Government Plaintiffs'
Rebuttal

United States, et al. v. Google, LLC

November 21, 2025

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Dr. Andres Lerner

ECONIC PARTNERS

"So the economics literature is very clear, and there's broad agreement that **remedies should terminate [a] monopoly [caused] by anticompetitive conduct** . . . ."

"Plaintiffs . . . have proven that Google has violated Section 2 of the Sherman Act by willfully **acquiring** and maintaining monopoly power in the open-web display publisher ad server and the open-web display ad exchange market . . . ."

Opinion at 1 (emphasis added)

"For over a decade, Google has tied its publisher ad server and ad exchange together through contractual policies and technological integration, which enabled the company to **establish** and protect its monopoly power in these two markets."

Opinion at 114 (emphasis added)

"Plaintiffs have proven that Google has willfully engaged in a series of anticompetitive acts to **acquire** and maintain monopoly power in the publisher ad server and ad exchange markets for open-web display advertising."

Opinion at 114 (emphasis added)

"Google recognized the unique attractiveness of its extensive advertiser demand, and its employees understood that limiting access to AdWords demand in this way `compel[led] publishers' to use AdX and DFP."

Opinion at 29

Opaque Digital Markets Are Difficult to Monitor

"As technology has come to play an increasing role in business operations, it has become **increasingly challenging to craft effective antitrust remedies**. **Nowhere are the challenges greater** than where they have to be applied to a company whose products are **services delivered through digital technology**, such as those offered by Facebook and **Google** . . . ."

"The **oversight road** was much **longer and rockier** than either Microsoft or the enforcers had anticipated when they hammered out the court's remedial decree."

Jay L. Himes, Jason Nieh & Ron Schnell, "Antitrust Enforcement and Big Tech: After the Remedy is Ordered," 1 Stanford Computational Antitrust 65, 66, 73 (2021)

Acquirers "must . . . have the intent and capability . . . including the necessary managerial, operational, technical, and financial capability – to compete effectively in" the relevant markets.

Pl. PFJ §§ VI(E), VIII(E)

DFP's Final Auction Logic Controls Which Ad Wins

DFP Redesign

Redacted

In 4 years, will structurally remove the ability for PCAS to decide which ad to serve across direct and indirect demand by open sourcing the final auction

PRX050 at -325

Rumors of the Death of Open Web Display Ads Are Greatly Exaggerated

Figure 5. Replication of Lerner Initial Report Figure 27 (in total spending): "Worldwide Google Ads Spending by Ad Type (Excluding Search), Jan 2019–Mar 2025"
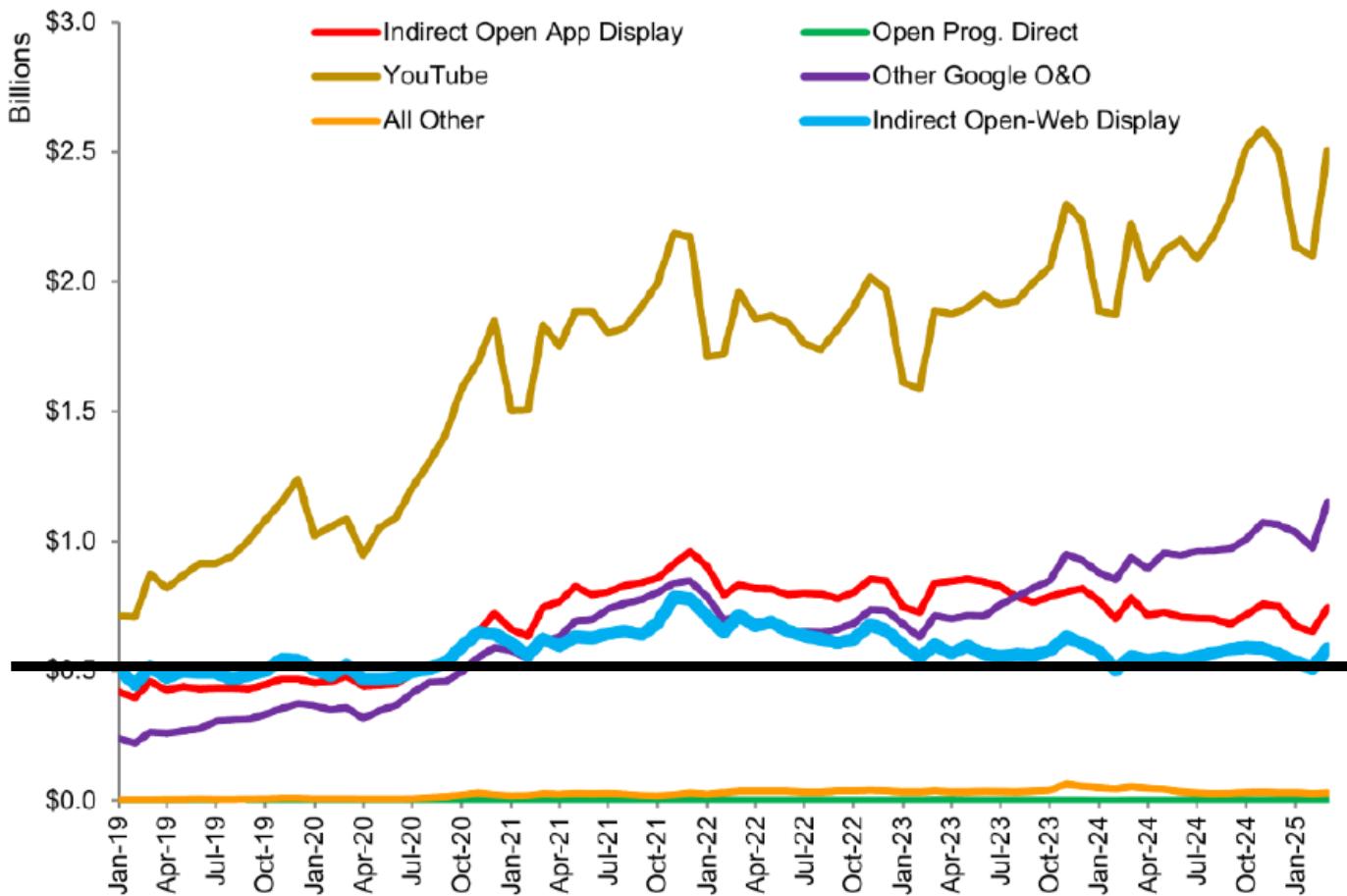
Source: Backup materials for Lerner Initial Report, Figure 27 (Google Ads data (DOJ RFP 26, refresh of DOJ RFP 7)).

AI is Hurting Publishers, Not Restoring Competition

AI is Hurting Publishers, Not Restoring Competition

"As ad tech products continue to integrate artificial intelligence and machine learning capabilities, **Google's vast repositories of data** about advertisers, publishers, and Internet users, **combined with the company's scale and technical sophistication**, will **further benefit** its open-web display advertising business."

Opinion at 40

"When it comes to fashioning an antitrust remedy, we acknowledge that **caution is key**. . . . Judges must be mindful, too, of their limitations – as generalists, as lawyers, and as outsiders trying to understand intricate business relationships. Judges must remain aware that **markets are often more effective than the heavy hand of judicial power** when it comes to enhancing consumer welfare. . . . [praising district court for its] "**healthy dose of judicial humility**.""

"Courts must have a healthy respect for the **practical limits of judicial administration** . . .**Nor should any court impose a duty that it cannot explain or adequately and reasonably supervise**.""

NCAA v. Alston, 594 U.S. 69, 106-107, 102 (2021)

"The Sherman Act was designed to be a **comprehensive charter of economic liberty**, aimed at preserving free and unfettered competition as the rule of trade. **It rests on the premise** that the **unrestrained interaction of competitive forces will yield the best allocation of our economic resources, the lowest prices, the highest quality and the greatest material progress**, while at the same time providing an environment conducive to the preservation our democratic political and social institutions."

N. Pac. Ry. v. United States, 356 U.S. 1, 4 (1958)

Selected Trial Testimony

I: Industry Participants Want Structural Relief

I: Industry Participants Want Structural Relief

[Q.] Given that you're an open-web display publisher and you've described the conditions that exist in the ad exchange market for open-web display, can you tell the Court what changes you believe would help address those conditions you described?

A. **I think a divestiture of AdX by Google would help improve those conditions.**

Q. Why do you say that?

A. Because of the -- because of the consolidation of the entirety of the ad ecosystem business within Google sort of products and services, they are able to command an outsized share of the budgets that come through exchanges for SSPs, and **I think that a spun-out AdX would introduce more competition to the marketplace.**

Q. Now, as an open-web display publisher, what changes do you believe would improve the conditions you described in the ad server market?

A. **I would like to see DFP spun out and sold to another acquiring entity.**

Q. And why do you say you would like DFP spun out?

A. Because I think that, again, **the consolidation that Google has been able to achieve** throughout the ad ecosystem **is unhealthy.** I think that there are things that are part of the publisher ad server that they maintain, including the final auction logic that **allows them to too easily put their thumb on the scale** as it relates -- as it relates to influencing outcomes that have a significant impact on my business.

Grant Whitmore

ADVANCE
LOCAL

Grant Whitmore

ADVANCE
LOCAL

Q. Now, ultimately what is your view on plaintiffs' proposal that DFP's final auction logic be made subject to an open source license?

A. I think that it's a great start. **I would like to see DFP divested fully.**

Q. Why do you say it's a great start?

A. Well, because I think if the final auction logic is made public and is -- and is managed thusly, I do think that it allows both publishers and advertisers a better opportunity to optimize their business so that we understand how bids are won.

Q. Can you explain that a little bit more? What do you mean it gives publishers a better opportunity to understand why bids are won?

A. Well, right now we don't know why. So we don't know what the final auction logic is determining. I think of this as a pachinko ball. Right. You've got, like, all these variables that are landing this thing at an outcome. Right now we don't know all of the variables that are bouncing that ball around. What we get is we know that there was, you know, a bid that came through Prebid, and we know that there, you know, was a bid that maybe came through Trade Desk, or we know that there was a bid that came through AdX, and at the end we see who won the bid. But all of the decision points along the way that are bouncing that ball around, we have no idea what they are.

Q. And why would that be useful information to you?

A. **Because I would like to make as much inventory for my company as I can, and not having access to that information limits my ability to do so because I can't optimize the business on the desired outcome of making the most money from the folks that want to spend money on my sites.**

Q. Do you have concern about Google making that decision on your behalf without your knowledge?

A. Absolutely.

Q. Why?

A. **I think that Google has too many competing interests throughout the entirety of the ad ecosystem for them not to lean into wanting to, you know, put their thumb on the scale to favor their own inventory and the best outcomes for themselves.**

Grant Whitmore

ADVANCE
LOCAL

THE COURT: What you're basically saying for the last five or six of these proposed Google remedies, that if they did not have the qualifying open-web display inventory caveat or restriction, how would you feel then about those general recommendations?

THE WITNESS: I think -- I think that they are tighter, certainly, by allowing us to -- allowing us to optimize the parts of our business that are growing the fastest more than we do today. I'm hesitant to ask us to go walk back through them one by one with that caveat in mind. **I do worry, however, that having AdX and DFP existing in a common ad tech ecosystem controlled by Google, even with these provisions, allows them to continue to put the thumb on their scale by the preferencing of AdX inventory delivery through the ad server through a whole host of things that are opaque to me as a publisher.** So when they are able to control the supply path of every bid that is coming through and they own one of those supply paths, I think that there's an inherent conflict of interest as it relates to them dealing evenly with every auction and every bid in a way that I would like to be able to do as a publisher to optimize my business.

Andrew Casale

Index Exchange

Q. So given the challenges you've identified today, do you have a view as to the remedy needed to improve competition in the exchange market?

A. I do have a personal view.

Q. What is that view?

A. I believe AdX should be divested from Google, or at the very least DFP should be separated from AdX and one company should not own both.

Q. Let's take those in turn. Why do you believe that AdX should be divested from Google?

A. **I think Google has demonstrated that with the DFP asset and with the features and functions it has deployed to benefit AdX, it is a very innovative engineering company that is capable of benefitting a completely different business, and I think the two businesses should be separated for that reason.**

James Avery

Q. And -- so do you understand that the plaintiffs are requesting that the Court order Google to fully divest AdX?

A. Yes.

Q. And what impact do you think an AdX divestiture would have on Kevel's ability to compete in the publisher ad server market?

A. **I think it would dramatically improve it.**

Q. Why do you say that?

A. **Because I think then AdX would -- there would be no economic interest in, you know, paying more or delivering better bids to DFP customers, and so it would be -- I think create a fair market.**

Q. Why do you think it would create a fair market?

A. **I mean, I think just because you don't have -- there's no economic incentive for AdX to preferentially treat one ad server differently from another one**.

Q. What impact would a complete divestiture of DFP have on Kevel's ability to compete in the publisher ad server market?

A. Yeah. **I think it's the only way to ensure a fair and, you know -- a fair competitive market for ad servers if we're not -- you know, if we're not competing against an ad server that is owned by a company that, you know, directs a large amount of demand.**

Jay Friedman

goodway group

Q. Mr. Friedman, what effect, if any, would a divestiture of AdX have on publisher ad server competition?

A. Well, yeah, **I think that would increase it pretty significantly**, because I think that not having AdX tied to DFP or GAM or whatever it's called and truly letting the ad server stand on its own -- now, again, I don't know if Google still owned the ad server and then they began tying other buyer tools to it, then I guess all bets are off. But I think the ad exchange is a -- again, a partial first step.

Q. . . . I want to next ask you about plaintiffs' proposed remedy that Google open source DFP's final auction logic, which would be administered by a third-party organization. Do you generally understand that proposal?

A. Yeah.

Q. What effect would that have on advertisers?

A. I think **that is a positive step**. I think that understanding the -- I think there's two components. **Understanding the auction logic so that everybody is playing by the same rules** is one thing. Then **operating within that auction logic is another**. And so **there has to be some oversight that everybody is operating by the same auction logic and not just saying, yep, here's the one we're going to do, and then having secrets on the back end.**

Jed Dederick

theTradeDesk

Q. [A]re you aware that the government has proposed that Google be required to divest its ad exchange functionality?

A. Yes.

Q. And can you give the Court, what is your perspective as a Trade Desk representative of demand-side platforms on that remedy?

A. **I think the single most important way to restore the trust from ad buyers that we represent and from The Trade Desk is to sever the ownership between Google and their sell-side tools. And so I view that as perhaps the most important, if not sufficient on its own.**

Q. And why do you say that?

A. The sense from The Trade Desk and ad buyers we represent has been that Google has owned and has created, manipulated auctions, has taken unreasonably high fees out of the sell side of the display ad ecosystem. And having all of those practices and all of that in place already, **I can't see without severing that ownership tie that trust being restored and ad buyers wanting to invest again.**

Jed Dederick

theTradeDesk

Q. . . . [A]re you aware of plaintiffs' proposal to take that final auction logic power outside of DFP and make it subject to an open source license?

A. Yes.

Q. What's your view of that proposal?

A. That open sourcing that final auction logic would be a meaningful step in restoring trust from ad buyers in that auction. **We want transparency, we want fairness in the auction itself, so open sourcing that code would be a meaningful step**. I have skepticism that that would be sufficient on its own, but I do think that would be a meaningful step.

Q. Now, you say you have skepticism that open sourcing the final auction logic on its own would be sufficient. What do you believe is necessary to restore competition in the publisher ad server market, based on your experience?

A. My suspicion -- or my belief would be that if AdX were divested, if the publisher ad server code was open sourced, there would still be the potential to rebuild and innovate within the publisher ad serving market, given the presence that Google has. And so my suspicion would be that the divestiture of DFP would also be necessary.

Michael Racic

≡ **Prebid**

Q. Now, what impact do you believe removing the final auction logic from Google's sole control and making it available on an open-source basis would have in the publisher ad server and ad exchange markets?

A. **Specifically for publishers,** you're probably going to be looking at -- **there's more information flowing back, so clearly they're going to be able to make better decisioning, which will lead to better monetization, and that could be either in CPM increases, margin increases or something as basic as how they spread out the share between SSPs and who's driving more. This is all going to be happening in real time versus there's a latency now. You're removing all latency from the auction.** The information that's flowing back and forth through all marketplace constituents, everyone is seeing the same information, for the most part. It's how you action against that information that is important. **So for the SSPs and the DSPs, they'll be able to make better decisioning and adjust their algorithms to buy more based off of that from a publisher perspective. From an innovation perspective, people are just going to start building more products to actually enhance publisher revenue and to enhance their own products in order to capture more share.** And the buyers, the winner -- **ultimately the winner on all of this will be the buyer because the buyer is going to get more transparency into what's happening,** why it's happening, and when they start talking about some of the headier topics that buyers like to talk about, like fraud and MFA, and you start looking at real fraud, financial fraud and stuff like that, this pathway and conduit of information will lead to better supply path optimization, which benefits the entire marketplace. Like, no one wants any of that.

Q. Why is divesting AdX an important remedy, in your view?

A. Why? It's because we have seen in the past that behavioral remedies to prevent Google to favor or to self-preference Google DFP might not be working.

Q. Are you aware of plaintiffs' proposal for an open source final auction?

A. Yes, I am.

Q. As CEO of a publisher ad server, how would that proposal impact your ability to compete?

A. I think it will change a few things. **I think it will first restore more competition on the ad exchange market. So it will bring more transparency in how will -- the ad decisioning is made in the ad server.** If the ad decisioning is managed by an independent administrator, it could restore (audio cut out) ad exchange market.

Q. Could you repeat the last sentence of that answer, please?

A. If the ad decisioning engine is managed and monitored by an independent administrator or trustee, then it will restore part of the competition on the ad exchange (audio cut out).

Arnaud Creput

EQUATIV

Q. Given those challenges that you've talked about, Mr. Goel, do you have a view as to what remedy is needed to improve competition in the ad exchange market?

A . Yes. In my view -- I understand there's proposed, from my reading, structural and behavioral remedies. **In my view, the structural remedies are critical, because ultimately the pace at which this industry moves and the technical challenges and complexity are such that as long as there is an incentive for Google to tie its products together and to compete on an unfair basis, I believe Google will be tempted to succumb to that incentive. And without the structural remedy, they would continue to operate in such a way that forecloses upon fair competition in the industry.**

Q. And just to be clear, Mr. Goel, when you say "structural remedies," what structural remedies are you referring to?

A. **The divestiture of AdX and potentially DFP.**

Q. And you mentioned that structural remedy is critical. Could you explain why structural remedy is critical?

A. **Sure. Yes. Without structural remedies, obviously we would be left with some set of behavioral remedies. And with behavioral remedies, while it may be possible, I think even then it's challenging to proscribe certain types of behavior based on historical examples of bad behavior; I think it's very likely impossible to consider all of the different ways in which unfair competition can arise and proscribe those.**

Rajeev Goel

PubMatic

Stephanie Layser

News Corp

former

Q. Ms. Layser, just a few final questions. Do you have a view as to whether AdX divestiture is needed in this case?

A. I do.

Q. What is your view?

A. **My view is that AdX should be divested.**

Q. Can you explain why?

A. **Sure. I think it's pretty consistent with what we were just -- like, what we were just talking about before, which is kind of a historical, and it removes the conflict of interest of operating the exchange and the demand side of Google.**

Q. And do you have a view as to whether open sourcing DFP's final auction logic is needed in this case?

A. Yes.

Q. What is your view?

A. **So my view is that 90 percent of the Internet is decisioned on -- or more is decisioned on by this algorithm, and if we're going to restore innovation to the space, I think that the downstream companies need to understand exactly how that functions, how that works. So DSPs, demand side, ISVs that function in the middle. And then it also gives us kind of a point in if you're switching ad servers to be able to evaluate it against other -- like, other ad servers.**

Matthew Wheatland

Daily **Mail**.com

Q. And what would be the advantage to you as a publisher of open-web display to have open source auction code run within DFP as opposed to the way it is today?

A. **I mean, this would mean that the code would be sort of transparent and auditable, similar to how Prebid operates today. It would also give us the option to, as I mentioned, maybe if we didn't want search and features on or off, we would then have control over that, and we would understand how all of those features operate within the code.** So, for example, if we knew that we didn't want to run EDA or any flooring module, like maybe we could switch that off in the code, and then it would simplify that code for us. **So we would be at a, to a certain degree, I guess customize the code using the standard modules so that the code is better suited to our business needs.**

Q. And how do you think making the final auction logic open source would help with competition in the publisher ad server market?

A. I think it would improve competition.

Q. Why?

A. Because -- well, as I mentioned earlier, **you could have new entities in the market that could utilize that code to help them build competing products. If the code is open sourced, then part of Google's ability to manipulate auctions within DFP, that would be, you know, significantly reduced. And so it's -- the incentive for Google to funnel buy-side demand to DFP, if there's not artificial benefits from doing so, you're more likely to see buy-side demand funnel more neutrally through whatever route is driving actual performance for advertisers.**

Matthew Wheatland

Daily **Mail**.com

Q. Now, if AdX were divested to a different entity, how, if at all, would that impact the ad exchange market that Daily Mail uses to sell open-web display ads?

A. **So I think if AdX is divested, then firstly that kind of -- that breaks the tie, and it sort of puts space between the ad server and Google's buy-side. And I think it would -- it would sort of significantly reduce the chances of AdX preferencing DFP or AdWords preferencing AdX. So I think naturally you would then have – Google would then -- because there isn't that sort of artificial preference for AdX, they're more likely to funnel demand throughout the ecosystem. So I think that would be beneficial for the ad exchange market, and it would give other ad exchanges a better chance to compete.**

II: Market Participants Need Confidence to Invest and Make Changes

Andrew Casale

Index Exchange

Q. And what would be the impact on Index's ability to compete in the exchange market if the remainder of DFP is divested?

A. I think as far as Index is concerned, our primary concern is DFP and AdX being owned by the same company. **And in an environment where Google owned AdX and still operated DFP, we would be very uncomfortable that at any moment in time a new feature could appear, tomorrow, that might in some way favor AdX.** You know, we talked a lot about First Look and Last Look, but for all we know, they're currently working on Third Look and Fourth Look right now, whatever those are. We just can't be certain. **So I think for us it would bring a level of certainty to bear if there was a separation of the assets**.

Q. And what is the importance of certainty to you as you are competing at Index?

A. **We would certainly love the guaranteed certainty that if we are placing a bid into a fair auction that does not preference another exchange,** the only determiner of whether or not we win that bid would be price or some other wish of the publisher, like a deal, which we like, we think is appropriate and we think is fair.

Andrew Casale

Index Exchange

Q. Mr. Casale, **absent structural change like an AdX divestiture, what plans does Index have to expand its open web display business?**

A. **We don't have any planned investments to expand our open web display business.** We certainly plan to continue to operate the exchange on the open web in display, and do everything we can to compete aggressively in the business.

[…]

Q. Mr. Casale, do you remember at the very beginning of Ms. Dunn's questions she asked you about further investments in open web display. And I believe you said, given the state of the market, you don't have planned investments?

A. That's correct.

Q. What did you mean by the state of the market?

A. The open web display business today is not growing.

Q. And is there any impact by Google's conduct on that lack of growth?

A. I believe that in a fair market, we would be seeing significantly more share in growth today.

Q. **Absent Google's conduct in this case, would Index be planning investments in the open web display market?**

A. **Yes. Where we find growth, we invest.**

Q. And **absent structural changes to Google's ad tech business,** what plans would Kevel have to expand its focus to focus on open-web display publishers?

A. **We would have no plans**.

Q. Why not?

A. Just for all the reasons I've testified to is that **there's really no opportunity for us to compete in the traditional publisher, like, ad server market** with the current, like, market dynamics.

James Avery

Q. How would it impact your ability to persuade customers to switch from DFP to Kevel **if there was no guarantee that there wasn't preferential treatment?**

A. I think we would be in the same place we are today where **they would be worried about losing that big piece of their revenue if there's no guarantee that, you know, they're going to get the same demand on Kevel that they were getting on DFP.**

Q. And plaintiffs also propose that Google be prohibited from engaging in any form of direct bidding between Google's buy side products and Google's sell side products. What effect would that have on advertisers?

A. **I think it would help give the assurance that we wouldn't just be back here talking about the same things in a couple years because this very sophisticated and creative company had found another way to use the sell side presence and the ad selection sort of ownership between their demand side tools and their sell-side tools.**

Q. And **what if any effect on the marketplace is there of this lingering concern that we're just going to be back in court in a few years?**

A. **I think there's a lack of investment in the open web display ecosystem,** and that has to do with venture capital, that has to do with ad tech companies not investing, and it certainly has to do with the advertisers we represent not buying it.

Q. And ultimately do you have a view as to whether behavioral remedies alone are sufficient to solve the problems that you've identified in the publisher ad server and ad exchange markets for open web display?

A. I don't think that they are.

Q. Why not?

A. **I come back to it is the simple position of owning the ad selection on the sell side, of one company owning the ad selection on the sell side who are also a very large media company with their own ads to sell, and a long history and the understanding of the ecosystem that there's been demand biasing, discriminatory practices, obfuscation. The ownership of the sell side of our industry by one company who also has a large media presence, who also has tools across the rest of the ecosystem is the problem. And so that is the most important signal that would restore trust from buyers, is the ownership of those tools.**

Jed Dederick

theTradeDesk®

Dr. Robin Lee

Professor of Economics
Harvard University

Q. . . . How would uncertainty about the restoration of competition potentially affect the incentives of rivals to invest or for customers to switch to alternatives in the market?

A. So I think **if there's a risk of monopolization or harm to competition or foreclosure, rivals' and competitors' incentives to invest would be dampened, as well customers might [not] choose to incur significant switching costs to adopt alternatives if there's a risk that those products would be competitively disadvantaged or potentially exit the market.**

Q. And in this case, do you have a view as to whether market participants have a rational economic basis to expect future monopolization under Google's proposed remedies?

A. I would go back to what I stated in direct testimony. As an economist, I believe firms tend to act in accordance with their abilities and incentives.

Q. So what effect on investment do you believe would occur if market participants have an expectation of future monopolization?

A. I expect **investment incentives to be lessened if the risk of future monopolization is higher.**

Matthew Wheatland

Daily**Mail**.com

Q. . . . If the Court only were to impose behavioral remedies such as Google could no longer preference its own ad tech products over vendors, how would that impact your ability to change publisher ad servers if you wanted to?

A. Okay. Yeah. Like I said, I think **that creates friction** to the idea of moving ad servers, but I also think if it's just -- like **if we want to change ad servers and then invest in this new ad serving technology and that's how we're going to run our business, we need to be sure that whatever the remedies are, there are -- there's, like, lasting effects of those remedies so we know five, ten years down the line we've made the right decision to start making these kinds of ad tech changes. And, you know, if Google is still able to in some ways favor or change the auction within DFP, then that is going to create an incentive for, you know, its buy-side demand to route through to DFP still. So I think it just creates a bit more of a gray area for us.**

Q. And what impact does that gray area have on your ability to switch publisher ad servers?

A. I think it would make it harder for us to switch publisher ad servers.

Q. And what impact do you believe behavioral remedies would have on the viability of rival publisher ad servers?

A. Again, I think like with the stickiness -- from my perspective, **the stickiness that would occur from it being just behavioral remedies**, it would probably **act as a drag on competitive ad servers**, and there may be sort of other innovation that could occur elsewhere in the ad tech ecosystem.

Q. When you say "a drag on," what do you mean by that?

A. **As in a publisher would be less likely to switch, and they would have less new customers, and so they would have less revenue, so they would be able to invest less in their businesses.**

III: Google's Black Box Technology Will Be Difficult to Monitor

Grant Whitmore

ADVANCE
LOCAL

Q. Now, Mr. Whitmore, if the Court were to impose only behavioral remedies and appoint a monitor to ensure that those behavioral remedies are complied with, would you have any concern about a monitor's ability to detect Google's behavior?

A. **I do. I mean, the technology offers a lot of opportunities for somebody -- Google to continue to put their thumb on the scale,** especially if the company remained intact in its current structure, so exchange all the way through ad server. And I think that there is an inherent sort of conflict of interest of addressing only -- addressing this only through behavioral remedies. I think there's just always going to be an incentive to try to find your way around the behavioral remedies that can only be addressed through divestiture of AdX and DFP.

Q. And why are you concerned that a monitor wouldn't be able to detect Google's attempt to find a way around the behavioral remedies?

A. Because you can -- I mean, you know, **I liken it to tuning a car. There are all sorts of things that you can do inside the engine, especially if that engine doesn't have significant outside eyes on it, to make it perform in a particular manner.** And so there could be -- **there could be, you know, bid latency that was introduced to competitive bids to make sure that that -- that, you know, win rates remained high. There just -- there are mechanisms to do this when the total control of the operations remain inside of Google.**

Q. And what is the significance to you of having DFP make that final auction decision?

A. Well, **it certainly allows Google to put its thumb on the scale as it relates to favoring -- favoring bids that are coming through AdX. It certainly is -- it's an unbelievable source of control in terms of how websites are monetized that, you know, we have no influence over and no transparency into.**

Q. You say you have no influence over. It's your ad space; isn't it?

A. It is our ad space, and -- so maybe no influence is too strong a word.

We are not able to control it in the way that one would assume you would be able to control advertising within a property that you owned outright. And so **when the decisioning is happening within this black box, the ad lands and we don't know why.** We don't know why the ad may have come from OpenX or why the ad may have come from PubMatic or why the ad may have come from AdX.

Q. Now, you called it a black box. **What's problematic about it being a black box**?

A . I think it's -- **I think it's problematic across the board**. I would like the ability to know the different points of decision that were influencing my ability to monetize our properties so that I could optimize my business operations to yield the best possible outcome. **And not knowing what the rules are, it's sort of like we're all running around the dark playing tag.** You know, we can try, we can make certain inferences, but without knowing what the rules to the game are, it's very, very hard to optimize against.

Grant Whitmore
ADVANCE
LOCAL

III: Google's Black Box Technology Will Be Difficult to Monitor

Grant Whitmore
ADVANCE
LOCAL

Andrew Casale
Index
Exchange

Q. And what, if any, concerns do you have about the transparency with which AdX operates?

A. Well, look, **right now there's a lot that happens in that ecosystem that is completely opaque to both publishers, such as myself, and advertisers as well.** Right now, AdX enjoys an unfair advantage in the final distribution of what ad fills what impression as a result of their control of the -- of the final auction. And that is simply -- that is simply a mechanism, again, that **we don't understand the rule sets against it works that says that this bidder, sort of potentially independent of price or these other things, won this bid, and thus this is the ad that is going to be seen.** That's, I think, very problematic for the industry as a whole.

Q. You referenced DFP being a black box. Can you explain more what you mean by that?

A. **It's not always clear to us at Index why a given impression opportunity wins, nor how the auction -- or the outcome of a given auction is determined. So as a result, we refer to that as a black box.**

Michael Racic

≡ **Prebid**

Q. . . . [Y]ou spoke about a lack of transparency to the publisher about how those final decisions were made. Can you explain what you meant by that?

A. I think Patrick said it best. **It's no information is getting passed back as to why these decisions are happening.** Right? So when you're in Prebid, when the other SSPs and DSPs are working with the publishers, there's a bunch of metadata that will pass back, and each publisher is different so I don't want to get hung up on that, but it's specific data that they look at that is important to them from a perspective of determining what they should be doing from setting a price perspective, a CPM perspective, like how they run their business.

When it goes into GAM, none of that is coming back to them, all right? And when they get a call back from GAM that AdX won and, you know -- basically won an auction; that's what they hear, they won an auction. That's it.

Q. When an ad exchange sends real-time bids to a publisher ad server, can it bid differently into one specific publisher ad server versus another?

A. Yeah. Absolutely.

Q. Are there ways that an ad exchange can disadvantage a particular publisher ad server even though it was still providing real-time bids into that publisher ad server?

A. Yeah. From the publisher ad server standpoint, **we only see the bid that's coming to us. So we don't know if that bid has been discounted, if that bid is lower, if they're not bidding, if certain advertisers aren't bidding. We really have no idea of what the bids are going to the other ad servers,** so it's up to the exchange to decide how it bids into different ad servers.

Q. To what extent could a publisher ad server like Kevel's detect if an ad exchange was bidding differently into Kevel versus into another publisher ad server?

A. **We would really have no way of knowing.**

Q. Why would you have no way to know?

A. **We only see the bids that are coming to us from the exchange** or -- and we don't -- **we wouldn't know what they would be going to another ad server.**

Q. And what concerns, if any, do you have with AdX specifically bidding differently into Kevel's publisher ad server even if AdX did provide real-time bids to Kevel's publisher ad server?

A. Yeah. I mean, I think **there's still definitely an incentive for Google to bid differently or, you know, reward the publishers who are on DFP on their ad server versus on a competitive ad server.**

Q. And what would address those concerns?

A. I think the only way to really address it is to have AdX and DFP be separate companies, right, to separate the economic interest from -- of Google to take that action.

James Avery

Q. Okay. So if Kevel could directly connect to AdX and it could get real-time bids from AdX in the same way that GAM gets real-time bids from AdX, and there was no preferential treatment for traffic coming from DFP or through AdX, that would resolve your concerns in this case; right?

A. Yeah. As long as there was a guarantee there was no preferential treatment.

Q. So divestiture would not be necessary?

A. I think divestiture is the only way to guarantee there's no preferential treatment.

Q. But you've never said that before; right?

A. Well, I think it's -- when I say that it needs the same -- we need the same access to demand, implies that it's the same access to demand. Just having a connection – like you could enable this graph and AdX could just never bid on Kevel, right, or AdX could go to their advertisers and say when you're filling out a bid, select the ad server you want to bid on, and we highly recommend you pick DFP, not Kevel.

So there's lots of ways that this connection could be there, but the bidding wouldn't be fair and unbiased. And so that's the concern where I think divestiture is the way to ensure that it is fair and there's no economic interest in preferentially treating DFP.

Q. But just to be clear, if it is fair, what you need is a connection between AdX and Kevel that would give you access to real-time bids, provided that it's fair?

A. Right. Correct. Provided that it's fair and unbiased, then this is -- like, from a technology standpoint is definitely what we need.

Q. Okay.

THE COURT: And wouldn't you be able to detect if there was unfairness if you saw that AdX was still getting the majority of the bids?

THE WITNESS: Well, the problem is it's really hard to -- **a publisher only picks -- has one ad server.** So if they move from DFP to Kevel, the only way we would know if it changed is right at the time of movement. **But over time,** we can't really -- **we can't test both ways unless they ran both ad servers, which would be kind of abnormal. So once the customer has moved to Kevel and we're getting bids from AdX, we have no way of knowing if those bids would have been higher or different if the customer was on DFP.**

James Avery

IV: Without Structural Change, Google Will Find New Ways to Act Anticompetitively

Andrew Casale

Index
Exchange

Q. So I want to take a step back, Mr. Casale. We've taken a look at a few of plaintiffs' proposed remedies relating to conduct. To what extent if any do these remedies we've just looked at replace the need for a divestiture of AdX in order to improve competition in the exchange market?

A. I think these remedies help, but I don't think they replace it.

Q. Why is that?

A. This goes back to **we have no way to know what new feature or function a company as sophisticated and capable as Google will implement tomorrow.** And for us, we're very uncomfortable with the share of the market that DFP represents and the AdX asset present. Even with these remedies, **a very creative mind can develop another preferencing feature to implement into DFP tomorrow.**

Jed Dederick

theTradeDesk

Q. Let me contrast plaintiffs' proposed remedy of an AdX divestiture with Google's proposed remedy, at least one of them, which is to have AdX, to require that AdX bid into rival publisher ad servers and require that AdX bid into Prebid.

Do you believe that that would be a sufficient remedy to solve the competition concerns you outlined in the ad exchange market?

A. No.

Q. Why not?

A. There's so much that's been built up, and there are so many ways -- you know, **once you own the sell side, if you own the ad selection process, then trying to figure out and name all the different ways that you could use that to create unfair advantage or to take -- you know, manipulate auctions and take nondisclosed fees is -- it's -- I don't -- I have not seen or been convinced that we can predict all of the ways that this creative, innovative company can use its position as long as they're left in it.**

I mean, the problem of being in that position is the incentives that it creates, and so those incentives, I think, will drive them to find new ways to use that position in a way that we don't know about.

Jed Dederick

theTradeDesk®

Q. Sure. Are there ways in which an entity that is bidding into an auction can bid in ways to make their chances of winning in that auction less likely?

A. Yes.

Q. And **are there ways that you can bid that can make it more likely for your bid to be won in certain areas versus other areas?**

A. **Well, especially if you have control over the auction and the selection tools, yes.**

Q. And so **how if at all is having the decider of the final ad that's selected in charge of also -- held by the same company that is running the auction, how if at all does that create a concern for you as an advertiser?**

A. Well, as an ad buyer you're really just putting the trust in that final ad selection, that ultimately that that will be the decider. And so, you know, I think the final auction – **there can be multiple steps in that process but the final one is within the publisher ad server.**

Grant Whitmore

ADVANCE LOCAL

Q. And is it your opinion that divesting AdX alone without any further remedies or relief would be a sufficient remedy to address the concerns you've identified in the publisher ad server market?

A. I do not. I do not believe that to be the case.

Q. Why not?

A. I think that -- look, **Google is a smart and well-run company. They have demonstrated the ability to adapt to pressures that allow them to continue to grow in favor of their business even when they make changes to how they're conducting that business.** And I think that if they maintain control of the ad server, that they would continue to have an outlet that would do that that would be anticompetitive in the ad server market.

Andrew Casale

Index Exchange

Q. In today's exchange market, is there a level playing field?

A. I do not believe there's a level playing field as it pertains to DFP and AdX.

Q. Why not?

A. **We have seen a series of behavior from Google which has shown us that either directly, through features like Last Look and First Look, Google is willing to release products that will favor AdX, or through examples like Programmatic Guaranteed, Google will keep certain features available just to their own exchange instead of making them available to the entire ecosystem.** I don't believe that's fair.

Jay Friedman

goodway group

Q. I want to turn to a remedy that Google has proposed. So Google has proposed that AdX be -- would provide realtime bids to other publisher ad servers. Based on your experience, what effect would a remedy like that have on competition?

A. Well, **the devil is in the details there.** I mean, they would provide those realtime bids, but **would they be preferenced? Would they come 25 milliseconds later?** Would they -- you know, I mean, **there are so many ways that even if that were true that things could go wrong, that that to me seems like it's more ripe for problem than ripe for solution[.]**

THE COURT: If, in fact, it's an "even playing field," what's the problem there? If the Court orders that that's how it has to be –

THE WITNESS: Okay.

THE COURT: -- why would that not give you sufficient -- as a publisher, give you sufficient remedy?

THE WITNESS: If AdWords -- I think the only thing that gives me, like, pause in what I'm just, like, thinking through is that, **in my experience, everything was always a moving target,** right. So you would say -- you know, **it would be like, okay, we're going to get rid of last look, right, but then there was an introduction of a feature called minimum bid to win that basically helped to give Google the continued functionality of last look.**

Or, you know, this idea of -- like, those were the types of things that -- or when I asked for my log-level data, they were like, I am going to give you AdWords' log-level data, right, but then once they did, they broke the key where I couldn't take the impression-level data and the log-level data and marry them.

So my fear is -- like, I've thought of this scenario, right, and I'm like, okay, yeah, maybe this would work, but **it's always a moving target**. So, like, in my experience**, I worry that, like, there's something I haven't thought of yet that's, like, a lever that they can pull**. And that's my only thing that gives me pause at this point.

Stephanie Layser

News Corp

Rajeev Goel

PubMatic

Q. Given those challenges that you've talked about, Mr. Goel, do you have a view as to what remedy is needed to improve competition in the ad exchange market?

A. Yes. In my view -- I understand there's proposed, from my reading, structural and behavioral remedies. In my view, the structural remedies are critical, because **ultimately the pace at which this industry moves and the technical challenges and complexity are such that as long as there is an incentive for Google to tie its products together and to compete on an unfair basis, I believe Google will be tempted to succumb to that incentive.** And without the structural remedy, they would continue to operate in such a way that forecloses upon fair competition in the industry.

Rajeev Goel

PubMatic

Q. Now, earlier, Mr. Goel, you also mentioned the pace at which the ad tech industry is evolving. What impact does that have on your view as to the need for structural remedies here?

A. Yeah, **this industry, of course, evolves at a very high pace**. We deal with significant volumes of ad impressions. PubMatic processes nearly 1 trillion ad impressions on a daily basis. That's trillion with a T, as in Tom. We process 15 to 20 petabytes on a daily basis. So there's constantly new technology we're using to scale the platform, to build new products and services, to identify opportunities for advertisers to bid more efficiently.

So the pace of change, I would say, you know, **in my 19-year experience, is a relentless pace of change, and as a result of that, I think any behavioral remedies,** while we can consider the full set of facts and circumstances as they exist, you know, as of today or as of yesterday, in three months, six months, nine months, they **can quickly become obsolete.**

Dr. Andres Lerner

ECONIC PARTNERS

Q. Okay. And again, we're sitting here in 2025 and we at least, on behalf of plaintiffs, have considered 15 possible ways that Google's behavior could at least in plaintiffs' estimation violate what the Court found to be anticompetitive. But you would agree that in the future there may be other ways that we haven't thought of. Right? You just described that as the future unknowns. Correct?

A. **There may be other mechanisms for replicating the conduct found anticompetitive.**

Q. And you would agree, this is not -- **these 15 are not an exhaustive list?**

A. I don't know sitting here if there's other ways. **There may be other mechanisms.**

Matthew Wheatland

Daily **Mail**.com

Q. Now, if the Court were to order Google to no longer preference its ad tech products over rival ad tech providers, would that address the concerns you've identified in the ad tech markets, the publisher ad server and the ad exchange market?

A. If it was just behavioral remedies?

Q. Yes.

A. So I think -- I think if it's behavioral remedies, then, like, the monopoly stays in place. So you have the incentive, and likely you still have the ability to favor Google's demand. **And we have seen, you know, over ten years, you know, different conduct which changes – you know, from time to time it will change, new features are developed, and it's very difficult for publishers to understand how these features operate, to -- sometimes to even know they exist, but to understand how they operate and to sort of report on them and see if they're beneficial for us.** And I think that if it's just behavioral remedies, whatever -- however the entity that oversees those, I think that would also struggle to sort of understand how they operate and to sort of identify them. And I think that sort of we know, **within DFP, there are features that can change our pricing and the price that we sell our inventory in ways that we don't know or understand. And I think as long as that ability kind of remains, tied with the incentive of having the buy-side, presumably, you know, I think that's a problem.** Google's going to act in its best interest, which is I guess it's buy-side incentives.

V: Open Sourcing DFP's Final Auction Logic is Feasible, Safe and Consistent With Industry Practice

Tim Craycroft

Q. And did Google's internal analysis evaluate the technical feasibility of making DFP's auction logic open source?

A. Yes, it did.

Q. The final auction logic of DFP is the logic that decides which advertisement is served for an impression. Correct?

A. It makes the final decision, yes. […]

Q All right. And in the context of the internal feasibility analysis that Google performed, what does it mean to make DFP's auction logic open source?

A. To create an open source project with code that models DFP's current final auction that decides between indirect demand and direct demand, to do that in the context of working with the industry to define an API or a protocol for DFP to talk to the open source auction so that someone else could build an alternative implementation.

So by virtue of being open source, it could be modified but it could also be wholesale replaced with a different implementation and then published in a way where publishers could run it themselves or they could potentially hire someone to run it for them. […]

Q. **Did the internal analyses last year conclude that it was possible from a technical standpoint to open source DFP's auction logic?**

A. **Subject to participation from the industry and buy-in on the approach, yes**. […]

Q. **So, I'm sorry, I appreciate all that context, but is the bottom line that Google estimated it would take an outer bound of four years to open source DFP's final auction logic?**

A. **Yes.**

Noam Wolf

Q. And it [PRX50] indicates Google could launch an open-source version of -- or it could launch an open-source auction in a maximum of four years as well; right?

A. An open-source auction by our definition.

Q. Understood. **But it contemplates that that open-source auction could be created in four years; right?**

A. **Yes.**

Glenn Berntson

Q. . . . Would it be technically feasible to do the open source proposal with the final auction logic defined by the plaintiffs?

A. **I believe it would be technically feasible to build what they are proposing.** I do not think it would work.

Noam Wolf

Q. Okay. And your team at Google has contributed to open-sourced software projects; right?

A. Yes.

Q. They've contributed materials to the Prebid project; correct?

A. Correct.

Q. They've contributed materials to the IAB Tech Lab project; right?

A. Correct.

Q. **Are there any other open-source projects your team has contributed materials to?**

A. **I can't think of all of them. There's many. Some people do it for fun. We contributed, like, bidder, open source technology at some point.**

Heather Adkins

Q. **Would you agree that companies can benefit from making their code open source?**

A. **Yeah. There's a lot of benefits to making your code open source. You get more ideas from the community, in theory, assuming you have people who want to write open-source code with you. And it can build trust in the community as well.**

Q. Would you agree that Google benefits from making versions of its Chrome browser code of Android operating system code open source?

A. I would generally agree with that.

Q. **Now, let's talk about open-source software that Google uses instead of makes open source. Google also incorporates open-source projects into its own systems; is that correct?**

A. **Yes.**

Q. **In fact, Google uses around 19,000 open-source software projects in its systems; correct?**

A. **That sounds about right, yes.**

Q. **Google's internal infrastructure is even based on an open-source operating system; is that true?**

A. **Yes.**

Q. And that operating -- that open-source operating system underlying Google's internal infrastructure is called Linux; right?

A. Correct. Yes.

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. Okay. Now, can you provide the Court with some examples of software that has been made available on an open source basis?

A. I can. There's a lot to mention. Google in particular has been a very good citizen in this area. All high-tech companies do it. Google is to be commended for what they've done. I mentioned the Android operating system is one piece of software. Another is the Kubernetes software for doing resource management is another. Cloud Spanner is – a distributed database system, is yet another that is available on the Google Compute cloud.

Q. And all of those are examples of Google making Google's software open source?

A. Yes, it is.

Q. Are you aware of any ad-tech-specific software that has been made available on an open source basis?

A. Yes, I am. Through my work in this course -- on this case rather, I've been -- I've learned about open RTB, which is an open-source real-time bidding software, as well as Prebid header bidding that we talked about yesterday.

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. I want to look at the very -- the title of the piece is Why Open Source; do you see that?

A. Yes, I do.

Q. And the first sentence reads: "There are a variety of good reasons to release something under an open source license from 'more perspectives makes better software' to 'establishing a standard'"; do you see that?

A. I do.

Q. Can you explain to the Court what you understand that to mean?

A. **This refers to the activity that surrounds a project when it is open sourced. So you have an engagement with a much larger set of software engineers and companies, and you get, therefore, more perspectives on the software, and you have collective improvement and development. So oftentimes you end up with much better software as a result, and we've seen that over the last few decades.**

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q.　And do you see there is a heading Establishing or Supporting an Open Standard; do you see that?

A.　Yes, I do.

Q.　And the first sentence of that reads:　"Publishing your project or open source code under an open source license can encourage adoption of a standard.　When a project becomes a standard, you benefit from a massive influx of outside contributors so the project, and the ecosystem around it, evolves more rapidly"; do you see that?

A.　I do.

Q.　And then the next sentence reads:　"This accelerates innovation across the industry and facilitates adoption of services and products you offer that are built on top of the project"; do you see that?

A.　I do.

Q.　**Can you explain to the Court what is being described there, based on your experience?**

A.　**What this is describing is, because different groups are working on the software and contributing, including companies, there is an opportunity for consensus to be reached and various points of the software to be standardized.　For example, standard APIs.　And once you standardize an API, that creates a lot of excitement in the developer community, because it says that I know the API, now I have freedom to determine what it should implement inside. And so there tends to be a lot more activity because they can rely on the API not changing.**

　Similarly, you have a piece of software that has a standard API, it also encourages what I like to call a cottage industry of new software that will use that standard, and so the industry facilitates new things in this case.

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. Now, with respect to the process of making the software open source, are there standard procedures for that process?

A. Yes. And I follow the procedures myself, and they're well laid out on this slide, actually. You know, identifying code, determining where the dependencies lie because the code will be moved from your environment, as the developer of the system, to some new location. You know, making copies and readying the code for its deployment in new environments by specifying adapters to be able to change the interfaces.

Dr. Goranka Bjedov

Q. And what was the overall effect of beginning industry engagement at the very beginning of the [open-sourcing] process?

A. So in my professional opinion, it would result in a higher quality code, it would probably result in more people getting engaged, and in this particular case, it results in the whole process being done by about -- in about two years.

Andrew Casale

Index Exchange

Q. And can you explain to the Court what it means for software to be open sourced?

A. **Open source software is software that's code based, is available to the public by an open source license, which effectively means anyone in the public can download the code, can review the code, can inspect the code, can also modify the code. And it promotes a community that is ultimately invested in continuing to improve that software for the better.**

Q. You referenced a community. Can you explain what you meant by that?

A. The clearest example of a community would be to look at Prebid. So in the case of Prebid, in the Prebid header bidding wrapper code base, all of the members of Prebid, of which I believe there's, if not hundreds, thousands around the world, have access to the Prebid code base and can submit requests to the code repository to modify the code, improve the code over time. **So you effectively have a global community of many, many, many companies, vendors, technology companies, as well as publishers, all contributing to make that one code base better.**

Q. Looking at your experience with Prebid specifically, what benefits are created by having open source software?

A. **The best thing about open source software is you have a giant bright light shining on the code base at all times. There's no black box, nothing is obfuscated, everyone understands what the code does, and anyone can raise any concerns they have about a given code base, if they detect bias, if they have any issues with the way it's functioning. I think that's one of the biggest benefits of open source.**

There's other benefits as well, though. The whole premise behind open source technology is companies can collectively solve a problem that they don't deem to be primarily strategic. Instead they can solve it together so they can focus on their primary business instead.

Andrew Casale

Index Exchange

THE COURT: With open source programming, does that not open up the code to much easier attacks from hackers?

THE WITNESS: It's a really interesting concept, in that by making the code widely available, a hacker could certainly inspect the code and find a way to breach it. But so can the community.

And so as a result, it tends to make code safer because everyone can see it, the bad actors can see it but so can the good actors.

The second thing that I would say, though, is when open source code is downloaded and used by a platform like Index or another technology platform, we don't necessarily use it exactly as-is. **We can still modify it and add our own protections on top of it based on our own individual assessment. So we don't necessarily have to use the code exactly as it lives in the open source community.**

THE COURT: But under the open source sort of protocol, are you supposed to share those modifications **with the community?**

THE WITNESS: It's generally the widespread practice to do so, but you are not required. You can also make proprietary modifications. The reason why you don't, though, is you start to drift off of the open source branch, so then as a result, if the open source code changes and you've changed yours, you can't get back to the branch. Which is why the community is always making the core code base better together.

V: Open Sourcing DFP's Final Auction Logic is Feasible, Safe and Consistent With Industry Practice

Andrew Casale

Index Exchange

Q. So are there any parties, Mr. Casale, that you've interacted with that you believe have the capacity to administer the open source auction as plaintiffs propose it?

A. I think either IAB's Tech Lab or Prebid would be in a position to host and maintain something like final auction logic.

Q. And why is that?

A. Well, if you compare the OpenRTB standard, which really governs auctions at massive scale today in programmatic, and if you compare Prebid's header bidding wrapper, I think if anything those are two far more complex standards than just final auction logic.

Q. Now, what impact do you believe removing the final auction logic from Google's sole control and making it available on an open-source basis would have in the publisher ad server and ad exchange markets?

A. Specifically for publishers, you're probably going to be looking at -- there's more information flowing back, so clearly they're going to be able to make better decisioning, which will lead to better monetization, and that could be either in CPM increases, margin increases or something as basic as how they spread out the share between SSPs and who's driving more. This is all going to be happening in real time versus there's a latency now. You're removing all latency from the auction. **The information that's flowing back and forth through all marketplace constituents, everyone is seeing the same information, for the most part. It's how you action against that information that is important.**

So for the SSPs and the DSPs, they'll be able to make better decisioning and adjust their algorithms to buy more based off of that from a publisher perspective.

From an innovation perspective, people are just going to start building more products to actually enhance publisher revenue and to enhance their own products in order to capture more share.

And the buyers, the winner -- ultimately the winner on all of this will be the buyer because the buyer is going to get more transparency into what's happening, why it's happening, and when they start talking about some of the headier topics that buyers like to talk about, like fraud and MFA, and you start looking at real fraud, financial fraud and stuff like that, this pathway and conduit of information will lead to better supply path optimization, which benefits the entire marketplace. Like, no one wants any of that.

Michael Racic

≡ **Prebid**

Michael Racic

≡ **Prebid**

Q. **Now, are there concerns with respect to the security of Prebid's hosting of the final auction logic from DFP on an open-source basis?**

A. **No.**

Q. Why not?

A. Because the way -- Prebid doesn't store any of the data. So the data flows between the publisher and the buyer and -- you know, the ultimate end buyer, which it's SSP, DSP, doesn't matter. We're just the pipe. Everything that's transacting there is encrypted, and there's no way to intercept that and actually hack into that. And if you hack into Prebid, there's nothing to hack into because we don't have servers that we're storing all of this information. We see none of it. We don't know who wins an auction, we don't know what the clearing prices is. Everything is shielded from Prebid.

So from that perspective, you have the security apparatuses that all the publishers use, you have the security apparatuses of all the ad tech partners use, and you have our own security that we're using to actually see if anyone is doing anything to the base code or dropping any malware in that, even if you drop malware in, someone has to download it, right, and not -- us not catch it, which is literally next to impossible, that it doesn't get caught within a matter of like hours.

And the -- any malware that gets dropped in wouldn't be relevant because when a Prebid release comes out, it's usually around bug fixes or features that we're announcing to the marketplace that are new. When you're just injecting malware, it's just malware coming in and you can see it. No one's downloading that, you know -- well, I won't say no one. There's always someone, right? But literally you can see what it is in the code base. There's no reason to download it.

Michael Racic

≡ **Prebid**

THE COURT: Let me ask you this. How much effort and engineering would be required if Prebid were to host the final auction logic of DFP?

THE WITNESS: It depends on what goes into that logic and honestly, like, how the definition of indirect is viewed by the Court, if it's PMPs and everything versus just solely on the Open Auction.

There will be some complexities on it, but you're probably talking about if Google is leaning in and they have proper technical documentation and their engineers are participating in this, with the Prebid engineers and the volunteers, **probably six months' worth of work to get it stood up**.

Grant Whitmore

ADVANCE
LOCAL

Q. My question is just about are you concerned at all about the final auction logic still performing up to par if it's no longer in Google's control?

A. I'm glad I asked for clarification on this.

No, I am not.

Q. Why not?

A. You know, much like the header bidding logic that was started by a private company and now is now open source and performs remarkably well, I think I would expect the same thing to happen with the final auction logic.

Q. Okay. And would you have any concerns about that open source entity's ability to protect against privacy and malware and the other things we discussed?

A. I would not.

Matthew Wheatland

Daily **Mail**.com

Q. Do you share that concern that making the DFP final auction logic open source will create greater latency? […]

THE WITNESS: No, I don't have additional concern that open sourcing the auction logic would create additional latency. I feel like that would run -- like today Google is running the final auction logic on DFP, and that is sort of -- the open source auction logic would also run on DFP, so I don't think there would be sort of additional latency.

Q. Now, if the Court orders Google to make the final auction logic open source, how would DFP -- would Daily Mail -- pardon me. How would Daily Mail implement that open source final auction logic?

A. …So -- and I think it would be similar with the open source auction logic, whereby there would be a – there would be the open source auction logic admin that would -- similar to sort of prebid.org, they would be managing and overseeing and sort of storing code. And then when we would want to run that, we would download that code and upload it to DFP and run it there. Or, you know, you could have like a default setting as well that would run in DFP. If you didn't want to do anything at all, you could -- I guess Google could run like a default version of the open source auction code as well.

VI: Selling AdX Is Feasible and Won't Be Disruptive to Customers

Noam Wolf

Q. So, generally speaking, Google's sell-side tools are **organized into independent components**?

A. Again, I can speak for GAM, not all the sell-side tools, but yeah.

Q. Okay. So for GAM at least that's true?

A. **Yes**.

[…]

Q. All right. And this slide on **PRX 50 indicates that Google could complete a divestiture of AdX in two years; right**?

A. **With -- a business divestiture, yes**.

Q. All right. And it indicates Google could complete a transition period for AdX within four years; right?

A. That's what we wanted to offer, yes.

Glenn Berntson

Q. Dr. Berntson, how frequently does Google migrate code?

A. **Pretty much all the time**. At any given point in time I always have at least one migration taking place within my team.

[....]

Q. Now, I want to keep focusing on just the **AdX divestiture part. Would it be technically feasible to do?**

A. **It would be technically feasible to do, yes**.

[....]

Q. All right. And at that point when the transitional services period ends, AdX -- under the concept that was evaluated here, AdX would be running independent of Google's infrastructure; correct?

A. That is what was envisioned.
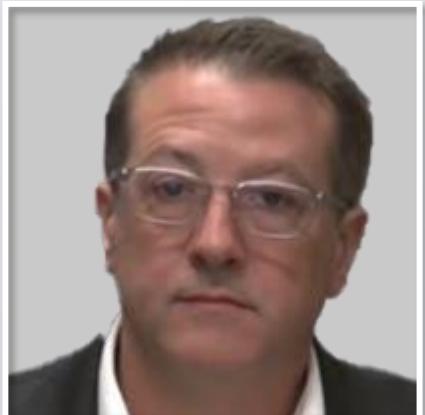
Tim Craycroft

Q. And that intellectual property would also include Google's -- that intellectual property would also include AdX's source code. Correct?

A. Not AdX's source code, AdX reference code which we explicitly defined to be the subset of AdX code that is not using Google infrastructure dependencies that are across Google, **they're used by Gmail and 50 other -- you know, all of Google's products**. Instead **it would be like an instruction manual for rebuilding AdX**. **It would have the code that is relevant and otherwise have documentation for what infrastructure would have to be different when you extract that logic from Google to another company.**

Q. Right. So it would be a project that is sourced by a version of the source code for AdX that would identify the dependencies that AdX required to be replaced. Correct?

A. Yes.

Q. **And it was the expectation of this project that the buyer would replace those dependencies. Correct?**

A. **Yes. Or maybe they already have a running SSP and they would use the AdX source code to make sure that it could support what AdX did.**

Q. And during the -- there was going to be a **transitional services period** after the closing of the AdX divestiture. Is that correct?

A. Yes. I think that's the name that we gave to the second stage.

Q. And **during that time, the AdX auction would run on Google's ad tech stack**?

A. **It would until the acquirer had rebuilt on their own stack, and then at a certain point, we would begin to gradually migrate traffic over to the acquirer's stack. So towards the end of the transitional services period, most of the traffic would be running on the acquirer's stack.**

Q. And during that transitional services period, Google would operate the existing AdX technology on behalf of the purchaser for a cost-based fee. Is that right?

A. We would -- I forgot how we described the fee. But yes, there would be some services arrangement where Google continues to run the existing technology stack for some period of time until the acquirer is ready to move customers over to the -- their own stack.

George Levitte

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. So let me show you what we've marked as Plaintiffs' Demonstrative E as in Edward. Can you describe what this demonstrative shows?

A. This is showing pictorially at a high level the software migration process. So in the current environment in Google we see a set of software components, AdX, final auction logic, DFP remainder, and they're currently now running on the Google data center, the Google internal system. And you can see the shadow of that over there behind it. So **during the migration process, what's going to be done is, a copy of AdX is going to be sent to an AdX buyer so that they can run it on their own set of equipment and their own infrastructure.** You can see that to the right of the AdX box on the far right. Similarly, a copy of the final auction logic is sent to the open source process where that's going to be housed, and that will also run on its own set of resources as appropriate. And then finally, a copy of DFP, DFP remainder, will be copied from the Google environment to the DFP buyer's environment. **And when I say copy, I mean that there's no deletion of any of that software in the Google environment.**

Q. **And did you ultimately conclude** that it would be feasible to migrate the software to a new environment, and **that in that new environment the software would function in a functionally equivalent or otherwise acceptable manner?**

A. **I did. I see no reason why the software would be degraded in any way.**

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. I want to turn back now to your overall opinions in this case. **You testified that you had reached the conclusion that it would be technically feasible to migrate the source code for AdX, DFP, and DFP's final auction logic into new environments**. What do you mean when you say it will be technically feasible?

A. When I use that definition in the context of this case, I mean that the software **does not require a major redesign** in order to be migrated, and **it does not require a from scratch re-implementation on a large scale in order to maintain the relevant functionalities in a new environment.**

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. Now, these three steps that you identified, how often do software engineers or computer scientists more generally implement this three-step process you've gone over?

A. **This three-step process is bread and butter to system builders**, particularly distributed systems. As I mentioned, hardware is always changing, better hardware comes around. New software systems come around that you want to use, not simply because they're proprietary, because they're better than what you have.

And so this idea of identifying code that you want to move to a new environment, maybe better hardware, be able to make replacements to newer, better software, and then finally to migrate it to that new environment, is something that's done quite frequently, and it's a very important process that happens in the open source community as well.

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. Now, as part of the replacement process, is it your expectation a buyer would need to develop entirely new systems from scratch in order to replace the dependencies that AdX and DFP remainder rely on today?

A. So my opinion is that **there are substitutes** for this vast, you know, ecosystem of disruptive system services. There will be some code that has to be written. There are adapters that have to be filled out. It is possible that one substitute is -- needs a little bit more work -- a little bit more work than another, and it may require some reimplementation.

So I don't rule out the possibility that a replacement might take a little bit of code, but what I see are generic distributive systems services in these substitutions. **And I know a lot of these exist because I've used them**.

Dr. Jonathan Weissman

UNIVERSITY OF MINNESOTA

Q. Okay. Now, the -- some of the dependencies are contained in Google's internal infrastructure. What do you understand Google's internal infrastructure to involve?

A. Google's internal infrastructure is hardware, of course, but, in my purposes, is a set of software components or services that I refer to as general purpose distributive system services. And what I mean by that is these services carry out very general operations, such as stored data in the database, query a database, run a -- schedule a piece of code to run on a particular server. And the reason they are of that character is because the Google infrastructure runs a large number of extremely diverse applications. And I alluded to that yesterday, Gmail, Search, many applications including ad tech.

And so what this means is that these dependent services have many analogous in the open source world, because virtually all large-scale distributed Internet applications need the same things. They need to use databases. They need to have a way to figure out what machine to run code on. And so -- and, additionally, a lot of these substitutions are already deployed in cloud environments because the cloud, as I said yesterday, wants to encourage you to take your application from your enterprise and drop it into the cloud and make it work.

Q. Now, you indicated yesterday that you had read Professor Nieh's report. Does Professor Nieh characterize AdX and DFP as entirely dependent on Google's infrastructure?

A. He uses that term, and I want to sort of decompose it a little bit. Any source code is dependent upon implementation choices that are made. Meaning what services you call of other software components, of the operating system, because of course every piece of -- every line of code, if it's actually being called, must be in place. That's a different question from is this the only place this code can run. That's a different matter. I see nothing in the source code that I analyzed that says that AdX and DFP are intertwined or inextricably dependent on those services that Google provides. **Those services, there is a rich set of candidate options that exist elsewhere.**

Rajeev Goel

Q. And what software has PubMatic migrated from the private cloud to the public cloud?

A. So the software that we would migrate would be various components of our platform. It would be the ad server, the ad serving, processing capability, so that's processing the ads. It would be user data stores. So these are systems that manage the data that we have on users that we would be showing ads to. Third-party data stores, so if we're overlaying third-party data onto that inventory. And then the fourth piece would be the reporting data that results from the processing of those ads. So these would be the primary software components, but there are other ancillary components such as processing for inventory quality and ad quality.

Q. And does PubMatic's software have dependencies on its private cloud?

A. It does have dependencies on our private cloud.

Q. And did PubMatic have to remove those dependencies on its private cloud when it migrated to a public cloud?

A. Yes, we would remove some of those dependencies. If some of those dependencies do not require realtime transaction processing, then those dependencies we would not need to remove and we could rely on our private cloud infrastructure for that aspect of processing.

[…]

Q. And how long did it take you to remove the dependencies during the migration from the private cloud to the public cloud?

A. Yeah, that process typically takes us **three to six months**.

Heather Adkins

Q. Okay. Now, when companies like Verily are spun out of Google, they eventually become separate entities from Google; correct?

A. Yes.

Q. And those spun-out companies can no longer use Google's internal infrastructure?

A. That's correct.

Q. And you mentioned Verily as an example of a company that Google is spinning out; correct?

A. Correct.

Q. So Google is moving Verily onto the Google Cloud Platform, GCP; correct?

A. I believe so, yes.

Q. And that's the same Cloud platform that third-party companies can pay to use?

A. Correct.

Dr. Goranka Bjedov

Q. **What changes would a customer using AdX see during the course of this migration?**

A. **So the customer will not see these changes**. What they see are changes on the front-end code. So somebody is going to have to change things like logos, colors, copyrights, all of that stuff. But that's not in data center; that is -- the front-end code, it lives on the customer machine, and usually I don't worry about that; that's done by the front-end engineer -- product engineers. This is infrastructure that we are talking about.

Q. **At any point in time would AdX's services be unavailable to customers?**

A. **Absolutely not.**

VI: Selling AdX is Feasible and Won't Be Disruptive to Customers

Noam Wolf

Q. Okay. And you were involved in the integration of AdX and DFP also; correct?

A. Correct.

Q. When did that take place?

A. Around 2014, I believe.

Q. And as a part of integrating AdX and DFP, you modified existing code, and you also wrote new code; right?

A. Right.

Q. During that integration, Google was able to continue operating both AdX and DFP; right?

A. Right.

Q. During that integration, Google was able to continue to meet its service-level obligations to its customers; right?

A. Right.

Rajeev Goel

PubMatic

James Avery

kevel

Q. **So of the migrations that you've talked about from private cloud to public and public to private, to what extent were customers negatively impacted during any of those migrations?**

A. Our goal is that any of those migrations are seamless to the customer. **The customer** should have no reason to know what our infrastructure looks like, whether it was on private cloud in the first place or public cloud. They **should have no reason to know that we're doing a migration, and our services should be up and running at 100 percent availability at all times. And we were able to successfully achieve that in multiple private to public and public back to private migrations.**

Q. And how much customer downtime will be required to migrate Nexta's software to AWS?

A. **Yeah, the plan is zero downtime.**

Q. How can you do that with zero downtime?

A. The same as the other processes where we basically get -- **run things in parallel and then switch over one customer at a time and making sure there's no issues and that it works smoothly.**

Q. Is that a common process for companies that host online software?

A. **Yeah. Absolutely.**

Luke Lambert

Q. And in the course of your work, have you ever worked with an ad exchange that was sold off to or acquired by another company?

A. I have.

Q. What are some examples of this?

A. Yeah. Rubicon became Magnite. Magnite purchased SpotX for video inventory, CTV inventory. So Talaria was the original merger with Rubicon. Rubicon used to be a really popular name; they had some real cool stuff. So when you combine those two, you became Magnite, then Magnite itself went and purchased SpotX. So you ultimately had three sources coming together there.

Q. **And what impact did those acquisitions have on you as a user of those ad tech tools?**

A. **It didn't.**

Q. **What outages did you experience when these ad tech tools were combined?**

A. **I didn't.**

Q. Based on your experience, roughly how long did it take for the software to migrate to a new buyer from your perspective as a user?

A. I mean, we're going to get everything late, right. We get it from the trades; we don't necessarily get it directly from our partners. They may give us a we're going to do this, or we're close to it, what do you think. But when the deal is done, the ink is dry, we don't necessarily get that information first. So the difference between the tech being integrated and the brand name coming to life, I can't tell you when the brand name, which is what's introduced to us as Magnite in this scenario, actually represented a connection between those tools.

Q. **So during the course of the transition of the software from one company to another, do you even remember knowing when that happened?**

A. **I don't.**

VI: Selling AdX is Feasible and Won't Be Disruptive to Customers

Matthew Wheatland

Daily **Mail**.com

Q. And have you at Daily Mail experienced any circumstance where an ad tech vendor migrated its software from one environment to a different environment?

A. There's examples of like OpenX moved from, you know, private cloud to Google Cloud, and they did sort of PR around that when they moved to Google Cloud.

Q. And what was your experience as a publisher when OpenX moved from the private infrastructure to the Google Cloud platform?

A. **Not much. I mean, we didn't have to do anything as a publisher.**

Q. And did that result -- either in the OpenX instance or any of the other instances you described, did that result in disruptions of your ad tech performance?

A. **No. No.**

Grant Whitmore

ADVANCE
LOCAL

Q. Now, you indicated that you are familiar with multiple other ad exchanges. Have you ever worked with the OpenX ad exchange?

A. Yes.

Q. And are you aware that, at one point, OpenX transitioned its code from one environment to an open – to a cloud environment?

A I was actually not aware of that.

Q. Okay. So that was seamless to you as a customer of OpenX?

A. Absolutely.

Q. **. . .** And does wikiHow utilize any other exchanges? I know you talked a little bit about Prebid.

A. Yeah.

Q. What other exchanges do you use?

A. We have several SSPs and ad exchanges running in Prebid.

Q. Can you name some of those?

A. Yeah. OpenX, Index Exchange, Rubicon.

Elizabeth Douglas

Q. Have you ever been a customer of an ad tech product that was migrated from one environment to another?

A. **I don't know how I would know**.

Q. Good point. And you're not familiar with the technical details of how plaintiffs propose AdX would be migrated from Google to a divestiture buyer?

A. No.

Q. So I want to turn now to a discussion of feasibility. If AdX was owned and operated by an entity other than Google, would you have concerns about the ability of that other entity to provide equivalent functionality for AdX?

A. I would not.

Q. Why do you say that?

A. The -- no one has the scale of AdX, but there are plenty of exchanges that are operating at significant scale handling billions and billions of impressions every day and doing that in a very, you know, professional and predictable manner to the standard we've required of them in order for them to be partners of ours.

[…]

Q. Have you, as an open web publisher, had other experiences in which ad tech providers have been divested?

A. Yeah. Ad tech generally. So speaking outside of just the exchange marketplace, but also inclusive of the exchange marketplace, changes all the time. And, you know, a lot of these companies are founded with an intent to be sold to somebody larger. It's a very common practice for those sorts of transactions to happen with companies with whom we currently work. And, you know, from my standpoint – and this is, you know, my publisher experience -- is **those transactions are usually seamless from how we interact with them**. We might get a new account manager or something like that, but the service that we are contracting with them for doesn't change.

Grant Whitmore
ADVANCE
LOCAL

Grant Whitmore

ADVANCE
LOCAL

Q. **Would you have any concern about Google's AdX degrading in quality if it was owned and operated by another entity?**

A. **I would assume that the acquiring entity would not -- would want it to remain competitive and would continue to innovate and introduce, you know -- or maintain high quality and introduce additional functionality. So no.**

Q. Have you, as an open web publisher, had other experiences in which ad tech providers have been divested?

A. Yeah. Ad tech generally. So speaking outside of just the exchange marketplace, but also inclusive of the exchange marketplace, changes all the time. And, you know, a lot of these companies are founded with an intent to be sold to somebody larger. It's a very common practice for those sorts of transactions to happen with companies with whom we currently work. **And, you know, from my standpoint – and this is, you know, my publisher experience -- is those transactions are usually seamless from how we interact with them. We might get a new account manager or something like that, but the service that we are contracting with them for doesn't change.**

Q. **And so in your past experience with ad tech products that have been moved from one environment to a new acquirer's environment, has that resulted in any degradation of any product features?**

A. **No, typically it has not.**

Q. Okay. Do you have any concern about another entity's, other than Google, ability to protect against malware or ad fraud in the ad exchange if AdX is divested?

A. I do not. That's table stakes at this point.

Q. What do you mean by that, it's table stakes at this point?

A. Meaning you can't be a reasonable participant in the ad exchange marketplace at any level if you're not able to guard against ad fraud and malware.

Grant Whitmore

ADVANCE
LOCAL

Q. Are there other ad exchanges that you worked with -- you testified to that earlier; right?

A. Yes.

Q. How do they deal with malware and fraud? Are they able to protect you as an open web publisher and your users from malware and fraud?

A. Yes. A condition of any exchange that we work with is that they would be able to do that to a high industry standard.

Q. And do you fear that a new acquirer wouldn't be able to do that?

A. I do not fear that.

Q. Same question about privacy protections. **Do you have a concern that if AdX was divested, the new owner wouldn't be able to ensure that privacy protections are in place?**

A. I would not be concerned by that.

Q. Why not?

A. Again, this is a table stakes issue in 2025. **If you were not able to guarantee and indemnify a partner such as ours that -- against those concerns, then we're not going to work with you and no one else will either.**

Q. And what does that say to you about the acquirer's incentive to ensure functionality in that regard?

A. If they -- if they're acquiring it, it's because they want to run it, and they would want to make sure that those standards were maintained.

Luke Lambert

Q. **Now, do you have any concern with another entity's ability to provide malware or ad fraud protections on AdX that are comparable to the protections provided today by Google?**

A. **No.**

Q. **Why not?**

A. **We do it today everywhere else.**

Q. How do you go about doing it everywhere else today?

We use a third party. It's -- there's a tool for everything, and in this case when it comes to brand safety and suitability, which is a passion point of my own, we think about is it viewable? Is it on target? Is it reaching the audience? Is it in a fraudulent position where maybe it's a spoof domain or otherwise? These are kind of critical things.

Luke Lambert

Q. Before the break we were talking about third-party tools that you use to protect against malware and ad fraud. I want to shift to privacy.

Do you have a concern about another entity's ability to provide the same privacy protections that Google currently offers?

A. **I don't.**

Q. **Why is that?**

A. **The current privacy protections that I have in place, some of it comes from those third-party ad servers – or third-party tools that confirm or deny fraud. They come in both pre- and post-bid forms.**

Q. Are you -- going back to the AdX divestiture, **are you concerned that another company operating AdX wouldn't be able to provide you as an advertiser with the same level of security or privacy or malware protection?**

A. **No. I've worked with many other ad exchanges that all seem to provide similar levels to AdX as malware protection and privacy and security.**

Q. **As an advertiser, do you have any concerns with privacy or security that would arise out of a divestiture of DFP?**

A. **No. I think it's incumbent upon the publisher and the buyer to ensure they are working with new companies that meet common standards such as SOC 2 and GDPR, et cetera.** And yeah, there may be some companies who do things that aren't good in terms of data security or whatever, but that's the case in almost every market, and it's the buyer and seller's responsibility to make sure that they're engaging with honest and reputable firms.

Jay Friedman

goodway group

Rajeev Goel

PubMatic

Q. You mentioned innovation. **What type of innovation do you believe would result from a divestiture of AdX in the exchange market?**

A. I believe there's multiple dimensions of innovation: **Security and malware reduction**, so improving the ad quality experience from a consumer perspective; optimizing across multiple ad formats; innovating in the different transaction types that we discussed earlier; innovative uses of data that can be applied to publisher inventory. So I think there's no shortage of opportunities to innovate in our ecosystem.

Q. Mr. Goel, you mentioned among the potential innovations a security and malware reduction. Can you explain why you believe there could be a reduction in security and malware resulting from a divestiture of AdX?

A. Sure. So **we take security and malware very seriously in terms of ensuring that the ads that flow through our platform, you know, do not contain violations that would harm consumers. And in fact, our publishers hold us accountable to ensure that we do exactly this.** We use a third party to benchmark our rate of security or malware as a percentage of total ads flowing through our platform, and we are consistently ranked as in the top one or top two of over a dozen different exchanges. And I think because we need to focus on servicing our customers to the best of our ability, we have consistently ranked very high on this order -- on this dimension, in order to ensure that we have an ongoing relationship with the publisher.

Q. **Based on your experience at PubMatic, do you believe a divestiture of AdX creates security concerns?**

A. **I do not see any reason why that would be the case.**

Q. **Why is that?**

A. **There are many other ad exchanges and demand-side platforms that operate in the ecosystem without significant security issues.** It does take work to manage that, so we have a team, engineering team and product team, that is focused on this. But I think we and others have proven that it can be managed with or without anything that AdX is doing.

VII: Open-Web Display Advertising Remains Vital

Matthew Wheatland

DailyMail.com

Q. Now, can you describe the importance to Daily Mail of selling open-web display ads in the last year?

A. The importance remains. **It's still the most important source of revenue that we have across our digital business.**

Q. And do you have an expectation as to whether in the future open-web display ads will remain an important source of revenue for Daily Mail?

A. Yeah. We think that will remain an important source of revenue. I mean today, something like **50 to 60** percent of all of our digital revenue is generated through display ads. So it's over half of our digital revenue is very important to us. **And we don't see that importance changing any time soon**.

Stephanie Layser
News Corp

Elizabeth Douglas
wiki How

Q. The Court has heard testimony that without Google to shepherd display ads, monetization could stop and the Internet could fall away. How would you respond to that?

A. **I would say that there are plenty of companies and people who care deeply about the open web.** I would say that in my experience throughout the last 15 years, Google did have control over the open web, they have 90 percent of the market in terms of the decisioning of ad serving, and we've seen the effects that that caused on publishing and has caused on the open web.

Q. Do you have any plans to stop selling open web display advertising in the next few years?

A. No.

Q. Okay. It's an important part of your business, fair to say?

A. **It's an important part of our business as our business exists today.**

Jed Dederick

theTradeDesk®

Q. Now, there was a lot of discussion about other types of ad formats other than open web display. Do you believe open web display will disappear?

A. No.

Jed Dederick

theTradeDesk

Q. And what is the significance, if any, of the fact that there are many news publications on this list?

A. We see a lot of opportunity for advertisers to invest in high quality journalism. **The biggest revenue stream that we see funding journalism is open web display inventory.** It hasn't seemed, from the industry, that subscriptions on their own or alternative revenue models have scaled, and so, you know, we see open web display opportunities on these journalistic outlets on these properties as being great opportunities for advertisers and something we think we can invest more in.

Q. And how if at all do you see the future of open web display advertising -- withdrawn.

How if at all do you as an advertising buyer view the availability of open web display ads on premium news websites such as the ones listed, for example, in this document?

A. **There's a huge amount of available open web display ads.** These are some of the high quality examples to highlight, but there's -- you know, we look at 17 million ads every second. We buy a **small fraction of them. You know, having enough supply of any given channel is not a problem.**

Q. **And is it your expectation that these companies that you see, these 100 companies that you see on this page, are going to stop selling their ad display inventory any time in the next 10 years?**

A. **No.**

Q. Why not?

A. Well, **particularly the long form written content, the journalistic outlets, the news outlets, open web display is the most scaled at format that they monetize.** So we haven't seen a replacement to that, we haven't seen alternative formats, you know, fueling those -- or those companies effectively abandoning open web display. So that's still the principal driver and a big opportunity that we see on those.

Luke Lambert

Q. Okay. Now, Google has claimed in some of its filings that open-web display advertising is already in rapid decline. To what extent do you plan to continue purchasing open-web display advertising in the coming year?

A. **I will continue to purchase as much as I possibly can.**

Q. And why is that?

A. Scale. My job is to invest my clients' dollars to deliver on their goals. The goals can vary obviously depending on where we're sitting in the marketing funnel. My job today is almost upper funnel. You can consider it brand work even though it's not just because of where it sits in the funnel. And brand work comes with a need for reach, scale, penetration of that audience that we're trying to speak to, and, in doing so, display is the most efficient and ultimately turns into the most effective when you're looking at -- exclusively looking at numbers.

Q. Do you anticipate open-web display advertising disappearing as a form of advertising in the next couple of years?

A. I see it slowing down. Disappearing is an aggressive word. I do not see that happening.

Rajeev Goel

PubMatic

Paul Crisci

UBS

Q. And based on your experience at PubMatic, Mr. Goel, what is your view on the potential for future growth in open web display ads?

A. So **open web display is a multibillion-dollar market. You know, it's in the tens of billions of dollars per year.** It is not one of the fastest growing markets or submarkets within digital advertising, but I think it is a very important market. The growth rate is slower than some of the newer ad formats and channels, but it's difficult for me to separate what is the slowness of that growth rate as a result of Google's monopoly and significant market share as compared to market dynamics or market forces. [. . .]

Q. Dr. Goodwin further claims that potential buyers will exercise caution in investing in open web display. What do you think of that, Mr. Crisci?

A. I disagree with Dr. Goodwin on that point as well. As I indicated a little earlier, open web display, certainly not growing at the same rates as the other formats, but **it is growing, and it is sustaining that 30 percent share of the ad formats.** I would also say that Dr. Goodwin ignores the fact that the open web display market has been hampered by Google's anticompetitive behavior. Once those restraints are lifted, I fully expect that buyers and investors will find the open web display sector interesting.

VIII: AI Is Harming Publishers, Not Helping Competition

Elizabeth Douglas

Q. **WikiHow's business has been negatively impacted by artificial intelligence**. Correct?

A. Correct.

Q. [. . .] **WikiHow's traffic is down catastrophically** this year. Correct?

A. That's correct.

Q. [. . .] And you attribute that catastrophic reduction in traffic on your website to AI. Right?

A. Yes.

Q. [. . .] Okay. And **Google's AI products are part of that apocalypse**. Right?

A. Yes.

Q. Google has an AI tool in its search product called AI Overviews. Right?

A. Uh-huh.

Q. [. . .] And the way -- just so the Court understands, the way AI Overview works is that when an internet user searches for something on Google's search product, at the top of the search results page it has something called an AI Overview. Right?

A. Yes.

Q. [. . .] So that user can get an answer to their query without having to visit any publisher's website. Correct?

A. That's correct.

Q. And when a user doesn't visit your website, because they got their answer from AI Overviews, you can't serve ads to that user. Right?

A. [. . .] Yes.

Q. Are you aware Google uses publisher content to train its AI Overview tool?

A. Yes.

Q. [. . .] So, for example -- If we could pull up Douglas DX-1, just quickly, just so we have a visual of what we're talking about. If someone wants to know how to set a thermostat and they type that question into Google Search rather than into wikiHow's search bar, Google's AI Overview tool can answer that query using this content from wikiHow without that user ever having to visit wikiHow's website. Right?

A. That's correct

Q. And that harms your business?

A. **That does harm our business**.

Q. [. . .] It undermines your mission that you talked about. Right?

A. It does.

James Avery

Q. **Have advances in generative AI impacted competition between publisher ad servers for traditional and web display publishers?**

A. **No.**

Q. Why do you say that?

A. I mean, I haven't seen any evidence of -- you know, there's no companies created around generative AI for ad serving and things like that. **So I haven't seen any change.**

Jed Dederick

theTradeDesk®

Q. Now, to the extent there is a disruption caused by AI in the ad tech industry, what company, if any, do you think stands to benefit from the disruption AI might cause?

A. I would think the largest companies who sit on the most data and, you know, machine learning and data science capabilities are poised to benefit from AI.

Q. And with respect to the open web display ad tech industry, what company is that, or companies?

A. **I think Google has that advantage in open web display**.

Q. And by what margin, if any?

A **A very wide margin.**

Q. And can you give some examples of that, why you think Google would have an advantage with respect to AI as a disruptive influence in the ad tech industry?

A Well, so in my view, they have had real control over the sell side of the ad selection process, just picking publisher ad server or ad exchange, picking which ad ends up on the publisher site. And so you're talking about decades and troves of data with regard to all of those ads, and you're also talking about having amassed a lot of advertiser budget, a lot of relationships with ad buyers, and, you know, frankly, all of the practices and behaviors of 10 years of buying ads this way. And so I would say both from having the advantage of having all the demand and the systems and the history, and then also having the massive advantage of all the data from the sell side but also all the consumer touch points that Google has. I mean, they have a tremendous -- they have tremendous data assets.

Q. And how, if at all, would those data assets enable Google to compete more effectively with AI?

A. When we think about AI and we think about it similar to like machine learning and algorithms and we think about the scale of data that you have, you think about the quality of data you have. **If you have high-quality data, if you have high-scale data and strong data science capabilities and engineering resources, that's how you benefit from AI.**

Jed Dederick

theTradeDesk®

Q. Do you think AI threatens Google's dominant position, monopoly position, in the publisher ad server market for open web display?

A. No, I see the conversation about the disruption of AI being very specific to the consumer navigation, and **we have not seen AI disrupt or effectively change the ad tech infrastructure behind publisher ad serving.**

Q. And I have the same question for ad exchanges. Do you believe that AI represents a competitive threat to Google as the monopoly of AdX operates in the ad exchange market for open web display?

A. **We haven't seen that.** And to the point a moment ago, they have this great -- they have high scale, high quality data and endless resources, so **I certainly haven't seen their position threatened.**

Q. **Has generative AI impacted competition in the exchange market?**

A. **Not as far as I can tell**.

Q. Can you explain why not?

A. Generative AI to us is akin to a superpower. It can be leveraged today by our employees to make them more productive, you can use it as a writing buddy, you can use it as an editor. In the application of software development you can use it to code or edit code. These things make us more productive but they don't change the competitive market around us.

Q. Does AI change the fundamental dynamic of an auction?

A. Not as far as I can tell.

Q. To what extent is AI affecting the actual exchange market and auctions in that market?

A. **We have not seen AI directly change auctions or the ad exchange market**.

Andrew Casale

Index Exchange

THE COURT: And is a lot of that going to be taken care of in the next two or three years with AI?

THE WITNESS: I don't think AI enters into this in a material fashion. So a -- an SSP's decision to want to curate a deal or to want to enter into a Private Marketplace deal with us so that they have access to that inventory still requires some level of our participation. That could be facilitated through AI, but it isn't completely obviated by AI.

Grant Whitmore

ADVANCE
LOCAL

Luke Lambert

Q. And how, if at all, have advances in generative AI impacted competition among ad exchanges for open-web display advertising?

A. Soon? **It hasn't. It hasn't**.

Q. And, to date, what impact has generative AI had on ad targeting in your business?

A. It hasn't.

Q. Just to simplify that, has gen AI affected the way -- whether you need to use an ad exchange to buy open-web display advertising?

A. No.

Jay Friedman

goodway group

Q. **Do you believe that gen AI will render obsolete ad exchanges for publisher ad servers?**

A. **No.**

Q. **And you mentioned the AI tool that you saw Google has unveiled. Do you think AI will help Google or hurt Google?**

A. **It will help them dramatically**.

Q. Why do you say that?

A. **No one on the planet has a broader base of data from which to train their AI models.** Because they not only have all of the -- you know, a large chunk of the world's search data, location data, maps data, chrome browsing data, that really is the most desirable set of data. And, of course, where advertisers have spent their money, where consumers have clicked and engaged with advertisements, that is an exceptionally valuable -- probably the single most valuable set of data in the world from which to train AI.

Q. To what extent does that impact competition for publisher ad servers or ad exchanges?

A. **I don't think it has impacted the publisher ad server market yet, and it's hard for me to forecast exactly how that will impact it.**

Matthew Wheatland

Daily **Mail**.com

Q. Can you describe what role you believe AI will have on the ad tech industry going forward?

A. I mean, as it stands today, **I don't think AI has had sort of any real impact on the ad exchange or the ad server market.** AI, as it relates to advertising, we're aware of it being utilized on the buy-side for sort of like dynamic creative optimization or for targeting ad campaigns. So with AI, you can sort of -- historically you would use sort of key values to scan a web page to understand the context of the page, and AI can help do that to a deeper level. And then you could -- it gives new opportunity to sort of target ad demand to publishers' pages. But I don't think that -- that doesn't change the underlying, like, uniqueness of the demand. So AdWords still has the huge pool of unique demand, it's just different ways that the buyers are targeting their ad campaigns or maybe doing creative optimization.

Rajeev Goel

PubMatic

Q. Yeah, so let's take those in turn. I think you mentioned both that it's more important, that structural relief, as well as the ease of changing is greater. So let's do the first one. Can you explain why you believe AI makes structural relief more important?

A. Yes. When we think about AI in the market for search – and search is relevant here because it's a source of traffic for many publishers, search referrals -- AI is the consumer product; meaning the consumer might use a traditional search engine or they may use a newer AI-enabled search engine. So AI is the consumer product, and one is a substitute for the other. If I was using a traditional search engine to conduct a search and now I use an AI search engine to conduct that same search, then I am also not conducting that same search via traditional search engine, most likely. **What that means is that publishers have been seeing less search referral traffic coming to them. And I think many publishers have reported this and many industry analysts have reported on this, the phenomenon where the search referral traffic is going down 10, 20, 40, 80 percent in some cases. So what that means is that, for a publisher, it's all the more critical that they maximize their yield or revenue for whatever traffic remains** as the search referral traffic reduces. So that's why I say I think AI, changes in AI, the evolution of AI, makes it even more critical than ever that we see structural changes put into place.

IX: Google's Lone Non-Party Witness Was Biased, Uninformed, and Not Representative

Elizabeth Douglas

wikiHow

Q. Okay. So let me ask you this, Ms. Douglas. If a remedy in this case allowed Google to continue charging that higher than competitive AdX revenue share, would you be happy with that remedy?

A. **I think that there's a lot of people that understand the monopolistic part of what has happened better than I am,** and I think that should be solved.

THE COURT: That's not an answer. The question is, do you like the 20 percent take?

THE WITNESS: So to us, the auction is done on a net basis. So **what we see is how much -- or the auction prices for the ads are competing based on net to publisher.** And so mathematically speaking, the rev share affects the ability of the SSP to win in the auction more so than it affects the dollar amount that's going to go to the publisher because the auction is done on a net basis. **So I don't spend a lot of time thinking about rev shares,** and so -- because the auction is done on a net basis.

Q. Okay. But you talked on direct examination about AdX's unique demand. Do you recall that?

A. Yes.

Q. Are you aware that AdX's unique demand comes f[ro]m AdWords?

A. I mean, it makes sense to me, but **I haven't spent a lot of time thinking about it.**

Elizabeth Douglas

wikiHow

Q. Okay. And you testified on direct examination about a content licensing agreement that wikiHow has with Google?

A. Yes.

Q. What content does wikiHow license to Google?

A. WikiHow licenses content from its articles to Google.

[. . .]

Q. Did you negotiate that agreement with Google?

A. Yes.

Q. Did you sign that agreement?

A. Yes.

Q. [. . .] That agreement with Google accounts for about **10 to 15 percent of wikiHow's revenue.** Is that right?

A. Yes. Revenue is a moving target, so -- but yes, that's what I believe it to be.

Q. As of today?

A. As of right now, yeah.

Q. But at any point in time, have you evaluated switching ad servers?

A. I don't think so.

Q. As a customer of Google, what is it like to negotiate with Google?

A. About what?

Q. About the ad tech products that they provide.

A. I'm just trying to think back because we do have this long history. I mean, today I -- **I mean, I haven't tried to negotiate with Google on ad tech in a very long time.** I don't remember -- again, I'm trying to speak accurately, and I'm worried that I'm misremembering something from like 12 years ago or 14 years ago. I mean, it's possible that we actually did negotiate a little bit at some point, but we don't have any favored negotiations with Google in ads nowadays that I'm aware of.

Elizabeth Douglas

wiki **How**

Q. Please tell the court why you are here today to testify in this trial.

A. Yeah. So when I was reading the DOJ proposal about Google divesting AdX and divesting parts of GAM and maybe all of GAM, it really worried me. There's a lot going on in the publisher world right now that is really hard for publishers. We are under, what I call for my small company, this, like -- **we have this AI apocalypse happening**, and our businesses as they've operated for like the last 20 years, like, have to change or we're going to go out of business [. . .] And I'm worried, with or without ads, but even more **so without, like, Google shepherding the ad system, that, like, more of the internet could stop to exist.** And without display ads being tended to by someone, like, we're headed towards a world, because of AI as well, that people are no longer visiting publisher sites, there's no monetization, and the internet could, you know, fall away.

Elizabeth Douglas

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IX: No Evidence Google Provides Superior Security or Privacy Protections

Scott Scheffer

Heather Adkins

Q. You personally, though, haven't done any analysis of the privacy protections provided by other ad exchanges. Correct?

A. I have not dug into those details, no.

Q. So you're here only to speak about Google's security, not to make comparisons to security of any other companies, including ad tech companies?

A. Correct.

Q. You've never evaluated the security of a company called Equativ; is that correct?

A. Correct.

Q. Never evaluated the security of a company called Index Exchange; correct?

A. Correct.

Q. Or PubMatic?

A. Correct.

Q. You've never evaluated the security of Prebid; is that correct?

A. No, I have not.

Q. Do you know how many companies review Prebid source code?

A. No, I don't.