



# DE{CODE} 2023

THE VIRTUAL DEVELOPER CONFERENCE

# Privacy Sandbox for web: the changing privacy landscape and impact to your sites



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Google  
@sw12

**What you need to know**

**What you need to do now**

**How to provide feedback**

# What is the Privacy Sandbox?

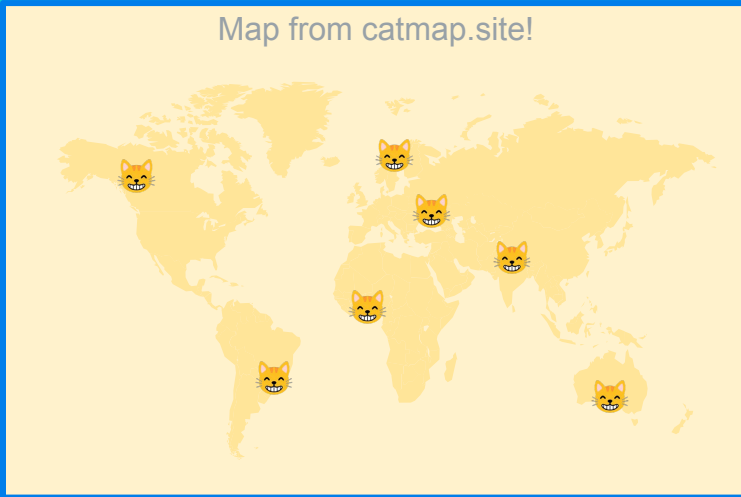


we-love-cats.glitch.me

We ♥ cats

See [more cats](#)?

Map from catmap.site!



```
<script src="https://third-party.site/cat-cursor.js">
```

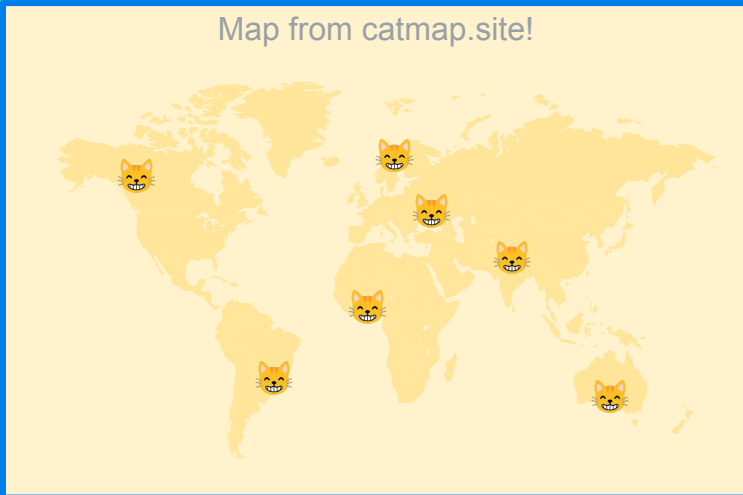


we-love-cats.glitch.me

We ♥ cats

See [more cats](#)?

Map from catmap.site!



Ad from  
adtech.example!



```
<script src="https://third-party.site/cat-cursor.js">
```

# Composability

# So... what's the problem?

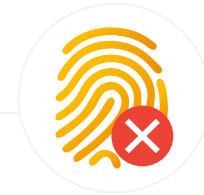


# Cross-site tracking



## Third-party cookies

**Store files in the browser** to recognize users as they visit sites across the web.



## Covert tracking

*including fingerprinting*

**Combining pieces of data** to uniquely profile and identify users.



# With current technologies third parties...

**Collect** user data

**Store** user data

**Aggregate** user data

**Share** user data

# 80% of internet users believe data protection is very important



65%

have **avoided certain online activities** due to privacy or security concerns.

65%

of the world's population is expected to be covered under modern **privacy regulations** by 2023

SOURCE: Gartner, 2020 | Avast / YouGov / Forsa 2021

# A problem for platforms and ecosystems

# Platform decisions not product decisions



# Privacy Sandbox for the Web

**Improve privacy** while supporting the publishers, advertisers and business models that **keep the web healthy**.





## New privacy-preserving technologies



Relevant ads and content



Measurement



Fraud detection



Identity



Device customization

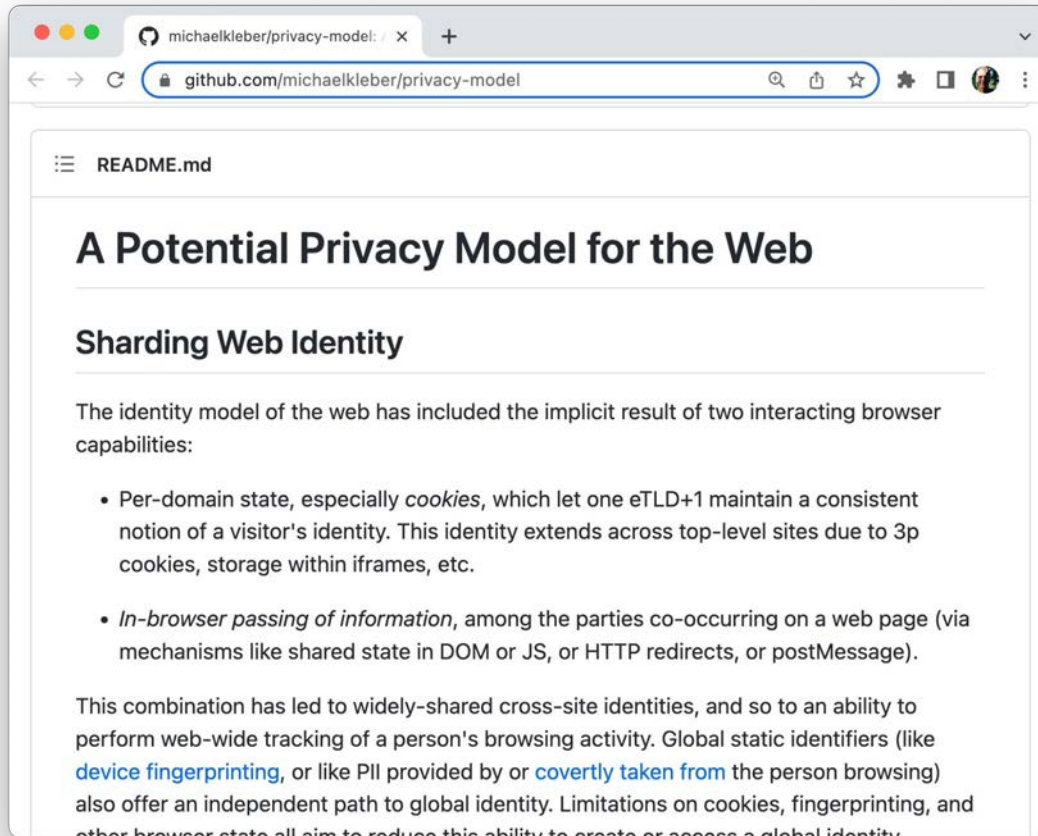
+ more...

### Phase out 3P cookies



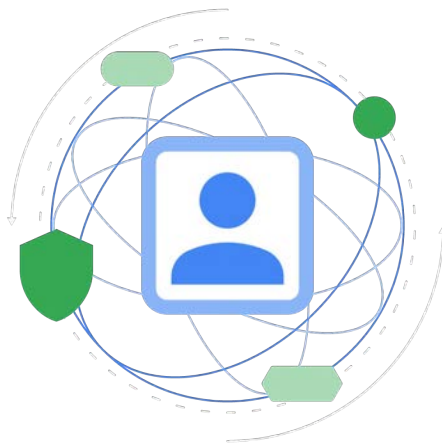
### Combat covert tracking





To establish the range of web activity across which the user's browser can let websites treat a person as having a **single identity**

To identify the ways in which information can move **across identity boundaries** without compromising that separation



**The user's browser on the user's device  
holds information about a user's interests**

**Not the advertiser or adtech platform**

# Vision: Rethink and rebuild together

## Platform-Level Changes

Web - Android



New privacy-preserving APIs and infrastructure



Mitigations to address cross-site tracking



## Industry Innovation

AdTech - Publishers - Brands - Developers



Privacy-forward products and services



Machine learning and modeling



First-party data strategies

## Consultation and Transparency

Users - Regulators - Privacy Community

# Privacy Sandbox APIs

# Privacy Sandbox for Web and Android



**Common vision** to improve user privacy and sustain healthy web and mobile ecosystems.

**Collaborative approach** to input from publishers, brands, privacy advocates and others.

**Common technology proposals** for advertising use cases (measurement and relevance).

**Different platform technologies**, integrations and timelines for Web and Android.



## Privacy Sandbox for the Web

Launch new technologies by Q3 2023  
Begin phasing out third-party cookies in H2 2024



## Privacy Sandbox on Android

New technologies available for Beta testing soon  
Support existing capabilities until at least Feb 2024

# Industry collaboration

Ideas and discussion  
Testing  
Feedback

[privacysandbox.com](https://privacysandbox.com)





# 20+ Privacy Sandbox technologies

- Not Ready to Test
- Android Developer Preview
- Early Testing w/ Live Traffic
- Late Testing, Evaluation
- Launched

	TECHNOLOGY	WEB	ANDROID	LIKELY INTEGRATORS
✓ <b>Relevance</b>	Topics	●	●	AdTech (SSP)
	FLEDGE	●	●	AdTech (SSP+DSP)
	Attribution Reporting API	●	●	AdTech, 3P Measurement
ii. <b>Measurement</b>	Private Aggregation API	●		AdTech, 3P Measurement
	Aggregation Service	●		AdTech, 3P Measurement
	Fenced Frames	●		AdTech (w/ FLEDGE)
	Shared Storage	●		AdTech (w/ Measurement)
🎮 <b>Cross-Site Privacy Boundaries</b>	CHIPS	●		Cross-Site Embedders
	First Party Sets	●		Sites w/ Multiple Domains
	SameSite Cookies	●		Many Use Cases
	Storage Partitioning	●		Cross-Site Services
	Network State Partitioning	●		Cross-Site Services
	User-Agent Client Hints	●		Many Use Cases
	HTTP Cache Partitioning	●		Cross-Site Services
	DNS-Over-HTTPS	●		Cross-Site Services
👤 <b>Address Covert Tracking</b>	Federated Credential Mgmt.	●		Identity Providers
	IP Protection (Gnatcatcher)	●		Many Use Cases
	Privacy Budget	●		Many Use Cases
	Bounce Tracking Mitigations	●		Many Use Cases
	SDK Runtime			●
🛡️ <b>Fight Spam &amp; Fraud</b>	Trust Token	●		Anti-Fraud Services

# Main ads APIs



## Topics

High-level interest categories

## FLEDGE

Remarketing and custom audiences

## Attribution Reporting

Advertising conversion measurement

# Staged approach

— 'Behind a flag' —

— Chrome origin trials —

**Technical testing**

Very limited traffic

**Utility testing**

Small % of Chrome traffic

**General availability**

Enabled for all Chrome traffic

↑  
We are here

Origin Trials

developer.chrome.com/origintrials/#/view\_trial/771241436187197441

Chrome Origin Trials

## Trial for Privacy Sandbox Relevance and Measurement

ACTIVE

The shared origin trial includes the following APIs to facilitate advertising: FLEDGE, Topics, Attribution Reporting, and Fenced Frames.  
[Learn more](#)

Available	Chrome 101 to 107
End date	29 Nov 2022

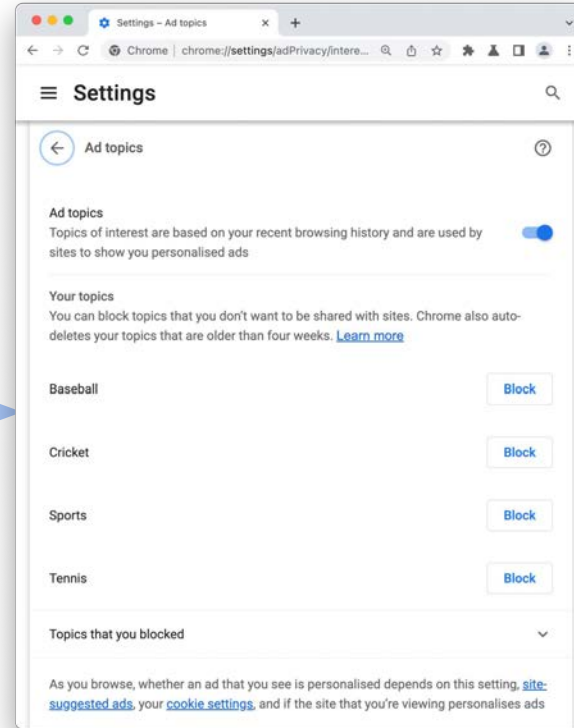
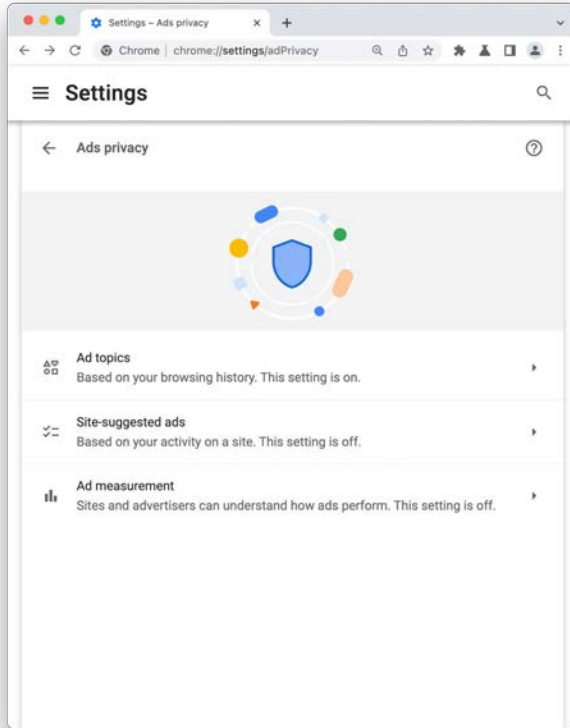
### Resources

[Chrome Platform Status](#) [Feature Feedback](#) [Intent to Experiment](#)

[REGISTER](#)

[Terms](#) [Privacy](#) [Help](#) [Contact Us](#)

# Chrome user controls



**...but these may also be relevant to your business**

**CHIPS**

**First-Party Sets**

**Private State Tokens**

# The Topics API

# Interest-based advertising without tracking the sites a user visits



# Maintain a public taxonomy

A list of user interests

The screenshot shows a GitHub repository page for 'patcg-individual-drafts / topics'. The repository is public and has 94 watchers, 77 forks, and 417 stars. The current file is 'topics / taxonomy\_v1.md' on the 'main' branch. A commit by user 'jkarlin' is shown with the message 'Add identifiers to the taxonomy ...' and a commit hash of '3c684c6' on February 8, 2022. The file is 29.8 KB and contains 351 lines of code. Below the commit information, there is a table with the following data:

ID	Topic
1	/Arts & Entertainment
2	/Arts & Entertainment/Acting & Theater
3	/Arts & Entertainment/Comics
4	/Arts & Entertainment/Concerts & Music Festivals

# Record user interests

In the browser, on the user's device...

# Provide access to user interests

...but don't share browsing activity

# Two stages to using the API

Observe topics

Access topics

# Two ways to use the API

JavaScript API from an iframe

Fetch request and response headers

# JavaScript API

## Call

`document.browsingTopics`  
**from an iframe**

# fetch()

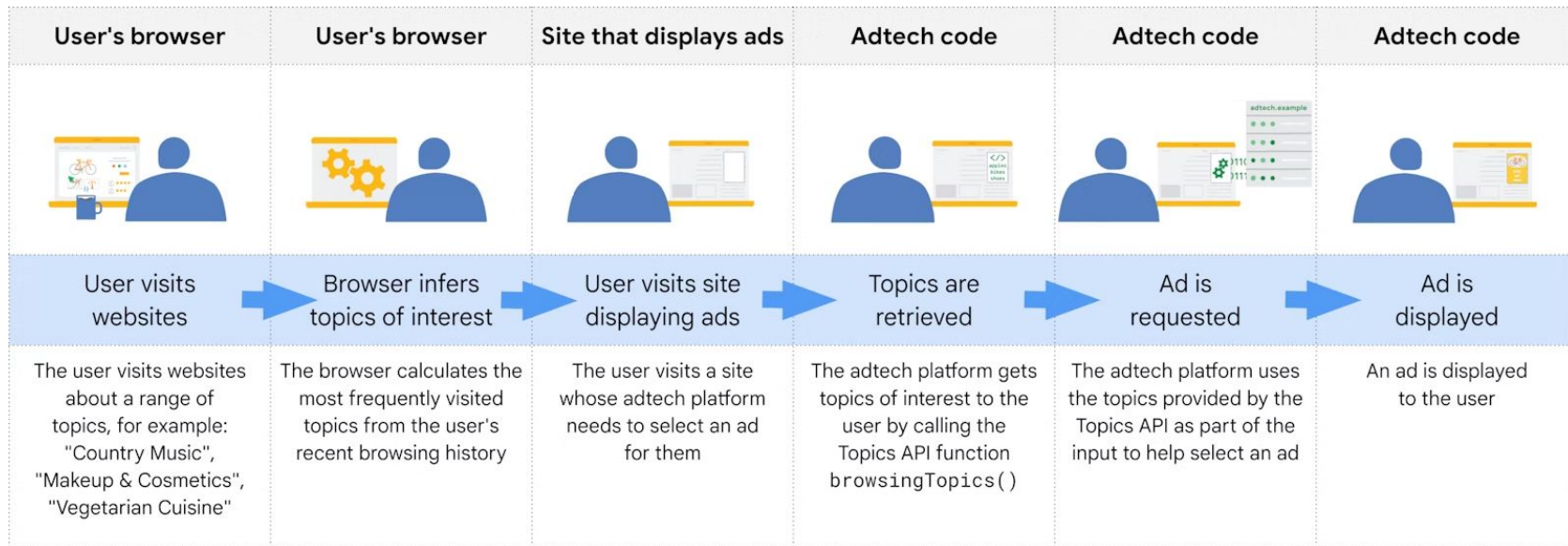
Fetch request includes  
`{browsingTopics: true}`

Fetch response includes header  
`Observe-Browsing-Topics: ?1`



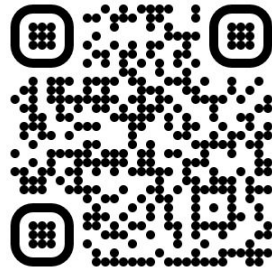
# fetch()

Access topics from request header  
`sec-browsing-topics`



# JavaScript iframe demo

[topics-demo.glitch.me](https://topics-demo.glitch.me)



# Header demo

## topics-fetch-demo.glitch.me



# chrome://topics-internals

Topics API Internals

Topics State | Classifier | Features and Parameters

Next scheduled calculation time: 13/05/2022, 18:42:05

Epochs (latest -> oldest)

Topic ID	Topic Name	Real or Random	Observed-by context domains (hashed)
265	Pets	Real	7610709088227068340
267	Cats	Real	7610709088227068340
36	Indie and alternative music	Random	
328	Tennis	Random	
226	Jobs and education	Random	

Calculation time: 13/05/2022, 18:41:50  
Model version: 2205052059  
Taxonomy version: 1

Topic ID	Topic Name	Real or Random	Observed-by context domains (hashed)
123	Printing and publishing	Random	
200	Fibre and textile arts	Random	

Topics API Internals

Topics State | **Classifier** | Features and Parameters

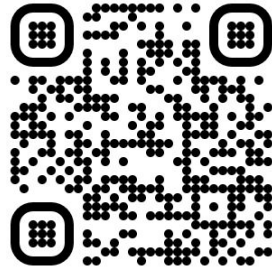
Model version: 2205052059  
Model file path: /Users/dutton/Library/Application Support/Google/Chrome Canary/OptimizationGuidePredictionModels/44d99d96-9467-4d5f-a8db-897f71bbeb9f/model.tflite

```
developer.chrome.com
web.dev
google.com
```

Classify

Host	Topics
developer.chrome.com	148. Web browsers   139. Programming
web.dev	139. Programming
google.com	219. Search engines

# goo.gle/topics-colab



# Open questions

Better ways to infer topics of interest?

Better taxonomy?

Better overall architecture?

# FLEDGE

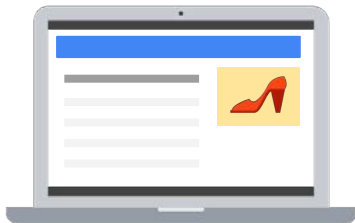


**Serve retargeted ads and  
custom audiences  
without tracking the sites  
a user visits**

# How FLEDGE works

## 1 Buyer adds users to audiences

Create custom audiences directly with the browser. Use any on-site signal to inform audiences.



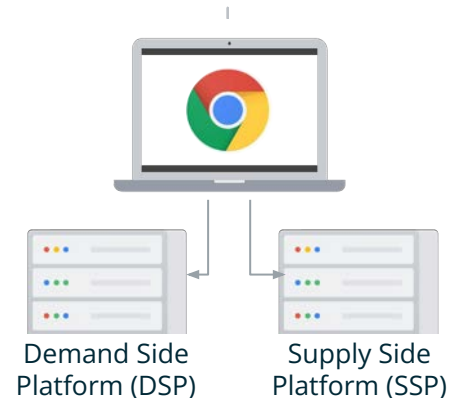
## 2 Seller initiates on-device auction

Auction run within the browser. Bidding & auction logic provided by ad buyer and seller from trusted servers.

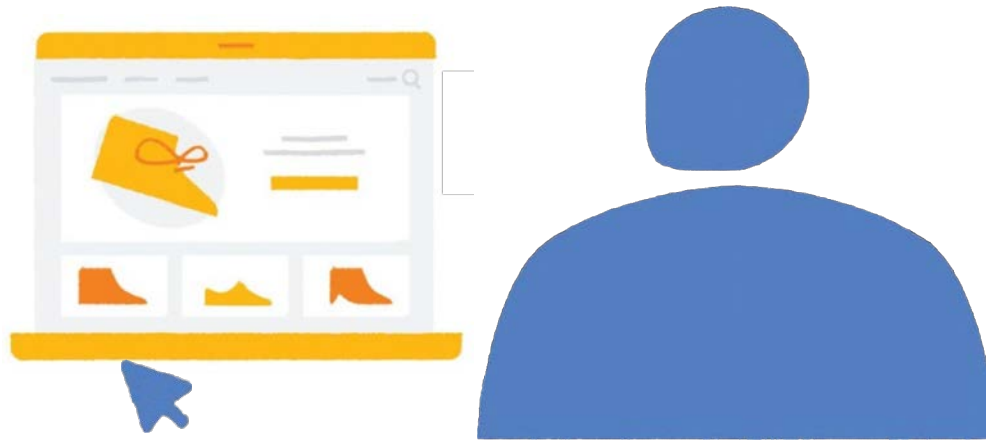


## 3 Browser sends post-auction reporting

Browser sends post-auction reporting to buyer & seller, which in the current origin trial includes event-level win/lost bids.



# User visits advertiser website



Browser is asked to join an  
**interest group**

```
const interestGroup = {  
  'owner': 'www.example-dsp.com',  
  'name': 'trail-running-shoes',  
  'biddingLogicUrl': ...,  
  'dailyUpdateUrl': ...,  
  'trustedBiddingSignalsUrl': ...,  
  'trustedBiddingSignalsKeys': ['key1', 'key2'],  
  'userBiddingSignals': {...},  
  'ads': [shoesAd1, shoesAd2, shoesAd3],  
};
```

```
navigator.joinAdInterestGroup(interestGroup, 30 * kSecsPerDay);
```

# User visits publisher website



# Ad auction is run

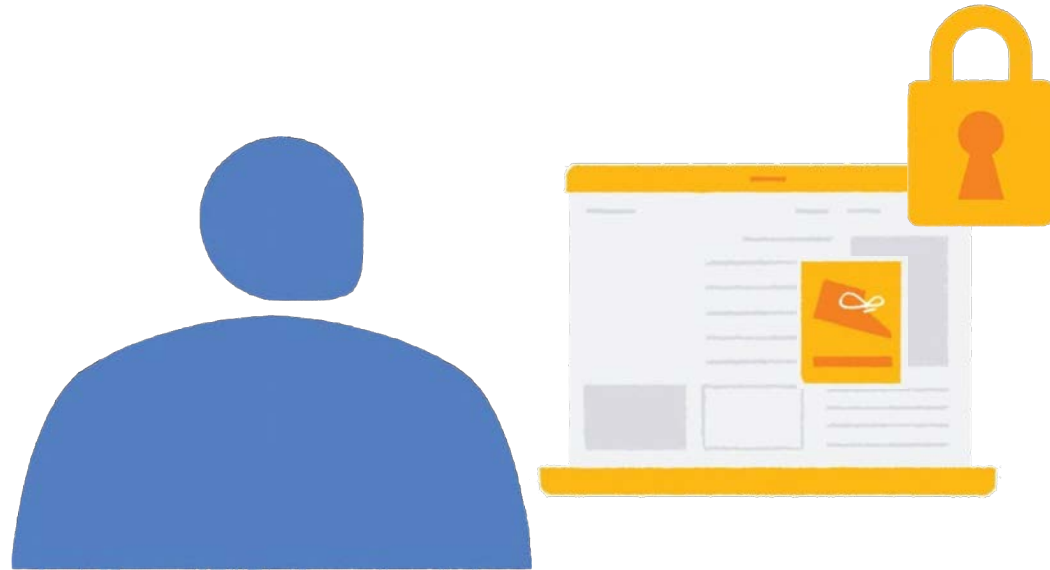
```
navigator.runAdAuction()
```



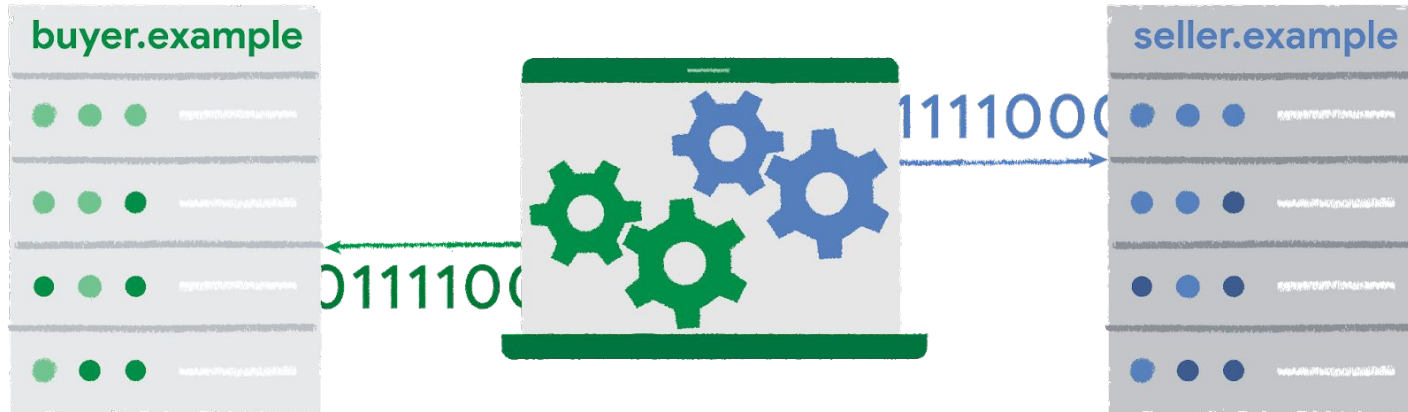
```
const auctionConfig = {
  'seller': 'www.example-ssp.com',
  'decisionLogicUrl': ...,
  'trustedScoringSignalsUrl': ...,
  'interestGroupBuyers': ['www.example-dsp.com', 'buyer2.com', ...],
  'additionalBids': [otherSourceAd1, otherSourceAd2, ...],
  'auctionSignals': {...},
  'sellerSignals': {...},
  'perBuyerSignals': {
    'www.example-dsp.com': {...},
    'www.another-buyer.com': {...},
    ...},
};
```

```
navigator.runAdAuction(auctionConfig);
```

# Winning ad is displayed



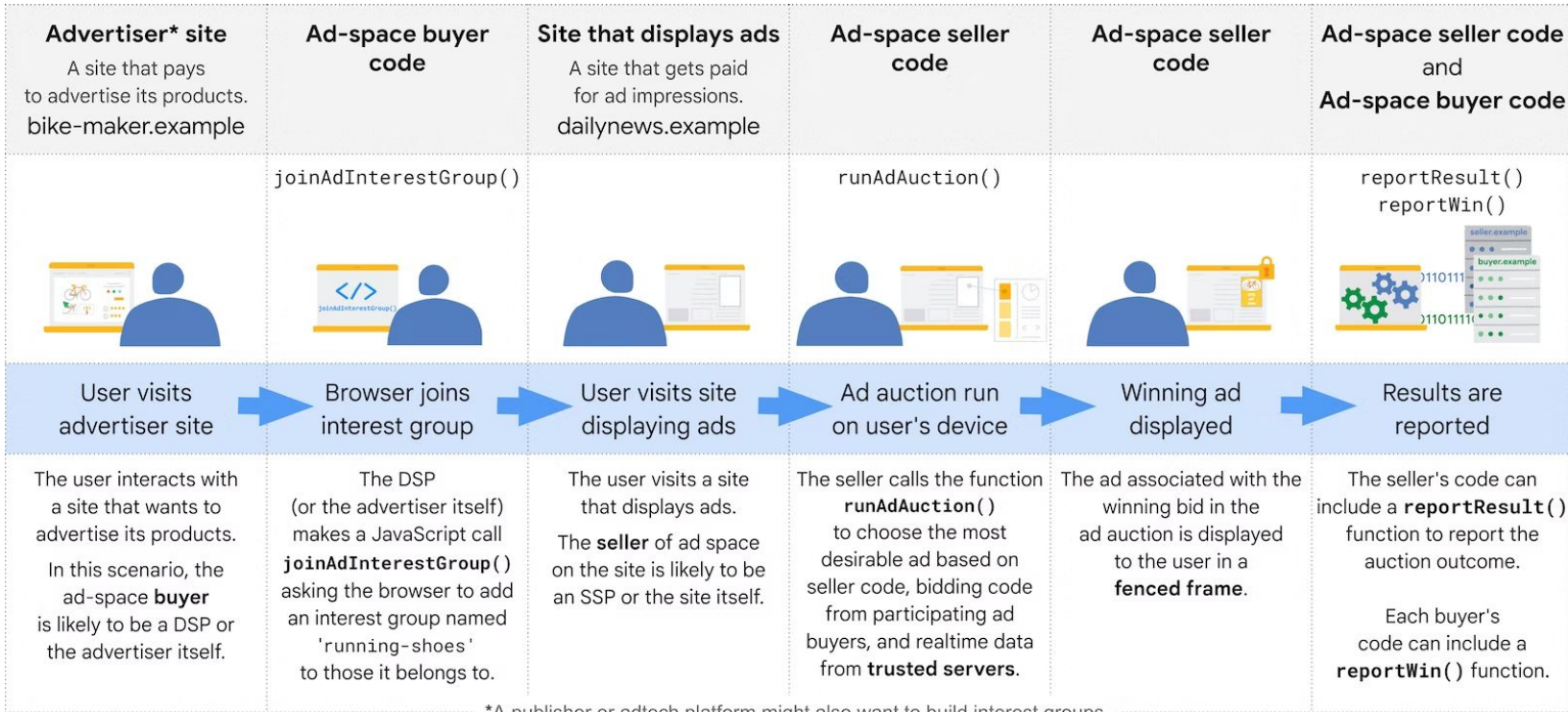
# Winning buyer and seller report result



```
navigator.reportResult();
```

# And if all goes well...





\*A publisher or adtech platform might also want to build interest groups.

# Attribution Reporting



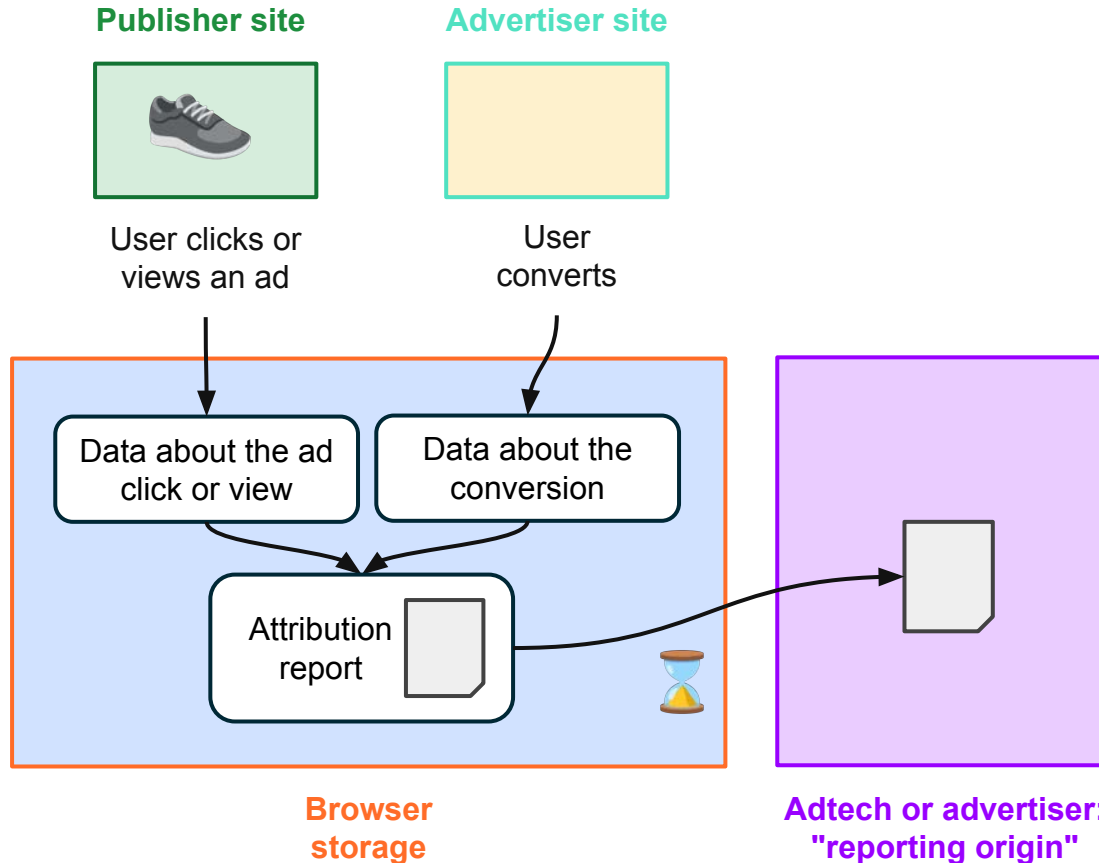
**Measure when  
an ad click or impression  
leads to a conversion  
without cross-site tracking**

**Two APIs in one!**

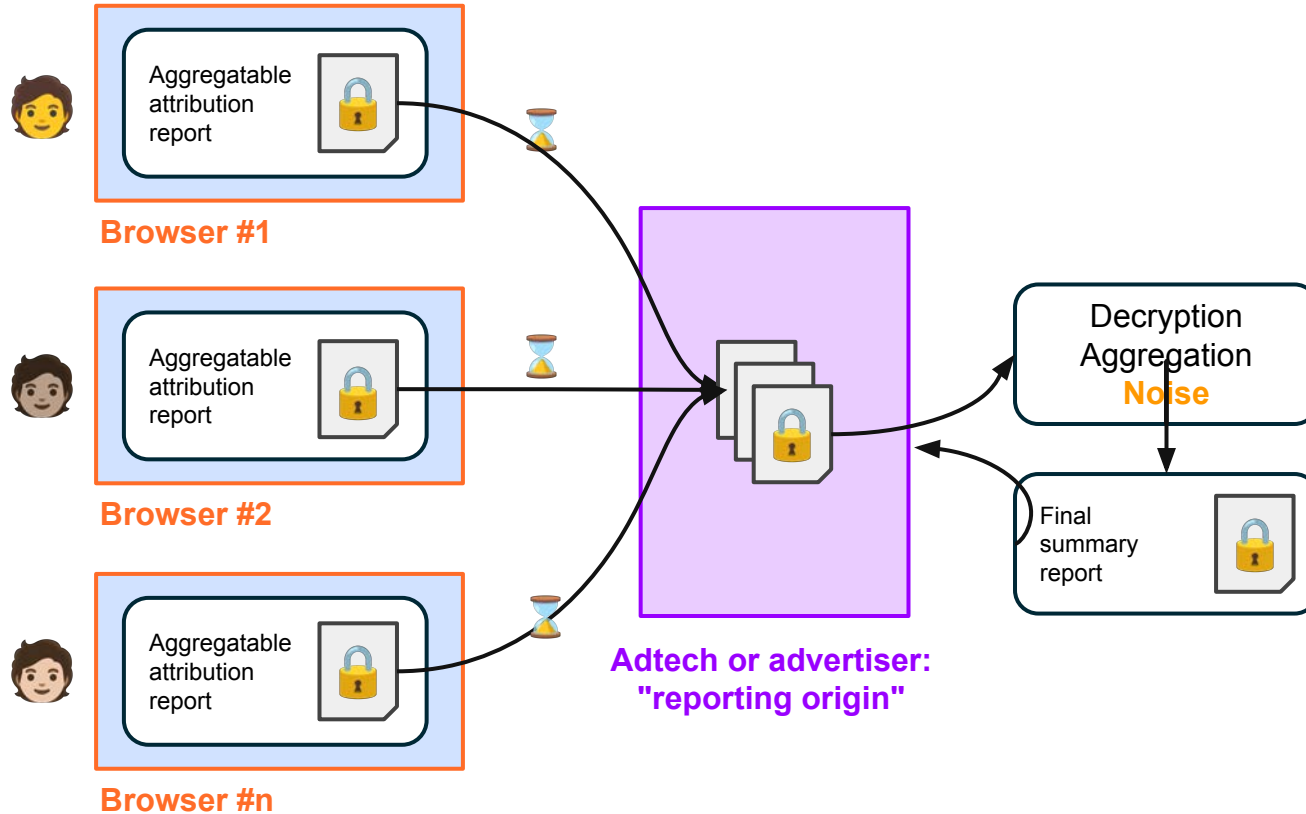
**Event-level reports**

**Summary reports**

# Event-level reports



# Summary reports



**Bonus thing!**

# Privacy Sandcastle



# Topics

## FLEDGE

### Fenced Frames

### Attribution Reporting

[github.com/JackJey/privacy-sandcastle](https://github.com/JackJey/privacy-sandcastle)

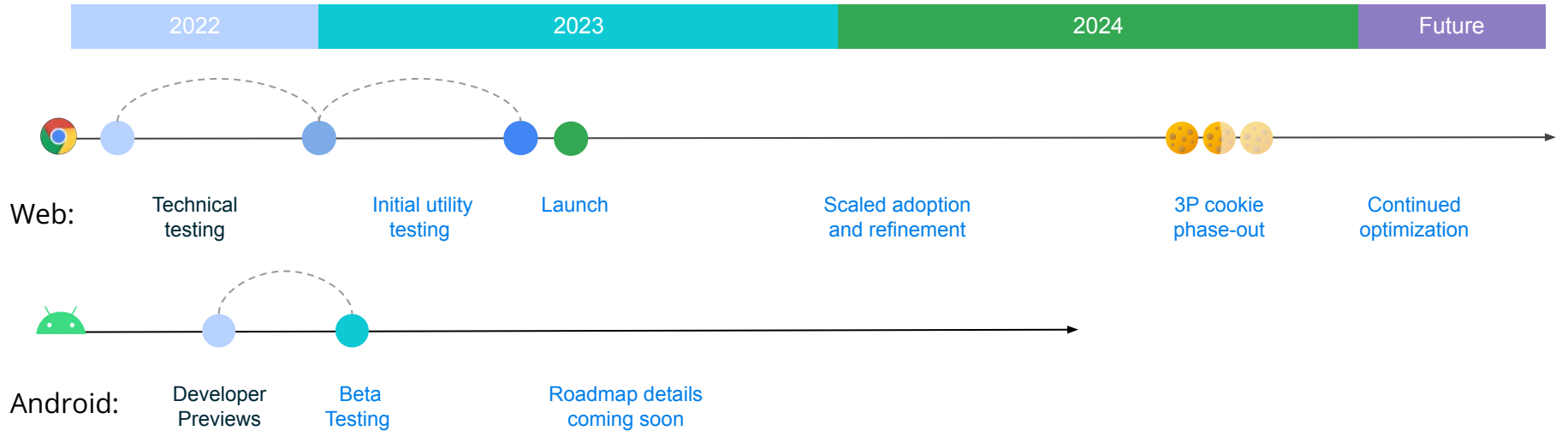
# Timelines



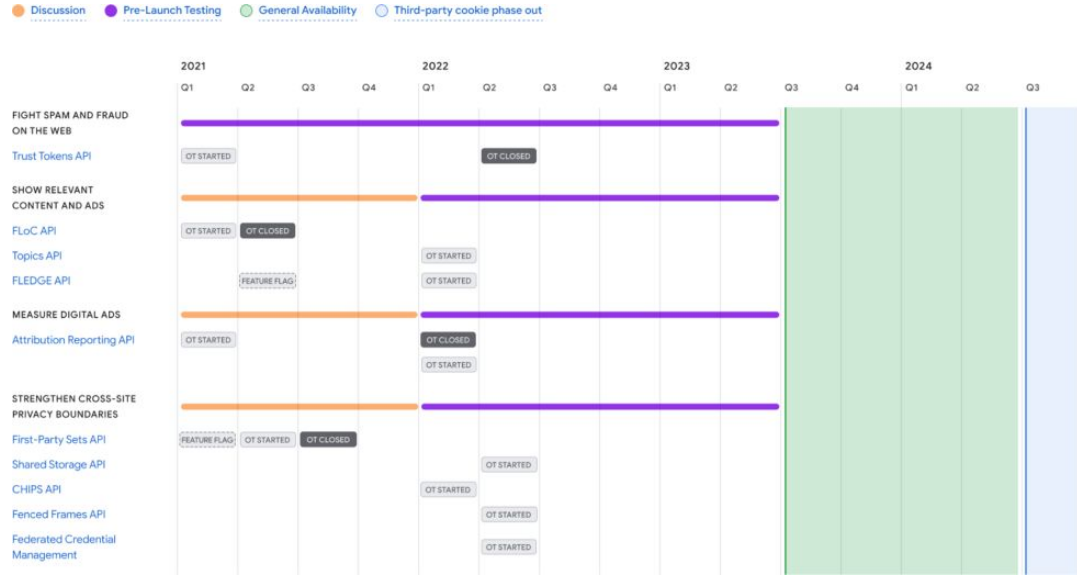
# High-level timelines

**Today:** Early technical integration

**Soon:** Early utility testing



# Timeline



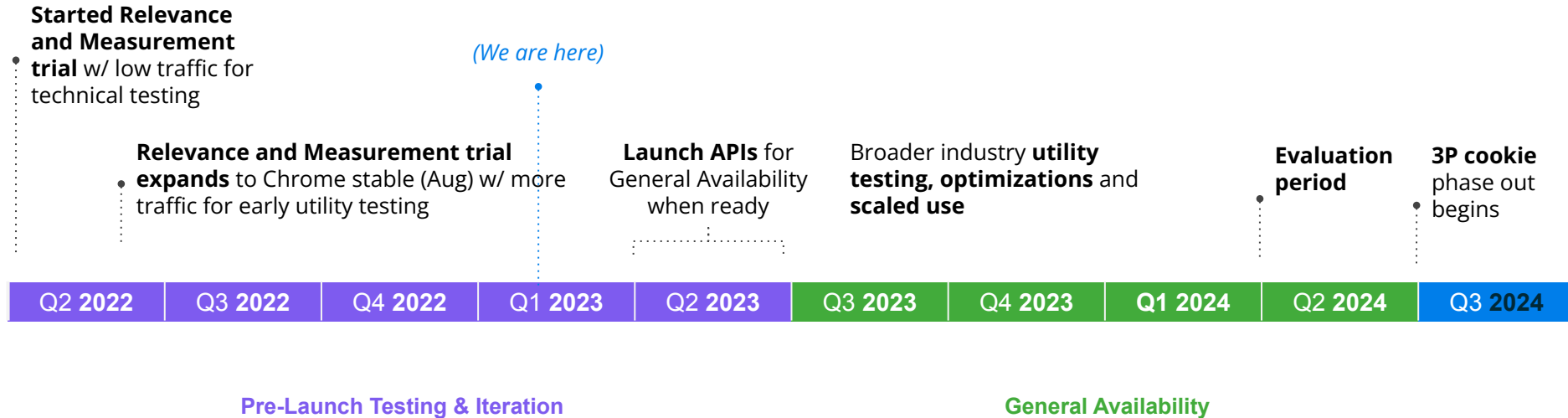
**H2 2023:** APIs launched for general availability.

**H2 2024:** Begin phasing out third-party cookies.

[privacysandbox.com/timeline](https://privacysandbox.com/timeline)

# Privacy Sandbox timeline for testers

## (Relevance and Measurement APIs)



Current as of Q1 2023; check [privacysandbox.com](https://privacysandbox.com) for updates.  
General timeline applies to Ads APIs and other technologies related to third-party cookie deprecation.

# What you need to do now

Understand timelines

Audit your sites

Talk to third-party providers

Test the APIs

# privacysandbox.com

# Privacy Sandbox for developers

[google.com/ps](https://google.com/privacy-sandbox)

# Origin trials

# goo.gle/ot

# What are Chrome's origin trial?

[goo.gl/origin-trial](https://goo.gl/origin-trial)



# Chrome Concepts

[google.com/cc](https://google.com/cc)

# Thank you.

**Sam Dutton**

Developer Advocate  
Google

@sw12



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