

**[SHARED]**

This deck was initially presented at Web Summer Camp 2022

[goo.gle/ps-wsc](https://www.google.com/ps-wsc)



# What is the Privacy Sandbox?

**Sam Dutton**

Developer Advocate

Google

@sw12

Web Summer Camp 2022





I grew up here



**Which looks like this**

Photographer: John Coppi



I live here

A photograph of a park on a sunny day. In the foreground, a dark wooden bench sits on a paved path. The path leads into a large, open field of dry, yellowish-brown grass. In the background, there is a dense line of green trees under a clear blue sky. The text "Which looks like this" is overlaid in the center of the image in a bold, blue font.

**Which looks like this**





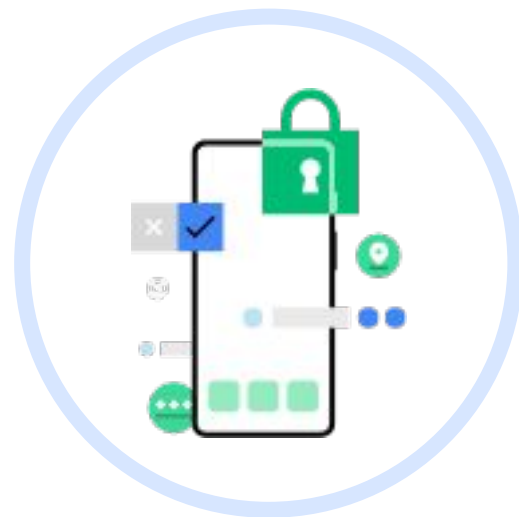




# Privacy Sandbox for Android

Announced Feb 2022

- Shared vision
- Shared proposals
- Unique technical implementations



How We're Protecting Your Me... x +

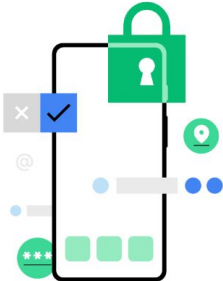
← → ↻ privacysandbox.com/intl/en\_us/android/#how-works-on-apps-hero 🔍 🏠 ☆ OT 🛠️ 🗄️ 👤 ⋮

The Privacy Sandbox Home ▾ Web ▾ Android ▾

# Privacy Sandbox on Android

Privacy Sandbox will introduce new technology that operates without cross-app identifiers – including [Advertising ID](#). This helps apps remain free through ads while your data stays protected.

Privacy Sandbox also aims to limit covert tracking and collection of user data, including safer ways for apps to integrate with third-party developers.



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

Privacy Sandbox on Android | x +

developer.android.com/design-for-safety/privacy-sandbox

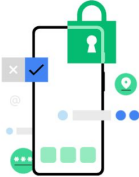
developers Platform Android Studio More Search English Sign in

Overview Releases Multi-device Wear Technology Large Screens Privacy

Privacy Sandbox on Android Developer Preview is here! [Learn how to get started](#), and [continue to provide feedback](#).

# Privacy Sandbox on Android

The Privacy Sandbox on Android aims to develop new technologies that improve user privacy and enable effective, personalized advertising experiences for mobile apps. We welcome industry feedback on the design proposals and testing as previews become available.



developer.android.com

**Motivation**

**APIs**

**Feature lifecycle**

# Motivation

# Composability



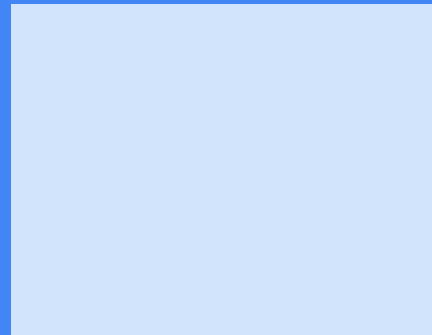
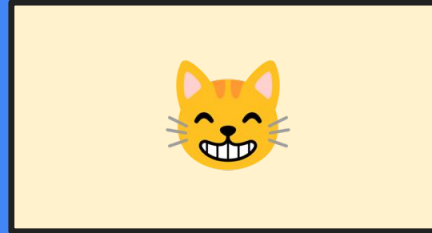
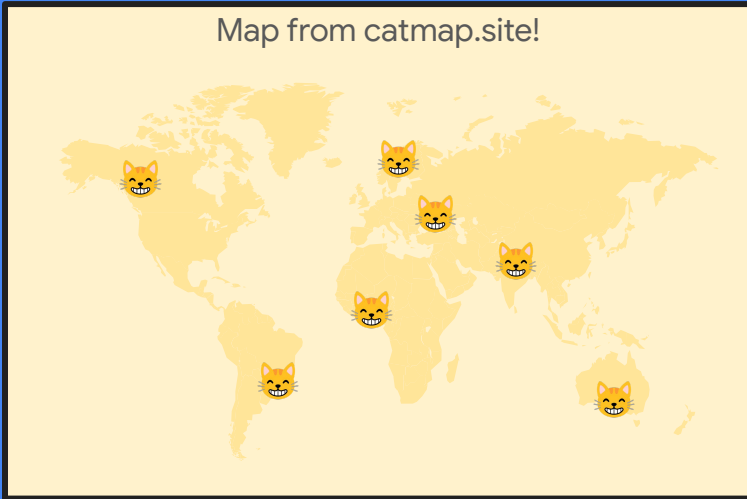


we-love-cats.glitch.me

We ♥ cats

See [more cats?](#)

Map from catmap.site!



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

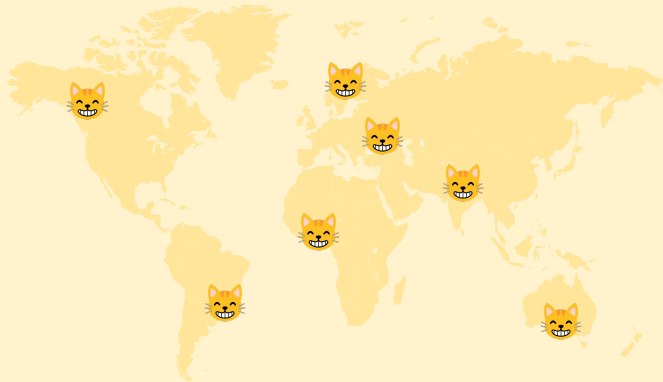


we-love-cats.glitch.me

We ♥ cats

See [more cats?](#)

Map from catmap.site!



Ad from  
adtech.example!



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

## FAVOURITE AUTHORS, BRITISH AND FOREIGN.

*Crown 8vo, fancy boards, 2s. each.*

- |  |  |
|--|--|
| <p>1. NEVER AGAIN. Mayo.<br/>2. SCOTTISH CHIEFS.<br/>3. LEAH.<br/>4. MARGARET CATCHPOLE.<br/>5. ZANA, THE GIPSY.<br/>6. SAILOR HERO.<br/>7. POE'S TALES.<br/>8. CRUISE OF THE DARING.<br/>9. ADVENTURES OF MR. WILDERSPIN.<br/>10. THE BERBER. Mayo.<br/>11. IMPROVISATORE. By Andersen.<br/>12. WILD AS A HAWK. Macquoid.<br/>13. ARTHUR BONNICASTLE. By J. G. Holland.</p> | <p>14. MARGARET. A Tale of Real and Ideal. By Sylvester Judd.<br/>15. EVELINA. By Mme. D'Arblay (Miss Burney), Author of "Cecilia," etc.<br/>16. GAMBLER'S WIFE.<br/>17. REGINALD HETHEREDGE. By Henry Kingsley.<br/>18. UNREQUITTED AFFECTION; OR, DADDY GORIOT. By Honore de Balzac.<br/>19. THE SUFFOLK GIPSY; OR, JOHN STEGGALL. By the Author of "Margaret Catchpole."<br/>20. TOM CRINGLE'S LOG. By Michael Scott.</p> |
|--|--|

## HOUSEHOLD AND RAILWAY NOVELS.

*Crown 8vo, fancy boards.*

- |   |   |
|---|---|
| <p>1. EULALIE; OR, The Red and White Roses. By W. S. Hayward, Author of "The Black Angel," &amp;c. Feap., boards. 2s. 6d.<br/>2. THE YOUNG DRAGON. By Captain Drayson. 2s.<br/>3. THE IMAGE OF HIS FATHER. By the Brothers Mayhew. With Clever Illustrations by Phiz. 2s.<br/>4. BRET HARTE. Complete Tales. 2s.<br/>5. THE INNOCENTS ABROAD; OR, THE NEW PILGRIM'S PROGRESS. By Mark Twain. 2s.<br/>6. OUT OF THE HURLY BURLY. By Max Adeler.<br/>7. TWELVE MONTHS OF MATRIMONY. 2s.<br/>8. THE PHANTOM CRUISER. 2s.<br/>9. THE BRILLIANT MARRIAGE. 2s.<br/>10. MARK'S REEF. 2s.</p> | <p>12. RUNNING THE BLOCKADE. 2s.<br/>13. THE SEA LIONS. 2s.<br/>14. NIGHTS AT SEA. 2s.<br/>15. MARY BUNYAN. 2s.<br/>16. BACK LOG STUDIES AND MY SUMMER IN A GARDEN. By Charles Dudley Warner. 2s.<br/>17. MARK TWAIN'S AMERICAN DROLLERIES. 2s.<br/>18. FUNNY STORIES AND HUMOROUS POEMS. By Mark Twain and O. W. Holmes. 2s.<br/>19. BEETON'S RIDDLES AND ACTING CHARADES. 2s.<br/>20. ARTEMUS WARD: HIS BOOK, AND TRAVELS AMONG THE MORMONS. 2s.<br/>21. JOSH BILLINGS AND MAJOR JACK DOWNING. 2s.<br/>22. BIGLOW PAPERS AND SAXE'S</p> |
|---|---|



# So... What's the problem?

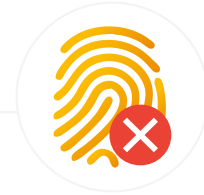
- Cookies and other tracking mechanisms are going away.
- Interest-based ads and remarketing ads rely on these.

# 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.

# ADVERTISERS

### Agencies

- OmnicomGroup
- WPP
- PUBLICIS
- IPG Interpublic Group
- HAVAS
- AEGIS
- MDC PARTNERS
- AKQA
- LBi
- icrossing / i///
- Innovation INTERACTIVE
- at&t Interactive
- ReachLocal
- yodle
- WebVisible

### Media Buying Platforms

- OmnicomMediaGroup TradingDesk
- MIG
- VivAKi
- CADREON
- adnetik
- VARICKMEDIA

### "DSPs"

- MediaMath
- invite media
- [X+1]
- TURN
- DataXu
- appnexus
- efficient frontier
- TRIGGIT
- AdBuyer.com
- Trade Desk
- BRANDSCREEN

### Ad Exchanges

- doubleclick by Google
- rightmedia a Yahoo! company
- Advertising.com Ad Desk
- ADECN
- CONTEXTWEB Where buyers and sellers win
- adBrite
- adap.tv
- OpenX
- adjug

### Ad Networks

#### Horizontal

- YAHOO!
- Microsoft Media Network
- Google
- Aol.
- audience network
- ValueClick
- Tribal FUSION
- 247 REALMEDIA
- UNDERTONE NETWORKS
- BurstMedia
- cpX interactive
- Casale
- interclick
- traffic marketplace
- AdDynamix
- ADTEGRTY.COM
- Brand.net

#### Video / Rich Media

- SAY:
- tidalTV
- tremor media
- o-o-y-a-l-a
- brightcove
- BrightRoll
- YuMe
- BBE
- adconion
- ScanScout
- OGGFINO
- eyeWONDER

#### Vertical

- TRAVEL
- NetShelter Technology Media
- GORILLA NATION
- jumpSTART
- SPORTSGENIC
- IDG TechNetwork
- Glam
- INTERNET
- FERRETTED MEDIA

### Sharing Data / Social Tools

- facebook
- ShareThis
- clearspring
- gigya

### Ad Servers

- doubleclick by Google
- pointroll
- atlas
- Mediaplex
- mediamind

### Analytics

- OMNITURE
- unica
- Coremetrics
- tracksimple
- webtrends
- FLURBY
- MARKETSHARE PARTNERS
- Google Analytics

### Verification / Attribution

- DoubleVerify The Ad Verification Authority
- adsafe
- ANCHOR intelligence
- Ad-Juster
- vizu
- convertro
- ADXPPOSE
- visualiq
- Adometry
- ClickForensics

### Data Suppliers

- Experian
- ACXION
- datalogix
- TARGUSinfo
- nielsen
- eBureau
- NETEZZA
- infogroup
- IRI

### Mobile

- admob
- mejiva
- JumpTap
- InMobi
- Amobee Media Company
- mediatiles
- GREYSTRIP
- quattro
- crisp
- wireless
- millennialmedia
- fiobcix
- transpera

### Ad Servers

- doubleclick by Google
- 247 REALMEDIA
- apf
- OpenX
- ZED
- ADTECH
- FreesWheel

### Ad Ops / Infrastructure

- DDS
- Solbright
- MEDIABANK
- centro
- faciqa
- operative
- theorem
- TRAFFIQ
- ADIFY

# PUBLISHERS

# AUDIENCE

### Yield Optimization

- rubicon
- PubMatic
- ADMELD
- Publisher Tools
- fatTail
- Yieldex
- ShortTail
- YieldBuild
- yieldbot
- scout analytics

### Ad Servers

- doubleclick by Google
- 247 REALMEDIA
- apf
- OpenX
- ZED
- ADTECH
- FreesWheel

# 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



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

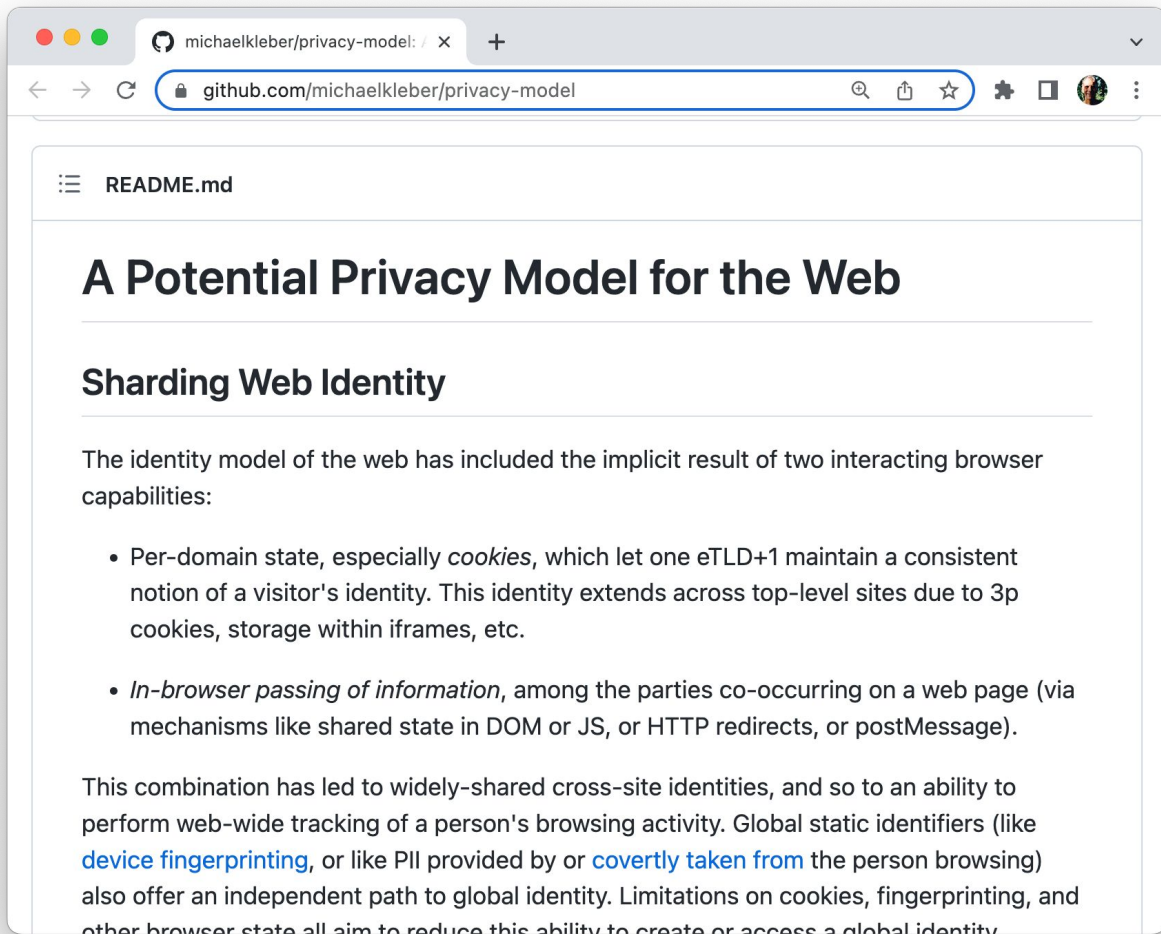
+ more...

## Phase out 3P cookies



## Combat covert tracking





The image shows a browser window with the address bar containing 'github.com/michaelkleber/privacy-model'. The page title is 'README.md'. The main heading is 'A Potential Privacy Model for the Web'. Below it is a sub-heading 'Sharding Web Identity'. The text discusses the identity model of the web, mentioning cookies and in-browser information passing. It lists two bullet points: 'Per-domain state, especially cookies' and 'In-browser passing of information'. The text continues to discuss cross-site identities and tracking, mentioning 'device fingerprinting' and 'PII provided by or covertly taken from the person browsing'.

microsite/privacy-model: / X +

github.com/michaelkleber/privacy-model

☰ README.md

# A Potential Privacy Model for the Web

---

## Sharding Web Identity

The identity model of the web has included the implicit result of two interacting browser capabilities:

- Per-domain state, especially *cookies*, which let one eTLD+1 maintain a consistent notion of a visitor's identity. This identity extends across top-level sites due to 3p cookies, storage within iframes, etc.
- *In-browser passing of information*, among the parties co-occurring on a web page (via mechanisms like shared state in DOM or JS, or HTTP redirects, or `postMessage`).

This combination has led to widely-shared cross-site identities, and so to an ability to perform web-wide tracking of a person's browsing activity. Global static identifiers (like [device fingerprinting](#), or like PII provided by or [covertly taken from](#) the person browsing) also offer an independent path to global identity. Limitations on cookies, fingerprinting, and other browser state all aim to reduce this ability to create or access a global identity.

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**



# Privacy Sandbox APIs

# Collaboration to design new technologies

30+

Proposals by Chrome and others to support a range of use cases

Behavioral Audience Groups  
Remarketing & Custom Audiences  
Conversion Measurement  
Fraud Detection  
Declaring First Party Context  
Federated Identity  
IP Address Privacy  
(+ More)

500+

Participants in W3C discussion and incubation groups

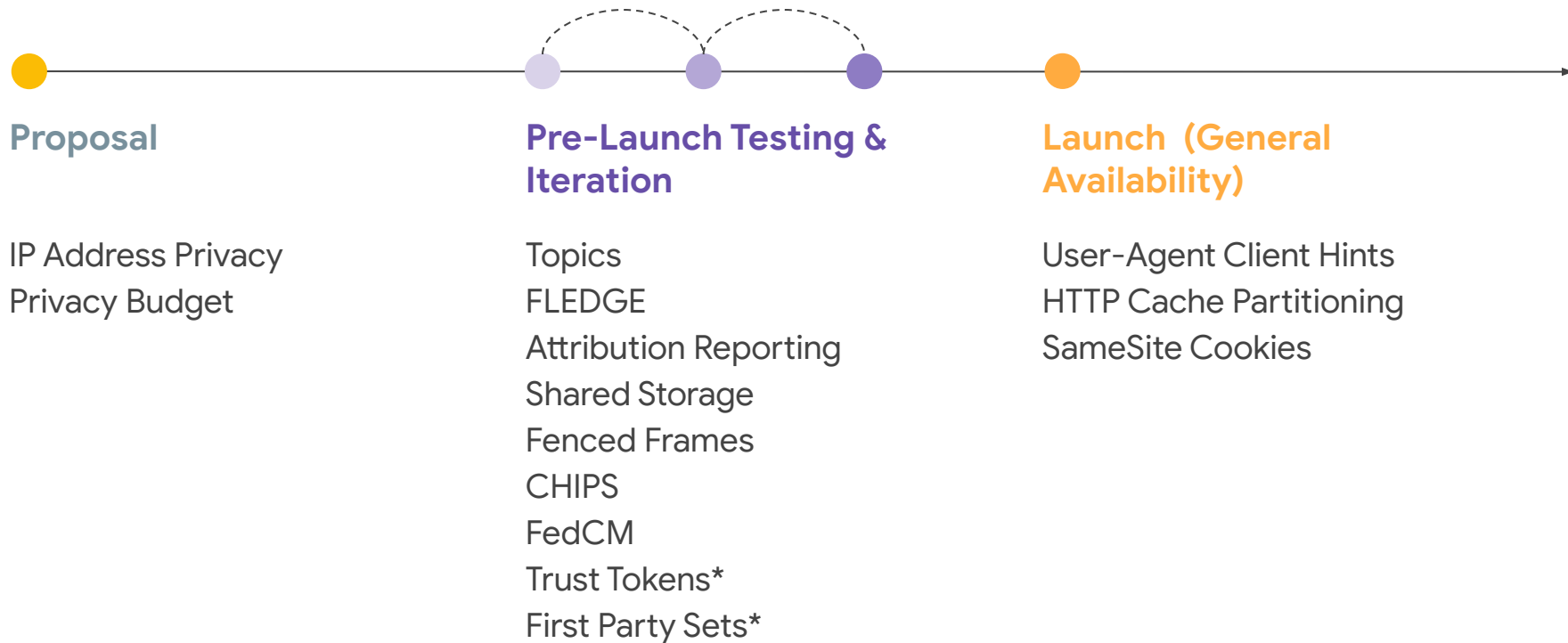
Ad Tech  
Mar Tech  
Browsers  
Social Platforms  
Publishers  
Advertisers  
Trade Associations  
Researchers

2,000+

Comments, questions and suggestions in GitHub across Chrome's proposals

Attribution Reporting (500+)  
FLEDGE (300+)  
Fenced Frames (40+)  
Topics (80+)  
FLoC (Replaced by Topics) (150+)  
First Party Sets (90+)  
CHIPS (40+)  
Shared Storage (40+)  
Trust Token (100+)  
FedCM (300+)  
UA-CH & UA-Reduction (300+)

# Progress of key Privacy Sandbox technologies



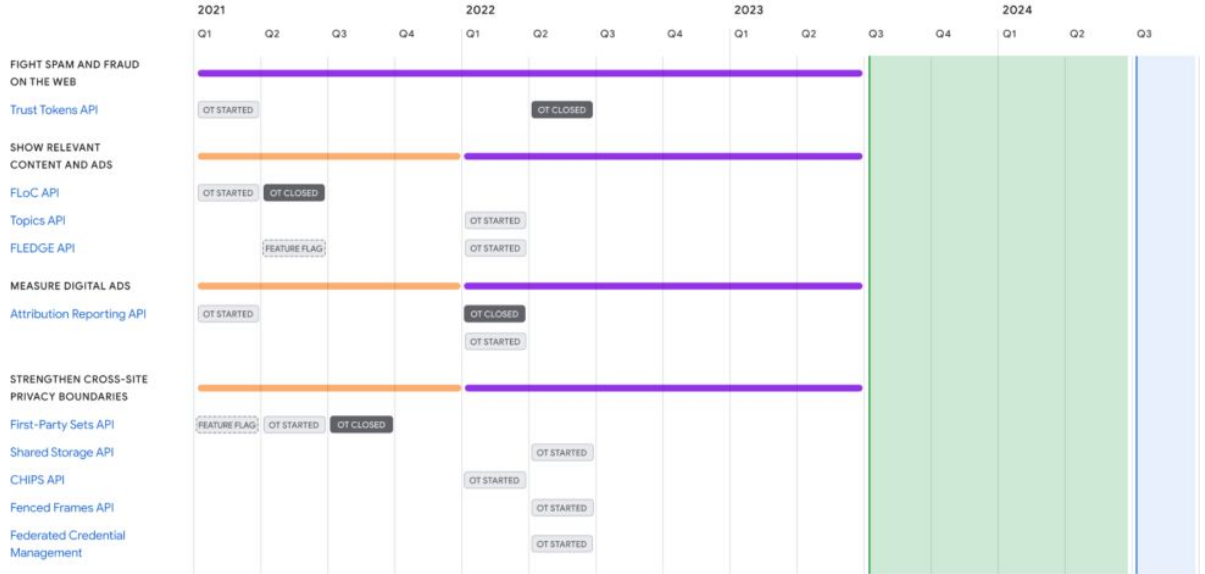
*\* Initial trial complete, evaluating next steps*

# Timeline

● Discussion ● Pre-Launch Testing ● General Availability ● Third-party cookie phase out

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







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



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

# Guidance and Updates

[developer.chrome.com/privacy-sandbox](https://developer.chrome.com/privacy-sandbox)

					
<b>Developer Guides</b>	<b>Chrome Office Hours</b>	<b>API Email Groups</b>	<b>Quarterly Feedback Reports*</b>	<b>W3C Meetings</b>	<b>GitHub Discussion</b>
Example: <a href="#">Attribution Reporting Guide</a>	Example: <a href="#">Attribution Reporting Office Hours</a>	Example: <a href="#">Attribution Reporting Updates</a>	Example: <a href="#">Measurement section of Q2-22 report</a>	Example: <a href="#">Dedicated Bi-Weekly Attribution Reporting Meeting</a>	Example: <a href="#">Attribution Reporting Issues</a>

(Plus trade association meetings and industry events around the world)

\* As part of its commitments to the Competition and Markets Authority, Google has agreed to publicly provide quarterly reports on the stakeholder engagement process for its Privacy Sandbox proposals (see paragraphs 12 and 17(c)(ii) of the [Commitments](#)).

## New Privacy-Preserving Technologies



Relevant Ads & Content



Measurement



Fraud Detection



Identity



Device Customization

+ more...

## Phase Out 3P Cookies



## Combat Covert Tracking



Show relevant content

Measure digital ads

# Roles and concepts



# Advertiser

A site that pays to advertise its products.

For example: an **online shoe store**.

# Publisher

A site that gets paid to display ads.

For example: a **news website**.

# Advertisers rely on ads

- To make people aware of their products.
- To drive business to their sites.

# **Publishers** rely on ads

- To show content without needing to charge for it.
- Because they don't have content people will pay for.

# Adtech platforms

- Help advertisers and agencies run web and app campaigns.
- Enable publishers (websites and apps) to sell ad space.
- May provide attribution, verification and other services.

# Relevant ads

- Are more profitable for sites that publish ads
- Drive more business to advertiser sites
- Annoy users less

# Different ways to provide relevant ads

- First-party
- Contextual
- Interest-based
- Remarketing

# “Ads APIs”

---

## Topics

High-level interest categories

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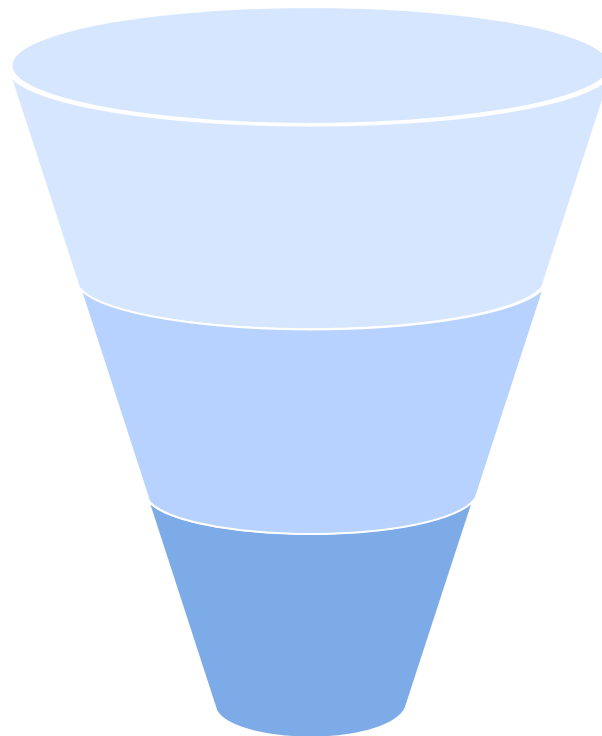
## FLEDGE

Remarketing and custom audiences

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## Attribution Reporting

Web advertising conversion  
measurement





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	30 Nov 2022

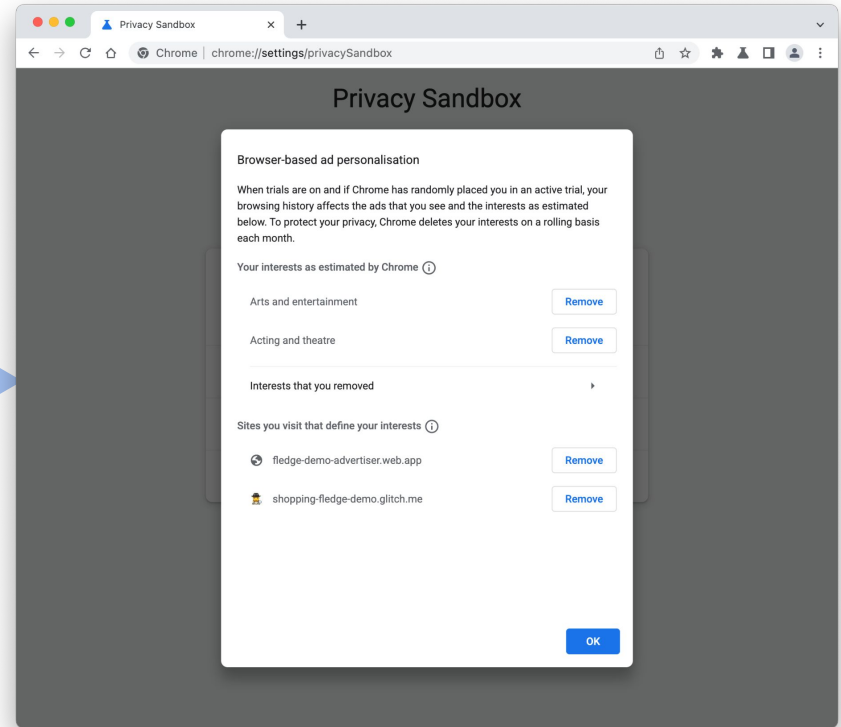
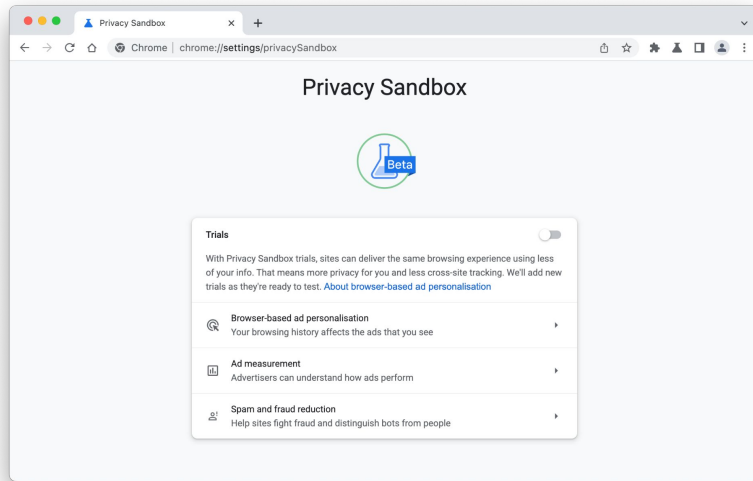
### Resources

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

[REGISTER](#)

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

# Updated user controls



# Use cases and proposals



## Relevant Ads & Content

- FLoC → Topics
- TURTLEDOVE → **FLEDGE**



## Measurement

- Attribution Reporting API



## Fight Spam & Fraud

- Trust Tokens



## Cross-Site Privacy Boundaries

- SameSite Cookies
- First Party Sets API
- Shared Storage API
  - CHIPS API
- Storage Partitioning
- Fenced Frames API
- Network State Partitioning



## Address Covert Tracking

- User-Agent Client Hints API
  - HTTP Cache Partitioning
    - DNS-over-HTTPS
- FedCM (Federated Identity)
- Gnatcatcher (IP Address Privacy)
  - Origin-Bound Cookies
  - Privacy Budget



## Other / Future Use Cases

*Ongoing use case discovery and innovation*

# The Topics API

# Topics API Overview

- 1 Sites are mapped to a public list of a few hundred human-curated, recognizable topics.

(e.g. Travel, Cooking & Recipes, Cycling)

- 2 User's browser works out the user's "top topics" for the week.

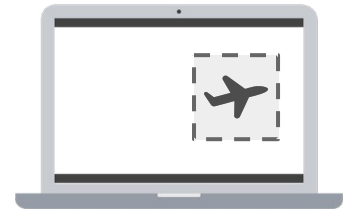
(People can view, remove or opt out.)



- 3 User's browser shares a limited set of "top topics" with each API caller (usually an advertising company).

Additional privacy measures to prevent re-identification across sites.

- 4 Advertisers use topics as a signal to help deliver relevant ads.



## Site Classification



`https://cats.example.com`

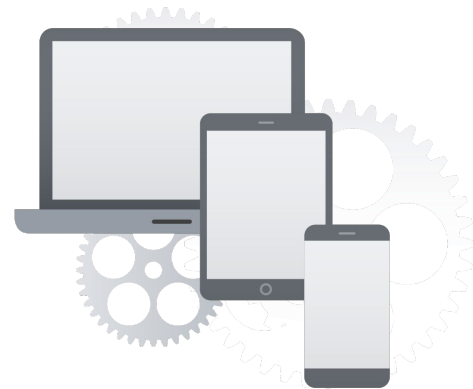
Host name

Pets & Animals/Pets/Cats

Mapped topic



## On-Device Algorithm



Browsing History  
(not exposed to any party;  
stays on device)



Site Classification



Filters

# chrome://topics-internals

Topics API Internals

Topics State Classifier Features and Parameters

Next scheduled calculation time: 13/05/2022, 13:20:06

Epochs (latest -> oldest)

Topic ID	Topic Name	Real or Random	Observed-by context domains (hashed)
267	Cats	Real	7610709088227068340
7	Humour	Real	7610709088227068340
265	Pets	Real	7610709088227068340
25	Classical music	Random	
344	Tourist destinations	Random	

Calculation time: 13/05/2022, 13:19:50  
Model version: 2205052059  
Taxonomy version: 1

Topic ID	Topic Name	Real or Random	Observed-by context domains (hashed)
7	Humour	Real	7610709088227068340
119	Hospitality industry	Random	

Topics API Internals

Topics State Classifier **Features and Parameters**

BrowsingTopics: enabled  
PrivacySandboxAdsAPISOverride: enabled  
PrivacySandboxSettings3: enabled  
OverridePrivacySandboxSettingsLocalTesting: enabled  
BrowsingTopicsBypassIPISPubliclyRoutableCheck: disabled  
BrowsingTopics:number\_of\_epochs\_to\_expose: 3  
BrowsingTopics:time\_period\_per\_epoch: 0d-0h-0m-15s  
BrowsingTopics:number\_of\_top\_topics\_per\_epoch: 5  
BrowsingTopics:use\_random\_topic\_probability\_percent: 5  
BrowsingTopics:number\_of\_epochs\_of\_observation\_data\_to\_use\_for\_filtering: 3  
BrowsingTopics:max\_number\_of\_api\_usage\_context\_domains\_to\_keep\_per\_topic: 1000  
BrowsingTopics:max\_number\_of\_api\_usage\_context\_entries\_to\_load\_per\_epoch: 100000  
BrowsingTopics:max\_number\_of\_api\_usage\_context\_domains\_to\_store\_per\_page\_load: 30  
BrowsingTopics:config\_version: 1  
BrowsingTopics:taxonomy\_version: 1

# 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

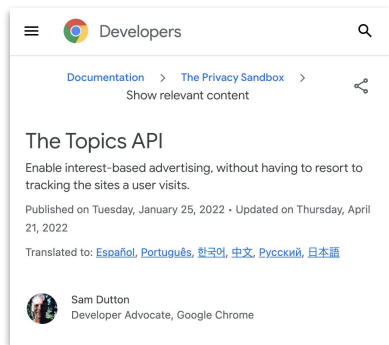
Host	Topics
developer.chrome.com	148. Web browsers 139. Programming
web.dev	139. Programming
google.com	219. Search engines



# Resources



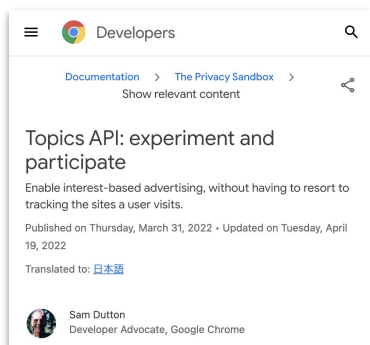
## Overview Orientation



[goo.gle/topics-overview](https://goo.gle/topics-overview)



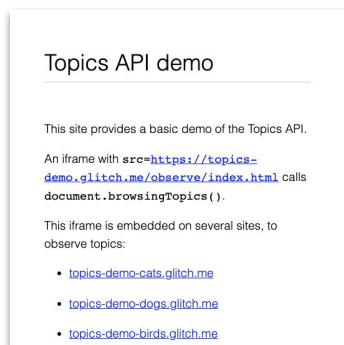
## Test & experiment Plan experimentation



[goo.gle/topics-experiment](https://goo.gle/topics-experiment)



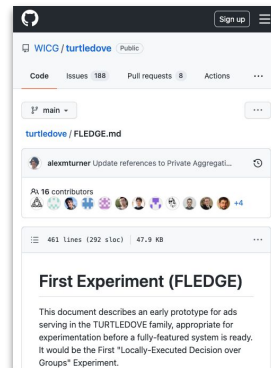
## Demo See how it works



[goo.gle/topics-demo](https://goo.gle/topics-demo)



## Specification Raise feedback



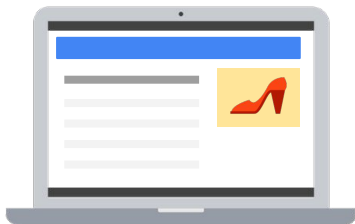
[goo.gle/topics-explainer](https://goo.gle/topics-explainer)

# The FLEDGE API

# How FLEDGE works

## 1 Buyer adds browsers to audiences

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



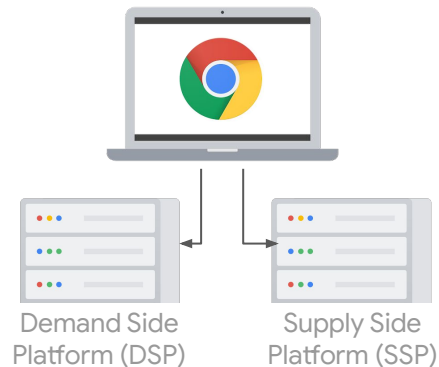
## 2 Seller initiates on-device auction

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

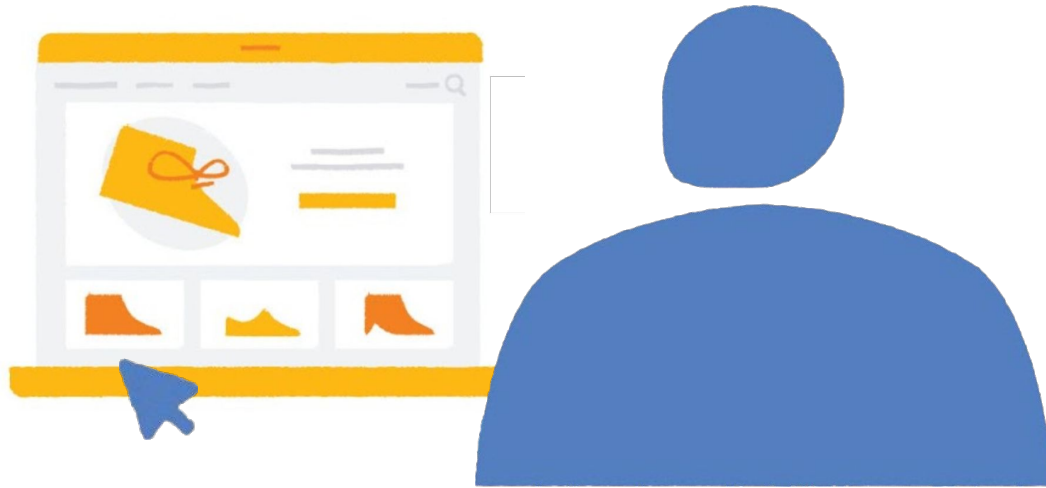


## 3 Browser sends post-auction reporting

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



User visits **advertiser** website



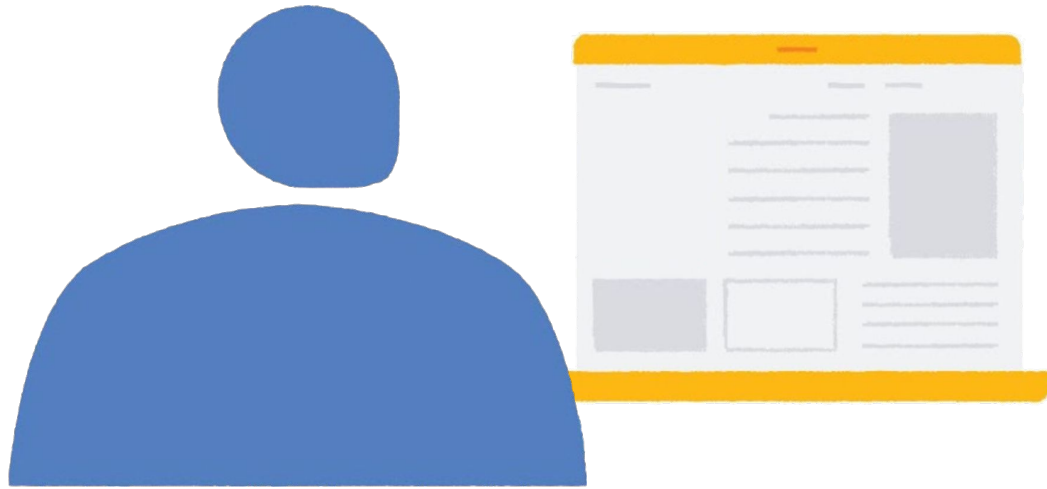
Browser is asked to join an **interest group**

```
navigator.joinAdInterestGroup()
```

```
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





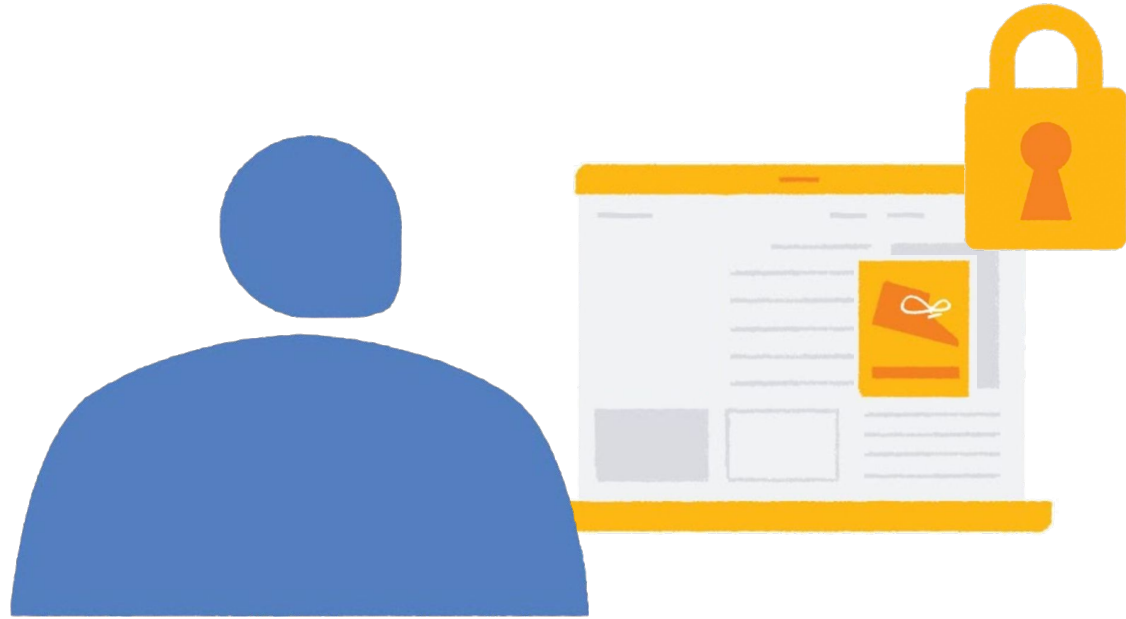
Ad auction is run

```
navigator.runAdAuction()
```

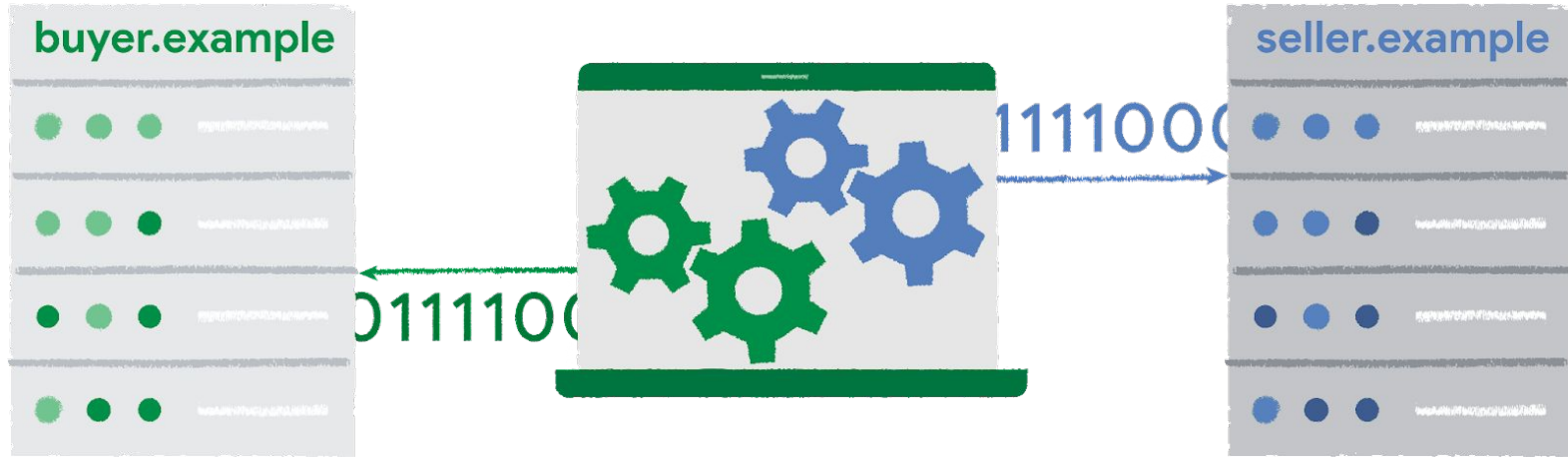
```
const auctionConfig = {
  'seller': 'www.example-ssp.com',
  'decisionLogicUrl': ...,
  'trustedScoringSignalsUrl': ...,
  'interestGroupBuyers': ['www.example-dsp.com', 'buyer2.com', ...],
  'additionalBids': [otherSourceAd1, otherSourceAd2, ...],
  'auctionSignals': {...},
  'sellerSignals': {...},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

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

# Winning ad is displayed

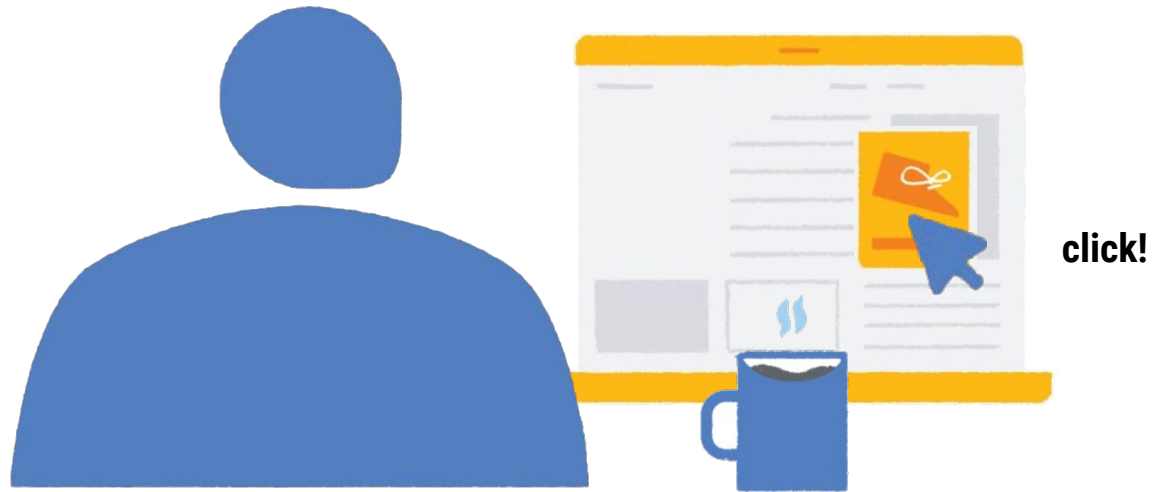


# Winning buyer and seller report result



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

And if all goes well...



**What's an interest group?**



# An interest group is...

A group of people with a common interest

Every interest group has an owner

**What's an auction?**

A small JavaScript program

# Resources



## Overview Orientation

Chrome Developers

Documentation > The Privacy Sandbox > Show relevant content

### FLEDGE API

FLEDGE is a Privacy Sandbox proposal to serve remarketing and custom audience use cases, designed so it cannot be used by third parties to track user browsing behavior across sites.

Published on Thursday, January 27, 2022 • Updated on Tuesday, April 19, 2022

Translated to: Español, Português, 한국어, 中文, Pусский, 日本語, Français, Deutsch

Sam Dutton  
Developer Advocate, Google Chrome

Table of contents



[goo.gl/fledge-overview](https://goo.gl/fledge-overview)



## Developer Guide Technical Details

Chrome Developers

Blog

### FLEDGE API developer guide

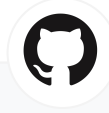
Published on Thursday, January 27, 2022 • Updated on Friday, April 22, 2022

Sam Dutton  
Developer Advocate, Google Chrome

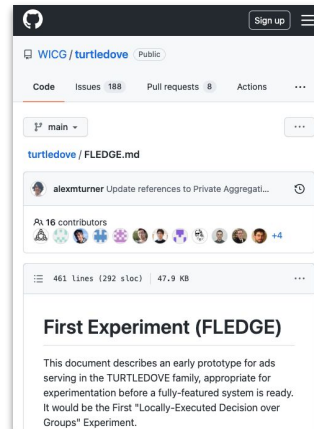
Table of contents



[goo.gl/fledge-dev-guide](https://goo.gl/fledge-dev-guide)



## Specification Raise feedback



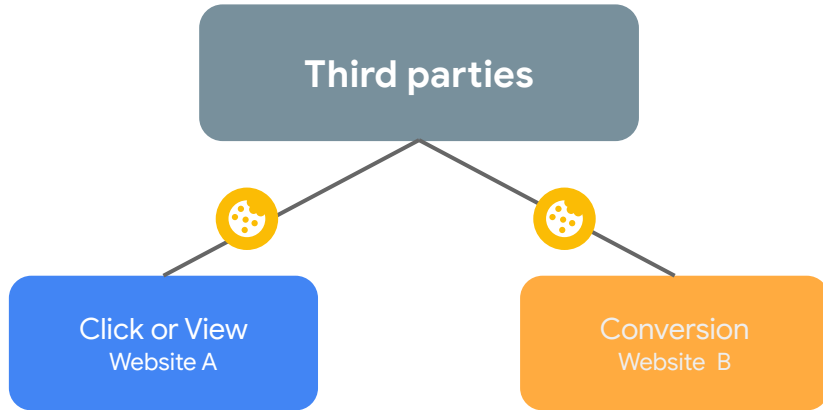
[goo.gl/fledge-explainer](https://goo.gl/fledge-explainer)

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

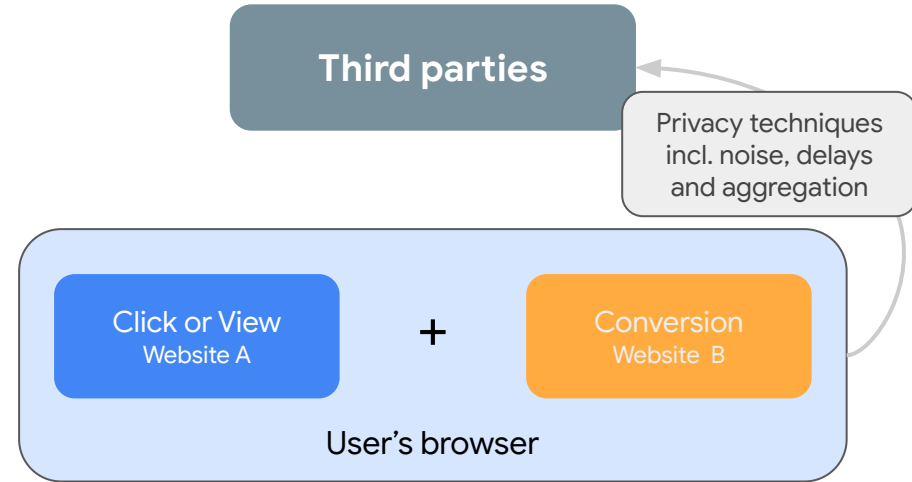
[fledge-demo.web.app](https://fledge-demo.web.app)

# Attribution Reporting

## Using cookies



## Using Attribution Reporting





# Attribution Reporting step by step

**1** When a user **views or clicks an ad on a website**, the user's browser records the event.

**2** If the user later **engages with the advertiser's site**, the user's browser records the event.

*Conversion events include purchases, sign-ups, etc.*

**3** Privacy measures such as **delays**, **noise** and **aggregation services** are used to deliver anonymized campaign reports to advertisers.

➔ **Summary reports** provide detailed attribution information in aggregate

➔ **Event-level reports** provide limited ad engagement information on a per-event basis



*Publisher site*



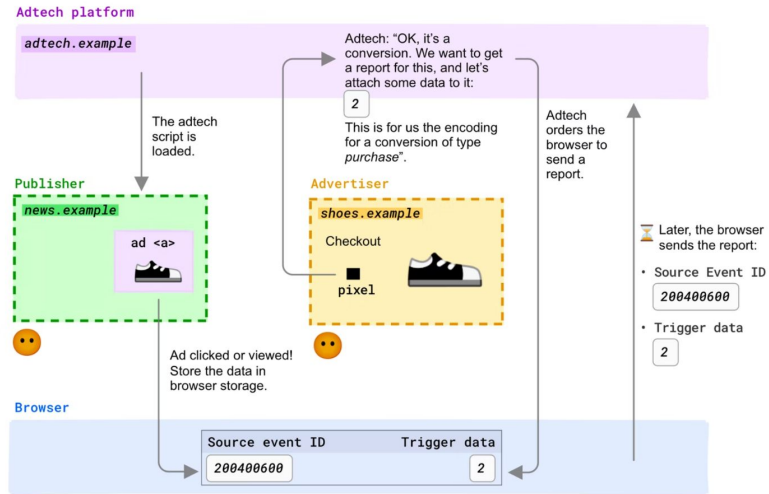
*Advertiser site*



## # How does the Attribution Reporting API work?

The Attribution Reporting API enables the measurement of two events that are linked together: an event on a publisher's website, such as a user viewing or clicking an ad, with a subsequent conversion on an advertiser site.

## # Event-level reports



Event-level reports are generated as follows:

The browser matches clicks or views with conversion data defined by an adtech.

Later, the browser sends the resulting reports to a predefined endpoint, with some delay and noise.

# Feature lifecycle

Draft  
proposal



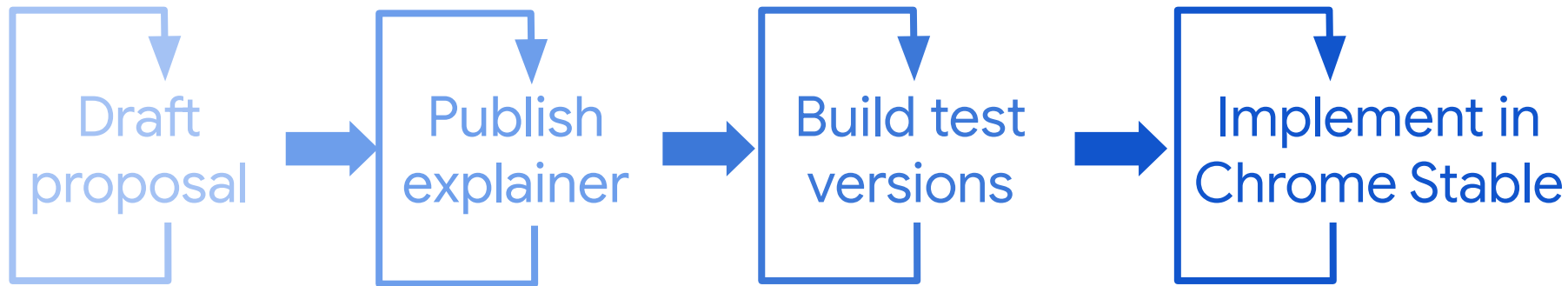
Publish  
explainer



Build test  
versions



Implement in  
Chrome Stable





# Stage 1: **Idea incubation**

The screenshot shows a Google Docs document titled "Topics API Explainer". The document content is as follows:

**Content to be published starts here (DO NOT PUBLISH THE ABOVE CONTEXT)-----**

## The Topics API

With the upcoming removal of third-party cookies on the web, key use cases that browsers want to support will need to be addressed with new APIs. One of those use cases is interest-based advertising.

Interest-based advertising (IBA) is a form of personalized advertising in which an ad is selected for the user based on interests derived from the sites that they've visited in the past. This is different from contextual advertising, which is based solely on the interests derived from the current site being viewed (and advertised on). One of IBA's benefits is that it allows sites that are useful to the user, but perhaps could not be easily monetized via contextual advertising, to display more relevant ads to the user than they otherwise could, helping to fund the sites that the user visits.

## The API and how it works

The intent of the Topics API is to provide callers (including third-party ad-tech or advertising providers on the page that run script) with coarse-grained advertising topics that the page visitor might currently be interested in. These topics will supplement the contextual signals from the current page and can be combined to help find an appropriate advertisement for the visitor.

Example usage to fetch an interest-based ad:

```
// document.browsingTopics() returns an array of up to three topic objects in
random order.
const topics = await document.browsingTopics();
```

patcg-individual-drafts/topics x +

github.com/patcg-individual-drafts/topics

README.md

# The Topics API

**This document is an individual draft proposal. It has not been adopted by the Private Advertising Technology Community Group.**

---

With the upcoming removal of third-party cookies on the web, key use cases that browsers want to support will need to be addressed with new APIs. One of those use cases is interest-based advertising.

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Example usage to fetch an interest-based ad:

```
// document.browsingTopics() returns an array of up to three topic objects in random or
const topics = await document.browsingTopics();
```

No releases published  
[Create a new release](#)



---

**Packages**

No packages published  
[Publish your first package](#)

---

**Contributors** 2

-  **jkarlin** Josh Karlin
-  **michaelkleber** Michael Kleber



Issues · patcg-individual-draft: x +

github.com/patcg-individual-drafts/topics/issues

51 Open ✓ 17 Closed

Author ▾ Label ▾ Projects ▾ Milestones ▾ Assignee ▾ Sort ▾

- Identifying the noisy topics**  
#75 opened 4 hours ago by AlexandreGilotte
- Fingerprinting threat using the TOPICS API**  
#74 opened 4 hours ago by AlexandreGilotte
- Toward an oligopoly of "Topic providers"?** 1  
#73 opened 8 hours ago by lbdvt
- Clarification on Padding Undersized Topics Lists** 1  
#72 opened 6 days ago by jeffhxu
- Not a document API** 7  
#71 opened 7 days ago by martinthomson
- Unable to get Topics values during origin trail** 5  
#68 opened 20 days ago by boazyaniv
- How often will modelVersion and taxonomyVersion change during the origin trial?** 3  
#66 opened on 26 Apr by timphsieh
- So how do I disable this infuriating feature?** 3  
#65 opened on 26 Apr by amicus-veritatis
- Classifier timeline and white paper** 3  
#64 opened on 22 Apr by fmingyan
- Definition of fields in the JSON returned by the TOPICS API** 4  
#63 opened on 20 Apr by arouzaud
- Treat sites with misrepresented or obfuscated ads as opted out** 10  
#62 opened on 16 Apr by...

Identifying the noisy topics - Issues

github.com/patcg-individual-drafts/topics/issues/75

Search or jump to... Pull requests Issues Marketplace Explore

patcg-individual-drafts / topics Public

Watch 72 Fork 35 Starred 318

Code Issues 51 Pull requests 2 Actions Projects Wiki Security Insights

# Identifying the noisy topics #75

Edit New issue

Open AlexandreGilotte opened this issue 4 hours ago · 0 comments

AlexandreGilotte commented 4 hours ago

It seems to me that the current specs of the API may enable a simple and practical attack to identify the noisy topics, which could thus be filter out by the DSPs.

This attack relies on those two rules:

- "The caller only receives topics it has observed the user visit in the past."
- "The exception to this filtering is the 5% random topic, that topic will not be filtered."

A direct consequence of those rules is that if a caller never observed any user before, then any topic it would receive is a random topic.

An attacker could thus call the API with two distinct endpoints:

- one regular endpoint, observing as much of the web as possible, to get as many user topics as possible (This is just the regular API use).
- an attack endpoint, which have never observed the user before. Any topic returned to this endpoint is a random topic, and should be filtered out from the result of the regular query.

Assignees  
No one—assign yourself

Labels  
None yet

Projects  
None yet

Milestone  
No milestone

Development  
Create a branch for this issue or link a pull request.

Notifications  
Customize



Identifying the noisy topics · Issue #75



github.com/patcg-individual-drafts/topics/issues/75



Search or jump to...



**Pull requests**



patcg-individual-drafts / **topics**

Public



meetings/2022/05/17-telecon

github.com/patcg/meetings/tree/main/2022/05/17-telecon

Search or jump to... Pulls Issues Marketplace Explore

patcg / meetings Public Watch 36 Fork 9 Star 21

Code Issues 15 Pull requests Actions Projects Wiki Security Insights

main meetings / 2022 / 05 / 17-telecon / Go to file Add file

eriktaubeneck Add PDF of slides for Issue #50 discussion 11 days ago History

- Aggregate Measurement Threat M... Add PDF of slides for Issue #50 discussion 11 days ago
- Attribution Measurement Use Cas... Add Attribution Measurement Use Cases slides 11 days ago
- README.md Update README.md 13 days ago
- W3C Read All About It!.pdf Add "W3C Read All About It!" Slides 13 days ago

README.md

## May 2022 Virtual Meeting

The Private Advertising Technology Community Group's meeting will be meeting two days for 3 hours at the same time both days.

### Schedule



## Stage 2: **Prototype and test**

Intent to Prototype: Topics API X +

groups.google.com/a/chromium.org/g/blink-dev/c/59uTw\_dxM3M/m/vF9IF9BVAgAJ

Groups

New conversation

My groups

Recent groups

All groups

Favourite groups

Starred conversations

blink-dev

Conversations 99+

Members

About

My membership settings

Intent to Prototype: Topics API 356 views Subscribe

yao...@chromium.org  
to blink-dev 24 Feb 2022, 23:09:36 ☆ ↶ ⋮

**Contact Emails**  
[yao...@chromium.org](mailto:yao...@chromium.org)  
[jka...@chromium.org](mailto:jka...@chromium.org)  
[ed...@google.com](mailto:ed...@google.com)  
[cilv...@google.com](mailto:cilv...@google.com)

**Explainer**  
<https://github.com/jkarlin/topics>

**Summary**  
Periodically, Chrome will classify the latest history hostnames to topics (i.e. the user's browsing interests) into one of a small number of coarse-grained Topics. The topics, subject to filtering, can be exposed to websites via the `document.browsingTopics()` API. This API aims to support interest-based-advertising use cases when third-party cookies are deprecated.

**Motivation**  
The intent of the Topics API is to provide callers (including third-party ad-tech or advertising providers on the page that run script) with coarse-grained advertising topics that the page visitor might currently be interested in. These topics will supplement the contextual signals from the current page and can be combined to help find an appropriate advertisement for the visitor.

# API announcements

Attribution Reporting API announcements (and developer questions)

190 members

1-28 of 28

- S, b. 2 Origin trial planned ramp-up to ~50% May 5
- a., A 2 Registering click sources with the JS May 4
- Sam... Origin trial for Attribution Reporting, F Apr 19
- ma..... Intent to Experiment – Published 2... Mar 28
- C, m 3 Updates to github proposals – Jus... Feb 16

FLEDGE API announcements

54 members

1-4 of 4

- Sam ... Origin trial planned ramp-up to ~50% o Apr 28
- Sam ... Origin trial for Attribution Reporting, FL Apr 19
- Sam ... Intent to Experiment – Published 25 ... Mar 25
- Sam ... Welcome! – This is a mailing list for ... Jan 31

Topics API announcements

87 members

1-6 of 6

- Sam... Stability issue fixed in code, API disat May 4
- Sam... Origin trial planned ramp-up to ~50% Apr 28
- Sam... Origin trial for Attribution Reporting, F Apr 19
- Sam... Intent to Experiment – Published 2... Mar 25
- Sam... Intent to Prototype – Published 24 ... Feb 28
- Sam... Welcome! – This is a mailing list fo... Jan 25





Articles

Check out what's new for the web platform at Google IO!

[Join the party](#)

[Dismiss](#)

[Documentation](#) > [The Privacy Sandbox](#) > [Get started](#)



▶ [What is the Privacy Sandbox?](#)

▼ [Get started](#)

[Feedback](#)

[Privacy Sandbox glossary](#)

[Is it ready yet?](#)

[FAQs](#)

▶ [Strengthen privacy boundaries](#)

▶ [Prevent covert tracking](#)

▶ [Show relevant content](#)

▶ [Measure digital ads](#)

▶ [Fight spam and fraud](#)

# Feedback

Where and how to provide feedback for Privacy Sandbox proposals throughout the development process.

Published on Monday, February 28, 2022 • Updated on Tuesday, May 17, 2022

Translated to: [日本語](#)



Rowan Merewood

Rowan is a Staff Developer Relations Engineer at Chrome.

[Table of contents](#) ▼

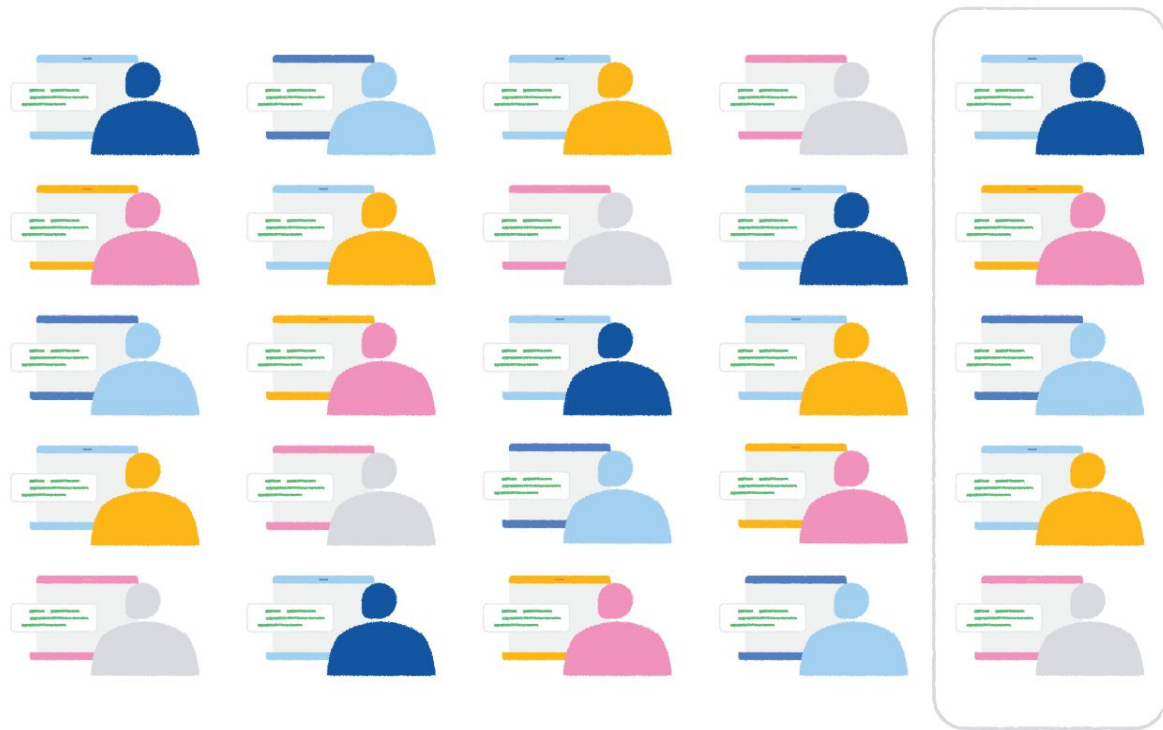
Getting feedback from a diverse set of stakeholders across the web ecosystem is critical to the Privacy Sandbox initiative. Here you'll find explanations of the many public channels that inform

# Release channels

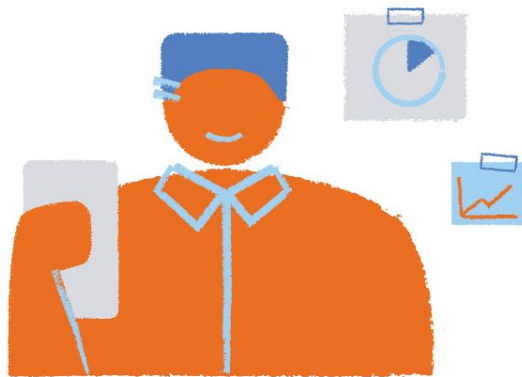


' The API has been  
rolled out to  
**1% of Chrome users.** '

# Chrome Variations



Trial group



Engineers testing  
Chrome **before** release.



Real people using  
Chrome **after** release.

What are Chrome Variations?

[goo.gle/chrome-variations](https://goo.gle/chrome-variations)



Individual developer testing

'Behind a flag'

Experiments x +

Chrome | chrome://flags/#privacy-sandbox-ads-apis

privacy sandbox Reset all

# Experiments

104.0.5092.0

Available Unavailable

**Privacy Sandbox Ads APIs**

Enables Privacy Sandbox APIs: Attribution Reporting, Fledge, Topics, Fenced Frames, Shared Storage, and their associated features. – Mac, Windows, Linux, ChromeOS, Android, Fuchsia, Lacros

[#privacy-sandbox-ads-apis](#)

✓ Disabled  
Enabled

Documents

```
Documents: /Applications/Google\ Chrome\ Canary.app/Contents/MacOS/Google\ Chrome\ Canary --enable-features=BrowsingTopics:  
time_period_per_epoch/15s,PrivacySandboxAdsAPIsOverride,PrivacySandboxSettings3,OverridePrivacySandboxSettingsLocalTesting
```

1321140 - Browser crash on to | X +

bugs.chromium.org/p/chromium/issues/detail?id=1321140

bugs chromium New issue Open issues owner:me dutton@google.com

☆ Starred by 2 users

Owner: yaoxia@chromium.org

CC: mleela@chromium.org

Status: Assigned (Open)

Components: Blink>InterestCohort

Modified: 6 days ago

Editors: ---

EstimatedDays: ---

NextAction: ---

OS: Linux, Android, Windows, Chrome, Mac, Lacros

Pri: 1

Type: Bug

Hotlist-Merge-Review merge-merged-5005 merge-merged-102

Your Hotlists: Update your hotlists

### Issue 1321140: Browser crash on topics calculation

Reported by jkarlin@chromium.org on Fri, Apr 29, 2022, 3:57 PM GMT+1 Project Member Code Back to list

**Public issue: Please do not post confidential information.**

There are instances when calculating topics that cause the browser process to crash. This can theoretically cause a crash loop on browser start.

**Comment 1** by jkarlin@chromium.org on Fri, Apr 29, 2022, 4:04 PM GMT+1 Project Member

**Labels:** Restrict-View-Google

**Comment 2** by Git Watcher on Fri, Apr 29, 2022, 6:12 PM GMT+1 Project Member

The following revision refers to this bug:  
<https://chromium.googlesource.com/chromium/src/+2a7e70efd690765464426a9f72e786db18fd752a>

commit [2a7e70efd690765464426a9f72e786db18fd752a](https://chromium.googlesource.com/chromium/src/+2a7e70efd690765464426a9f72e786db18fd752a)  
Author: Yao Xiao <yaoxia@chromium.org>  
Date: Fri Apr 29 17:11:30 2022

[Topics] fix crashes in BrowsingTopicsCalculator

Fix 2 issues:

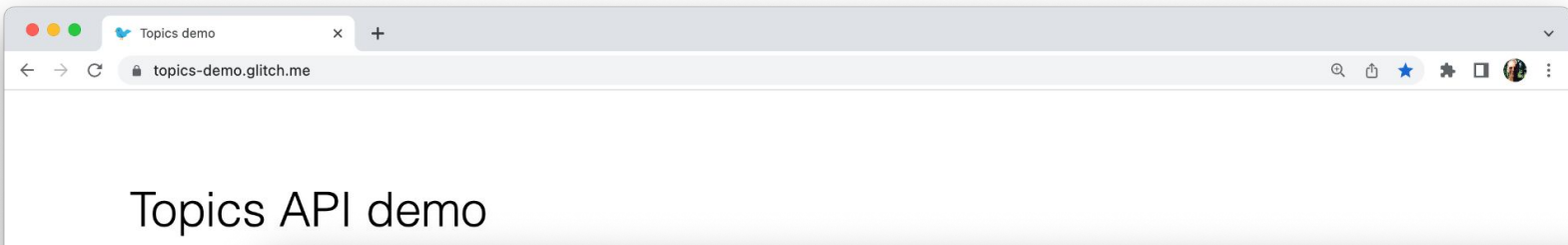
- When the classification succeeded in general, the specific topics for host (BatchAnnotationResult::topics()) could still be nullopt. Adding the check for nullopt.
- We should not use host\_topics\_map.at(host) as there could be no topics

Bugs

[crbug.com/new](https://crbug.com/new)

Comments on API design

[Issue on proposal on GitHub](#)



# Topics API demo

This site pro

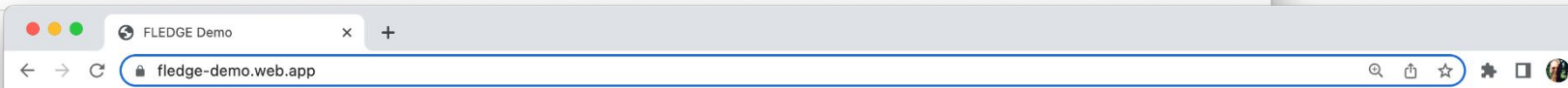
An iframe w

document.

This iframe i

- [topics-](#)
- [topics-](#)
- [topics-](#)
- [cats-ca](#)

Try out th



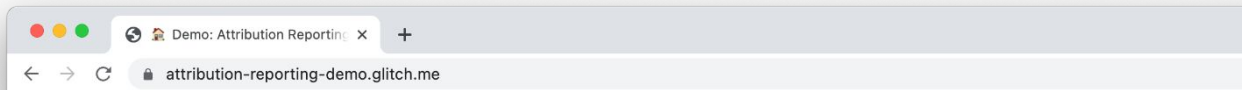
# FLEDGE demo

## Description

This demo represents th  
finished demo yet. Also,  
The support for multiple

## Instructions

1. Start Chrome with  
`--enable-feat`
2. Visit the [advertise](#)  
to check the intere
3. Visit the [publisher](#)  
will make a bid for



# Demo: Attribution Reporting API

Demo version: v-2022-04-06

## Ask questions / Share feedback 🙌

Is there a feature you'd like to see added to this demo? Do you have any question, request, or feedback? We want to hear from you. [Open an issue on our dev support repo](#) and select the type Attribution Reporting (ask your question on the developer mailing list).

## See the code

[Code for this demo](#). You can [reuse and customize it](#).

## Set up your browser

Scaled testing

**Origin trial**

Getting started with Chrome's x +

developer.chrome.com/docs/web-platform/origin-trials/

Chrome Developers Search docs, blogs and more

Check out what's new for the web platform at Google IO! [Join the party](#) [Dismiss](#)

Home

Docs

Blog

Articles

Documentation > Web Platform

Getting started with Chrome's origin trials

Troubleshooting Chrome's origin trials

What are third-party origin trials?

- ▶ Shipped
- ▶ Origin Trials
- ▶ No longer pursuing

# Getting started with Chrome's origin trials

Origin trials are a way to test a new or experimental web platform feature, and give feedback to the web standards community on the feature's usability, practicality, and effectiveness, before the feature is made available to all users.

Published on Monday, June 22, 2020 · Updated on Friday, May 13, 2022

Translated to: [日本語](#)

Origin Trials


 Sam Dutton  
Developer Advocate, Google Chrome

Table of contents ▾

Origin trials give you access to a new or experimental feature, to build functionality



Intent to Experiment: Topics API X +

groups.google.com/a/chromium.org/g/blink-dev/c/oTwd6VwCwqs/m/13aMK1BWAQAJ

Groups

New conversation

My groups

Recent groups

All groups

Favourite groups

Starred conversations

blink-dev

Conversations 99+

Members

About

My membership settings

Intent to Experiment: Topics API 895 views

Subscribe

Josh Karlin 25 Mar 2022, 21:31:45

to blink-dev, yao...@chromium.org, Philippe de Lurand Pierre-Paul

**Contact emails**  
[yao...@chromium.org](mailto:yao...@chromium.org), [jka...@chromium.org](mailto:jka...@chromium.org)

Developers interested in the Topics API can also join the [Topics API announcements](#) group for updates and announcements.

**Explainer**  
<https://github.com/jkarlin/topics>

**Specification**  
TBD

**Summary**  
The intent of the Topics API is to provide callers (including third-party ad-tech or advertising providers on the page that run script) with coarse-grained advertising topics that the page visitor might currently be interested in. These topics will supplement the contextual signals from the current page and can be combined to help find an appropriate advertisement for the visitor.

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 104
End date	24 Aug 2022

### Resources

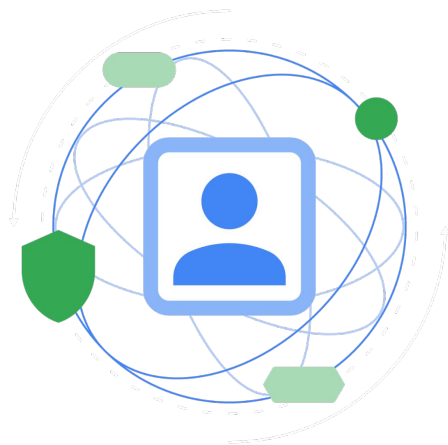
[Chrome Platform Status](#) [Feature Feedback](#) [Intent to Experiment](#)

[REGISTER](#)

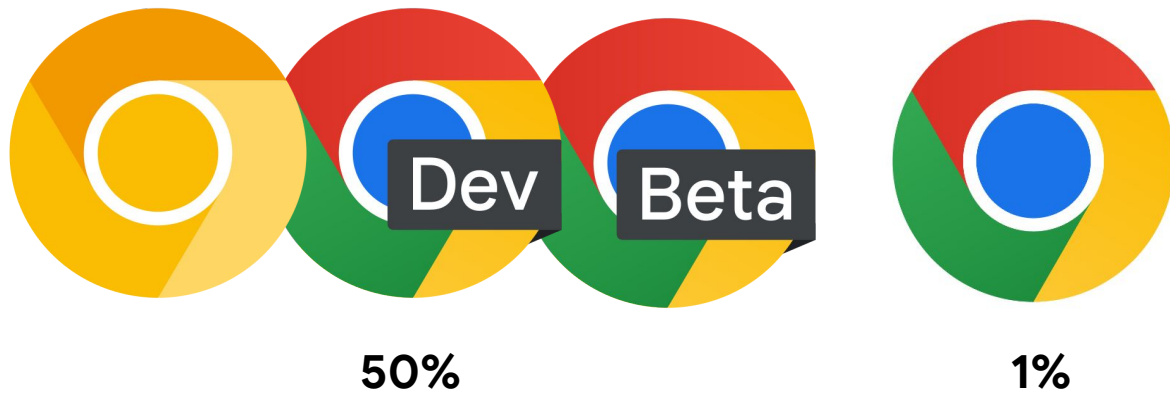
[Terms](#) [Privacy](#) [Help](#) [Contact Us](#)

# Caveat!

Privacy Sandbox origin trial APIs  
are only activated for  
**50%** of users



Available in origin trial



Origin trials

[goo.gle/ot](https://goo.gle/ot)

What are Chrome's origin trial?

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

# 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*

Thank you!



# Privacy Sandbox for developers

[goo.gle/ps](https://goo.gle/ps)

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

Hvala!