

AdChoices Signal Specifications

Bridging User Choices

Version 1.14.1

Digital Advertising Alliance

Last updated: April 30, 2025

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Introduction

The purpose of the AdChoices Interest-Based Self-Regulatory Programs across the world is to promote enhanced transparency of data practices outside the privacy policy, consumer control, and other elements of the DAA-family Self-Regulatory Programs (regardless of geographic region) related to the collection and use of data for Interest-Based Advertising (IBA), sometimes referred to as online behavioral advertising (OBA).

To achieve these ends, the **AdChoices Icon** provides a common method by which consumers can learn more about data collection and its use for online advertising. It also allows consumers to express their preferences to various parties in the advertising ecosystem.

The DAA's WebChoices tool has undergone a comprehensive rewrite to align with the evolving, cookie-and-beyond advertising ecosystem. This major update included back-end database enhancements, rigorous security reviews, and UI/UX improvements. This updated tool continues to support third-party cookie opt-outs. But it also features an integration with the Protect My Choices browser extension, which itself has been updated.

The new tighter integration of WebChoices and Protect My Choices means that companies can now access the AdChoices Signal from the extension or through headers. The AdChoices Signal will permit companies to read consumer choices in browsers without third-party cookie storage functionality, thus permitting consumer choice to be applied at the browser level for newer identifiers/targeting techniques such as IP-based and probabilistic, as well as category-based choices.

The DAA's strategic approach to tool development over recent years has prioritized modularity and adaptability to emerging identifier technologies, ensuring we can consistently uphold our mandate to provide consumers with meaningful transparency and choice.

The AdChoices Signal is an encoding of users' IBA preferences that can be passed to DAA Participants from DAA tools, retrieved by DAA Participants from HTTP headers or on-page JavaScript for users with Protect My Choices installed, or via CMPs working with DAA (as shown in Appendix 7). Participants in the ecosystem are expected to modify their IBA data collection and/or use behavior according to the preferences expressed in this string, consistent with the Self-Regulatory Principles¹ in the jurisdiction(s) where they operate.

¹ At the time of writing this specification, there are four jurisdictions where Self-Regulatory Programs on IBA exist: US (DAA), Canada (DAAC), Europe (EDAA), and Argentina (APDA).

Overview

The AdChoices Signal encodes the following information:²

- For the user's choice of either a specific set of participants integrated with the DAAs, or all participants integrated with the DAA one of three actions regarding IBA choice:
 - The user has not expressed a choice
 - The user has explicitly chosen to allow data collection and use for IBA
 - The user has explicitly chosen to limit data collection and use for IBA
- The user's IBA preference(s) request for one or more of a set of interest categories, applicable across all participants, consisting of one of the following states:
 - The user has expressed no preference.
 - The user explicitly desires to limit IBA for the interest category (i.e., category excluded)³

The specification does not prescribe what sort of identifier an AdChoices Signal is associated with. It may be associated with a cookie ID, mobile advertising ID, token (e.g., hashed email), or any other identifier as desired or supported between the DAA and participants, or between participants interacting with each other.⁴ (See Appendix 7 for an illustration of the data flow.)

AdChoices Signal Format

The AdChoices Signal is a sequence of bits, representing a series of fields, in big-endian format. It is transmitted as a base64url⁵ string. Padding characters ('=') must not be used. This encoding ensures an approach that is consistent with other such strings currently in use across the ad tech industry. All numeric values are unsigned integers.

Field	# of bits	Description
Header Section		
Version	6	The version number of the string, which will be incremented if and when a new version of this specification is released.

² This specification is designed to be extensible, and the possible values may be extended in future versions.

³ The user explicitly desires IBA for the interest category (i.e., category included) – This feature may be available in a future release.

⁴ The most recent version of the DAA token ID-based choice tool API acknowledges that ID types may be fluid and allows for a parameterizable 'ID Type' variable to be passed. The current default ID Type is email (idt=email). Future uses of idt could be idt=phone, idt=ami, etc.

⁵ See [RFC 4648 sec 5](#).

		The current version is 1.
Timestamp	32	The timestamp at which the string was created as seconds since Unix epoch.
Global IBA Choice Status	4	A choice status as described in Appendix 3: Choice Statuses , applying to all DAA participants.
Per-Participant Records Section		
Number of Per-Participant Records	12	The number of per-participant choice status records to follow. If zero, there are no per-participant choice status records, and the next bits will contain category preference data. Per-participant records should not be included when a global status other than 2 has been provided, since the global status applies to all. Per-participant statuses would provide no useful information in this case and would unnecessarily consume space. Likewise, records should not be included for participants when the choice status for that participant is 2.
Participant Choice Status Record		Repeated the number of times specified by the prior field.
Participant ID	12	The participant ID assigned by the DAA. See Appendix 1: Participants Reference File .
Choice Status	4	The choice status for this participant as described in Appendix 3: Choice Statuses .
Per-Category Preferences Section		
Number of Per-Category Records	12	The number of per-category preference records to follow. Records should not be included for categories with a choice status of 2 since this provides no useful information.

Per-Category Preference Record		Repeated the number of times specified by the prior field.
Category ID	12	The category ID assigned by the DAA. See Appendix 2: Category Reference File .
Preference	4	The user's preference for this category. See Appendix 4: Category Preferences .

See [Appendix 6: String Format Graphic Illustration](#) for a diagram illustrating the above.

Example Strings

Example 1: No Global Preference, Three Participant Preferences, One Category Preference

Base64url:

BYVHiWSADABAAIQAwABAZEa

Binary:

0000010110000101010001111000100101100100100000000001100000000000100000000000
000010000100000000001100000000000010000000110010001

Annotated Binary:

Bits	Field	Value/Description
000001	(Header Section) Version	Version 1 of the specification is used.
01100001010100011110001001011001	Timestamp	1632756313 seconds since epoch, or Monday, September 27, 2021 3:25:13 PM UTC.
0010	Global IBA Choice Status	2; the user has not expressed a preference.
000000000011	(Per-Participant Records Section) Number of Per-Participant Records	3 per-participant records will follow.
000000000001	(First Participant Choice Status Record) Participant ID	Participant ID 1 (as defined in the participants reference file).

0000	Choice Status	0; the user has explicitly chosen to limit data collection and use for IBA.
000000000010	(<i>Second Participant Choice Status Record</i>) Participant ID	Participant ID 2.
0001	Choice Status	1; the user has explicitly chosen to allow data collection & use for IBA.
000000000011	(<i>Third Participant Choice Status Record</i>) Participant ID	Participant ID 3.
0000	Choice Status	0; the user has explicitly chosen to limit data collection and use for IBA.
000000000001	(<i>Per-Category Records Section</i>) Number of Per-Category Records	1 per-category records will follow.
000000011001	(<i>First Category Record</i>) Category ID	Category ID 25: Travel (as defined in the category reference file).
0001	Category Preference	1; the user has expressed an explicit preference to allow/include this category.

Example 2: Global Preference Only

Base64url:
BYVHiWQAAAAA

Binary:
00000101100001010100011110001001011001000000000000000000000000000000

Annotated Binary:

Bits	Field	Value/Description
000001	(<i>Header Section</i>) Version	Version 1 of the specification is used.
01100001010100011110001001011001	Timestamp	1632756313 seconds since epoch, or Monday, September 27, 2021 3:25:13 PM UTC.
0000	Global IBA Choice Status	0; the user has expressly chosen to limit IBA.

000000000000	(Per-Participant Records Section) Number of Per-Participant Records	0 per-participant records will follow.
000000000000	(Per-Category Records Section) Number of Per-Category Records	0 per-category records will follow.

In this example, there are no per-participant or per-category records, so no such records appear, however the number of per-participant or per-category records fields are always required for correct parsing.

Receiving, Reading and Passing AdChoices Signals

DAA YourAdChoices Tool

Companies who participate in the DAA YourAdChoices program may receive the AdChoices Signal directly as a part of the call to their integration endpoint like this:

```
https://subdomain.company.com/pr.png?action=%action&pref=[STRING_HERE]
```

The same applies in the case of a preference with a token-based identifier, for example:

```
https://subdomain.company.com/pr.png?action=%action
&idt=email&md5=%md5-emailID&sha1=%sha1-emailID&sha256=%sha256-
emailID&sha512=%sha512-emailID&pref=[STRING_HERE]
```

Browser Extension: Protect My Choices

When consumers install the Protect My Choices (v2.0) extension, any preferences expressed through the YourAdChoices tools will be stored as a string in the extension, according to this AdChoices Signal specification document. The value of the string can be read by any participant with the code on page, either via JavaScript or by looking for specific HTTP headers set by the extension (see Appendix 9 for illustration). For more details on how to access the AdChoices Signal in cases where consumers have the Protect My Choices extension installed, refer to the [PMC technical specifications documentation](#).

Passing Between Participating Companies

Aside from communications between the DAA and participating companies, AdChoices Signals may be passed between companies when there is a need for one party to inform the other about the user's IBA choices.

URL-Based Passing

Parties can include the AdChoices Signal as a parameter in the URL when making a call to another party. The recommended URL parameter for this scenario is “adchoices_signal”. Ad networks, SSPs (supply-side platforms), and exchanges may support receipt of an AdChoices Signal, which they can further convey to DSPs (demand-side platforms) via OpenRTB Community Extension. This could be a URL parameter in the ad request, for example:

```
<script  
src="https://ads.ssp.com/jstag?pid=18504&sid=955917&plid=7821315&sz=30  
0x250&adchoices_signal=[STRING_HERE]"></script>
```

Macros

It is recommended that participating companies support a macro to allow an AdChoices Signal to be passed along to third-party ad servers or measurement vendors configured in an ad server or DSP, as appropriate given the nature of the company’s product. The macro recommended for this purpose is \${ADCHOICES_SIGNAL}.

Using the AdChoices Signal

Consent Management Platforms

CMPs may participate in the DAA YourAdChoices tool. In that case, they can receive the AdChoices Signal as described in the “DAA YourAdChoices Tool” section when the user makes choices in this tool. This string can be stored in any manner desired by the CMP and made available to a publisher’s or brand’s vendor partners and subsequently passed onwards. For example, a CMP can enable a publisher to pass the AdChoices Signal to the ad exchange(s) the publisher or brand uses, who can then pass it onwards to a demand-side platform(s) via OpenRTB. Authorized CMPs may also provide links to YourAdChoices (within the CMP user interface) for users that wish to update their preferences.

Ad Networks, SSPs, Exchanges, DSPs, and Other Companies Who Engage in IBA

Participants receiving an AdChoices Signal must respect the choice statuses expressed within it (similar to the behavior they have used when encountering an opt out cookie) and should use the category preferences provided to modify their IBA behavior. For example, a DSP or CDP (customer data platform) receiving such a string could store it in their user profile storage and read it back when making decisions. Participants must also respect any AdChoices Signal passed to them at a given transaction; for example, if a DSP receives an AdChoices Signal in the bid request for a user.

For clarity, it is **not** required that AdChoices Signals be handled in real-time only on a per-transaction basis — participants should store the user’s preferences when the YourAdChoices tool makes a call to the choice status endpoint, if possible. Real-time passing is supported so that choice information can be expressed to parties who may not already be able to identify a user. For example, a CMP may be able to identify a user and that they have made choices, even if an exchange or a DSP has not yet assigned identity to the user. The real-time passing allows for preferences to be respected if those other parties establish identity later, for example, through probabilistic methods.

Important: Generation of the string occurs only in the YourAdChoices tool so that multiple parties may independently store the current preferences without the issue of conflicting versions. (Refer to the diagram in Appendix 7 for clarification.)

Appendix 1: Participants Reference File

The DAA will publish a JSON format reference file at <https://www.digitaladvertisingalliance.net/participants.json>

This file enumerates the participating companies which may be indicated in the AdChoices Signal. This Appendix describes the file format. Additional fields may be added in the future and consumers of the file should handle unexpected fields gracefully.

Consumers of AdChoices Signals can poll this file from time to time to learn of new participants. **Consumers of the file should not poll the file more frequently than daily, and not less frequently than weekly.**

Root object

Field	Type	Description
lastUpdated	integer	Time at which the file was last updated, expressed as seconds since Unix epoch.
participants	array of objects	An array of Participant objects.

Participant object

Field	Type	Description
id	integer	The ID assigned to the participant by the DAA. Numbers should not be assumed to be contiguous.

name	string	The name of the company.
active	integer	Indicates whether the company is active in the program, where 0 is false and 1 is true.
direct	integer	DAA Internal Use Only:
verified	integer	Indicates whether the company has a verified solution for retrieving the AdChoices string from Protect My Choices.
gvl	integer	The ID assigned to the participant within IAB Europe's Global Vendor List. This field is optional and included for convenience.

Example file

```
{
  "lastUpdated": "1630612395",
  "participants": [
    {
      "id": "1",
      "name": "AdClicks",
      "active": "1",
      "direct": "0",
      "verified": "1",
      "gvl": "123"
    },
    {
      "id": "2",
      "name": "SuperDSP",
      "active": "0",
      "direct": "1",
      "verified": "0",
      "gvl": "456"
    }
  ]
}
```

Appendix 2: Category Reference File

The DAA will publish a JSON format reference file at:

<https://www.digitaladvertisingalliance.net/categories.json>

This file contains the taxonomy of categories users can express a preference for and may be indicated in the AdChoices Signal. This Appendix describes the file format. Additional fields may be added in the future and consumers of the file should handle unexpected fields gracefully.

Consumers of AdChoices Signals can poll this file from time to time to learn of new categories.

Consumers of the file should not poll the file more frequently than daily and not less frequently than weekly.

Note: The category-level preferences will initially be offered to consumers on a “best-effort-basis” as companies work over time to implement systemized ways in which to be responsive to these consumer signals.

Root object

Field	Type	Description
lastUpdated	integer	Time at which the file was last updated, expressed as seconds since Unix epoch.
categories	array of objects	An array of Category objects.

Category object

Field	Type	Description
id	integer	The ID assigned to the category by the DAA. Numbers should not be assumed to be contiguous.
name	string	The name of the category.
active	integer	Indicates whether the category is in active use, where 0 is false and 1 is true.

Example file

```
{
  "lastUpdated": "1630612395",
  "categories": [
    {
```

```

    "id": "1",
    "name": "Arts & Entertainment",
    "active": "1"
  },
  {
    "id": "2",
    "name": "Retail",
    "active": "1"
  },
]
}

```

Sample category list

The following table is included to give a sense of the initial preference categories for the specification. Please note, this list is just an initial sample. **Always refer to the public resource file at <https://www.digitaladvertisingalliance.net/categories.json> for the latest taxonomy.**

Category ID	Category name
1	Automotive
2	Careers
3	Community & Culture
4	Consumer Electronics
...	...
22	Shopping: Consumer Packaged Good & Non-Apparel
23	Sports & Outdoor
24	Tech & Internet
25	Travel

Appendix 3: Choice Statuses

Value	Description
0	The user has explicitly chosen to limit data collection and use for IBA.
1	The user has explicitly chosen to allow data collection and use for IBA.
2	The user has explicitly expressed that they have no preference.

Appendix 4: Category Preferences

Value	Description
0	The user has expressed an explicit preference to limit advertising in this category.
1	The user has expressed an explicit preference to allow/include this category.
2	The user has explicitly expressed that they have no preference.

Appendix 5: Proposed OpenRTB 2.x Community Extension

To enable AdChoices Signals to be conveyed in OpenRTB bid requests, the following community extension is proposed for OpenRTB 2.x.

In the “ext” object of the “user” object:

Field	Type	Description
acs	string	An AdChoices Signal, as specified in the DAA's AdChoices Signal Specification.

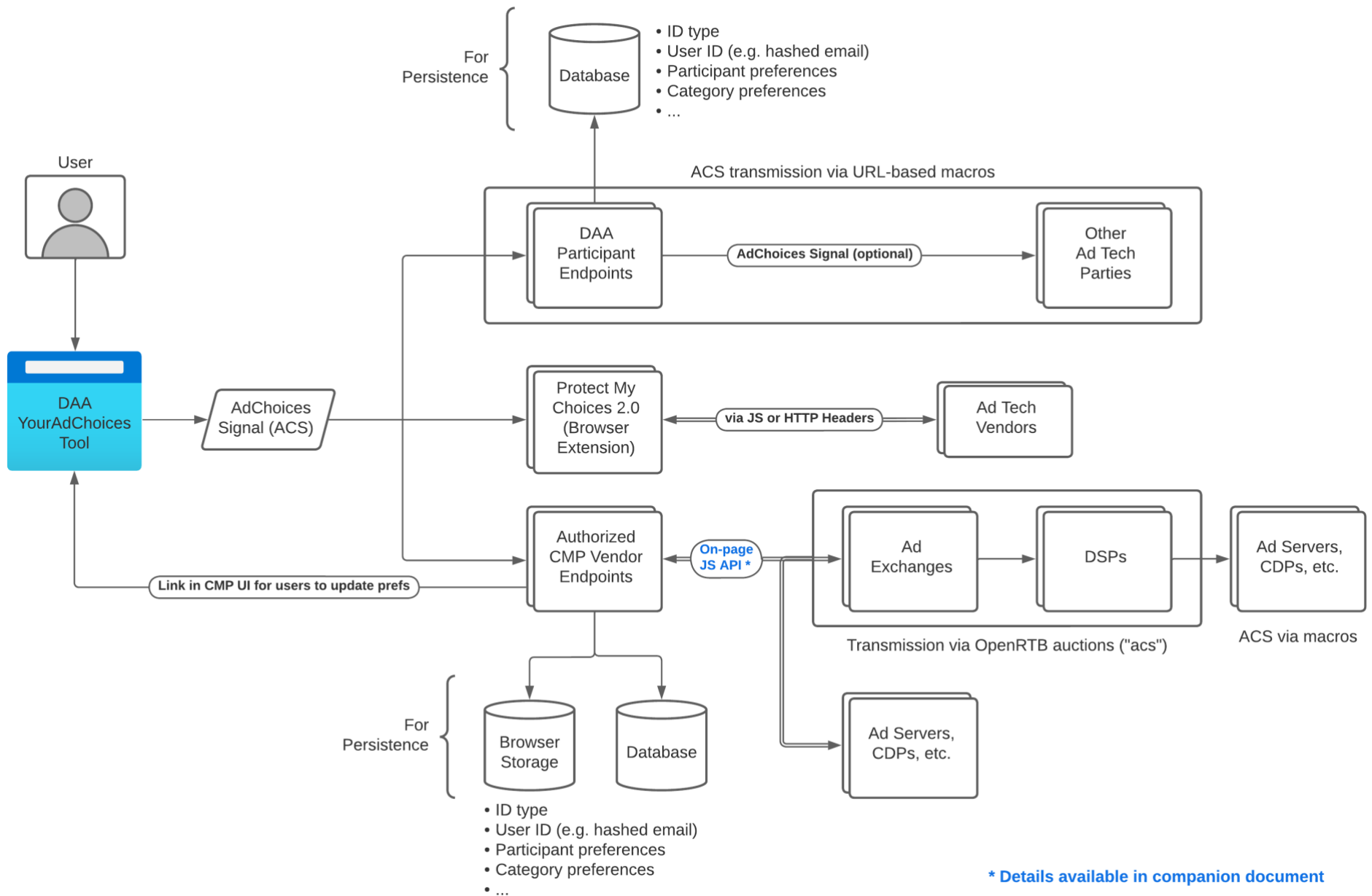
Appendix 6: String Format Graphic Illustration

	Header Section																																											
Bit #	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
Field	Version (6 bits)						Timestamp (32 bits)																																		Global IBA Choice Status (4 bits)			

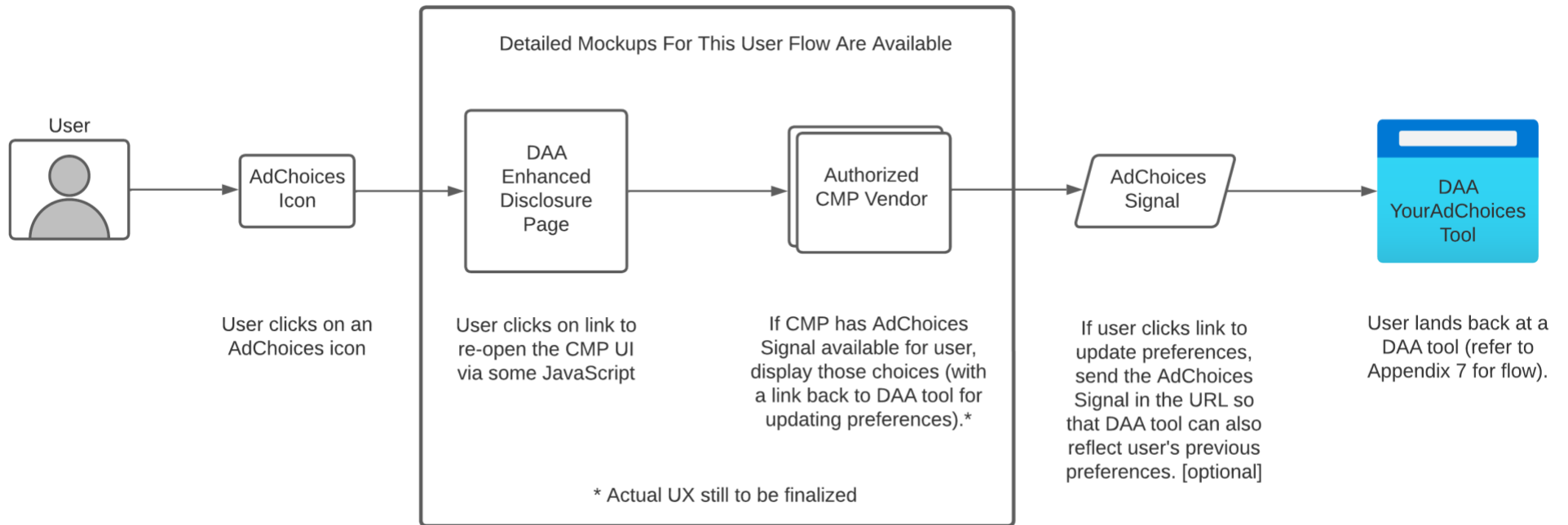
	Per-Participant Records Section																											
														Participant Choice Status Record <i>(not present if prior field is zero, and repeats # of times specified)</i>														
Bit #	42	43	44	45	46	47	48	49	50	51	52	53	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Field	Number of Per-Participant Records (12 bits)													Participant ID (12 bits)												Choice Status (4 bits)		

	Per-Category Records Section																											
															Per-Category Preference Record <i>(not present if prior field is zero, and repeats # of times specified)</i>													
Bit #:	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Field:	Number of Per-Category Records (12 bits)														Category ID (12 bits)												Preference (4 bits)	

Appendix 7: AdChoices Signal Usage Illustration



Appendix 8: User Journey From AdChoices Icon To CMP



Appendix 9: Reading The AdChoices Signal From The PMC Extension

