CPRA Law + Tech: Understanding Data, Decisionmaking, and Design

March 4, 2022
About This Series

CPRA LAW + TECH SERIES

FEBRUARY AND MARCH 2022
Weekly Friday Webinars beginning February 18
3 PM to 4:15 PM ET | Noon to 1:15 PM PT

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About This Series

What do privacy lawyers need to know about the **technologies and data practices** at the heart of emerging legislation? Informational webinars from Feb. 25 to Apr. 1 will bring academic, technical, and business experts to share **technological basics for privacy lawyers**.

<table>
<thead>
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<th>Topic</th>
<th>Dates (2022)</th>
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<tr>
<td>1 CPRA and Emerging US Privacy Laws</td>
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<td>2 Sensitive Data: Health Conditions, Demographics, and Inferences</td>
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<td>6-7 Coming soon!</td>
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2023 New Privacy Laws: Ad Tech Implications

California Privacy Rights Act (CPRA)
● Right to opt out of Sharing for Cross Context Behavioral Advertising

Colorado Privacy Act (CPA)
● Right to opt out of Processing for purposes of Targeted Advertising

Virginia Consumer Data Protection Act (VCDPA)
● Right to opt out of Processing for purposes of Targeted Advertising
## CPRA: Opt Out of Sharing for Cross Context Behavioral Advertising

<table>
<thead>
<tr>
<th>Sharing</th>
<th>Cross Context Behavioral Advertising</th>
</tr>
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<tbody>
<tr>
<td>&quot;...sharing, renting, releasing, disclosing, disseminating, making available, transferring, or otherwise communicating orally, in writing, or by electronic or other means, a consumer's personal information by the business to a third party for cross-context behavioral advertising, whether or not for monetary or other valuable consideration, including transactions between a business and a third party for cross-context behavioral advertising for the benefit of a business in which no money is exchanged.”</td>
<td>The targeting of advertising to a consumer based on the consumer's personal information obtained from the consumer's activity across businesses, distinctly-branded websites, applications, or services, other than the business, distinctly-branded website, application, or service with which the consumer intentionally interacts.</td>
</tr>
</tbody>
</table>
“Targeted advertising” means displaying advertisements to a consumer where the advertisement is selected based on personal data obtained from that consumer's activities over time and across nonaffiliated websites or online applications to predict such consumer's preferences or interests. Targeted advertising does not include:

1. Advertisements based on activities within a controller's own websites or online applications;
2. Advertisements based on the context of a consumer's current search query, visit to a website, or online application;
3. Advertisements directed to a consumer in response to the consumer's request for information or feedback; or
4. Processing personal data processed solely for measuring or reporting advertising performance, reach, or frequency.
"Targeted advertising" (a) means displaying to a consumer an advertisement that is selected based on personal data obtained or inferred over time from the consumer's activities across nonaffiliated websites, applications, or online services to predict consumer preferences or interests; and (b) Does not include:

- Advertising to a consumer in response to the consumer’s request for information or feedback;
- Advertisements based on activities within a controller’s own websites or online applications;
- Advertisements based on the context of a consumer’s current search query, visit to a website, or online application; or
- Processing personal data solely for measuring or reporting advertising performance, reach, or frequency.
CPRA Law + Tech Series: Session 3
The Basics of Online Advertising

Adam Towvim
Partner, Chameleon Collective

Christy Harris
Director of Technology & Privacy Research

Adam Towvim
Partner, Chameleon Collective
Today’s Agenda

1. Basics of Internet Data Flows & Cookies
2. Evolution of Ad Tech Systems & Key Players
3. Real-Time Bidding & Contemporary Ad Models
4. Analytics & Measurement Dependencies
5. Cookie Limitations & Alternative Technologies
6. Mobile Apps & Platforms
7. What’s on the Horizon?
Basics of Websites in 5 Steps

1. **User types in a URL**

2. **Browser establishes a connection**
   - Information sent: **Website Server**
   - Data sent: **Browser and operating system data**, **Cookies belonging to the domain**

3. **Browser sends HTTP request**
   - Information sent: **Website Server**

4. **Website returns instructions**
   - Information sent: **Browser**

5. **Most websites integrate “third party” content.**
   - **Fonts, Images, Ads, Analytics, Plug-ins, Videos**
First & Third Parties

“First party” Content

Fonts

Images

Advertisements

Analytics

Embedded Features (comments, videos, social media)

Tags (0x0 or 1x1 pixels)

“Third party” Content

(at the direction of the website owner)
## What Are Cookies?

<table>
<thead>
<tr>
<th>What:</th>
<th>Why:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Browsers have small storage (&quot;cache&quot;)</td>
<td>• Solution for &quot;state management&quot;</td>
</tr>
<tr>
<td>• Cookies are small text files</td>
<td>• Early (pre-1995) websites looked the same to all visitors, like the pages of a book. Cookies allowed websites to “remember” visitors’ choices and preferences (e.g. “Shopping Cart”)</td>
</tr>
<tr>
<td>• Browsers will accept and store (&quot;set&quot;) cookies on behalf of domains, and share them with the domains that set them</td>
<td></td>
</tr>
</tbody>
</table>
Setting & Reading Cookies

Visit #1
- No cookie
- Instruction to save cookie “123456”
- Browser sends cookie “123456”
- Server returns personalized content

Visit #2
Tags, Pixels, & Web Beacons

1x1 or 0x0 invisible pixel
Placed by the website owner
Allows the user’s browser to communicate (and share cookies) with a partner, even when no advertisement is being shown.

- Analytics
  - Example: Buzzfeed measures which articles are most popular.

- Reporting (Ad Effectiveness)
  - Example 1: Nike places a pixel on its own website, to determine if its ads on other sites are increasing traffic (click-through rates)
  - Example 2: Retailer places a pixel on the “Thank you for your purchase” page, to know whether its ads on other sites are resulting in purchases.
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The First Banner Ad: 1994

- Users
  - Publisher
- Advertisers
  - Direct Relationship
  - Agency Trading Desk or In-House

"Have you ever clicked your mouse right HERE?"
Ad Tech Value Chain

Users

- App/Publisher
- Ad Network
- Ad Server

Advertisers

- Agency
Ad Tech Value Chain

Users
- App/Publisher
- Ad Server

Sell Side
- Ad Network
- Supply Side Platform (SSP)
  - Auction Service
- Demand Side Platform (DSP)
  - Bidding Service

Buy Side
- Ad Exchange
- Campaign
- Agency Trading Desk or In-House
- Ad Server
- Data Broker
- Data Management Platform (DMP)

Advertisers
Supply Side Platform (SSP)

- **Enables** publishers to auction their ad inventory to a variety of media buyers and advertisers.
- **Specializes** in matching advertisers with the SSP’s publisher network in an automated manner.
- **Maximize** advertising revenue for publishers.
- Examples include: AppNexus (Xandr), Pubmatic, MoPub, and Rubicon Project.
Demand Side Platform (DSP)

- **Enables** it’s advertisers (brands & agencies) to bid for ad inventory, buying most types of digital advertising, including display, mobile, search and video.

- **Specializes** in running ad campaigns across many publishers, targeted to the intended audience at the right time.

- **Facilitate** bidding on criteria including: location, gender, and browsing history, leveraging data from multiple sources to target audiences and inform bidding strategies.

- **Track outcomes** from ad campaigns — CPA, ROI — automatically optimize campaigns to achieve ad buyer’s KPIs.

- Examples include: LiveRamp, AppNexus, Adform, Facebook Ads Manager, MediaMath, TubeMogul, & Amobee.
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## Targeted Advertising

<table>
<thead>
<tr>
<th>Targeting Types</th>
<th>Examples:</th>
</tr>
</thead>
</table>
| **Contextual**                       | • An airline buys ads on travel-related websites  
• A cooking supply store buys ads on a news website article about holiday recipes  
• A leisure gaming app buys ads on another game app                                                                                       |
| Tailored to a website or service     |                                                                                                                                                                                                          |
| **Behavioral**                       | • An advertiser buys “audience segments” of viewers, such as “auto intender,” “back to school shopping,” or “wedding planning”  
• An advertiser targets ads to users in certain demographic categories (e.g., age, location, income), search history, or other observed interests or preferences |
| Targeted to individuals using information collected from a variety of sources, based on activities across sites & platforms |                                                                                                                                                                                                          |
|                                      | (also referred to as interest-based advertising or tailored advertising)                                                                                                                                  |
| **Re-targeting**                     | • Retail site places a “tag” on a product page, and re-targets users who viewed that page with ads elsewhere on the internet                                                                                |
| First party targets ads to reach its own previous visitors or customers (a variation of behavioral targeting)                                                                                             |
What is “Programmatic”?

- The use of technology to automate the various online advertising processes, including buying, selling, and optimizing inventory.
- Real-Time Bidding (RTB) is one example of such automation.

By 2019 Two-Thirds Of Global Display Ads Will Be Traded Programmatically

by Larissa Few, November 19, 2017

Two-thirds of the world’s digital display advertising (67%) will be traded programmatically by 2019, worth $84.9 billion, according to Publicis Groupe Zenith’s latest report, Programmatic Marketing Forecasts.

Programmatic ad sales are growing at an annual average rate of 21% per year, according to the report. This year’s estimate is $57.5 billion.

“Advertisers need to understand the it won’t be long before digital display is 100% programmatic, and that some of what we consider ‘traditional media’ will follow fairly shortly,” says Jonathan Barnard, head of forecasting and director of global intelligence, Zenith.

The U.S. is driving this growth, increasing its percentage of display that will be traded programmatically this year from 78% to 83.6% in 2019, above the global average.
Real-Time Bidding (RTB)

Source: Web privacy measurement in real-time bidding systems. A graph-based approach to RTB system classification, 2019
What’s in a Bid Request?
{
"id": "80ce30c53c16e6ede735f123ef6e32361bfc7b22",
"at": 1, "cur": [ "USD" ],
"imp": [
  {
    "id": "1", "bidfloor": 0.03,
    "banner": {
      "h": 250, "w": 300, "pos": 0
    }
  }
],
"site": {
  "id": "102855",
  "cat": [ "IAB9-27" ],
  "domain": "www.answers.com",
  "publisher": {
    "id": "8953", "name": "www.answers.com",
    "cat": [ "IAB9-27" ],
    "domain": "answers.com"
  }
},
"device": {
  "language": "en",
  "geo": {
    "country": "US",
    "lon": -80.237,
    "city": "Orlando",
    "lat": 26.638,
    "zip": "33414",
    "region": "FL",
    "dnt": "1"
  }
},
"user": {
  "id": "55816b39711f9b5acf3b90e313ed29e51665623f"
}
}

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Analytics History

• "Can't manage what you can't measure"

• Advertising depends on analytics to:
  o **Target**: define campaign criteria/filters - includes ability to aggregate clusters of identifiers into targetable segments
  o **Track** which identifiers:
    ▪ **Perform** better than others
    ▪ Repeatedly **visit** the same website
    ▪ **Associate** themselves with meaningful geo boundaries
    ▪ **Convert, purchase, engage** with meaningful actions
  o **Measure** afterwards to completes the loop
  o Insights from campaign measurement **inform** targeting again
Analytics Flow

- Target
- Insights
- Measurement
- Track
Importance of Identifiers

Characteristics

- Recognize specific browser/device distinct from others
- See ID across multiple interactions
- Has attributes (Age, Gender) and metadata attached
- Use to aggregate historical behavior of browser/device

Uses

- Anti-Fraud
- Brand Safety
- Privacy
- User Experience
- Measurement
- Attribution
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The Cookie is Crumbling . . .

Cookies are increasingly ineffective:

- can only identify a user within a single browser
- ↑ % of browsing is on mobile
- ↑ % of activity is in apps (do not support cookies)
- Content accessed using more devices and platforms
- Browsers increasingly block 3rd party cookies

### Platforms
- Operating Systems
- Browsers
- App Stores
- Social Plug-Ins
- Analytics

### Consumer Software
- Search Engines
- Location Services
- Speech Recognition
- Office Suites
- Email Services
- Social Networks
- Cloud Services
- Video / Music Players

### Devices
- Mobile devices
- Tablets
- Wearables
- Home Assistants
- Connected Cars
- Virtual Reality
## Browser Cookie Handling Impacts on Ad Tech

<table>
<thead>
<tr>
<th></th>
<th>Chrome</th>
<th>Firefox</th>
<th>Safari</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cookies in 1st party context</strong></td>
<td>No Restrictions</td>
<td>All storage is purged from known trackers daily, unless the user has interacted with the site in first-party context within the last 45 days</td>
<td>Default expiration set to 7 days Expiration set to 24 hours on pages with URL decoration when referring domain is a known tracker</td>
</tr>
<tr>
<td><strong>Cookies in a 3rd party context</strong></td>
<td>No restrictions * Google Chrome will no longer support 3rd party cookies mid-to-late 2023.</td>
<td>Access restricted for known trackers * Firefox SmartBlock preserves functionality while blocking tracking mechanisms in Private &amp; Strict Tracking Protection modes</td>
<td>All access restricted, except with Storage Access API</td>
</tr>
<tr>
<td><strong>Protection mechanism</strong></td>
<td>N/A</td>
<td>Enhanced Tracking Protection (ETP) (+SmartBlock)</td>
<td>Intelligent Tracking Protection (ITP)</td>
</tr>
<tr>
<td><strong>Default protection mode</strong></td>
<td>N/A</td>
<td>By Default</td>
<td>By Default</td>
</tr>
<tr>
<td><strong>Classification of “known trackers”</strong></td>
<td>N/A</td>
<td>Disconnect.me</td>
<td>Algorithmic</td>
</tr>
</tbody>
</table>

*Source: https://www.cookiestatus.com/*
Alternatives to Cookies as IDs: Drivers

• Changes are impacting the economics of Identities and Digital Data Flows
  o Publishers: Ad prices, fill rates, analytic value
  o Advertisers: Return on Ad Spend (ROAS), reach, measurement precision

• Biggest Impacts:
  o EU Regulation (GDPR) impact on Google’s FLoC
  o Apple’s ID For Advertising (IDFA)/App Tracking Transparency Framework (ATT)
  o Apple’s iCloud Private Relay

“629 of the top 1000 Publishers are passing some kind of 1st party identifier”
- Julian Baring, AdForm
“Post-Cookie” Implications for Identifiers

• Find new ways to track and identify audiences
• New targeting capabilities: contextual targeting, 1st party-data
• 3rd Party for advertising severely limited, if not eliminated
• 3rd Party still likely to be used: more narrow purposes
• Changes how Publishers monetize ad inventory
Deterministic Alternatives to Cookies

Involves tracking a unique, stable identifier, such as an email address, when it is used across multiple **devices** to log into apps and websites.

1. User logs in with email

2. User logs in with same email

- **Hashed Email + Cookie ID**
- **Hashed Email + Mobile Ad ID**

Matched Using Hashed Email

Data Matching Partner

Third-Party Data

Cookie ID

Mobile Ad ID

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Probabilistic Alternatives to Cookies

Making inferences, using a variety of “signals” or data points, that multiple devices probably belong to the same person.

Example: IP Address or Local Router SSID (multiple devices accessing the same home Wi-Fi network)
Probabilistic Alternative to Cookies: Server-Side Recognition (Fingerprinting)

**Purposes:** Security, authentication, and/or recognition of users over time for advertising and reporting, especially if cookies are not available

- Browser is queried for its agent string, screen color depth, language, installed plug-ins, time zone, etc.
- Few browsers will share "fingerprints"
- May lose effectiveness over time
- Challenging to effectuate opt outs

Are you unique? 
Yes! You are unique among the 4684319 fingerprints in our entire dataset. 

The following informations reveal your OS, browser, browser version as well as your timezone and preferred language. Moreover, we show the proportion of users sharing the same elements.

<table>
<thead>
<tr>
<th>userAgent</th>
<th>// &quot;Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/60.0.3112.113 Safari/537.36&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>language</td>
<td>// &quot;en-US&quot;</td>
</tr>
<tr>
<td>plugins</td>
<td>&quot;Plugin 0: Chrome PDF Viewer; Plugin 1: Chrome PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 2: Native Client; internal-nacl-plugin. Plugin 3: Shockwave Flash; Shockwave Flash 27.0 r0; pepflashplayer.dll. Plugin 4: Widevine Content Decryption Module; Enables Widevine licenses for playback of HTML audiovideo content. version: 1.4.8.1000; widevinecdmadapter.dll.&quot;</td>
</tr>
<tr>
<td>platform</td>
<td>// &quot;Win32&quot;</td>
</tr>
<tr>
<td>do not track</td>
<td>// &quot;yes&quot;</td>
</tr>
<tr>
<td>timezone</td>
<td>// &quot;240&quot;</td>
</tr>
<tr>
<td>screen resolution</td>
<td>// &quot;1920x1080x24&quot;</td>
</tr>
</tbody>
</table>
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Mobile Platform Controls: Permissions

- Access to device sensor data is controlled by the operating system through **permissions**

**Apple iOS**

**Google Android**
Mobile Platform Controls: Advertising IDs

- Apps do not (generally) support cookies
- Platforms introduced advertising-specific identifiers and policies specific to identifiers for advertising:

**Apple iOS - IDFA (2013)**

advertisingIdentifier

The UUID that is specific to a device.

Declaration

```
var advertisingIdentifier: UUID { get }
```

Discussion

The advertisingIdentifier is an alphanumeric string that’s unique to each device, and which you only use for advertising. Use this string for frequency capping, attribution, conversion events, estimating the number of unique users, advertising fraud detection, and debugging. On devices running iOS 14.5 and later and iPadOS 14.5 and later, your app must request tracking authorization before it can get the advertising identifier. For more information on getting the advertising identifier, see AdSupport.

The advertising identifier returns either a unique UUID, or all zeros.

**Google Android - AAID or GAID (2014)**

Best practices for working with Android identifiers

When working with Android identifiers, follow these best practices:

1. **Avoid using hardware identifiers.** In most use cases, you can avoid using hardware identifiers, such as International Mobile Equipment Identity (IMEI), without limiting required functionality.

   Android 10 (API level 29) adds restrictions for non-resettable identifiers, which include both IMEI and serial number. Your app must be a device or profile owner app, have special carrier permissions, or have the READ_PRIVILEGED_PHONE_STATE privileged permission in order to access these identifiers.

2. **Only use an Advertising ID for user profiling or ads use cases.** When using an Advertising ID, always respect users’ selections regarding ad tracking. Also, ensure that the identifier cannot be connected to personally identifiable information (PII), and avoid bridging Advertising ID resets.

**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.
Mobile Platform Controls: iOS

Limit Ad Tracking

Initially, users could select “Limit Ad Tracking” (LAT) and a “flag” would be sent. Most treated this as an opt out of targeted advertising.

In iOS 10, LAT zeroed out the IDFA. This prevents the previously permitted “frequency capping, attribution, conversion events, estimating the number of unique users, advertising fraud detection, and debugging” uses.

Privacy Nutrition Label

In iOS 14.5 app privacy “labels” were introduced and LAT became opt-in, requiring apps to provide transparency into app privacy practices and obtain consent to tracking via the App Tracking Transparency Framework (ATT) in order to receive the IDFA.
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What’s On The Horizon

A comprehensive paradigm shift influenced by a variety of stakeholders:

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<th>Platforms &amp; Defaults</th>
<th>Publishers &amp; Trade Organizations</th>
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</thead>
<tbody>
<tr>
<td>EU Regulations &amp; Enforcement</td>
<td>Browsers</td>
<td>PRAM (Partnership for Responsible Addressable Media)</td>
</tr>
<tr>
<td>US Federal &amp; State Legislation</td>
<td>Mobile Operating Systems</td>
<td>Interactive Advertising Bureau (IAB)</td>
</tr>
<tr>
<td>Brazil, China, India . . .</td>
<td>W3C Standards (incl. Google’s “Privacy Sandbox”)</td>
<td>Proprietary Solutions</td>
</tr>
</tbody>
</table>
Questions?

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