provides a range of products and services that are marketed, distributed, and offered to consumers throughout the United States, in the plaintiff States, across state lines, and internationally.

VIII. VIOLATIONS ALLEGED

First Claim for Relief: Monopolization of the Publisher Ad Server Market in Violation of Sherman Act § 2

310. Plaintiffs incorporate the allegations of paragraphs 1 through 309 above.

311. Publisher ad servers for open web display advertising in the United States or, in the alternative, worldwide is a relevant antitrust market, and Google has monopoly power in that market.

312. Google has unlawfully monopolized the publisher ad server market through a course of exclusionary conduct described herein. While each of Google's actions increased, maintained, or protected its publisher ad server monopoly and/or market power in adjacent markets, the following exclusionary conduct—taken together—played a particularly important role in unlawfully establishing or maintaining a publisher ad server monopoly:

(1) Google's acquisition of DoubleClick to obtain not only a dominant publisher ad server, DFP, but also a nascent ad exchange, AdX, in order to pursue its goal of dominance across the entire ad tech stack;

(2) Google's restriction of Google Ads' advertiser demand exclusively to AdX;

(3) Google's restriction of effective real-time access to AdX exclusively to DFP;

(4) Google's limitation of dynamic allocation bidding techniques exclusively to AdX;

(5) Google's providing AdX with a "last look" auction advantage over rival exchanges;

(6) Google's acquisition of AdMeld to stop its yield management technology from promoting multi-homing across ad exchanges;

(7) Google's use of Project Bell, which lowered, without advertisers' permission, bids to publishers who dared partner with Google's competitors;

(8) Google's deployment of sell-side Dynamic Revenue Share to manipulate auction bids—again, without publishers' knowledge—to advantage AdX;

(9) Google's use of Project Poirot to thwart the competitive threat of header bidding by secretly and artificially manipulating DV360's advertiser bids on rival ad exchanges using header bidding in order to ensure transactions were won by Google's AdX; and

(10) Google's veiled introduction of so-called Unified Pricing Rules that took away publishers' power to transact with rival ad exchanges at preferred prices.

313. Although each of these acts is anticompetitive in its own right, these interrelated and interdependent actions have had a cumulative and synergistic effect that has harmed competition and the competitive process.

314. Google's exclusionary conduct has foreclosed a substantial share of the publisher ad server market.

315. Google's anticompetitive acts have had harmful effects on competition and consumers.

316. Google's exclusionary conduct lacks a procompetitive justification that offsets the harm caused by Google's anticompetitive and unlawful conduct.

Second Claim for Relief: Monopolization of the Ad Exchange Market in Violation of Sherman Act § 2

317. Plaintiffs incorporate the allegations of paragraphs 1 through 309 above.

318. Ad exchanges for open web display advertising in the United States or, in the alternative, worldwide is a relevant antitrust market, and Google has monopoly power in that market.

319. Google has unlawfully monopolized the ad exchange market through an exclusionary course of conduct and the anticompetitive acts described herein. While each of Google's actions collectively increased, maintained, or protected its ad exchange monopoly and/or market power in adjacent markets, the following exclusionary conduct—taken together—played a particularly important role in unlawfully establishing or maintaining an ad exchange monopoly:

(1) Google's acquisition of DoubleClick to obtain not only a dominant publisher ad server, DFP, but also a nascent ad exchange, AdX, in order to pursue its goal of dominance across the entire ad tech stack;

(2) Google's restriction of Google Ads' advertiser demand exclusively to AdX;

(3) Google's restriction of effective real-time access to AdX exclusively to DFP;

(4) Google's limitation of dynamic allocation bidding techniques exclusively to AdX;

(5) Google's providing AdX with a "last look" auction advantage over rival exchanges;

(6) Google's acquisition of AdMeld to stop its yield management technology from promoting multi-homing across ad exchanges;

(7) Google's use of Project Bell, which lowered, without advertisers' permission, bids to publishers who dared partner with Google's competitors;

(8) Google's deployment of sell-side Dynamic Revenue Share to manipulate auction bids—again, without publishers' knowledge—to advantage AdX;

(9) Google's use of Project Poirot to thwart the competitive threat of header bidding by secretly and artificially manipulating DV360's advertiser bids on rival ad exchanges using header bidding in order to ensure transactions were won by Google's AdX; and

(10) Google's veiled introduction of so-called Unified Pricing Rules that took away publishers' power to transact with rival ad exchanges at certain prices.

320. Although each of these acts is anticompetitive in its own right, these interrelated and interdependent actions have had a cumulative and synergistic effect that has harmed competition and the competitive process.

321. Google's conduct has drastically altered the supply paths through which available display advertising inventory is sold, reducing payouts to publishers, burdening advertisers and publishers with lower-quality matches of advertisements to inventory, and inhibiting choice and innovation across the ad tech stack.

322. Google's anticompetitive acts have had harmful effects on competition and consumers.

323. Google's exclusionary conduct lacks a procompetitive justification that offsets the harm caused by Google's anticompetitive and unlawful conduct.

Second Claim for Relief, in the Alternative: Attempted Monopolization of the Ad Exchange Market in Violation of Sherman Act § 2

324. Plaintiffs incorporate the allegations of paragraphs 1 through 309 above.

325. Ad exchanges for open web display advertising in the United States or, in the alternative, worldwide is a relevant antitrust market, and Google has attempted to monopolize that market.

326. Google has attempted to monopolize the ad exchange market through an exclusionary course of conduct and the anticompetitive acts described herein. While each of Google's actions collectively increased Google's market power in the ad exchange and adjacent markets, the following exclusionary conduct—taken together—played a particularly important role in Google's attempt to attain an ad exchange monopoly:

(1) Google's acquisition of DoubleClick to obtain not only a dominant publisher ad server, DFP, but also a nascent ad exchange, AdX, in order to pursue its goal of dominance across the entire ad tech stack;

(2) Google's restriction of Google Ad's advertiser demand exclusively to AdX;

(3) Google's restriction of effective real-time access to AdX exclusively to DFP;

(4) Google's limitation of dynamic allocation bidding techniques exclusively to AdX;

(5) Google's providing AdX with a "last look" auction advantage over rival exchanges;

(6) Google's acquisition of AdMeld to stop its yield management technology from promoting multi-homing across ad exchanges;

(7) Google's use of Project Bell, which lowered, without advertisers' permission, bids to publishers who dared partner with Google's competitors;

(8) Google's deployment of sell-side Dynamic Revenue Share to manipulate auction bids—again, without publishers' knowledge—to advantage AdX;

(9) Google's use of Project Poirot to thwart the competitive threat of header bidding by secretly and artificially manipulating DV360's advertiser bids on rival ad exchanges using header bidding in order to ensure transactions were won by Google's AdX; and

(10) Google's veiled introduction of so-called Unified Pricing Rules that took away publishers' power to transact with rival ad exchanges at certain prices.

327. Although each of these acts is anticompetitive in its own right, these interrelated and interdependent actions have had a cumulative and synergistic effect that has harmed competition and the competitive process.

328. In undertaking this course of conduct, Google has acted with a specific intent to monopolize, and to destroy effective competition in, the ad exchange market in the United States. There is a dangerous probability that, unless restrained, Google will succeed in monopolizing the ad exchange market, in violation of Section 2 of the Sherman Act.

329. Google's conduct has drastically altered the supply paths through which available display advertising inventory is sold, reducing payouts to publishers, burdening advertisers and publishers with lower-quality matches of advertisements to inventory, and inhibiting choice and innovation across the ad tech stack.

Third Claim for Relief: Monopolization of the Advertiser Ad Network Market in Violation of Sherman Act § 2

330. Plaintiffs incorporate the allegations of paragraphs 1 through 309 above.

331. Advertiser ad networks for open web display advertising in the United States or, in the alternative, worldwide is a relevant antitrust market, and Google has monopoly power in that market.

332. Google has unlawfully maintained its monopoly in the advertiser ad network market through an exclusionary course of conduct and the anticompetitive acts described herein. While each of Google's actions collectively increased, maintained, or protected its advertiser ad network monopoly and/or market position in adjacent markets, its veiled introduction of so-called Unified Pricing Rules that took away publishers' power to transact with rival advertiser ad networks at certain prices played a particularly important role in unlawfully establishing or maintaining an advertiser ad network monopoly.

333. Google's conduct has drastically altered the supply paths through which available display advertising inventory is sold, reducing payouts to publishers, burdening advertisers and publishers with lower-quality matches of advertisements to inventory, and inhibiting choice and innovation across the ad tech stack.

334. Google's anticompetitive acts have had harmful effects on competition and consumers.

335. Google's exclusionary conduct lacks a procompetitive justification that offsets the harm caused by Google's anticompetitive and unlawful conduct.

Fourth Claim for Relief: Unlawful Tying in Violation of Sherman Act §§ 1 and 2

336. Plaintiffs incorporate the allegations of paragraphs 1 through 309 above.

337. Google's AdX and DFP are separate and distinct products. They are sold in different markets; their functions are different; there is separate demand for them; and they have been treated by Google and by other industry participants as separate products.

338. Google's AdX has sufficient market power in the market for ad exchanges for open web display advertising in the United States to coerce publishers to license DFP, thus restraining competition in the market for publisher ad servers for open web display advertising in the United States. AdX was viewed as a "must-have" product in part because of its exclusive access to Google Ads' demand. Google compels publishers to use DFP to access real-time competition between AdX and other demand sources. The only viable economic option for many publishers is to use DFP because choosing a rival platform would require the publisher to lose access to economically essential, real-time, competitive advertiser demand.

339. Google's tying arrangement affects a substantial volume of commerce in the publisher ad server market and has substantially foreclosed competition in the publisher ad server market. Google's tying arrangement has excluded competition in the publisher ad server

market. Google's tying arrangement has further caused competing ad servers substantial damages as a direct and proximate cause of this unlawful conduct because Google has foreclosed other ad servers from competing for potential publishers and has deprived ad servers of other business for reasons having nothing to do with the merits of DFP.

Fifth Claim for Relief: Damages Incurred by the United States by Reason of Google's Violations of the Antitrust Laws, 15 U.S.C. § 15a

340. Plaintiffs incorporate the allegations of paragraphs 1 through 309 above.

341. Google's violations of the Sherman Act have caused the United States to incur monetary damages, as the United States and its various agencies and departments are buyers of open web display advertising.

IX. REQUEST FOR RELIEF

342. To remedy these illegal acts, Plaintiffs request that the Court:

1. Adjudge and decree that Google has acted unlawfully to monopolize the publisher ad server market in the United States in violation of Section 2 of the Sherman Act, 15 U.S.C. § 2;
2. Adjudge and decree that Google has acted unlawfully to monopolize, or, in the alternative, attempt to monopolize, the ad exchange market in the United States in violation of Section 2 of the Sherman Act, 15 U.S.C. § 2;
3. Adjudge and decree that Google has acted unlawfully to monopolize the advertiser ad network market in the United States in violation of Section 2 of the Sherman Act, 15 U.S.C. § 2;
4. Adjudge and decree that Google has acted unlawfully by tying AdX and DFP in violation of Sections 1 and 2 of the Sherman Act, 15 U.S.C. §§ 1, 2.

5. Award damages pursuant to 15 U.S.C. § 15a;

6. Order the divestiture of, at minimum, the Google Ad Manager suite, including both Google's publisher ad server, DFP, and Google's ad exchange, AdX, along with any additional structural relief as needed to cure any anticompetitive harm;

7. Enjoin Google from continuing to engage in the anticompetitive practices described herein and from engaging in any other practices with the same purpose and effect as the challenged practices;

8. Enter any other preliminary or permanent relief necessary and appropriate to restore competitive conditions in the markets affected by Google's unlawful conduct;

9. Enter any additional relief the Court finds just and proper; and

10. Award each Plaintiff, as applicable, an amount equal to its costs, including reasonable attorneys' fees, incurred in bringing this action.

X. DEMAND FOR A JURY TRIAL

343. Pursuant to Federal Rule of Civil Procedure 38(b), Plaintiffs demand a trial by jury of all issues properly triable to a jury in this case.

Dated this 24th day of January, 2023.

Respectfully submitted,

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