



# Display Ad Serving: Sellside POV

go/sellside-serving



bbenowitz@, stealing from many  
July 2022

# Agenda



# Display Ads Landscape



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GOOG-AT-MDL-B-009831492





## Slide 4 Comments

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- 1      What's a better term for AdX?
- It's a legacy product -- maybe call this Authorized Buyers?
- The only reason I hesitate is the Authorized Buyers doesn't cover Google Demand -- but I think that's actually an important distinction.
- Also -- I think that the "unified auction" is not accurately reflected in this flow -- unless you put it explicitly inside each sellside product.  
*Glenn Bertson, 8/9/2022 02:21 PM*
- 2      yeah I don't think this graphic is perfect, but a) I don't think it needs to be and b) I think its pretty hard to make it perfect given how often things change and how complex it is at any given point.
- My intention on the slide is really to just show the many-to-many relationship between buy/sell, and a big picture view of the landscape -- I won't go into nearly as much detail as Geoff does in go/display\_ads\_friendly.
- Are you opposed to leaving as-is (maybe adding a footnote that AdX is legacy terminology and instead referring to it as our combined auction or something like that)?  
*Brett Benowitz, 7/26/2022 07:56 PM*
- 3      Yes. I am. I think that it would be good for us to generate materials that are both a good overview, \_and\_ accurate. But don't feel that is strictly necessary in this case.  
*Glenn Bertson, 7/27/2022 11:49 AM*

## Slide 4 Comments (Continued)

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- 4 Updated -- I think pretty close now?  
- moved OB -> AdX  
- AdX now represents the unified/combined auction (rather than somewhat implicitly previously)  
- added footnote describing last point, that "AdX" is legacy term

Per your comment on another slide I did not move the Networks into AB yet as I'm unsure if that is accurate as of today or just future state?

*Brett Benowitz, 7/27/2022 01:23 PM*

- 5 I very much like the footnote.

I think this slide is OK now.

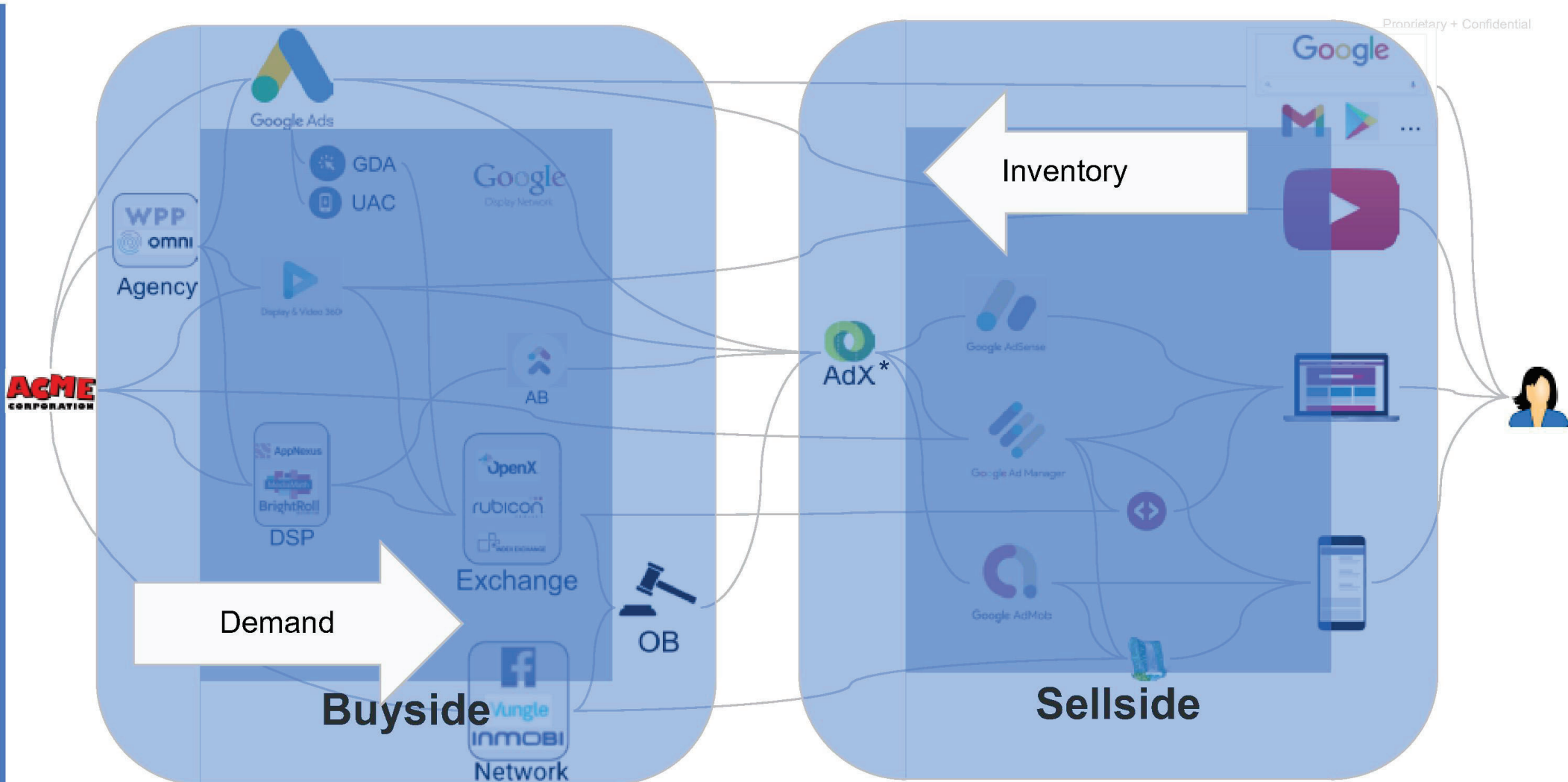
*Glenn Berntson, 7/27/2022 01:37 PM*

- 6 Great! Will update the next 2 slides to align :)

*Brett Benowitz, 7/27/2022 01:59 PM*

- 7 i don't know if you want to mention that adx is also often (unfortunately) referred to as "cat2" (eg you mentioned calling out to cat2 below, in slide 21 and after)

*Conroy Lee, 8/9/2022 02:21 PM*



Original Source: [go/display\\_ads\\_friendly](https://www.google.com/go/display_ads_friendly)

\* "AdX" as legacy term referring to the Google Ad Exchange, today more appropriately described as the "unified/combined auction"

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# Sellside Products



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# Sellside Products

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|  Google AdSense       |  Google AdMob                                                                             |  Google Ad Manager                                                                                |
|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Smaller, torso/tail publishers without sales teams.</p> <p>Open Auction only.</p> <p>Web only.</p> | <p>Smaller, torso/tail, publishers without sales teams.</p> <p>Open Auction only*.</p> <p>App only.</p> <p><small>*technically AdMob has a reservation product</small></p> | <p>Larger pubs with their own sales teams.</p> <p>Open Auction, as well as wide array of deal-types (reservations, PG, PD, PA)</p> <p>Cross screen/device: web, app, video/audio</p> |

Google

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## Slide 8 Comments

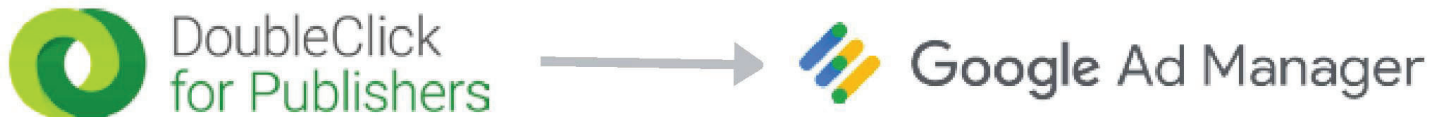
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- 1 and video/audio?  
*Conroy Lee, 8/9/2022 06:24 PM*
- 2 Does AdSense support video and audio? I was under impression that only GAM supported both of those (talking about instream, not video ads in display inventory)  
*Brett Benowitz, 8/9/2022 02:20 PM*
- 3 huh, TIL <https://support.google.com/adsense/answer/1705822?hl=en>  
*Brett Benowitz, 8/9/2022 02:20 PM*
- 4 oh I didn't know it's in "maintenance mode"  
*Conroy Lee, 8/9/2022 02:27 PM*
- 5 yeah I thought GAM was really the only instream platform...  
*Brett Benowitz, 8/9/2022 06:16 PM*
- 6 ah, yeah we added backfill to AFV (and adx video) in 2011  
*Conroy Lee, 8/9/2022 06:24 PM*

4

## Quick note on nomenclature / terminology

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DFP == DoubleClick for Publishers

AdX == Ad Exchange (in itself an overloaded term)

DRX == DFP + AdX (internal only)

GAM == rebranding of DFP + AdX  $\sim$  DRX

Other legacy acronyms that are mostly synonymous with above, but historical nuances: XFP, GFP

Will see all of the above in the code still, and I'll probably use at least a couple today to refer to the same thing.

Google



## Slide 9 Comments

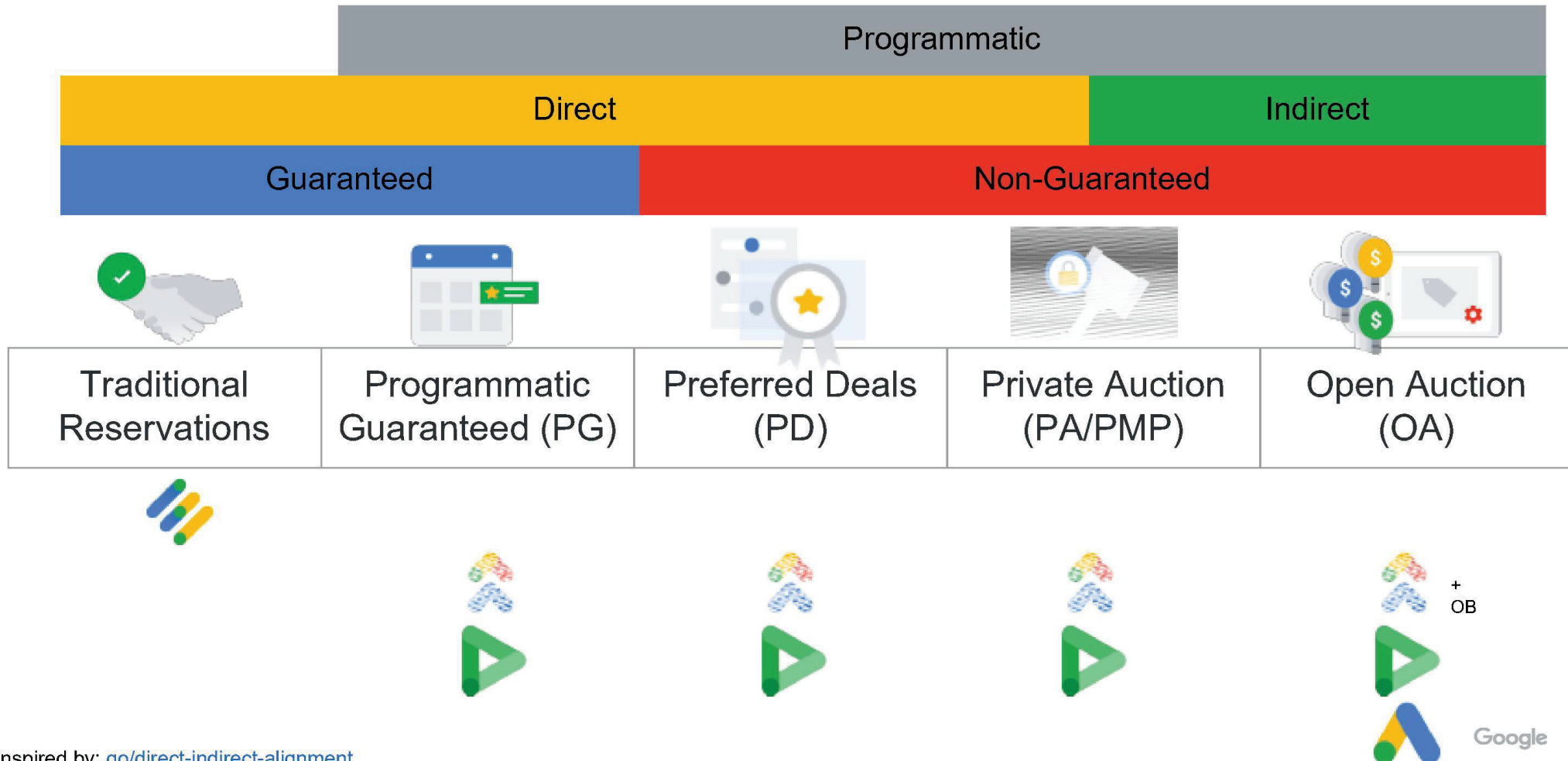
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- 1 [https://docs.google.com/spreadsheets/d/1kQQVZ3xjyDyxQtz\\_3BnNldWgG2cpf4llx97QaAOpCk/edit?resourcekey=0--R4A2OUTWH9D4q2TBDjnwg#gid=0](https://docs.google.com/spreadsheets/d/1kQQVZ3xjyDyxQtz_3BnNldWgG2cpf4llx97QaAOpCk/edit?resourcekey=0--R4A2OUTWH9D4q2TBDjnwg#gid=0)  
*Glenn Berntson, 7/26/2022 08:15 PM*
- 2 still don't have access to this after requesting -- any chance you can share? not sure who owns it  
*Brett Benowitz, 7/26/2022 05:51 PM*
- 3 Oops. Try now.  
*Glenn Berntson, 7/26/2022 06:49 PM*
- 4 thanks!  
*Brett Benowitz, 7/26/2022 08:15 PM*
- 5 Add AB and OB?  
  
See "BOSS" section of this  
deck: [https://docs.google.com/presentation/d/1UCbb08VIYVpwwkcotmEtZ58XHxTJkiJVSVD4IXdt\\_A8/edit?resourcekey=0-y-ApHIHItWr2kKVuW\\_UjDw#slide=id.g796e6f4207\\_0\\_4](https://docs.google.com/presentation/d/1UCbb08VIYVpwwkcotmEtZ58XHxTJkiJVSVD4IXdt_A8/edit?resourcekey=0-y-ApHIHItWr2kKVuW_UjDw#slide=id.g796e6f4207_0_4)  
*Glenn Berntson, 7/22/2022 04:08 PM*
- 6 are we officially allowed to say GAM now?  
*Conroy Lee, 8/9/2022 02:08 PM*

# The many ways to sell an ad



# The many ways to sell an ad (on GAM)



Inspired by: [go/direct-indirect-alignment](https://www.google.com/direct-indirect-alignment)

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# 1 Serving Deepdive



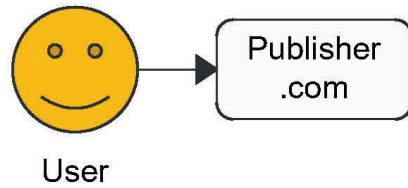
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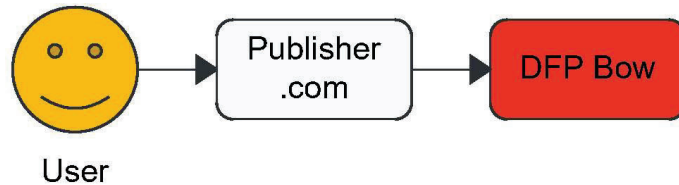
## Slide 12 Comments

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- 1 Love these slides  
*Glenn Berntson, 7/22/2022 04:09 PM*



User goes to Publisher.com (or opens com.publisher.app)



1

Client code (GPT / GMA SDK) sends an ad request to DFP Bow.

-> Ad Manager requests look like:

**pubads**.g.doubleclick.net/**gampad/ads** which is how GFE knows how to route to DFP Bow

-> AdSense on the other hand looks like:

**googleads**.g.doubleclick.net/**pagead/ads**?

GAM Ad Requests contain:

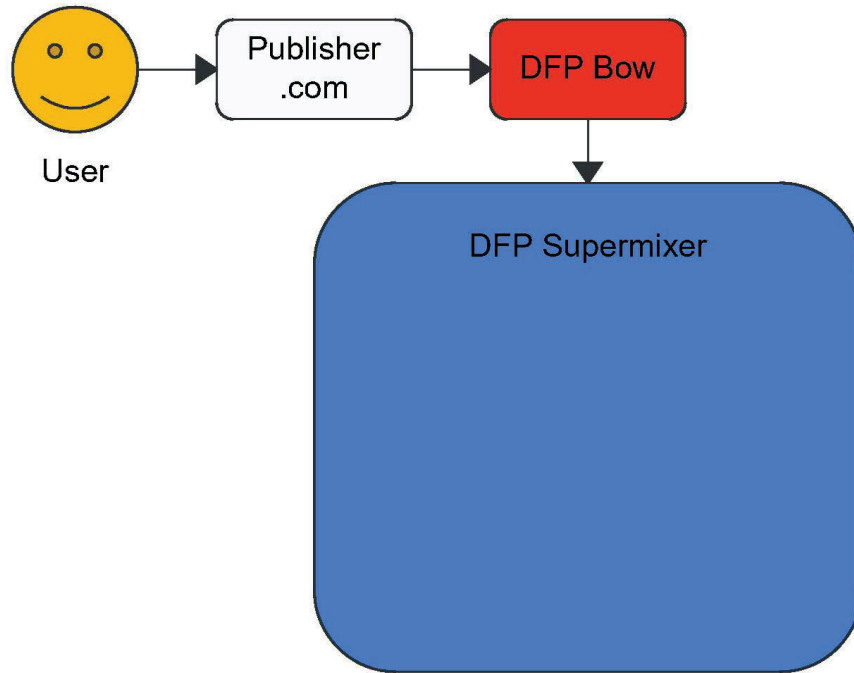
- Inventory unit, tells Bow both the publisher and the inventory/ad unit, used to look up inventory and publisher settings
- Slot info (e.g. sizes/formats)
- Consent signals
- Identity signals
- Targeting signals
- Spam signals

## Slide 14 Comments

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- 1 are details of adx/adsense/admob requests intentionally excluded?  
*Conroy Lee, 8/9/2022 02:11 PM*





1  
2 Bow validates the ad request, and translates the HTTP request into a SupermixerRequest for downstream processing.

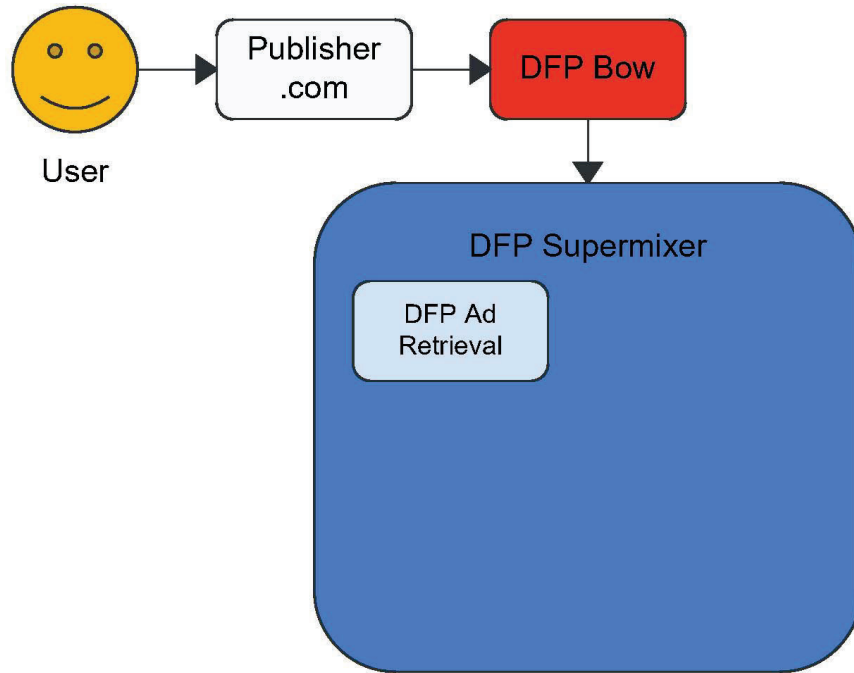
It also augments the original HTTP request with Privacy Context (UIS) and device info (UDL).

For GAM requests, it then calls *DFP* Supermixer

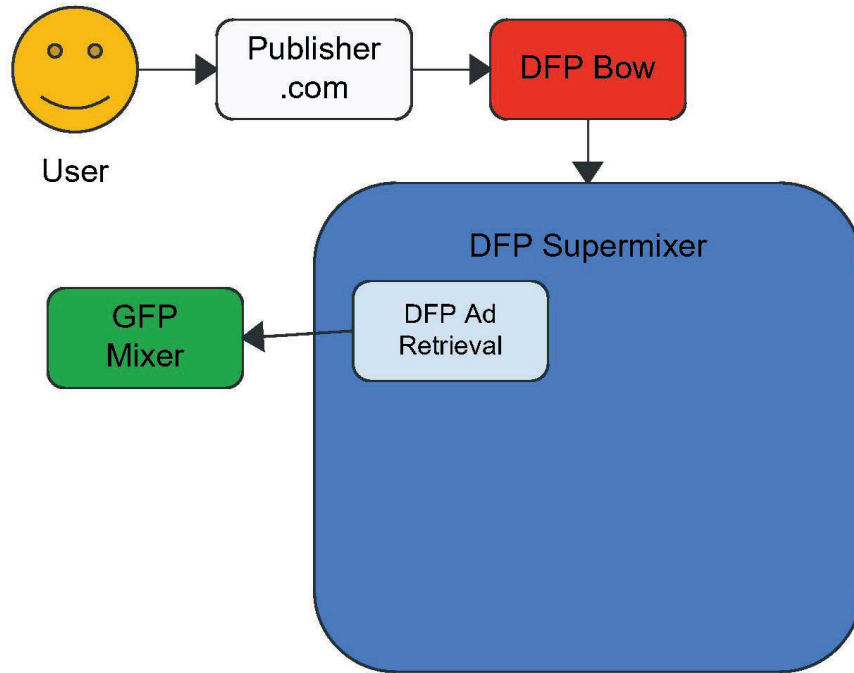
## Slide 15 Comments

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- 1 and geo location  
*Conroy Lee, 8/9/2022 02:16 PM*
- 2 Thoughts on including this as its own bubble? It's a distinct binary with pretty significant interaction with our org/traffic/etc.  
*Avraham Sherman, 8/9/2022 02:12 PM*



DFP Ad Retrieval parses the ad request, looks up publisher settings (e.g. rules, protections...), geotargeting, audience data, doc targeting, etc...



2

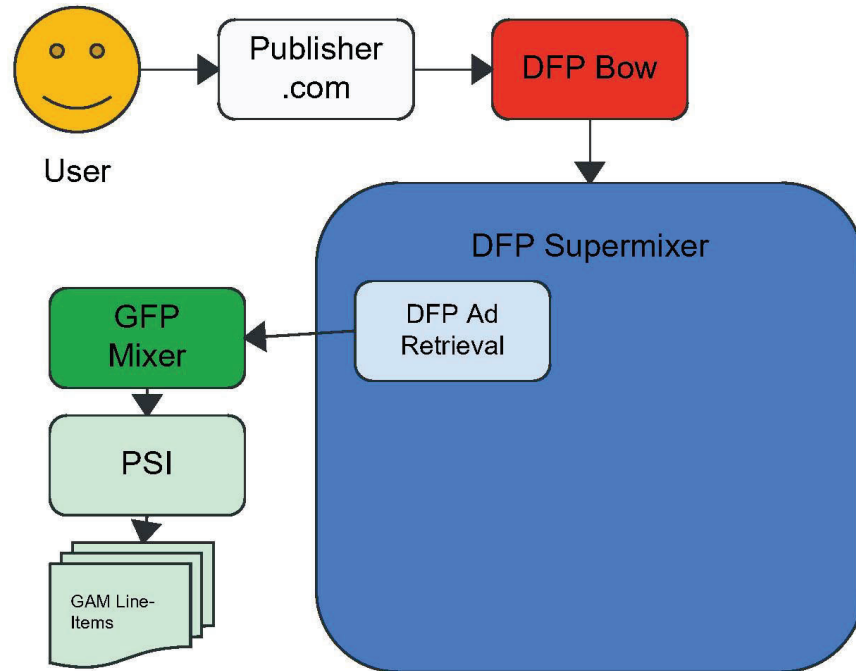
DFP Ad Retrieval parses the ad request, looks up publisher settings (e.g. rules, protections...), geotargeting, audience data, doc targeting, etc...

It then calls out to GFP Mixer ("DFP Stack" colloquially) to get DFP line items.

## Slide 17 Comments

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- 1      When I say DFP stack, I usually mean DFP bow all the way to the demand retrieval boundary (anything in reservation serving)... Do others really only use it for mixer?  
*Cody Wilson, 8/9/2022 02:16 PM*
  
- 2      +1  
*Conroy Lee, 8/9/2022 02:16 PM*



- 1
- 2 DFP Ad Retrieval parses the ad request, looks up publisher settings (e.g. rules, protections...), geotargeting, audience data, doc targeting, etc...

It then calls out to GFP Mixer (“DFP Stack” colloquially) to get DFP line items.

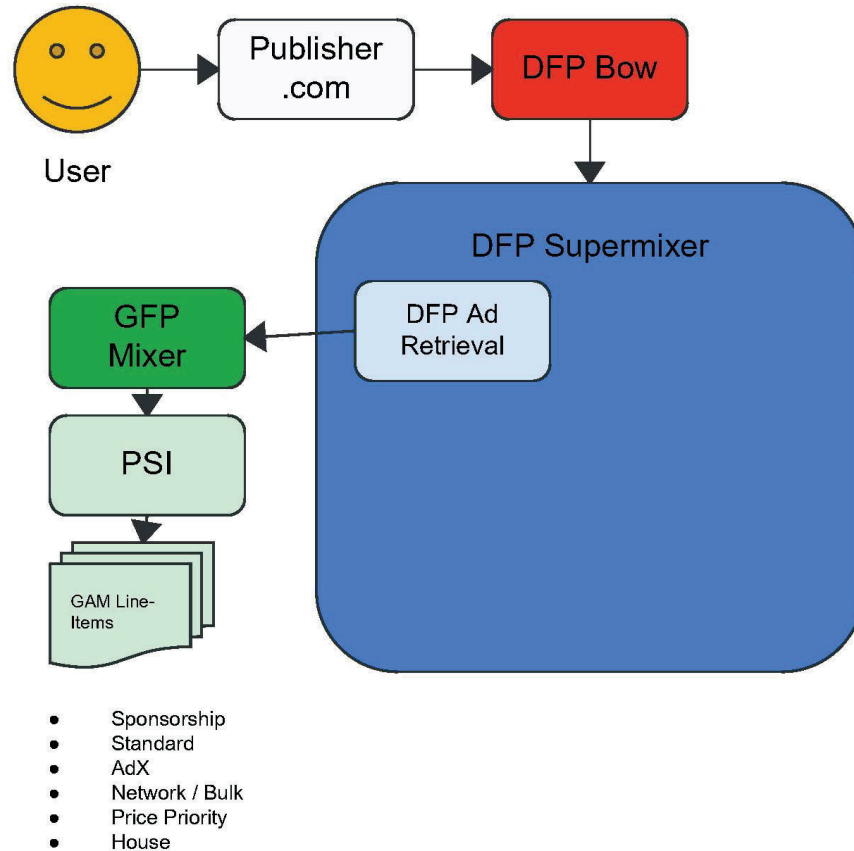
GFP mixer translates the DfpAdRequest to a PSI “request document” and calls PSI to get Line Items.

GFP Mixer is then responsible for any post-filtering of candidates, budgeting, pacing, predictions (e.g. pCTR) and ultimately translating back to a DfpAdResponse

## Slide 18 Comments

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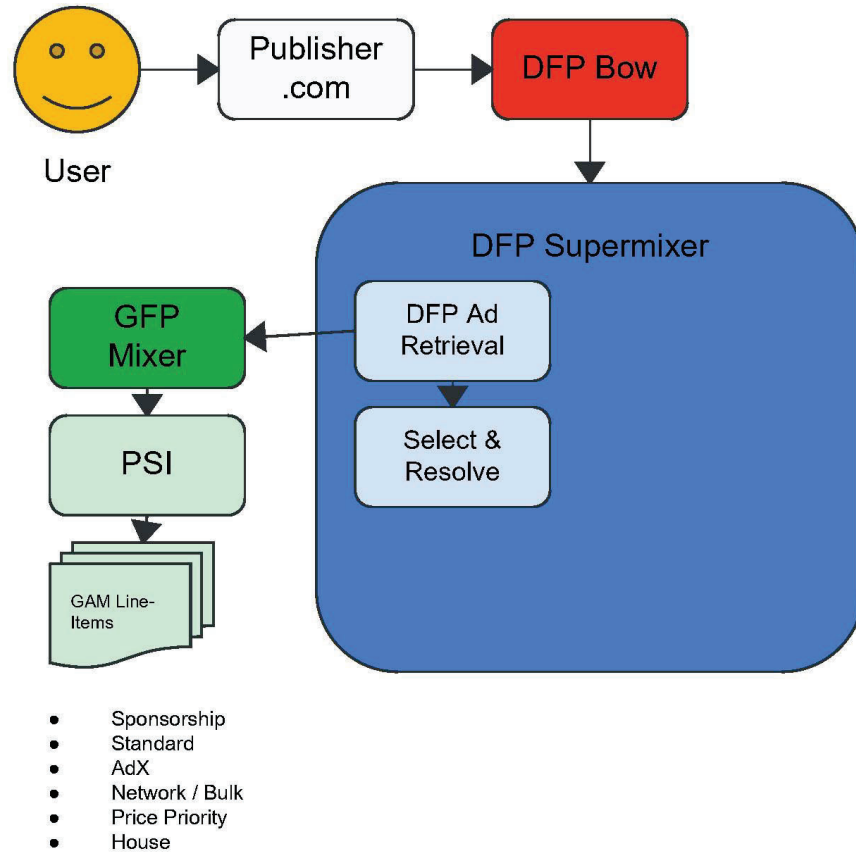
- 1 and video ad rules. I \*think\* other things like presentations and yg have all been moved off? actually i'm not sure about presentations  
*Conroy Lee, 8/9/2022 02:18 PM*
- 2 most  
*Conroy Lee, 8/9/2022 02:18 PM*



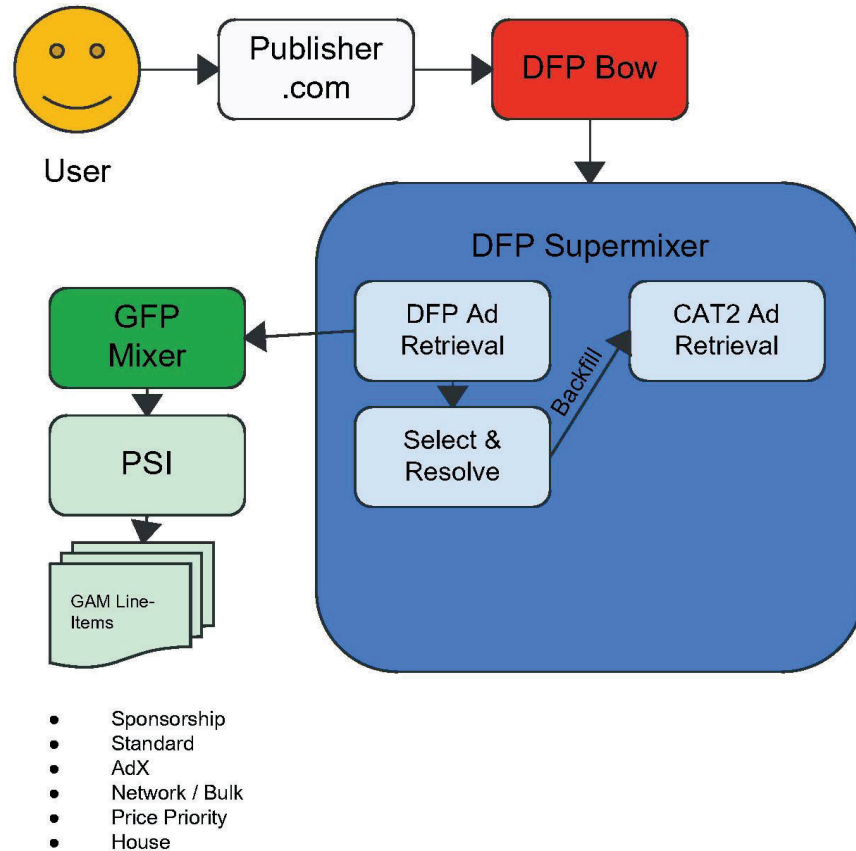
What are Line Items?

Effectively, the DFP representation of a “campaign.” These could represent reservations, PG/PD, backfill, or other remnant LIs like House ads.





SM receives the GFP candidates back from GFP Mixer.



1

SM receives the GFP candidates back from GFP Mixer.

If any of the candidates trigger backfill (AdX, PG/PD, ...) we “call out” to CAT2 to get backfill ads.

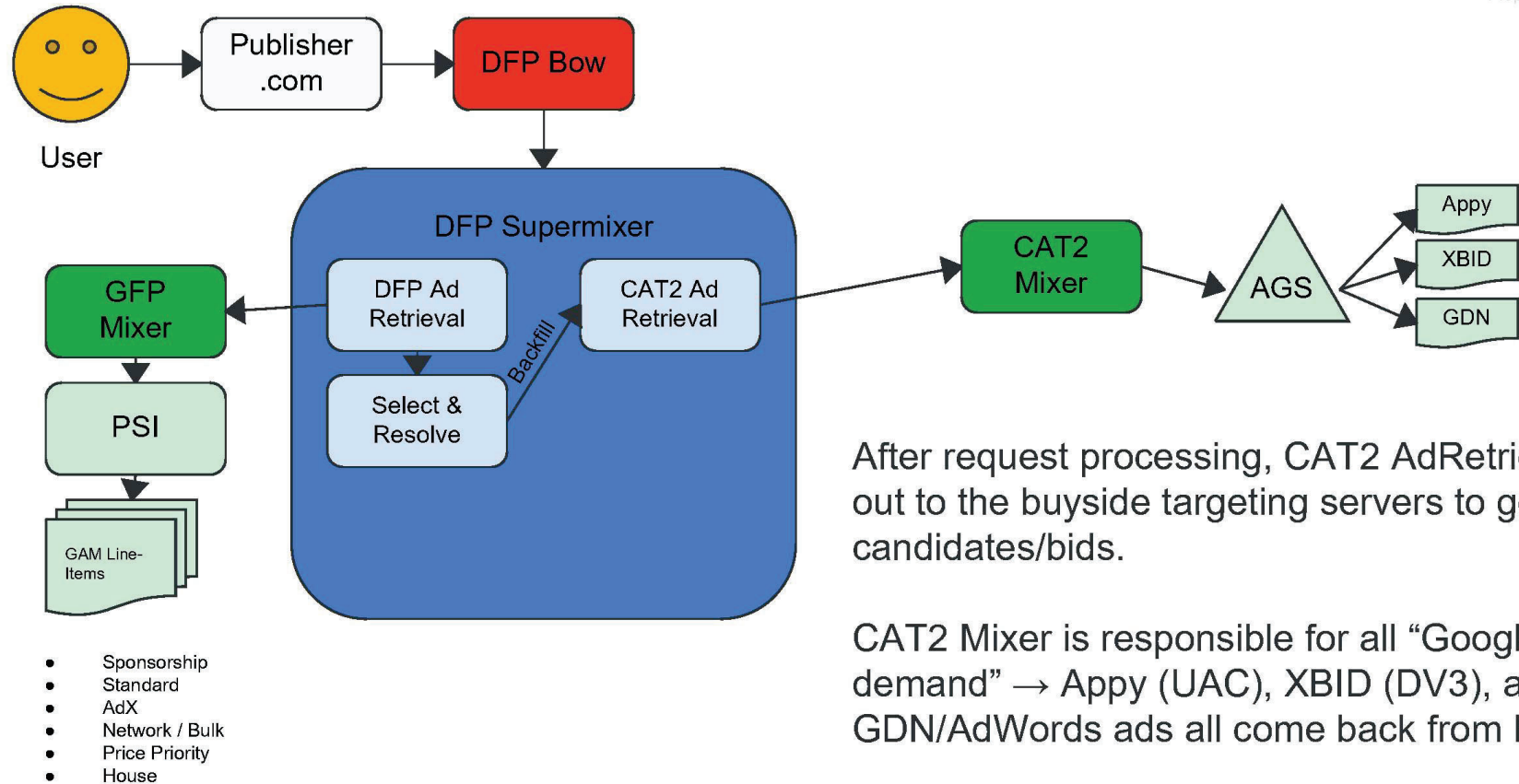
- Also calculates the “EDA” floor price based on the other eligible lineitems (Reservations, PG/PD)

CAT2 Ad Retrieval again parses the request and looks up additional publisher settings (e.g. pricing rules and protections), calls DTS again, etc...

## Slide 21 Comments

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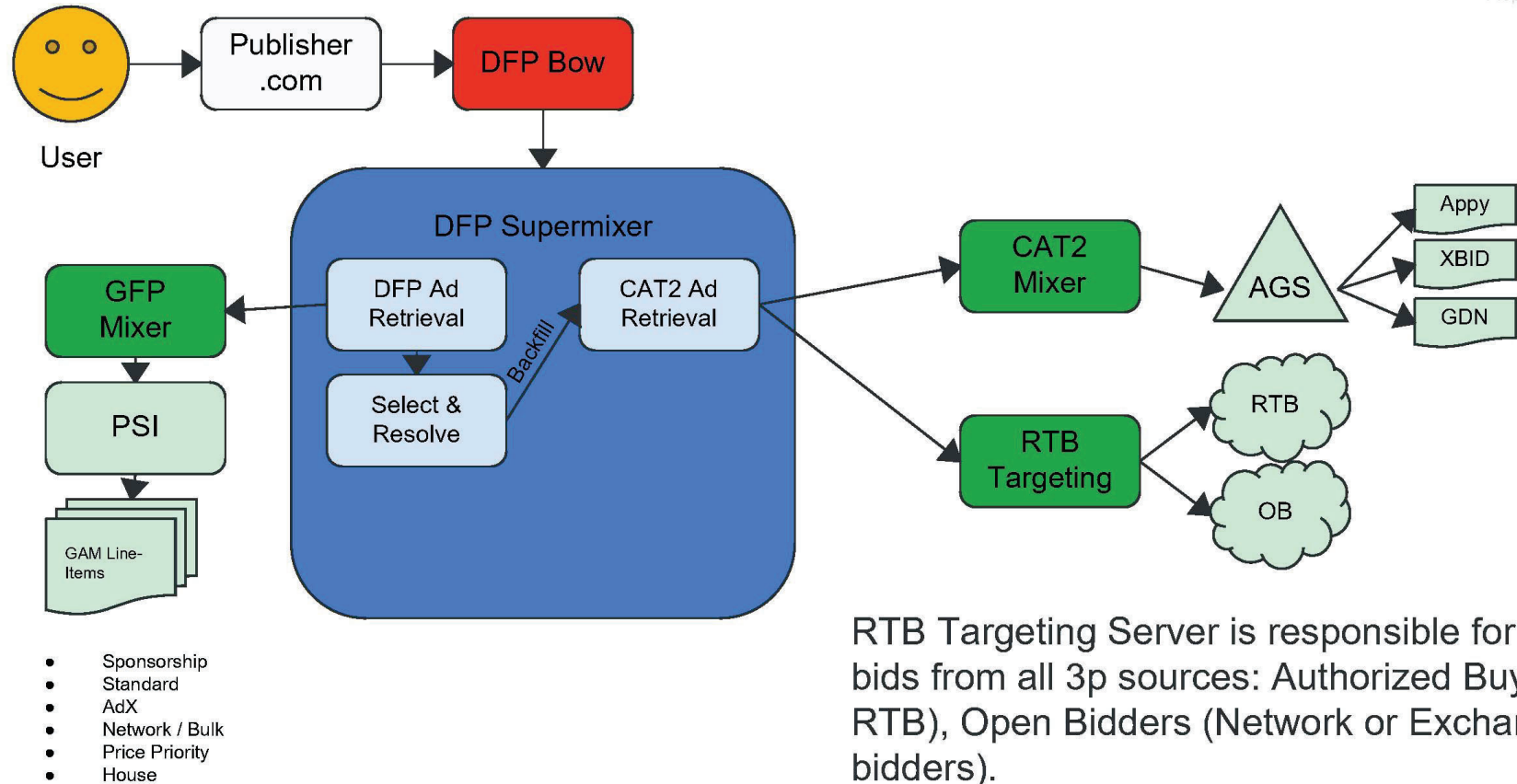
- 1 calculates a value, which can be EDA for guaranteed reservations, or pub-set value for remnants  
*Conroy Lee, 8/9/2022 02:22 PM*



After request processing, CAT2 AdRetrieval calls out to the buy-side targeting servers to get ad candidates/bids.

CAT2 Mixer is responsible for all “Google demand” → Appy (UAC), XBID (DV3), and GDN/AdWords ads all come back from here.

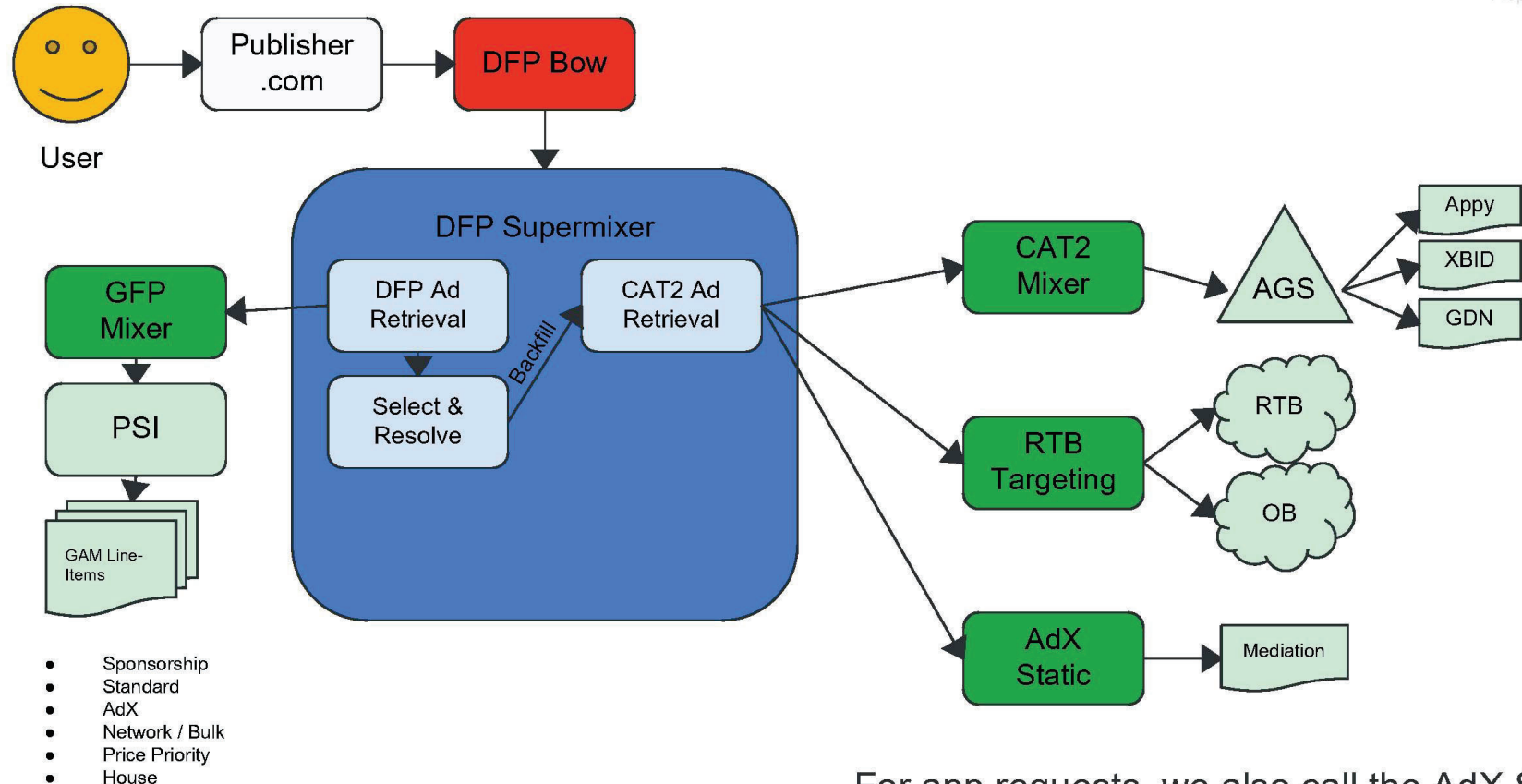
Sends back N candidates to the “unified” auction in SM.



RTB Targeting Server is responsible for soliciting bids from all 3p sources: Authorized Buyers (fka RTB), Open Bidders (Network or Exchange bidders).

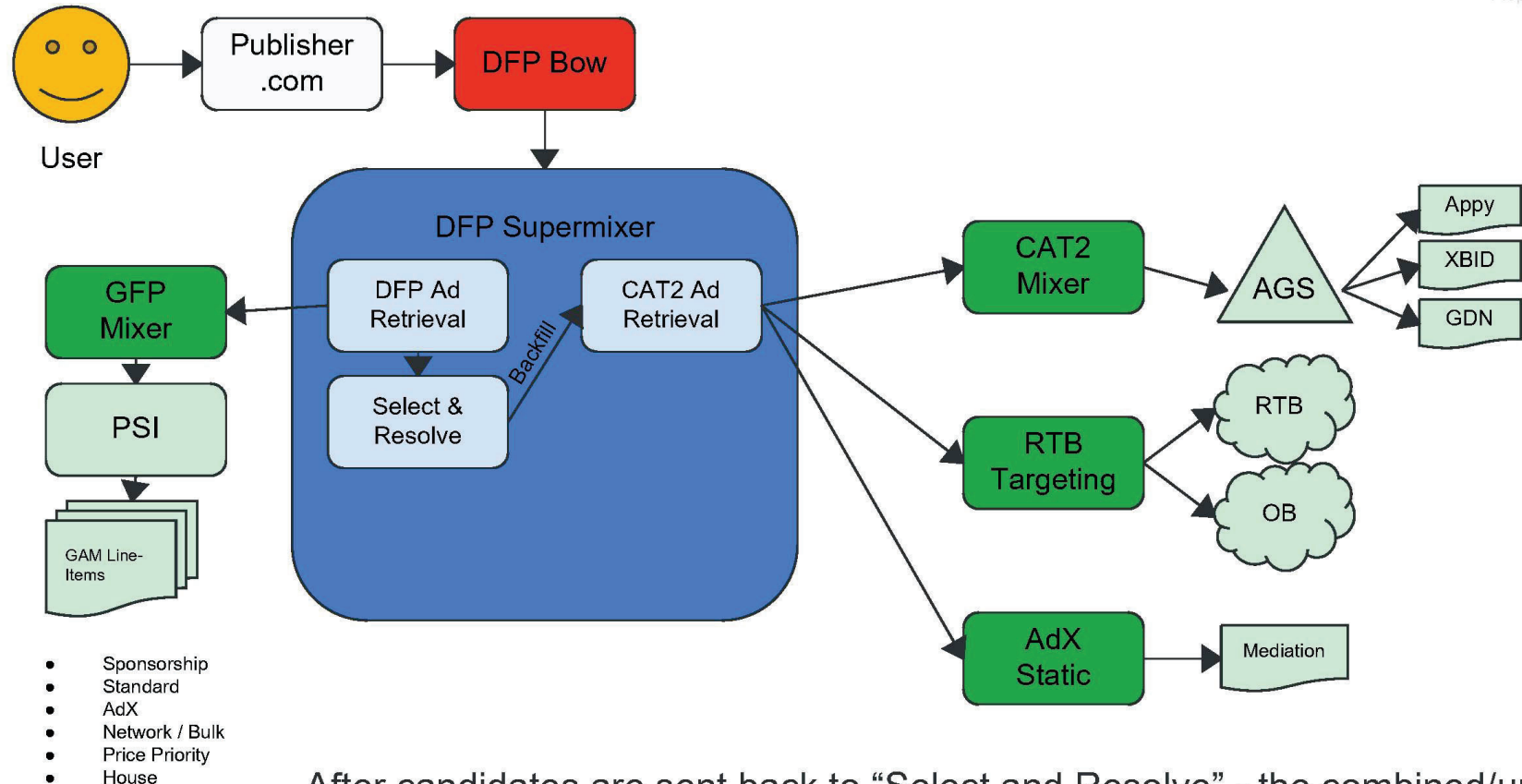
RTB TS handles any pretargeting, sends out bid requests, filters bid responses, and sends back bids to SM auction.

Google



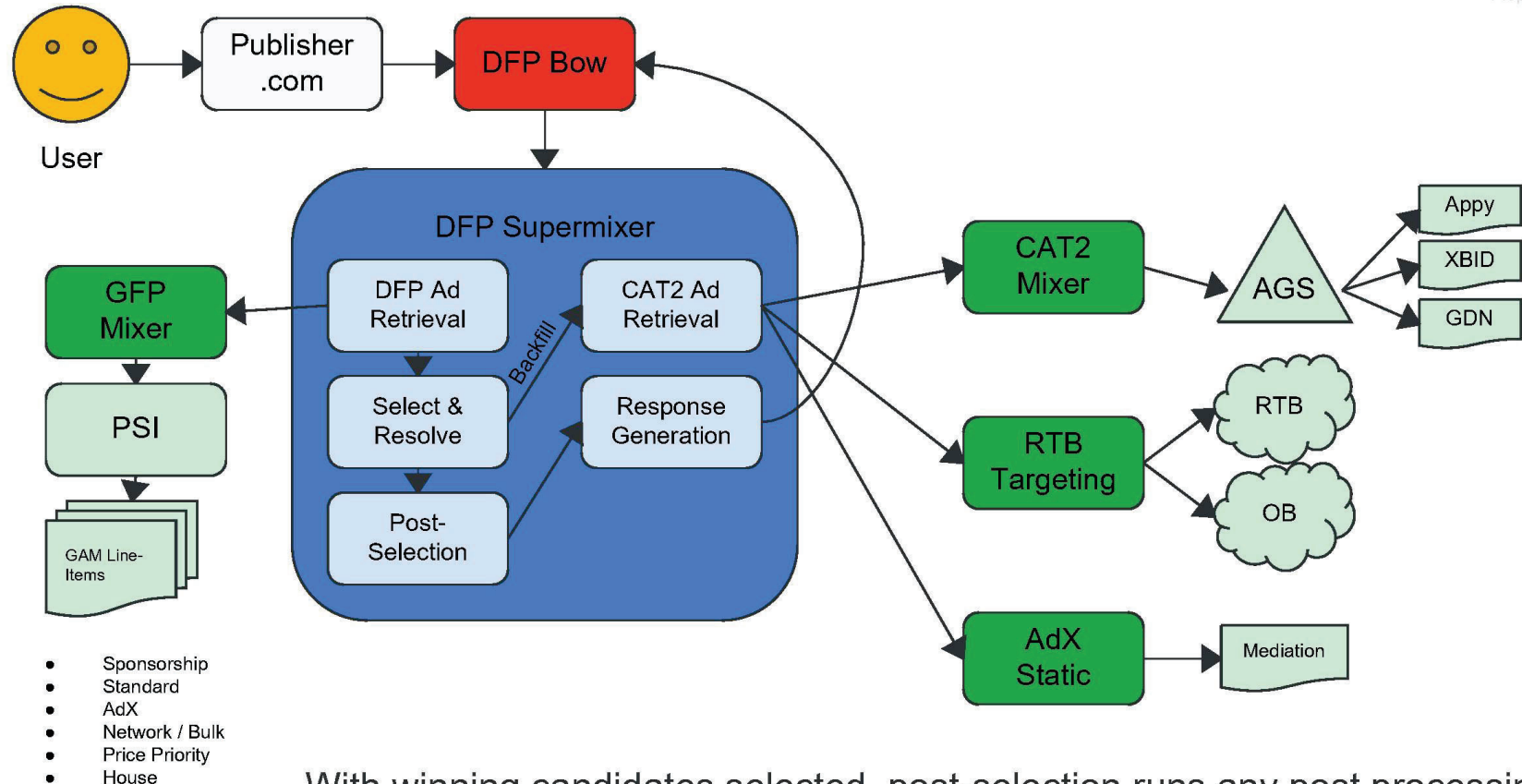
For app requests, we also call the AdX Static (DRX Mediation) server to get any “managed tags” (representing 3p networks in a mediation chain). These compete against all other candidates in auction.

Google



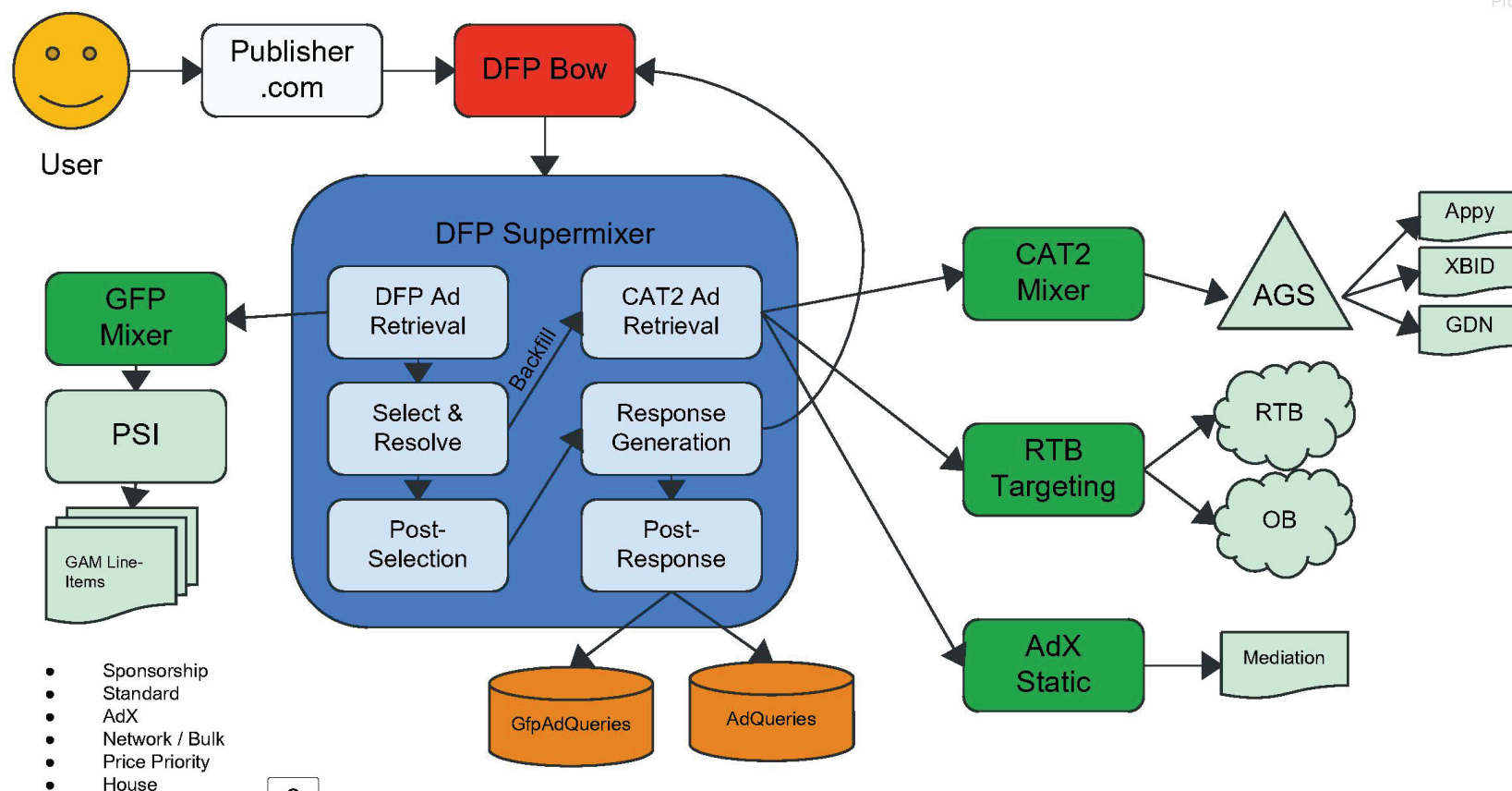
After candidates are sent back to “Select and Resolve” - the combined/unified auction runs across DFP/CAT2 and selects the winner(s), deduping across slots as necessary.





With winning candidates selected, post-selection runs any post processing (e.g. creative fulfillment), generates the `ContentAdResponse`->`SupermixerResponse` and returns to Bow for rendering.



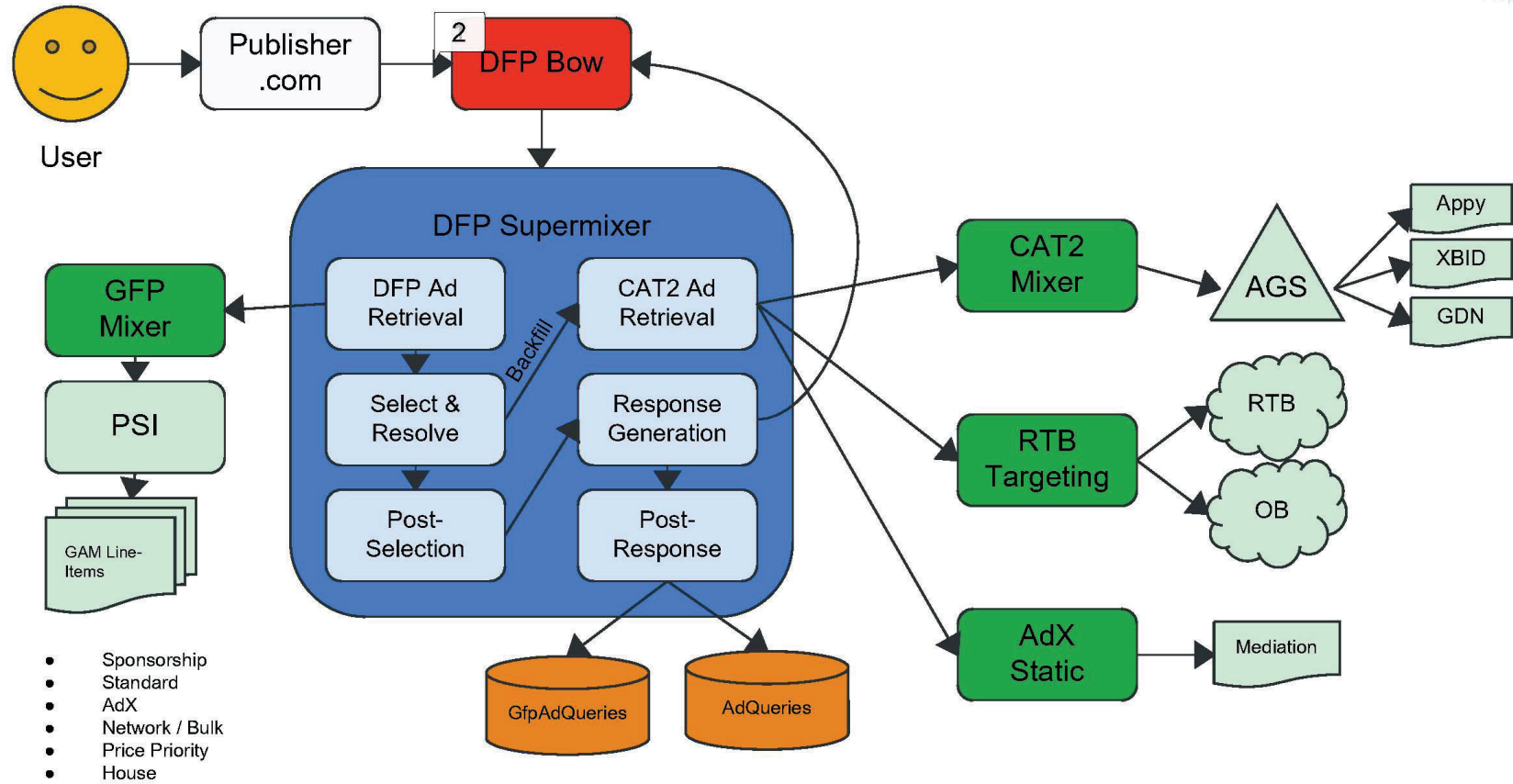


2  
3 Finally, after returning to Bow for rendering, SM does any post-response processing such as logging. If filled by DFP, logs to GfpAdQueries. If filled by CAT2, logs to AdQueries.

## Slide 27 Comments

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- 1      Should we also include DFP inreds into XFA? <https://screenshot.googleplex.com/AiPuPktrH6HhAuf>  
  
TYSM for these slides!  
*Joel Unzain, 5/21/2025 08:37 PM*
- 2      is this really after returning to bow?  
*Conroy Lee, 8/9/2022 01:59 PM*
- 3      Maybe link @conroylee@google.com's log counting g3doc here?  
*Cody Wilson, 8/9/2022 01:50 PM*



## Slide 28 Comments

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- 1 Do we need to separate Bow & Rendering server ?  
  
Mostly the same though  
*Lixing Dong, 7/29/2022 12:58 AM*
- 2 yeah I don't think there's much value of showing it as a separate box  
*Brett Benowitz, 7/29/2022 12:58 AM*

# Appendix



# Resources

- [go/display\\_ads\\_friendly](#) (deck) / [go/ads-ecosystem-intro](#) (video)
- [go/dvaa-training-classes](#)
- [go/appsimmersion2018](#)
- [go/drx-101](#)
- [go/drx-ks-2019](#)
- [go/display-ads-serving-architecture-101](#) & [go/supermixer-code-structure](#)
- [go/bow-intro](#)
- [go/xfp-overview](#)
- [go/drx-walkthrough](#)

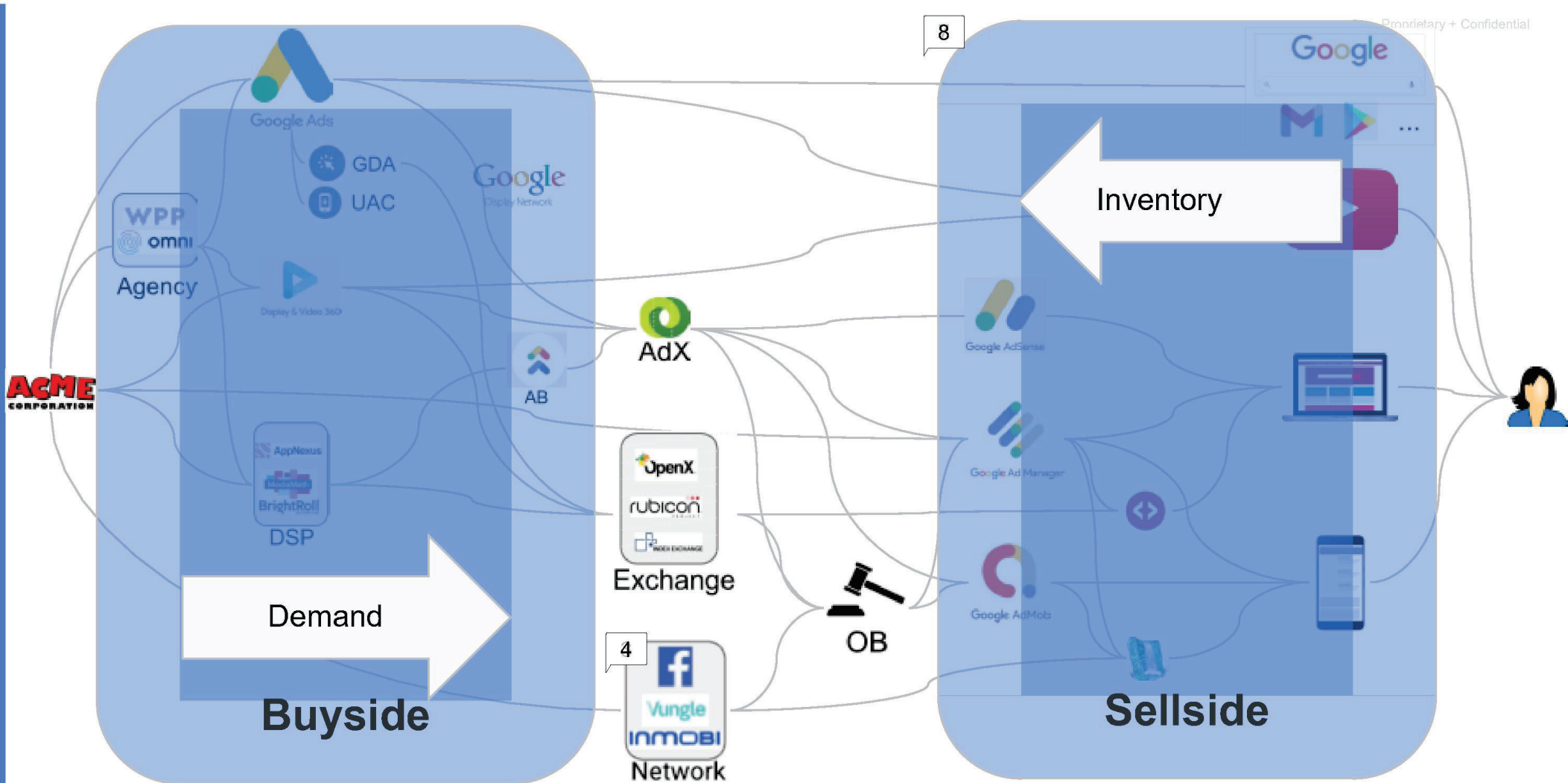
Google

# Slide graveyard (to save comment histories)



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## Slide 32 Comments

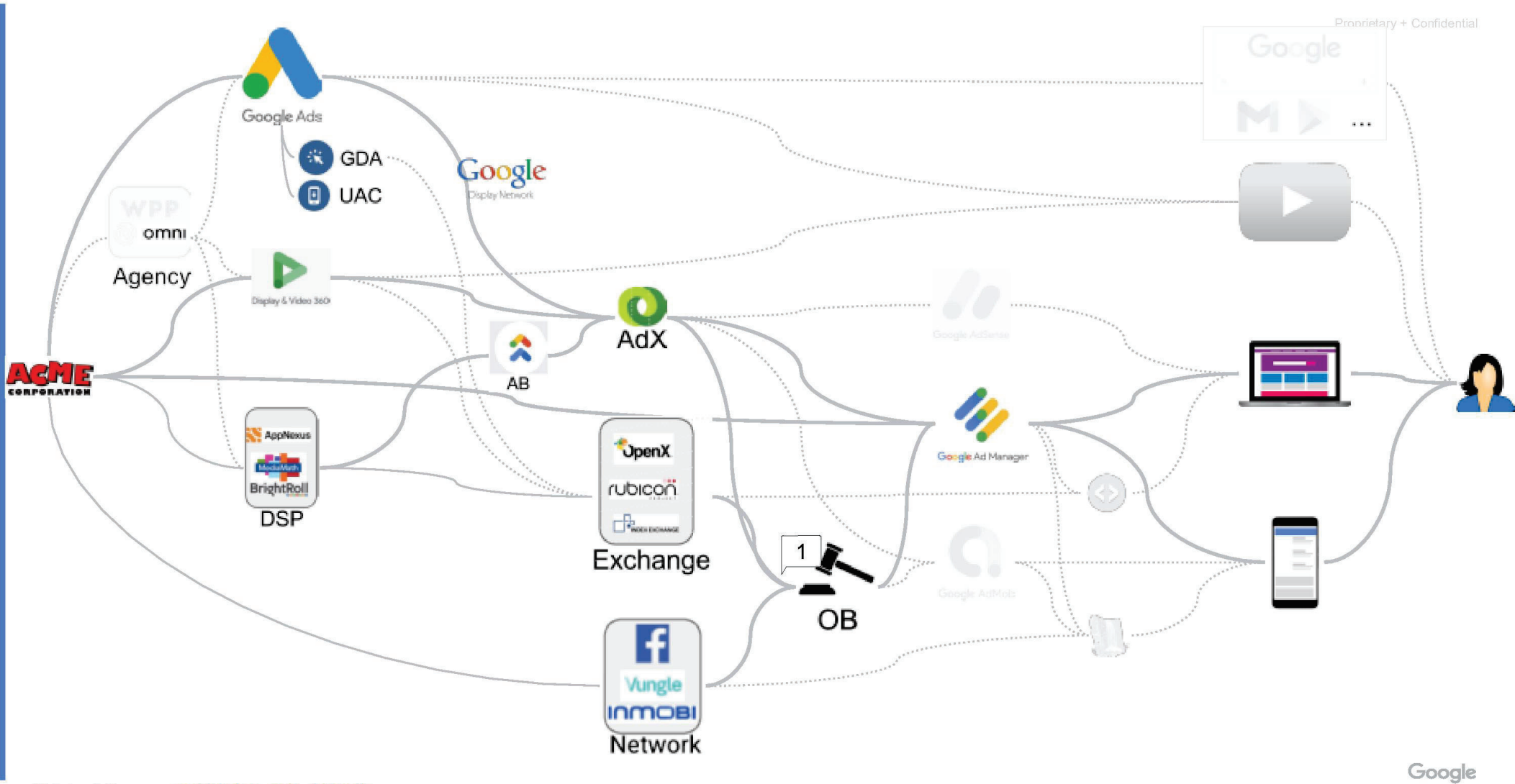
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- 1 I think networks, in this context, are buy-side.  
*Glenn Bertson, 7/27/2022 03:45 PM*
- 2 If you are GAM, or even a publisher, they're a buyer from your POV. But if you zoom out, isn't a network a connection of many buyers and many sellers?  
*Brett Benowitz, 7/26/2022 07:57 PM*
- 3 Operationally – if we think of FAN as example – it's an entity that has its own relationship with both advertisers and publishers. However, they rely on sellside platforms (GAM, AdMob, Ironsource, etc) to get access to inventory. So from the sellside platform perspective, they look like a DSP.  
*Glenn Bertson, 7/27/2022 11:51 AM*
- 4 ACK updated on new slide - kept this for reference in graveyard.  
*Brett Benowitz, 7/27/2022 03:45 PM*
- 5 So -- are you saying that exchanges aren't sellside or buy-side?  
  
Currently "AdX" as a product concept is sellside.  
*Glenn Bertson, 7/27/2022 03:45 PM*
- 6 IMHO an exchange connects the buy-side and sellside -- buyers buy and sellers sell \_on the exchange\_ ?  
*Brett Benowitz, 7/26/2022 07:40 PM*

## Slide 32 Comments (Continued)

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- 7 Google's exchange is part of Ad Manager. A sellside product. And when we think about things like header bidding -- they are run under the control of the publisher. I think that the auction, while a connection between buy and sell, is ultimately a sellside concept.  
*Glenn Berntson, 7/27/2022 11:35 AM*
- 8 ACK updated on new slide - kept this for reference in graveyard.  
*Brett Benowitz, 7/27/2022 03:45 PM*



Original Source: [go/display\\_ads\\_friendly](https://www.google.com/go/display_ads_friendly)

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## Slide 33 Comments

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- 1 This is legacy -- future of OB is only exchanges. Networks are moving to be treated like DSPs (via AB).  
*Glenn Bertson, 7/22/2022 04:02 PM*