Attribution Reporting API

Learnings and New Features
TPAC 2024

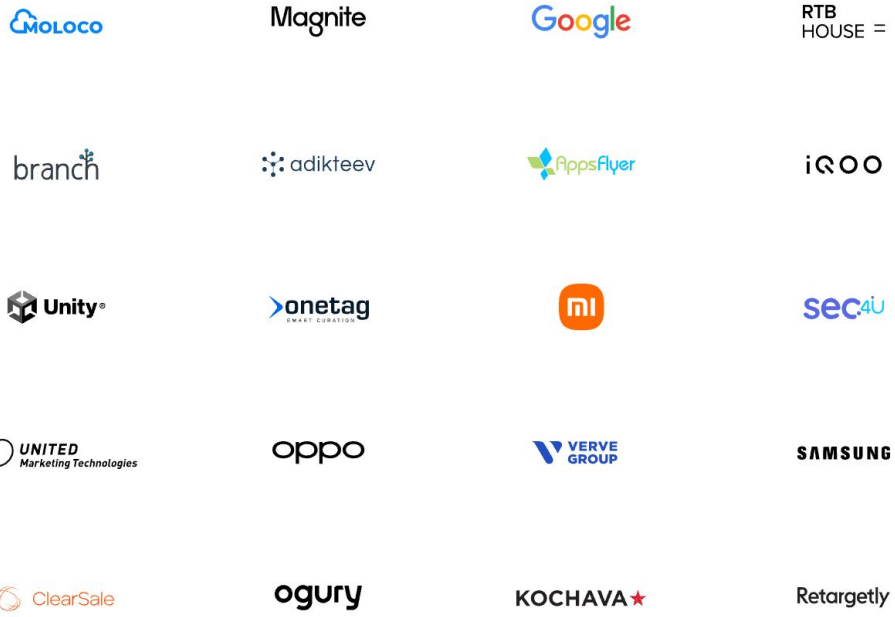
Testers

On github:

Company / Party	Industry or vertical	Est. Testing Timeframe	Link to testing plan and/or learnings (optional)	How to contact you (optional)
Criteo	Demand-side platform (DSP)	Started in 2022, long term commitment	Criteo's First Look at the Attribution Reporting API	privacy-sandbox-testing@criteo.com
Teads	DSP & SSP	March 15th 2024 - May 15th 2024		privacysandbox@teads.com
SMN	Ad tech services	February 1st 2024 - April 30th 2024		privacy-sandbox-testing@so-netmedia.jp
Yahoo! JAPAN	Ad tech services	2022-2023	Report	
NextRoll	Demand-side platform (DSP)	2024-03-25 - 2024-05-20	coming soon	privacysandbox@nextroll.com
RTB House	Demand-side platform (DSP)			privacysandbox@rtbhouse.com
CyberAgent(Dynalyst)	Demand-side platform (DSP)	March 15th 2024 - June 15th 2024		privacysandbox@cyberagent.co.jp
Google (Ads Products & Platforms)	Ad tech services	Testing ongoing		Clients can reach out to their account manager directly
MicroAd	SSP & DSP			privacysandbox@microad.co.jp
Nexxen (Unruly/Tremor/Amobee)	SSP & DSP	2023-2024	coming soon	privacysandbox@nexxen.com
Seedtag	SSP & DSP	2023-2024	coming soon	privacysandbox@seedtag.com
Adform	DSP	March 12 - May 31, 2024		privacysandbox@adform.com
Yahoo Inc	DSP	beginning 15 Jan 2024		googleprivacysandbox@yahooinc.com
Globo	Adtech			adtech-delivery@g.globo
MiQ	Adtech & Managed	From 01.01.2024	coming soon	privacysandbox@miqdigital.com

At privacysandbox.com

The Privacy Sandbox relies on contributions from many companies adopting the new technologies



23%

Of page loads call the Attribution Reporting API

Broad Learnings

- **Engage and get feedback:** Engaging with a diverse group can bring clarity to how the API may be improved.

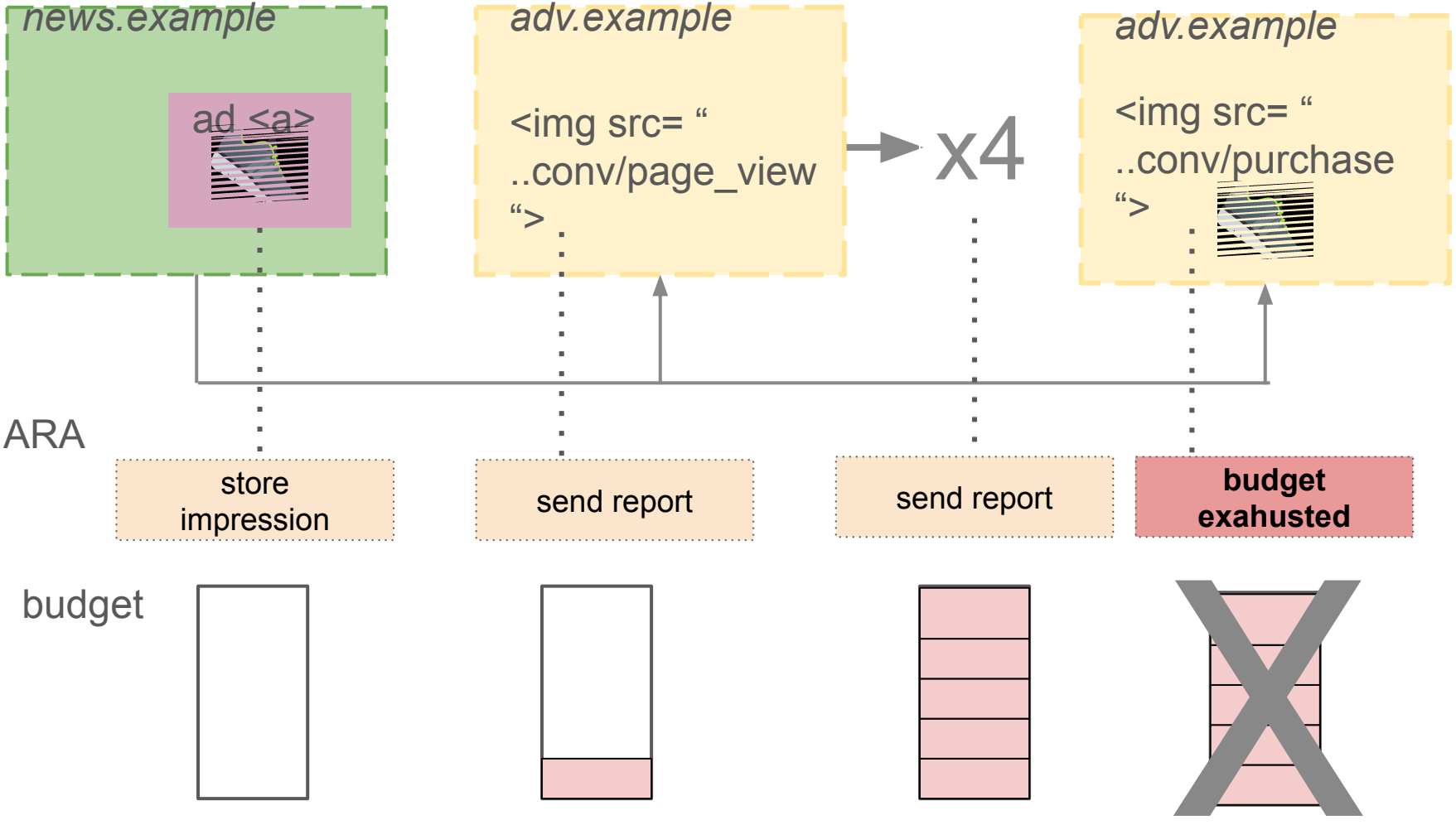
- **Flexibility helps to accommodate more use cases:** With more testing, more use cases are uncovered. Allowing for customization and flexibility in setup can accommodate a wider set of users.

- **Testers will need help to understand privacy principles:** The industry is still getting comfortable working with noised outputs and will need guidance to understand how noise is applied.

Learning: Deploying and monitoring private APIs on the Web is difficult for developers

Example: Ad techs need to understand if their setup is performing optimally

Solution: Aggregate debug reporting


news.example
ad <a>
adv.example
<img src= “
..conv/page_view
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x4
adv.example
<img src= “
..conv/purchase
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ARA
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send report
budget
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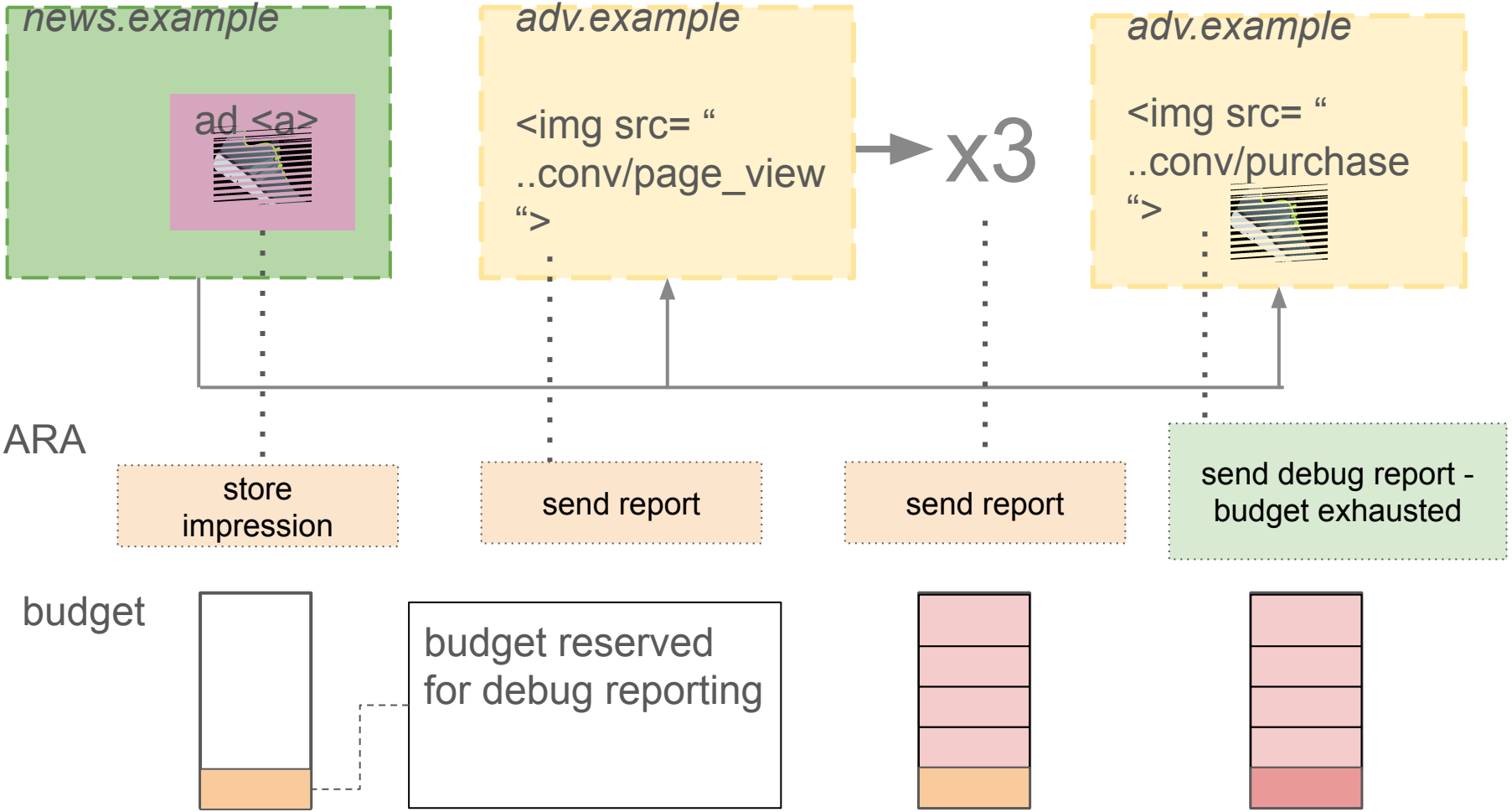
budget


news.example
ad <a>
adv.example
<img src= “
..conv/page_view
“>
x3
adv.example
<img src= “
..conv/purchase
“>
ARA
store
impression
send report
send report
send debug report -
budget exhausted
budget
budget reserved
for debug reporting

Aggregate Debug Reportng

Released July 2024

Purpose: Provides debug reporting without the ar_debug third party cookie

- Same supported use cases as verbose debug reports
- Allows creating histograms of various browser-defined debug events and creating a feedback loop
- Very similar to aggregatable attribution reports - requires using Aggregation Service
- Shared contribution budget with regular aggregatable reports
- Reports are sent unconditionally

Aggregate Debug Reporting

```
{
  ...
  "aggregate_debug_reporting": {
    "key_piece": "0xFFF000",
    "value": 128,
    "debug_data": [
      {
        "types": ["source-destination-limit",
"source-destination-rate-limit"], // required to be present and
non-empty
        "key_piece": "0x1", // required
        "value": 123 // required
      }
    ],
    "aggregation_coordinator_origin": "https://aws.example"
   }
}
```

Sample Source & Trigger Registration

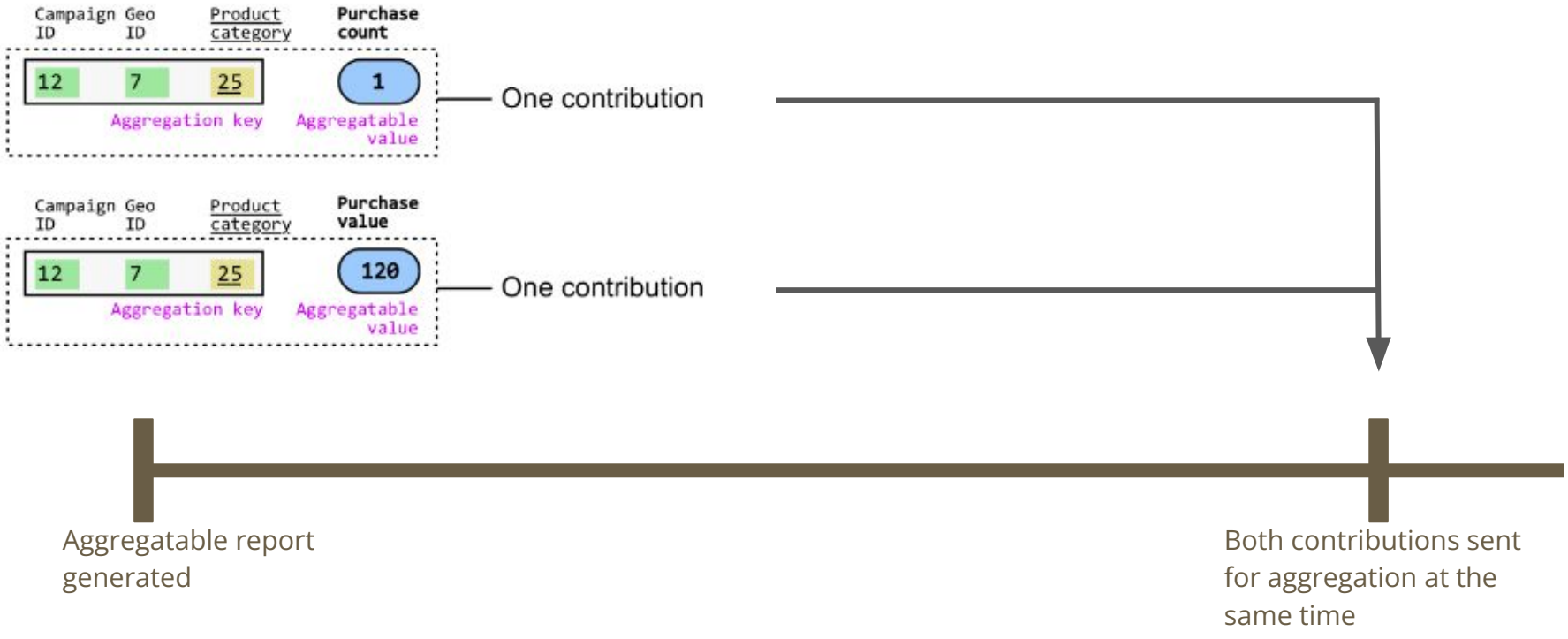
Sample Payload Structure

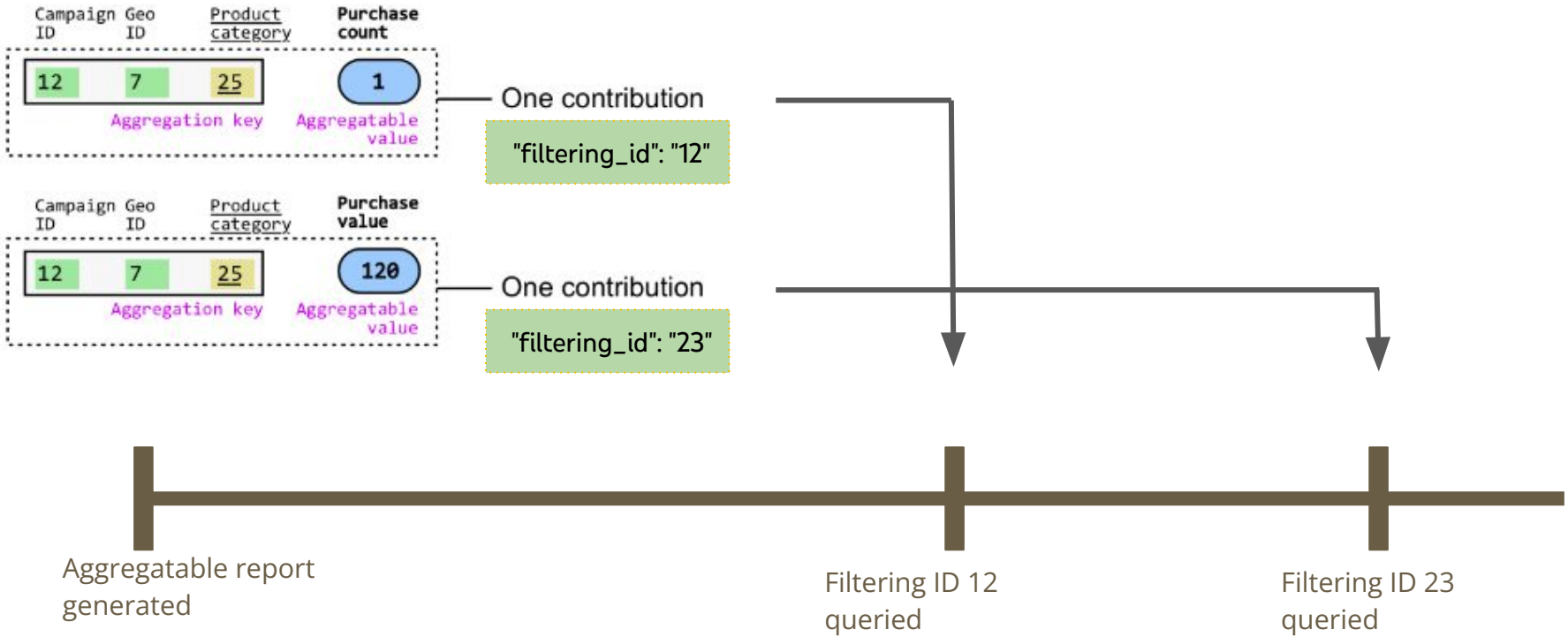
key: source key_piece | trigger key_piece | debug code key_piece
value: value

Learning: One size fits all solutions don't satisfy all ad tech requirements

Example: An ad tech may want to aggregate different types of contributions on different cadences, ex: counts vs. values.

Solution: Flexible contribution filtering


Campaign ID
Geo ID
Product category
Purchase count
12
7
25
1
Aggregation key
Aggregatable value
One contribution
Campaign ID
Geo ID
Product category
Purchase value
12
7
25
120
Aggregation key
Aggregatable value
One contribution
Aggregatable report generated
Both contributions sent for aggregation at the same time


Campaign ID
Geo ID
Product category
Purchase count
12
7
25
1
Aggregation key
Aggregatable value
One contribution
"filtering_id": "12"
Campaign ID
Geo ID
Product category
Purchase value
12
7
25
120
Aggregation key
Aggregatable value
One contribution
"filtering_id": "23"
Aggregatable report generated
Filtering ID 12 queried
Filtering ID 23 queried

Flexible Contribution Filtering

Released August 2024

Purpose: Allow for different contributions to be aggregated at different cadences

- Filtering IDs are included in the encrypted payload of aggregatable reports
- Queries to the Aggregation Service can provide a list of allowable IDs for contributions to be included
- Each contribution can only be used once

```
{
  ..., // existing fields
  "aggregatable_values": {
    "campaignCounts": {
     “value: 32768,
     “filtering_id”: “12”
     }
    "geoValue": {
      "value": 1664,
      "filtering_id": "23"
    }
  }
}
```

Trigger registration

Learning: Latency and delays break critical flows like monitoring and optimizing

Example: Reports are scheduled to be sent with a delay. The user closes their browser before the report is sent, and does not open again for a long time

Solution: Instant aggregate reports

Instant Aggregate Reports

Released January 2024

Purpose: Reduce transmission loss and more easily verify reports and filter out unwanted reports before aggregating

- Send aggregatable reports immediately
- Append a trigger context ID to aggregatable reports
- Many more null reports: must send aggregatable report unconditionally on trigger registration

```
{
  ...
  "aggregatable_trigger_data": [...]
  "trigger_context_id": 12345678,
}
```

Trigger registration

```
{
  ...
  "aggregation_service_payloads":
[...]
  "trigger_context_id": 12345678,
}
```

Aggregatable report

Learning: Engagement with the industry helps uncover unique business needs

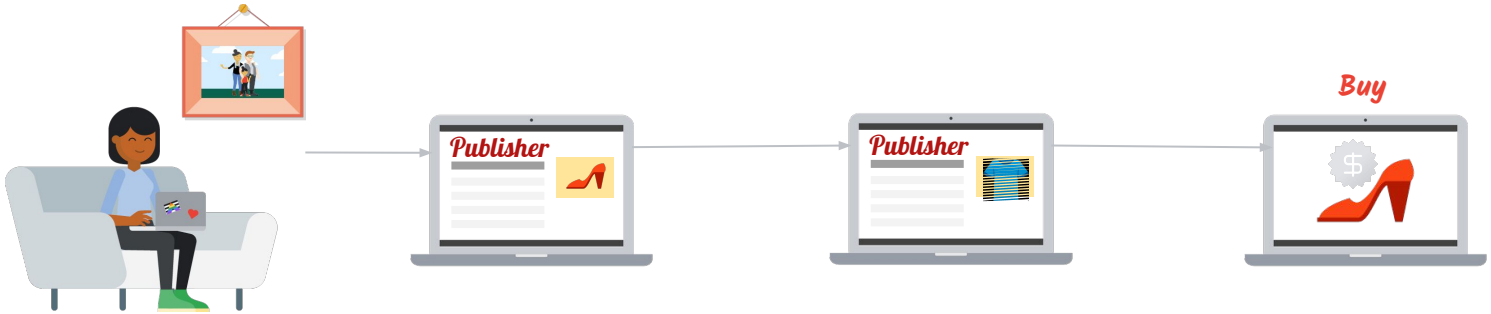
Example: A marketplace site is running ads for several of their different vendors, they only want sources associated with the correct vendor to be considered for attribution

Solution: Attribution scopes

User clicks a shoe ad on publisher.com that leads to **example.com/advertiser1**

User clicks a shirt ad on publisher.com that leads to **example.com/advertiser2**

User buys shoes on **example.com/advertiser1**



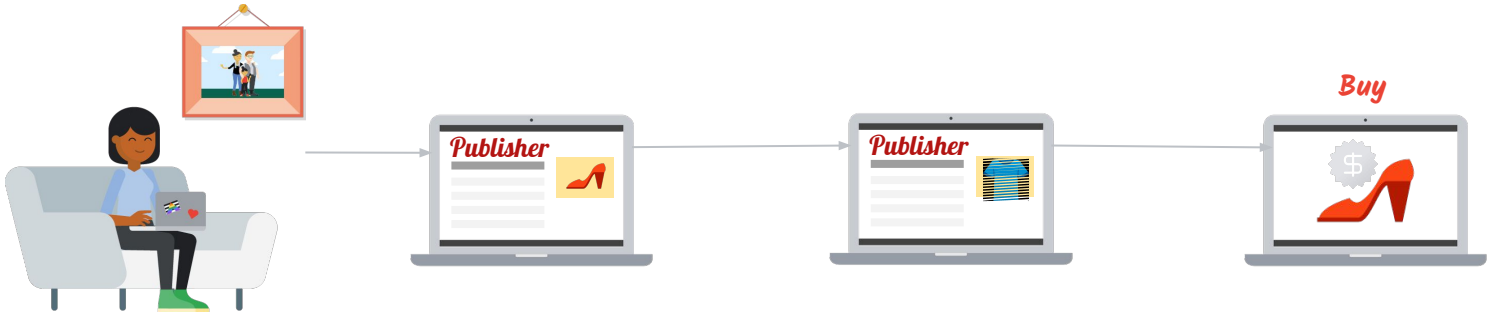
No Report Generated
-Last touch used to select source registration2
-Filters don't match

Source Registration1	Source Registration2	Trigger Registration
filter = advertiser1	filter = advertiser2	filter = advertiser1

User clicks a shoe ad on publisher.com that leads to **example.com/advertiser1**

User clicks a shirt ad on publisher.com that leads to **example.com/advertiser2**

User buys shoes on **example.com/advertiser1**



Report is generated
-Filtering is performed first on attribution_scope
-This narrows the sources down to source registration1, which matches

Source Registration1	Source Registration2	Trigger Registration
attribution_scope = adv1 attribution_scope_limit = 2	attribution_scope = adv2	attribution_scope = adv1

Attribution Scopes

Coming October 2024

Purpose: Allows filtering of sources before attribution takes place, giving flexibility to only consider sources from specific advertisers, campaigns, etc.

- At least one of the values in the list of attribution_scopes values on source and trigger must match in order for a source to be eligible for attribution
- Post attribution filtering can still happen

```
{
    ...
"attribution_scopes": {
    "limit": 3,
    "values": ["product1"]
  }
}
```

Source registration

```
{
    ...
 "attribution_scopes":["product1"]
}
```

Trigger registration

ARA's Latest Features

Feature	Description
Aggregate debug reports (explainer)	Provides aggregate reports of debug events
Attribution scopes (explainer)	Allows sources to be filtered before attribution happens
Changes to source deletion logic (PR)	Once the site destination limit is reached, instead of blocking new source registrations, the API will now delete the oldest and lowest priority source
Instant aggregate reports (explainer)	Includes a trigger context ID and sends the report without delay.
Flexible event level reports (explainer)	Ability to adjust noise by changing properties such as reporting windows, trigger data, and number of attributions per source
Flexible Contribution Filtering (explainer)	Includes a filtering ID for each contribution in the aggregatable report, allowing them to be aggregated at different times
Multi-origin report batching (explainer)	Ad techs can choose to batch reports at the origin or site level, providing greater control over batch sizes
Increase aggregation service capacity (PR)	Memory optimizations and support for larger instances, allowing for an increased number of breakdown keys (dimensions) that can be processed in one job

Thank You!