

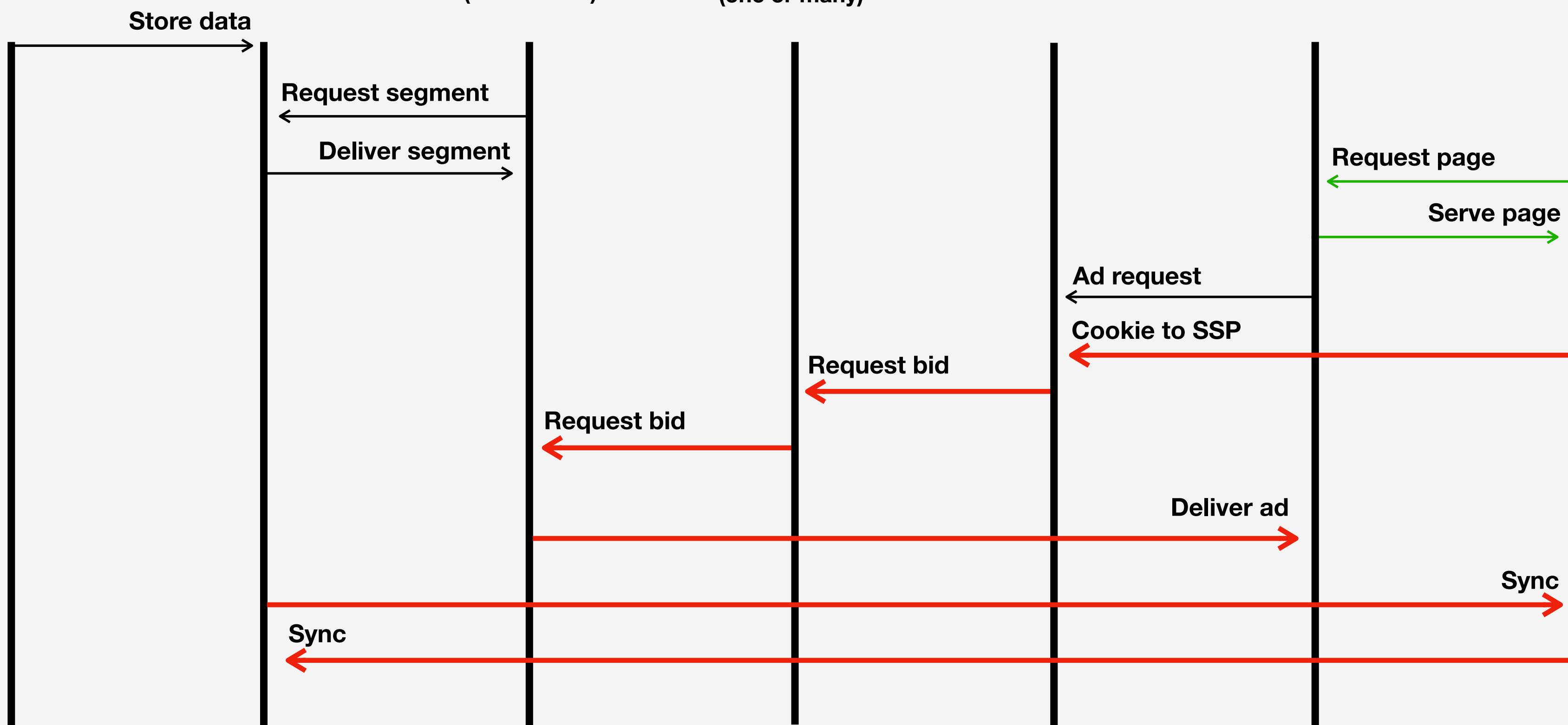
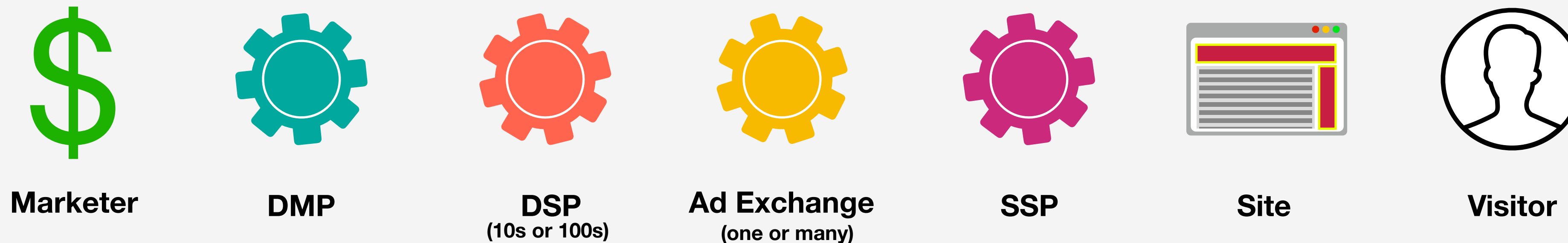


brave

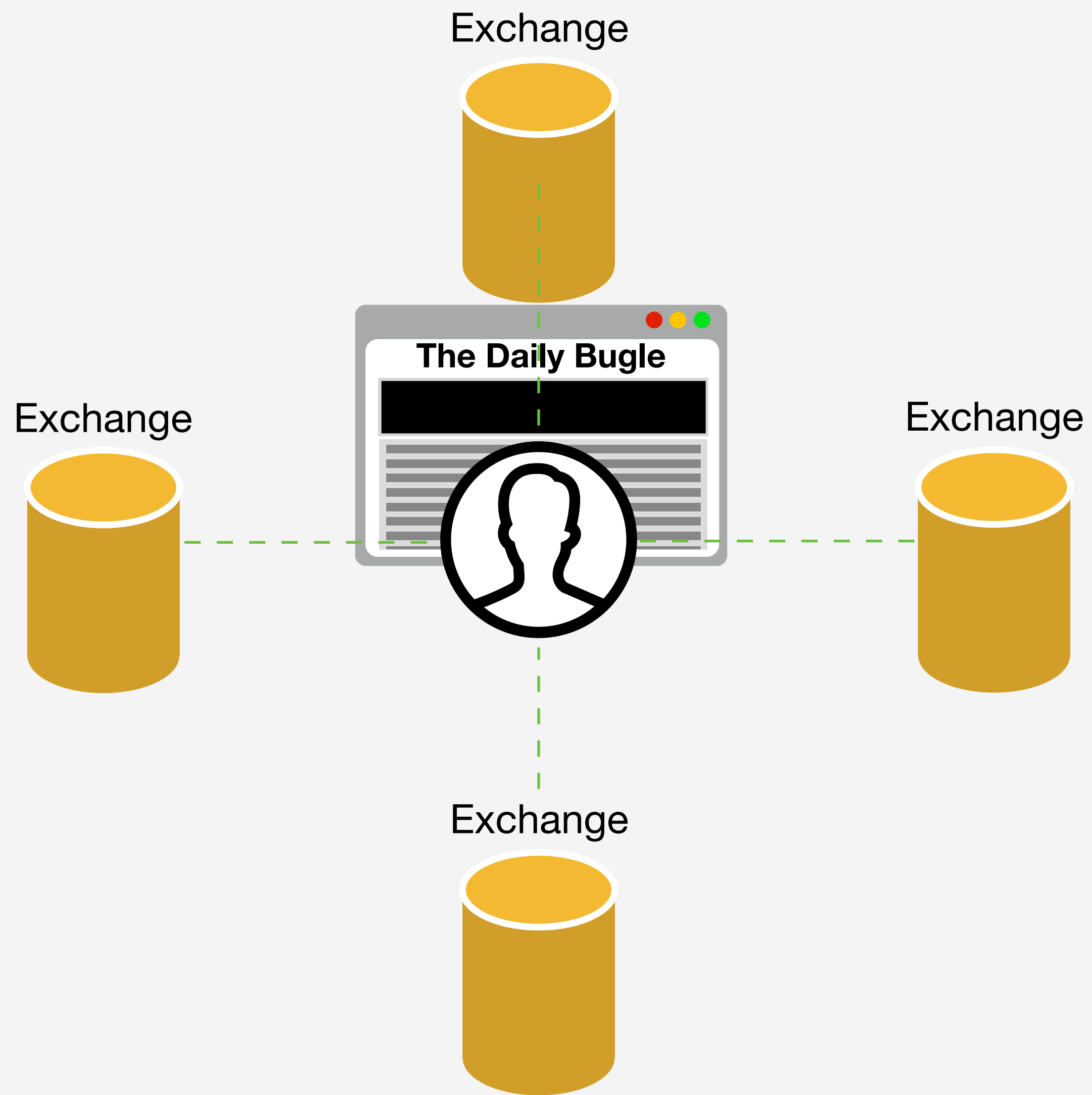
**THE BIGGEST  
DATA BREACH  
SO FAR** *(We are all complicit)*

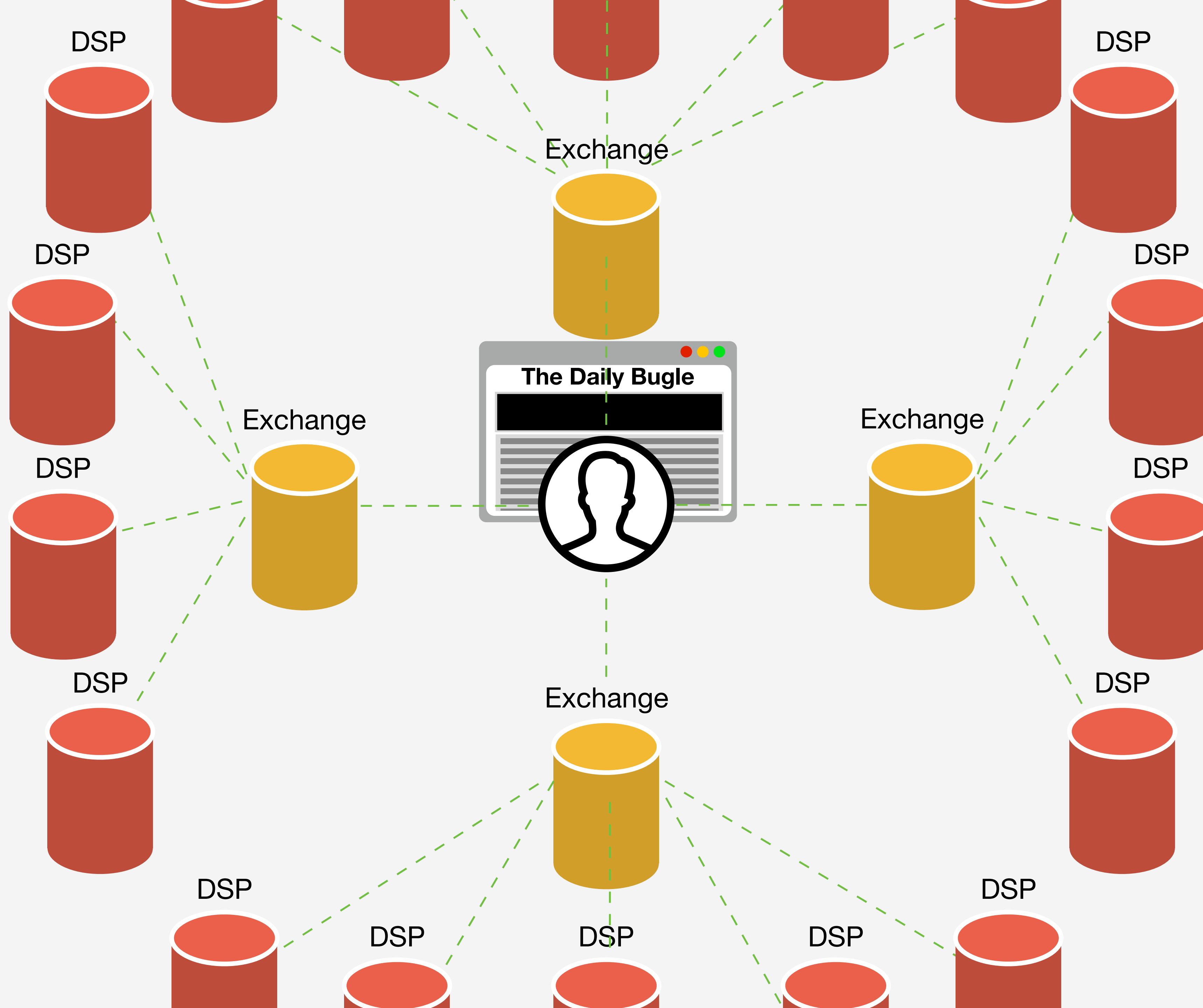
“Demand side”

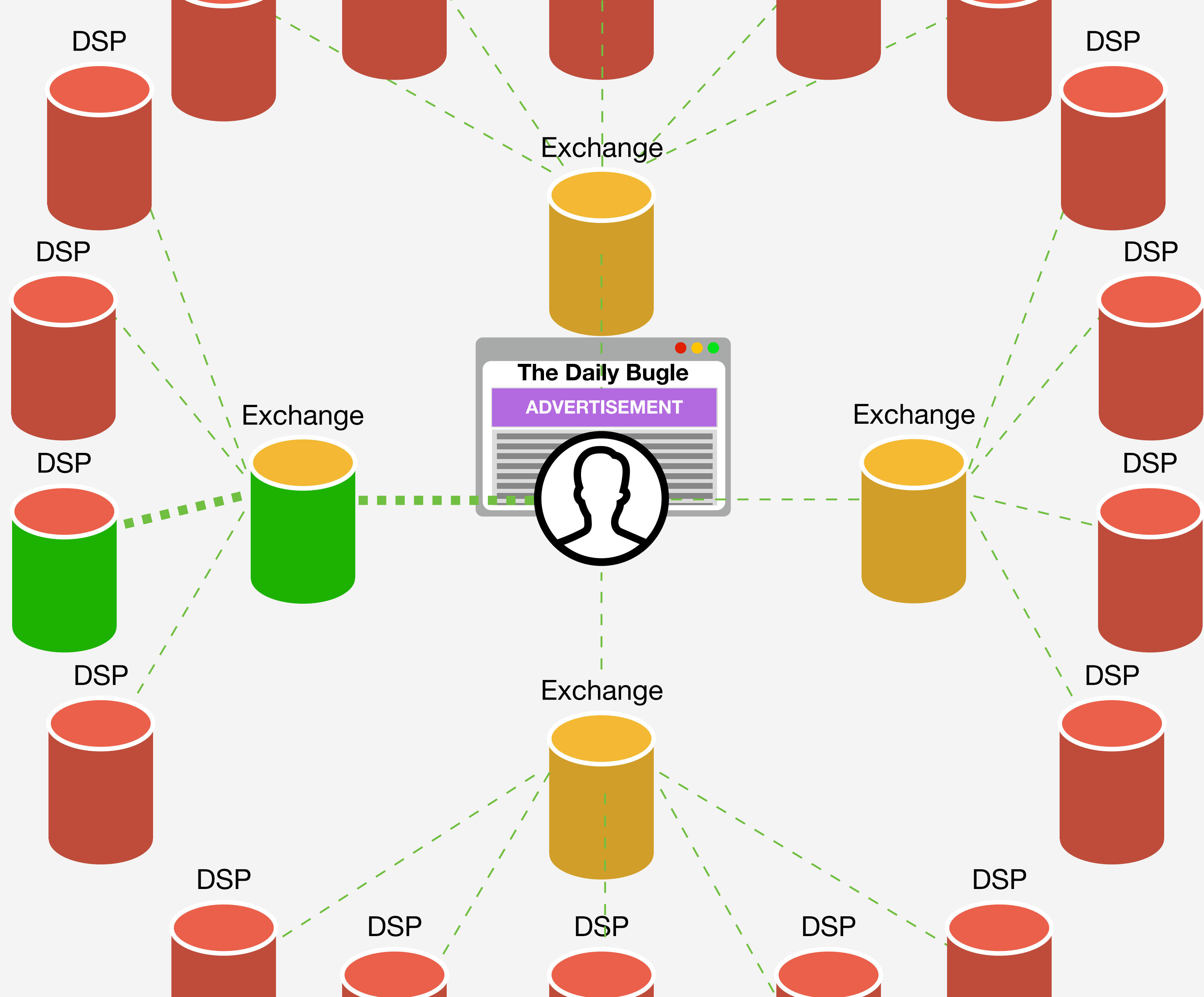
“Supply side”

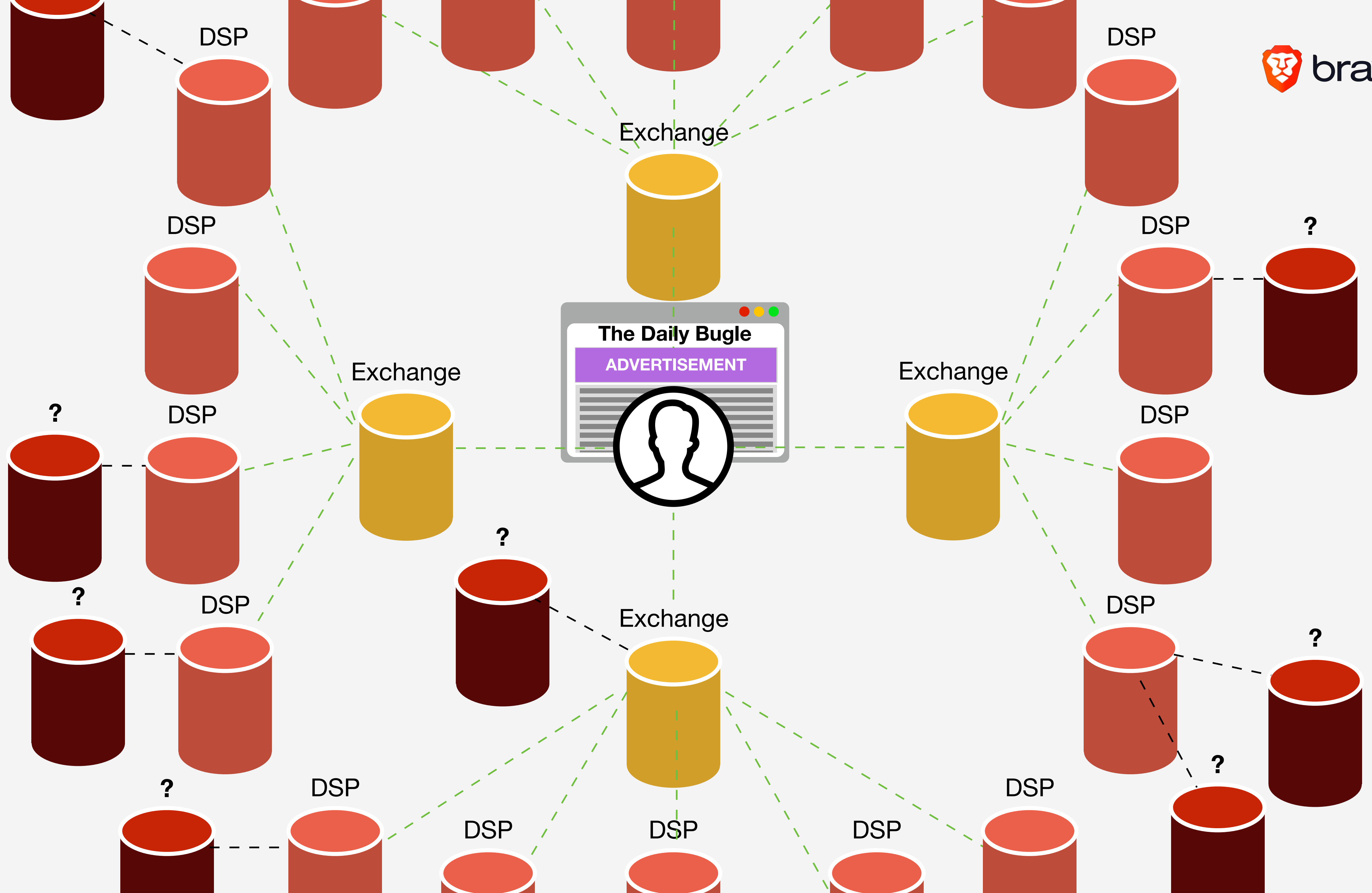




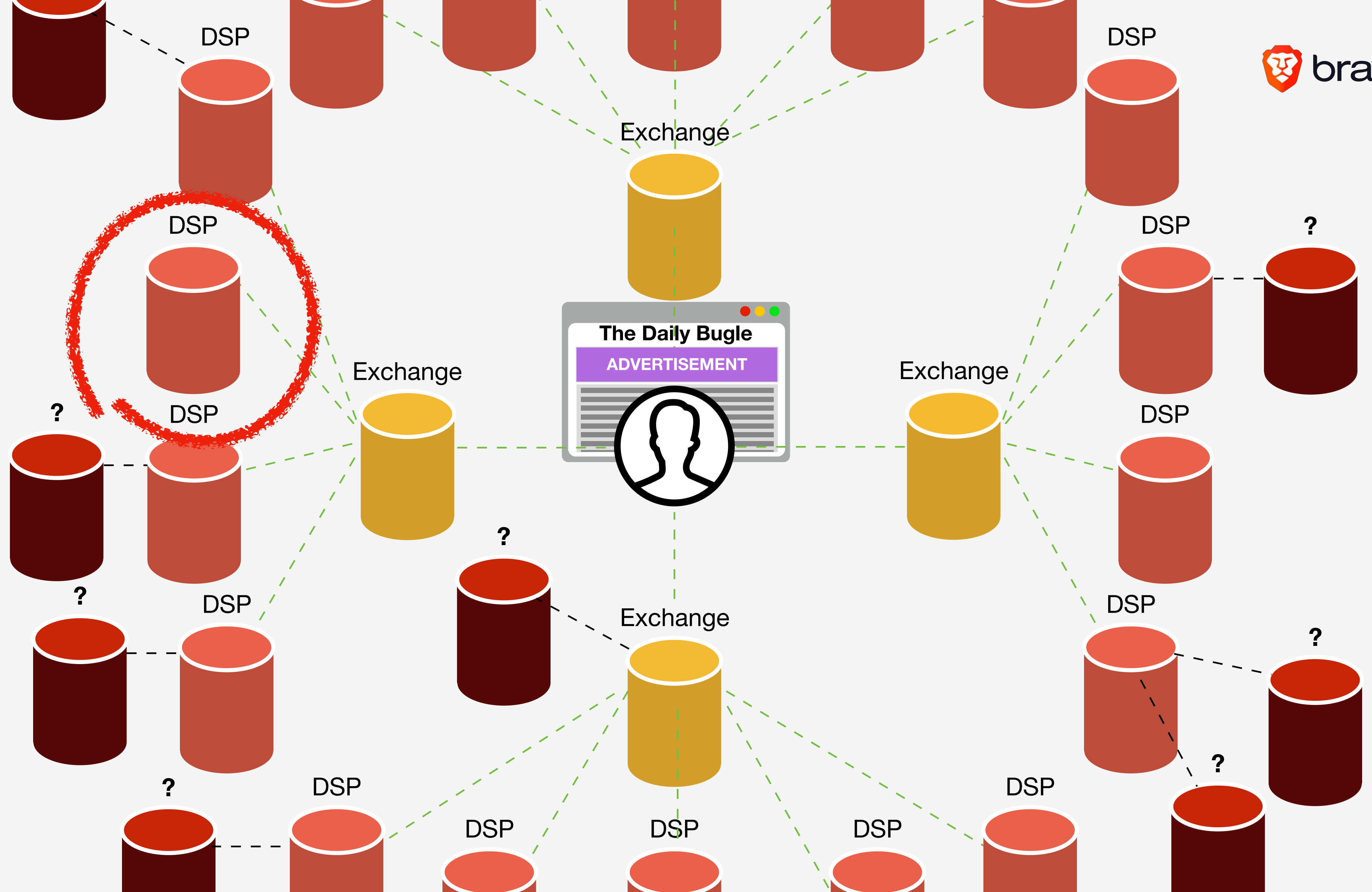


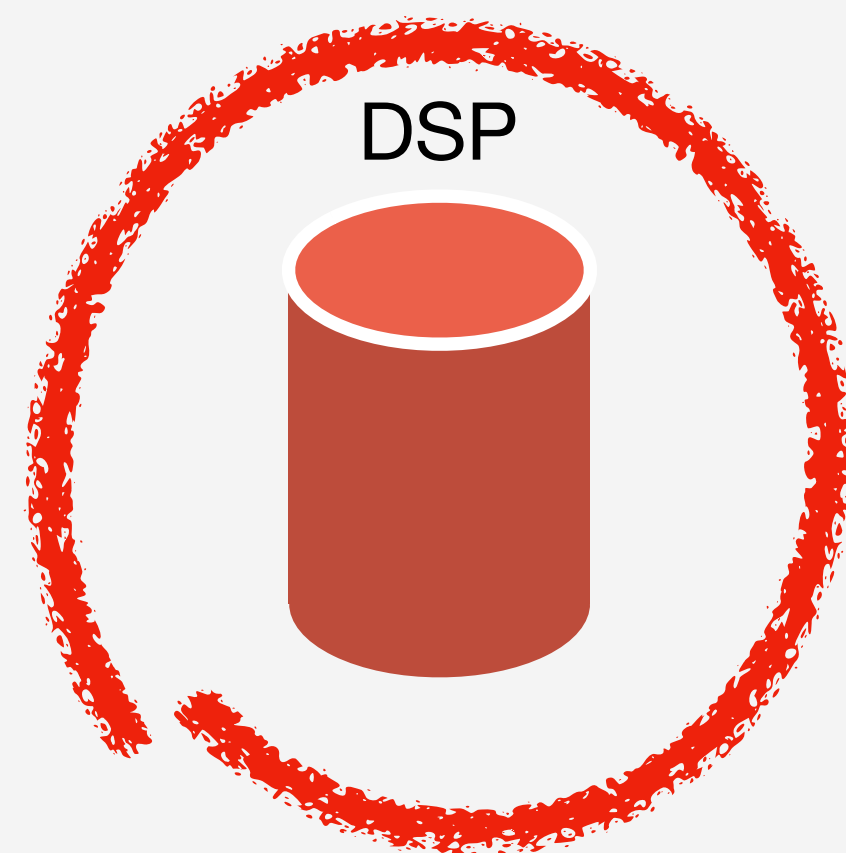












## Example

Vectaury: a small DSP/DMP/  
trading desk in France. €3.5M  
annual turnover in 2017 (though  
subsequently won a €20M  
investment).

French regulator caught it with  
**68 million** illegal RTB records.

# PRIVACY IS HARDCODED IN VECTAURY'S DNA

---

We strive for the creation of a constructive and sustainable ecosystem, serving all users and stakeholders

## WHAT SETS US APART



Of collected data is not stored



The date on which Vectaury began R&D on the issue of Privacy



Maximum storage length of personal data

## PRIVACY ACROSS THE DATA'S LIFE CYCLE



 70%

Of collected data is not stored

Is 68 million  
just 30%?

 12  
MONTHS



Maximum storage length of personal data

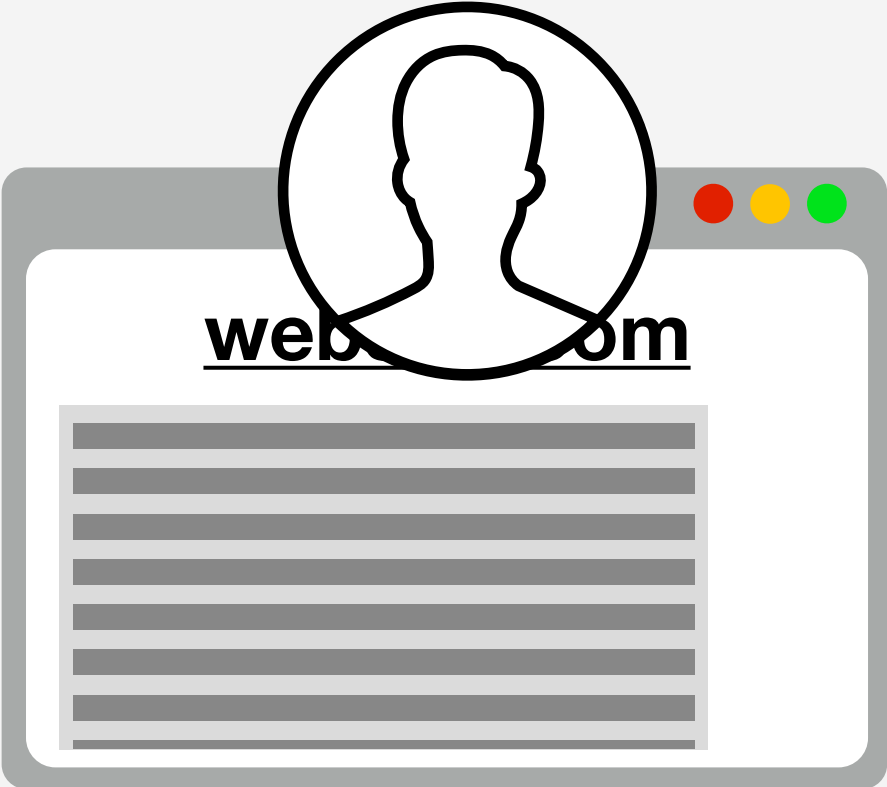
Then this small company  
was sent personal data  
**1/4 BILLION times** via RTB  
(in just one year)

# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

### Legend



-  Channel of data leakage
-  Money

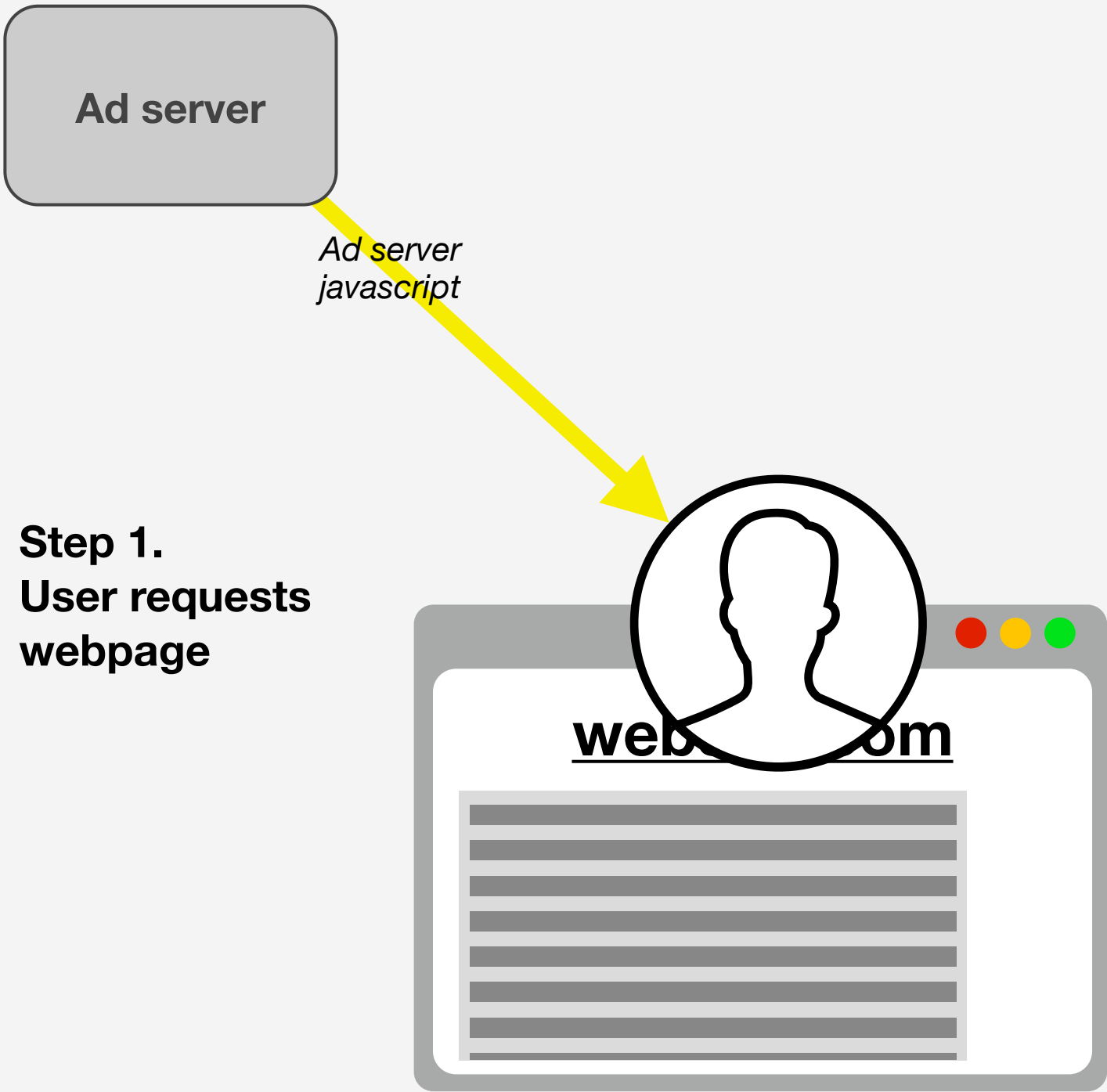


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

### Legend



-  Channel of data leakage
-  Money

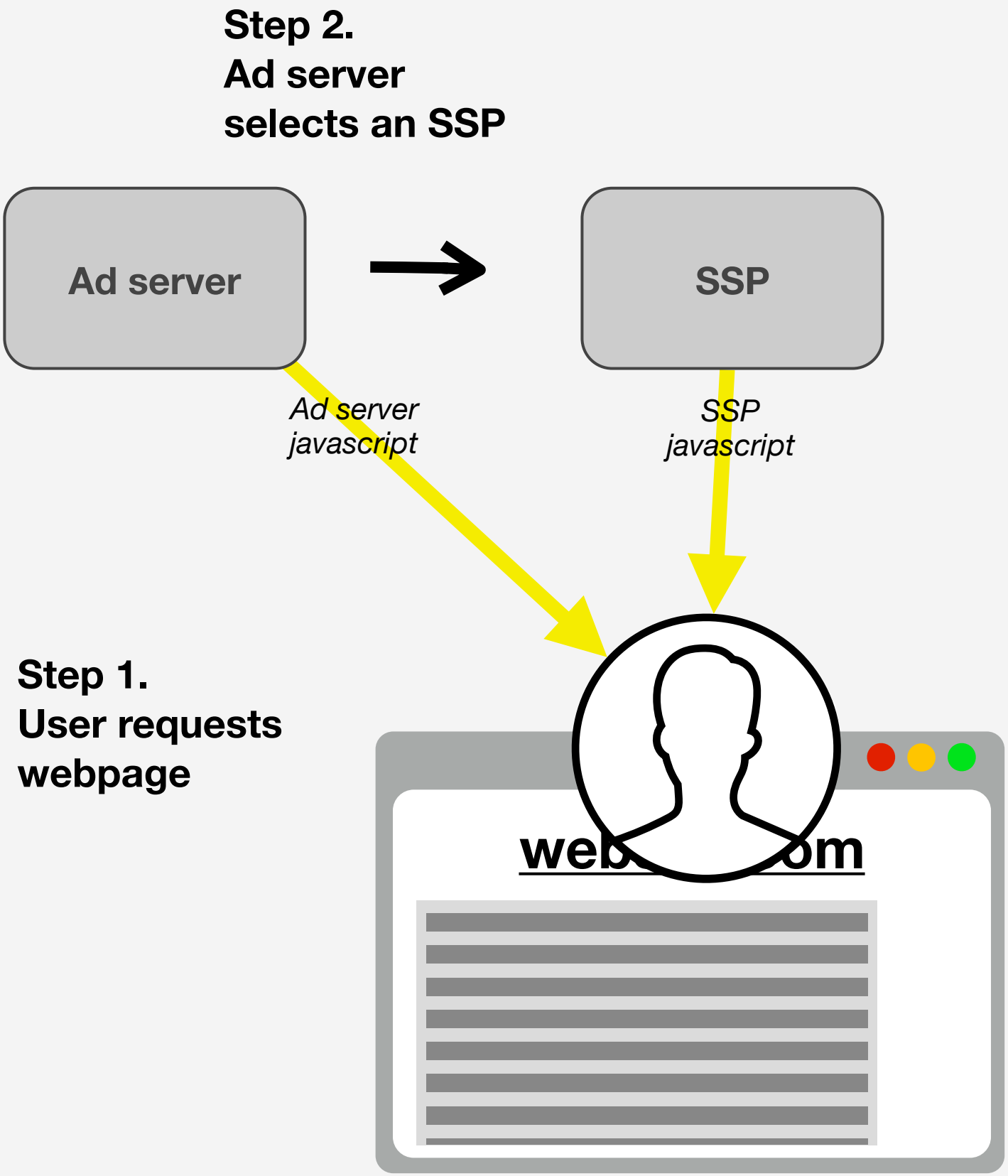


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

### Legend

-  Channel of data leakage
-  Money





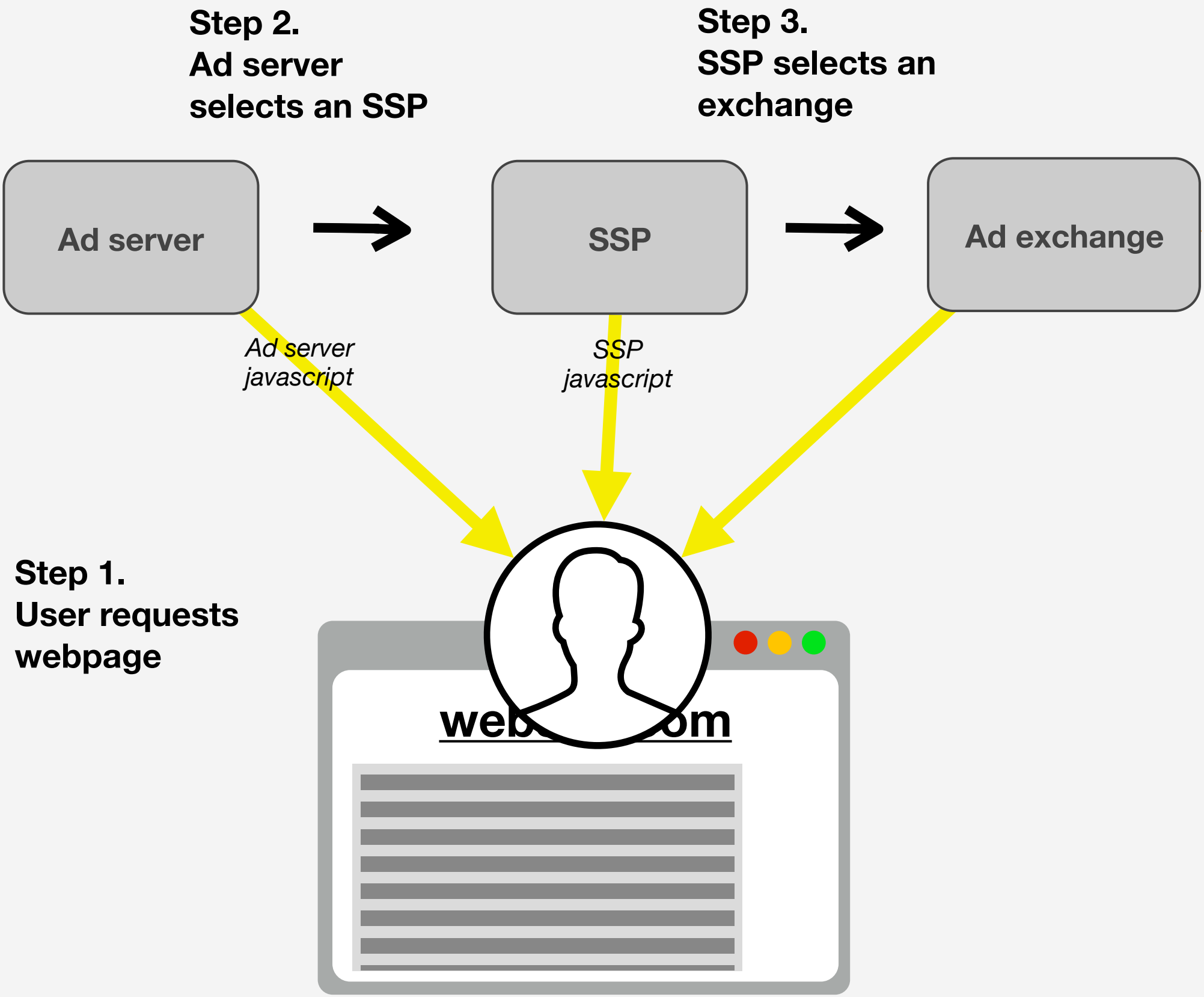


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

### Legend

-  Channel of data leakage
-  Money

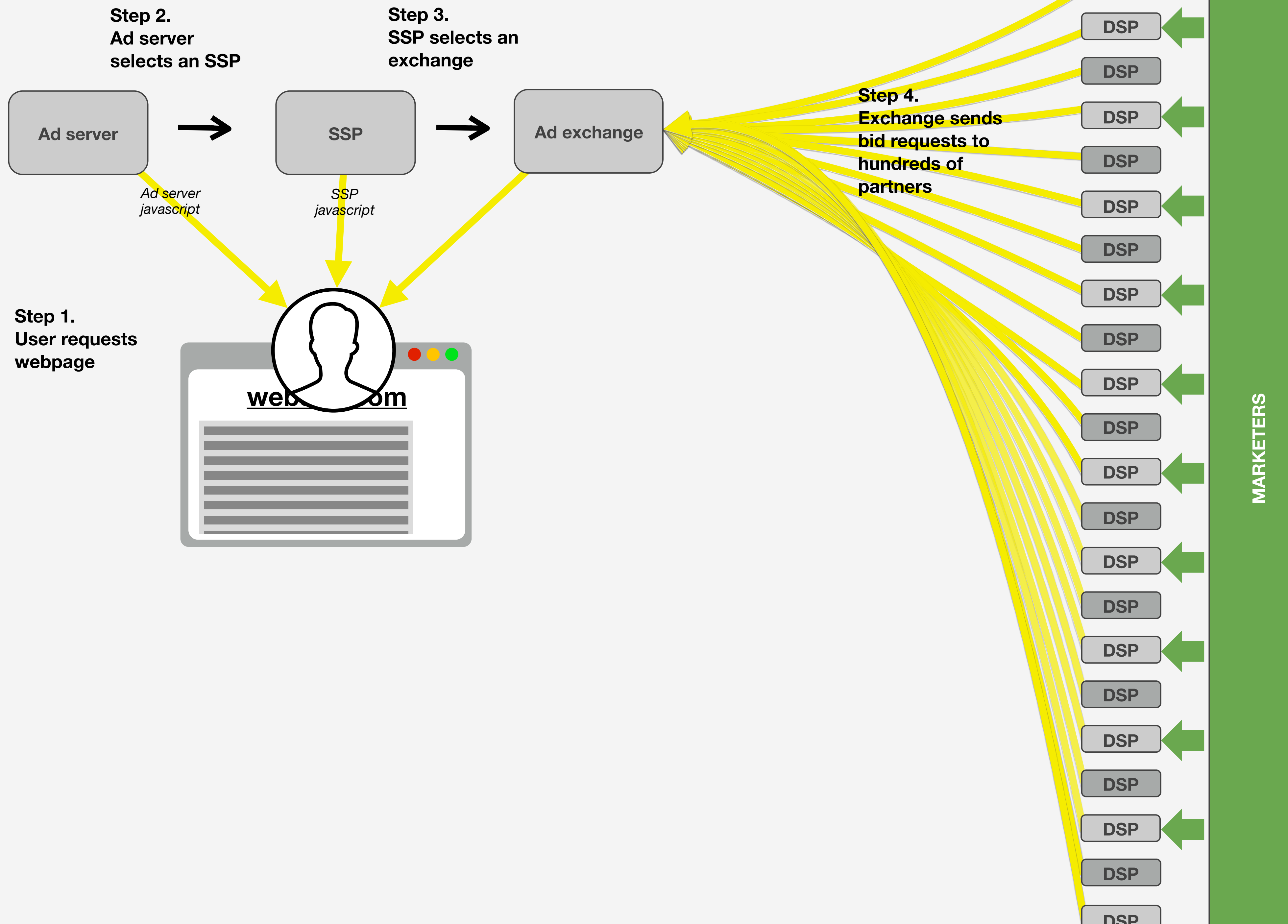


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

**Legend**

- Channel of data leakage
- Money

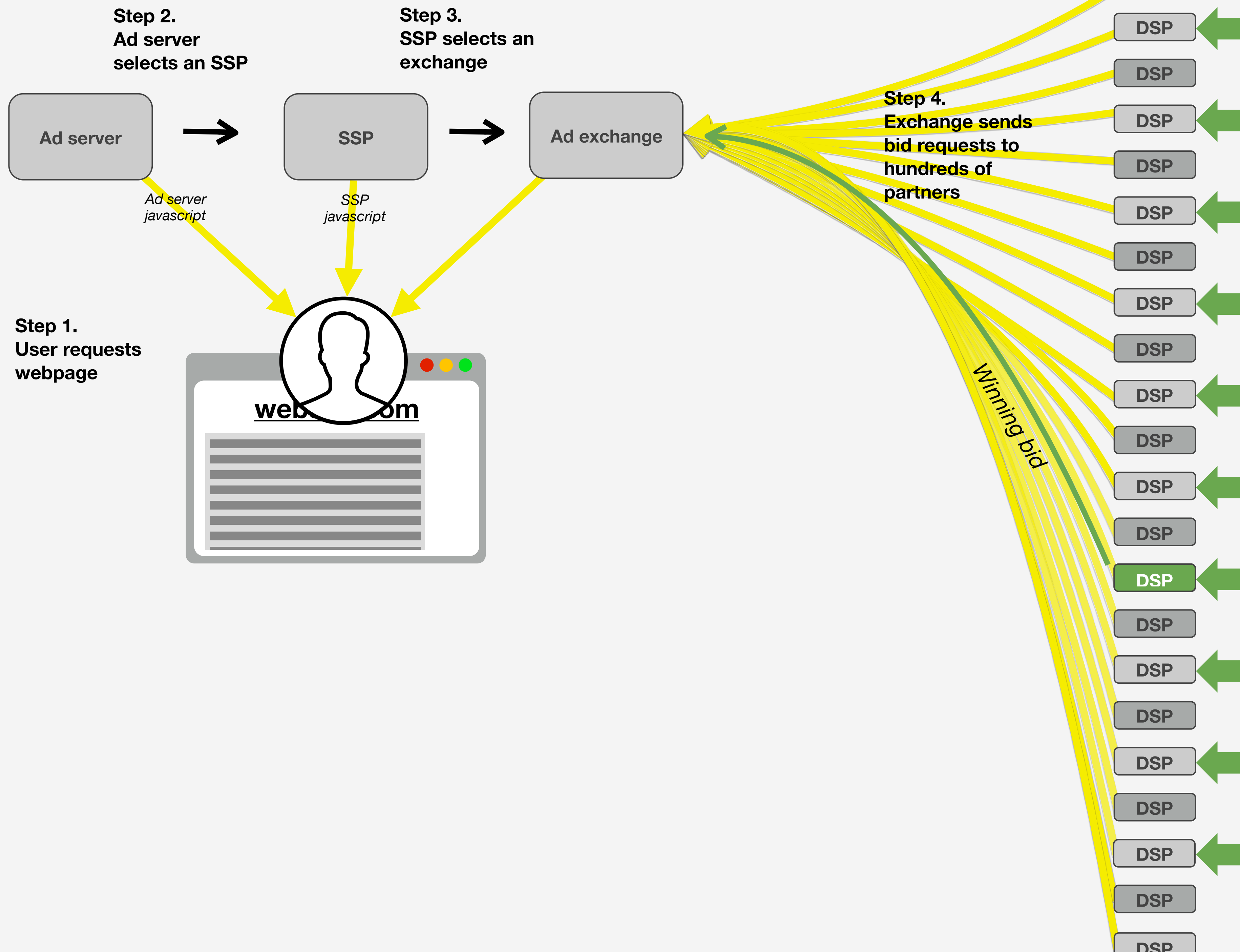


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

**Legend**

- Channel of data leakage
- Money

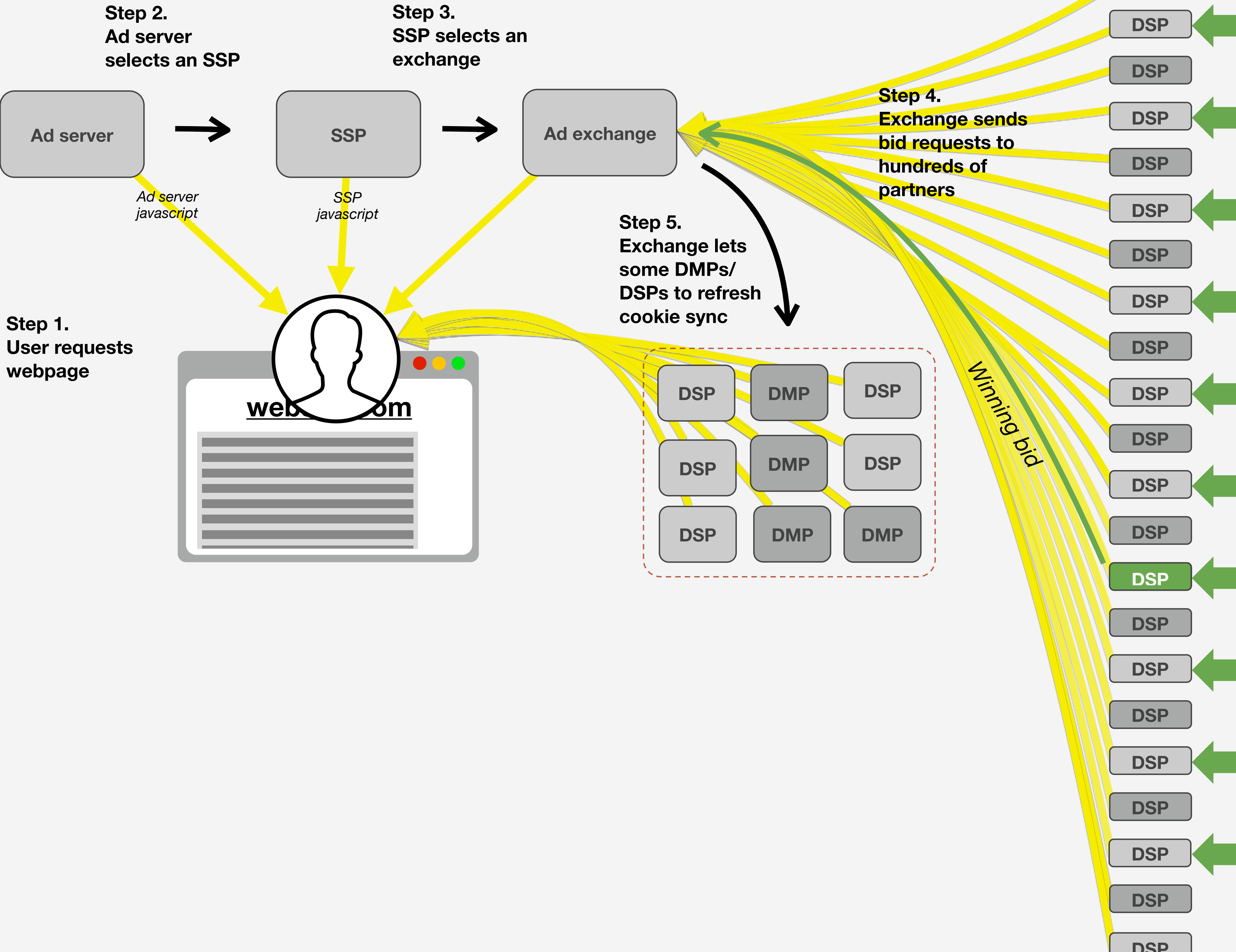


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

**Legend**

- Channel of data leakage
- Money

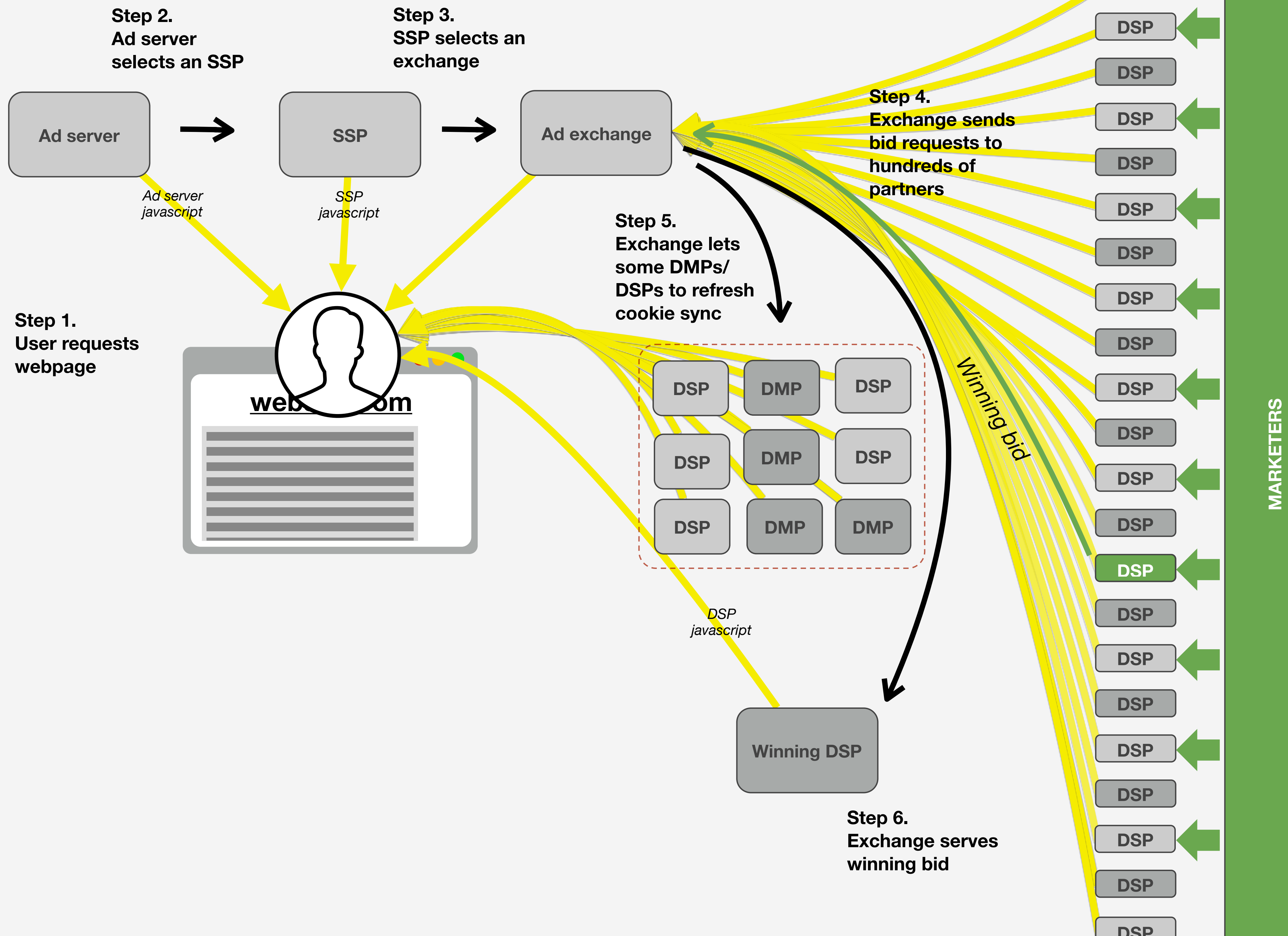


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

**Legend**

- Channel of data leakage
- Money

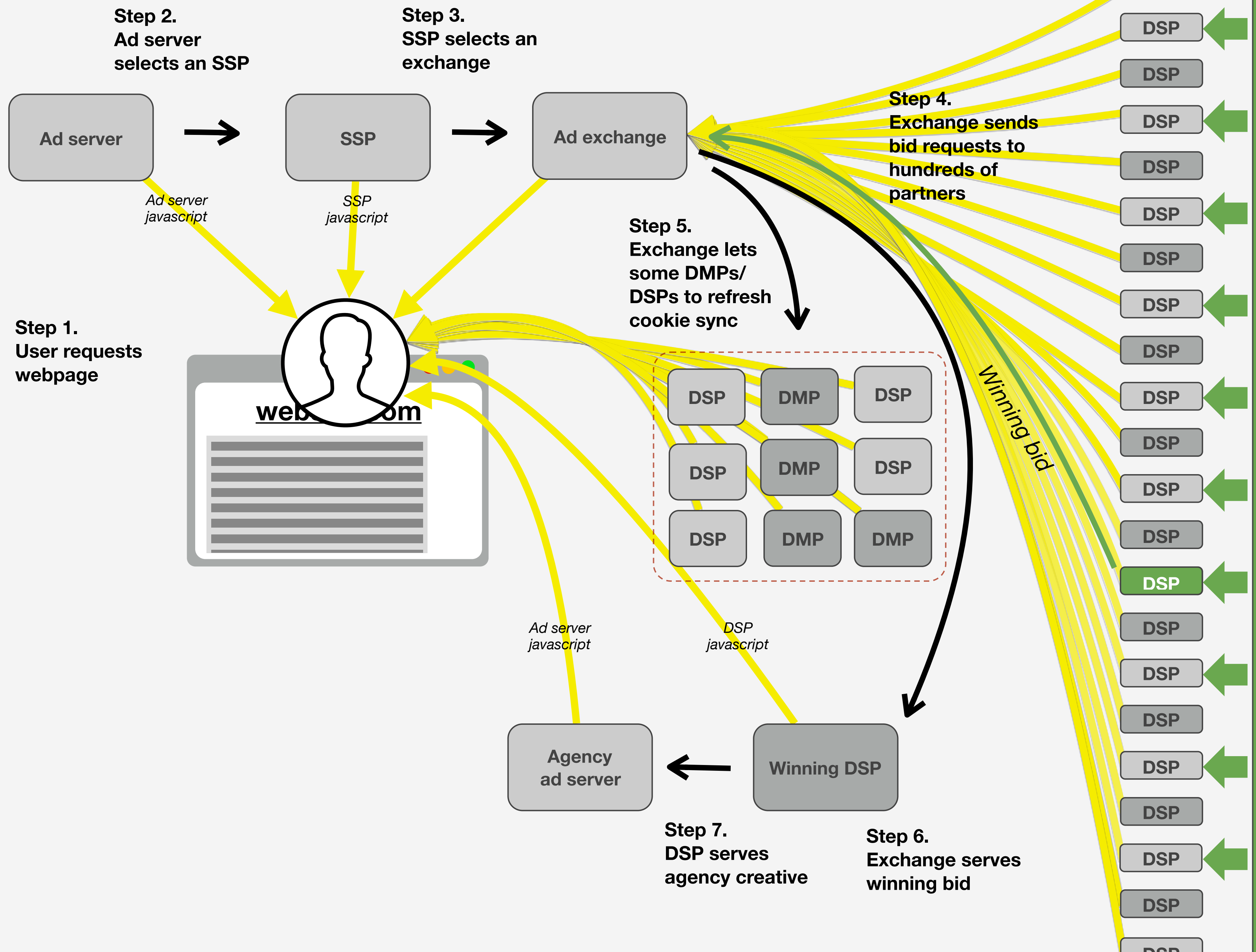


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

**Legend**

- Channel of data leakage
- Money

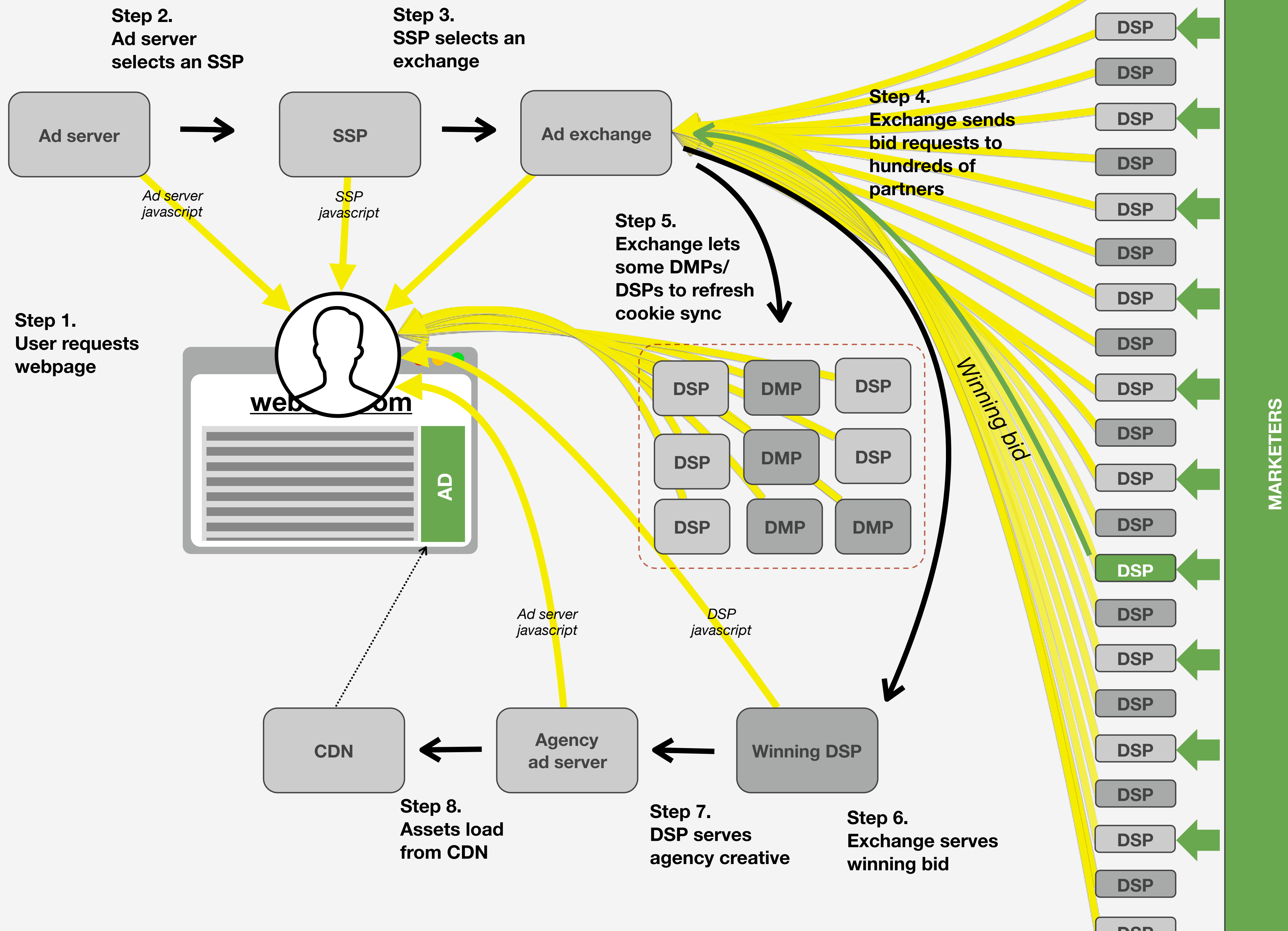


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

**Legend**

- Channel of data leakage
- Money

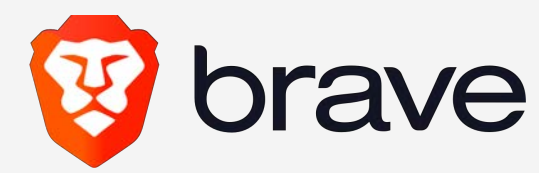
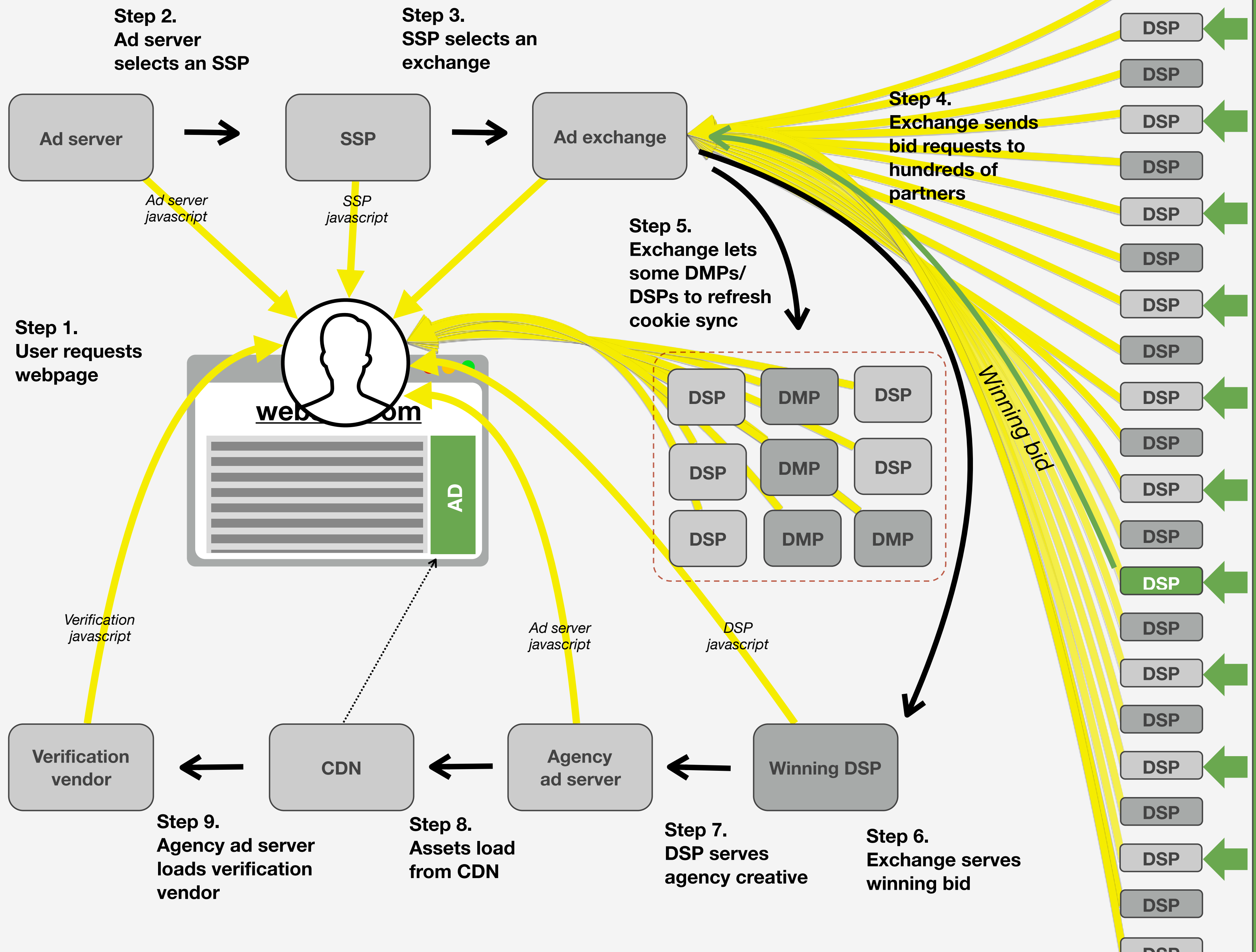


# DATA LEAKAGE IN ONLINE ADVERTISING

This is the current process of real-time bidding that is used in online behavioural advertising.

**Legend**

- Channel of data leakage
- Money





# WHAT'S IN A BID REQUEST?



# Personal data in bid requests

- What you are reading, or watching, or listening to.
- **Categories of the content.**
- Unique pseudonymous ID.
- Unique ID matched to ad buyer's existing profile of you.
- Your location (can be your exact latitude and longitude).
- Granular description of your device.
- Unique tracking IDs / cookie match.
- Your IP address.\*
- Data broker segment ID\* when available.

\*Depending on the version of "real time bidding" system

IAB7-21	Diabetes
IAB7-22	Epilepsy
IAB7-23	GERD/Acid Reflux
IAB7-24	Headaches/Migraines
IAB7-25	Heart Disease
IAB7-26	Herbs for Health
IAB7-27	Holistic Healing
IAB7-28	IBS/Crohn's Disease
IAB7-29	Incest/Abuse Support
IAB7-30	Incontinence
IAB7-31	Infertility
IAB7-32	Men's Health
IAB7-33	Nutrition
IAB7-34	Orthopedics
IAB7-35	Panic/Anxiety Disorders
IAB7-36	Pediatrics
IAB7-37	Physical Therapy
IAB7-38	Psychology/Psychiatry
IAB7-39	Senior Health



**“broadcast”**

# HUNDREDS OF BILLIONS OF RTB BID REQUESTS, EVERY DAY.

## Leading RTB exchanges, daily bid request estimates

Index Exchange	50 billion <sup>ii</sup>
OpenX	60 billion <sup>+</sup> <sup>i</sup>
Rubicon Project	Unknown. Claims to reach 1 billion people's devices. <sup>iii</sup>
PubMatic	70 billion <sup>+</sup> <sup>iv</sup>
Oath/AOL	90 billion <sup>v</sup>
AppNexus	131 billion <sup>vi</sup>
Smaato	214 billion <sup>vii</sup>
Google DoubleClick	Unknown. DoubleClick is the dominant exchange.

- i. "Tour IX's Amsterdam and Frankfurt Data Centers", Index Exchange, 2 July 2018 (URL: <https://www.indexexchange.com/tour-ix-amsterdam-frankfurt-data-centers/>).
- ii. "OpenX Ad Exchange", OpenX (URL: [https://www.openx.com/uk\\_en/products/ad-exchange/](https://www.openx.com/uk_en/products/ad-exchange/)).
- iii. "Buyers", Rubicon Project, (URL: <https://rubiconproject.com/buyers/>).
- iv. "How PubMatic Is Learning Machine Learning", PubMatic, 25 January 2019 (URL: <https://pubmatic.com/blog/learning-machine-learning/>).
- v. "Maximize yield with Oath's publisher offerings", Oath, 3 April 2018 (URL: <https://www.oath.com/insights/maximize-yield-with-oath-s-publisher-offerings/>).

- vi. 500 Billion / 29.6 = 18.6 billion impressions per day. Using AppNexus 1:11.5 ratio, this is 214 auctions per day. 500+ impressions figure cited in "Optimize your mobile strategy", Smaato, (URL: <https://www.smaato.com/>).
- vii. "Transacting at a peak of 11.4 billion daily impressions, our marketplace handles more traffic each day than Visa, Nasdaq, and the NYSE combined" at <https://www.appnexus.com/sell>. Note that in 2017, AppNexus said in "AppNexus Scales with DriveScale", 2017, (URL: [http://go.drivescale.com/rs/451-ESR-800/images/DRV\\_Case\\_Study\\_AppNexus-final.v1.pdf](http://go.drivescale.com/rs/451-ESR-800/images/DRV_Case_Study_AppNexus-final.v1.pdf)) that 10.7 billion "impressions transacted" came as a result of running 123 billion auctions. The impressions transacted to auctions ratio appears to be roughly 1:11.5. Therefore, the 11.4 daily impressions reported in 2018 equates to 131 billion auctions per day.

**EVERY ONLINE**

**PERSON**

**CAN BE PROFILED**

**‘controller’** means the natural or legal person, public authority, agency or other body which, alone or jointly with others, determines the purposes and means of the processing of personal data; where the purposes and means of such processing are determined by Union or Member State law, the controller or the specific criteria for its nomination may be provided for by Union or Member State law;

-GDPR, Article 4 (7)

A group photograph of the members of the European Court of Justice. There are 21 individuals in total, arranged in five rows on a set of stairs. They are all wearing traditional maroon judicial robes with white collars. The group is diverse in age and appearance. The background consists of dark wooden stairs and a wall with a large, dark, abstract sculpture on the left side.

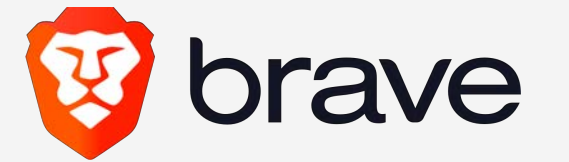
# European Court of Justice

## 5 JUNE 2018





(Reference for a preliminary ruling — Directive 95/46/EC — Personal data — Protection of natural persons with respect to the processing of that data — Order to deactivate a Facebook page (fan page) enabling the collection and processing of certain data of visitors to that page — Article 2(d) — Controller responsible for the processing of personal data — Article 4 — Applicable national law — Article 28 — National supervisory authorities — Powers of intervention of those authorities)



**35** While the mere fact of making use of a social network such as Facebook does not make a Facebook user a controller jointly responsible for the processing of personal data by that network, it must be stated, on the other hand, that the administrator of a fan page hosted on Facebook, by creating such a page, gives Facebook the opportunity to place cookies on the computer or other device of a person visiting its fan page, whether or not that person has a Facebook account.

**37** In particular, the administrator of the fan page can ask for — and thereby request the processing of — demographic data relating to its target audience, including trends in terms of age, sex, relationship and occupation, information on the lifestyles and centres of interest of the target audience and information on the purchases and online purchasing habits of visitors to its page, the categories of goods and services that appeal the most, and geographical data which tell the fan page administrator where to make special offers and where to organise events, and more generally enable it to target best the information it offers.

**38** While the audience statistics compiled by Facebook are indeed transmitted to the fan page administrator only in anonymised form, it remains the case that the production of those statistics is based on the prior collection, by means of cookies installed by Facebook on the computers or other devices of visitors to that page, and the processing of the personal data of those visitors for such statistical purposes. In any event, Directive 95/46 does not, where several operators are jointly responsible for the same processing, require each of them to have access to the personal data concerned.

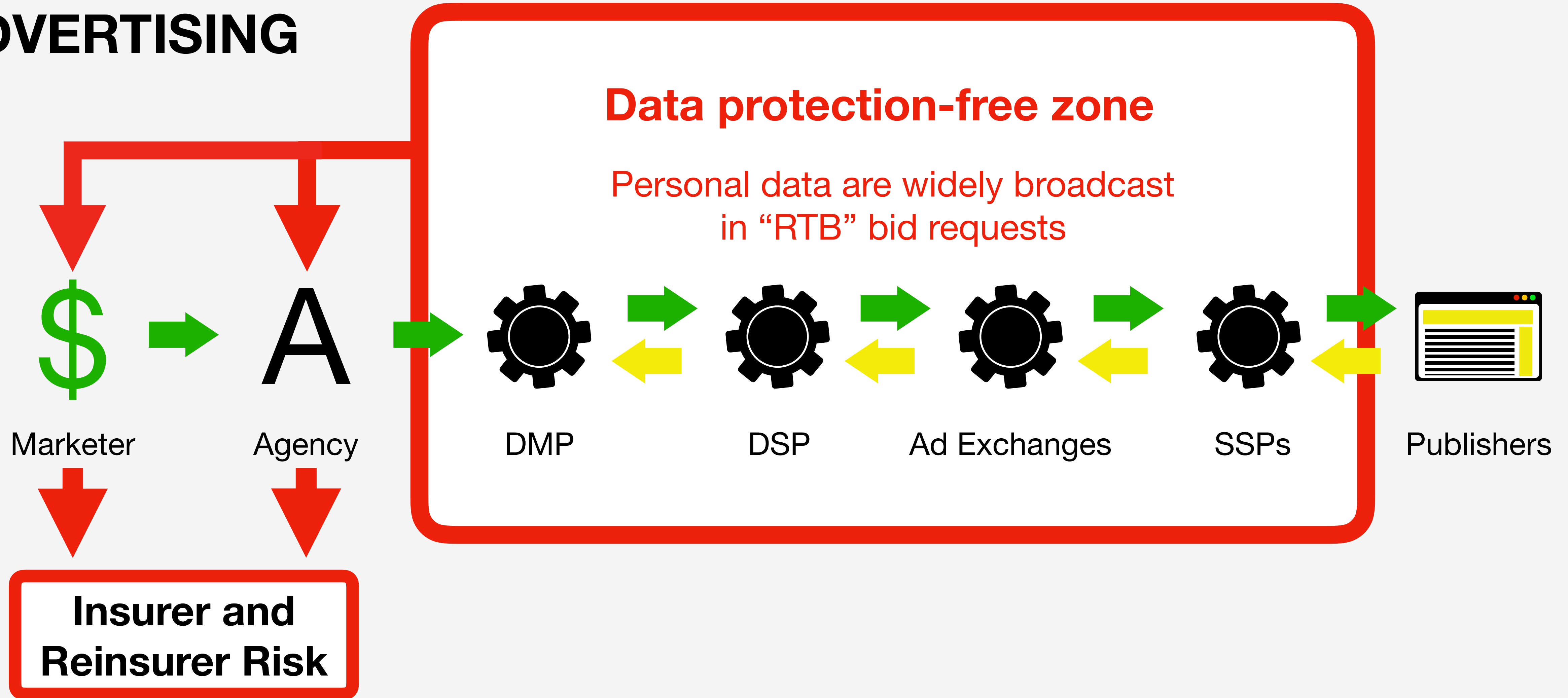
**39** In those circumstances, the administrator of a fan page hosted on Facebook, such as Wirtschaftsakademie, must be regarded as taking part, by its definition of parameters depending in particular on its target audience and the objectives of managing and promoting its activities, in the determination of the purposes and means of processing the personal data of the visitors to its fan page. The administrator must therefore be categorised, in the present case, as a controller responsible for that processing within the European Union, jointly with Facebook Ireland, within the meaning of Article 2(d) of Directive 95/46.

Any controller involved in processing shall be liable for the damage caused by processing which infringes this Regulation. A processor shall be liable for the damage caused by processing only where it has not complied with obligations of this Regulation specifically directed to processors or where it has acted outside or contrary to lawful instructions of the controller.

# THE ULTIMATE RETAIL PLATFORM

We created the ultimate retail platform that enables retailers and brands to act at each step of their consumers' journey and to **boost** in-store **traffic** and **sales**

# MARKETER RISK FROM PROGRAMMATIC ADVERTISING



Legend



Money



Channel of data leakage



Shared liability under GDPR Article 82

# DATA PROTECTION IMPACT ASSESSMENTS

Where a type of processing in particular using new technologies, and taking into account the nature, scope, context and purposes of the processing, is likely to result in a high risk to the rights and freedoms of natural persons, the controller shall, prior to the processing, carry out an assessment of the impact of the envisaged processing operations on the protection of personal data. A single assessment may address a set of similar processing operations that present similar high risks.

-GDPR, Article 35 (1)

...shall in particular be required in the case of:

- (a) a systematic and extensive evaluation of personal aspects relating to natural persons which is based on automated processing, including profiling, and on which decisions are based that produce legal effects concerning the natural person or similarly significantly affect the natural person;
- (b) processing on a large scale of special categories of data referred to in Article 9(1), or of personal data relating to criminal convictions and offences referred to in Article 10; or ...

-GDPR, Article 35 (3)

The controller shall consult the supervisory authority prior to processing where a data protection impact assessment under Article 35 indicates that the processing would result in a high risk in the absence of measures taken by the controller to mitigate the risk.

-GDPR, Article 36 (1)



# How to fix this

(an easy fix)

# IAB OpenRTB



## AdCOM Specification v1.0

FINAL v1.0

November 2018

### About the IAB Technology Lab

The IAB Technology Laboratory (Tech Lab) is a non-profit research and development consortium that produces and provides standards, software, and services to drive growth of an effective and sustainable global digital media ecosystem. Comprised of digital publishers and ad technology firms as well as marketers, agencies, and other companies with interests in the interactive marketing arena, IAB Tech Lab aims to enable brand and media growth via a transparent, safe, effective supply chain, simpler and more consistent measurement, and better advertising experiences for consumers, with a focus on mobile and TV/digital video channel enablement. The IAB Tech Lab portfolio includes the DigiTrust real-time standardized identity service designed to improve the digital experience for consumers, publishers, advertisers, and third-party platforms. Board members include AppNexus, ExtremeReach, Google, GroupM, Hearst Digital Media, Integral Ad Science, Index Exchange, LinkedIn, MediaMath, Microsoft, Moat, Pandora, PubMatic, Quantcast, Telaria, The Trade Desk, and Yahoo! Japan. Established in 2014, the IAB Tech Lab is headquartered in New York City with an office in San Francisco and representation in Seattle and London.

Learn more about IAB Tech Lab here: [www.iabtechlab.com](http://www.iabtechlab.com)

### License

OpenRTB Specification the IAB Tech Lab is licensed under a Creative Commons Attribution 3.0 License. To view a copy of this license, visit [creativecommons.org/licenses/by/3.0/](http://creativecommons.org/licenses/by/3.0/) or write to Creative Commons, 171 Second Street, Suite 300, San Francisco, CA 94105, USA.



# Google Authorized Buyers

10/02/2019

Authorized Buyers Real-Time Bidding Proto | Authorized Buyers | Google Developers

## Authorized Buyers Real-Time Bidding Proto

This guide describes each field in the Authorized Buyers Real-Time Bidding proto v.161, along with additional implementation tips and information.

See also the [Authorized Buyers RTB proto file](https://developers.google.com/authorized-buyers/rtb/downloads/realtime-bidding-proto)

(<https://developers.google.com/authorized-buyers/rtb/downloads/realtime-bidding-proto>) upon which this guide is based.

### BidRequest object

This is the message that Google uses to request bids. A BidRequest includes the ad slot from a single impression.

This section lists information that we know about the user.

Attribute	Required/Optional	Type	Implementation details
id	Required	bytes	Unique request ID generated by Google. This is 16 bytes long.
ip	optional	bytes	The first 3 bytes of the IP address in network byte order. For IPv6, the first 6 bytes are included. Note that the number of bytes included from IPv6 addresses may change over time.
user_data_treatment	repeated	UserDataTreatment	Reasons for constrained usage treatment of user (google_user_id, hosted_match_data, IDF)

When set, the user's cookie/id data allows only restricted usage. If not available in the usual fields, instead the data is provided through the constrained usage fields and stricter restrictions apply. There may be multiple restrictions applicable. You must only use the data for use cases allowed. You will receive the user\_data\_treatment value only if there are any applicable restrictions. However, you must be whitelisted in order to receive the constrained usage data. See the [User Data Treatments](https://developers.google.com/authorized-buyers/rtb/user_data_treatments) ([https://developers.google.com/authorized-buyers/rtb/user\\_data\\_treatments](https://developers.google.com/authorized-buyers/rtb/user_data_treatments)) guide for more information.

The impacted fields are:

- google\_user\_id: Use google\_user\_id and constrained\_usage\_google\_user\_id.



# AdCOM Specification v1.0

---

FINAL v1.0

November 2018

## About the IAB Technology Lab

The IAB Technology Laboratory (Tech Lab) is a non-profit research and development consortium that produces and provides standards, software, and services to drive growth of an effective and sustainable global digital media ecosystem. Comprised of digital publishers and ad technology firms as well as marketers, agencies, and other companies with interests in the interactive marketing arena, IAB Tech Lab aims to enable brand and media growth via a transparent, safe, effective supply chain, simpler and more consistent measurement, and better advertising experiences for consumers, with a focus on mobile and TV/digital video channel enablement. The IAB Tech Lab portfolio includes the DigiTrust real-time standardized identity service designed to improve the digital experience for consumers, publishers, advertisers, and third-

domain	string	Highest level domain of the producer (e.g., "producer.com").
cat	string array	Array of content categories that describe the producer using IDs from the taxonomy indicated in cattax .
cattax	integer	The taxonomy in use for the cat attribute. Refer to <a href="#">List: Category Taxonomies</a> .
ext	object	Optional vendor-specific extensions.

## Object: User

This object contains information known or derived about the human user of the device (i.e., the audience for advertising). The user ID is a vendor-specific artifact and may be subject to rotation or other privacy policies. However, this user ID must be stable long enough to serve reasonably as the basis for frequency capping and retargeting.

Attribute	Type	Definition
id	string; recommended	Vendor-specific ID for the user. At least one of id or buyeruid is strongly recommended.
buyeruid	string; recommended	Buyer-specific ID for the user as mapped by an exchange for the buyer. At least one of id or buyeruid is strongly recommended.
yob	integer	Year of birth as a 4-digit integer.
gender	string	Gender, where "M" = male, "F" = female, "O" = known to be other (i.e., omitted is unknown).
keywords	string	Comma separated list of keywords, interests, or intent.
		GDPR consent string if applicable, complying with the comply with the IAB

# Appendix C: OpenRTB Interfaces

---

As OpenRTB v3.0+ is a very popular transaction layer that uses AdCOM, this appendix is provided to show the interface between the two specifications. This is presented here as informational only; please refer to the current OpenRTB specification v3.0+ for official details on OpenRTB.

In the JSON snippets that follow, AdCOM objects are shown within OpenRTB payloads. The ellipses indicate attributes unrelated to this example that have been omitted for brevity.

## Request Context

---

The following is an abbreviated example of an OpenRTB v3.x bid request. It self-identifies as OpenRTB and shows its version as "3.0". It also shows that it is using AdCOM v1.0 as its domain layer.

The `context` object is the OpenRTB interface to AdCOM context objects. It can contain any of the top-level context objects, all of which are optional, and their subordinates. This example includes top-level objects `regs`, `restrictions`, `site` (no more than one distribution channel subtype may be included), `user`, and `device`.

This example is indicating a mobile optimized website and some basic details about the site and its publisher. The user is a female born in 1990. She is using an Apple iPhone 6S, running iOS 11.4.1, and is connected via the Verizon network. Her device (and presumably she) is currently located in Boston MA, USA, during eastern standard time. She is not subject to GDPR or COPPA. We would also like to block adult, illegal, and uncategorized content as well as ads from car makers Ford and Buick.

```
{
  "openrtb": {
    "ver": "3.0",
```

```
"id": "1234",
"name": "Awesome Example Site",
"domain": "examplesitedomain.com",
"mobile": 1,
"amp": 0,
"pub": {
  "id": "9876",
  "name": "Example Publisher, Inc.",
  "domain": "examplepubdomain.com"
}
```

The website this specific person is currently viewing

```
},
"user": {
  "id": "a0af45c77890045deec100acb8443baff57c",
  "buyeruid": "fcd4282456238256034abcdef220d9aa5892",
  "yob": 1990,
  "gender": "F"
}
```

Various ID codes that identify this specific person, and can tie them to existing profiles

Distinctive characteristics of this specific person

```
"device": {
  "type": 4,
  "ifa": "8846d6fa10008bceaaf322908dfcb221",
  "ip": "1.2.3.4",
  "ua": "...user agent string...",
  "make": "Apple",
  "model": "iPhone",
  "hvw": "6s",
  "os": 13,
  "osv": "11.4.1",
  "mccmnc": "310-005",
  "geo": {
    "type": 1,
    "lat": 42.3601,
    "lon": 71.0581,
    "country": "USA",
    "utcoffset": -300
```

Distinctive information about this specific person's device

This specific person's IP address

Distinctive information about this specific person's device

This young woman's GPS coordinates!



# Personal data in bid requests

- **What you are reading, or watching, or listening to.**
- **Categories of the content.**
- **Unique pseudonymous ID.**
- **Unique ID matched to ad buyer's existing profile of you.**
- **Your location (can be your exact latitude and longitude).**
- **Granular description of your device.**
- **Unique tracking IDs / cookie match.**
- **Your IP address.\***
- **Data broker segment ID\* when available.**

\*Depending on the version of “real time bidding” system



## Non-Personal data in bid requests

- What you are reading, or watching, or listening to.
- Categories of the content.
- Your **approximate** location.
- **General** description of your device.
- Your **approximate** IP address.
- Impression ID for buyer transparency.

Person is in **Etterbeek** in **Brussels**. Reading an article about **Tesla motors** on **TechCrunch**. Using **Safari** on a **Mac**.



This Regulation applies to the processing of personal data wholly or partly by automated means and to the processing other than by automated means of personal data which form part of a filing system or are intended to form part of a filing system.

-GDPR, Article 2 (1)

id	ext	value	tagid	event	ext	maxseq	ext	ext	live	osv	utcoffset	4 (Audit Status Codes)	1 (Creative Attributes)	12 ( Creative Subtypes - Audio/Video)	3 (Display Placement Types)	28 (DOOH Venue Types)	500+ (DOOH Venue Types)	1 (Native Data Asset Types)	14 (Operating Systems)	3 (Playback Cessation Modes)
adomain	img	len	ssai	ext	type	linear	id	venue	srcret	hwv	ext	5 (Audit Status Codes)	2 (Creative Attributes)	1 (Creative Subtypes - Display)	4 (Display Placement Types)	29 (DOOH Venue Types)	1 (Event Tracking Methods)	2 (Native Data Asset Types)	15 (Operating Systems)	1 (Playback Methods)
bundle	link	type	sdk	w	method	boxing	name	fixed	len	h	id	6 (Audit Status Codes)	3 (Creative Attributes)	2 (Creative Subtypes - Display)	500+ (Display Placement Types)	30 (DOOH Venue Types)	2 (Event Tracking Methods)	3 (Native Data Asset Types)	16 (Operating Systems)	2 (Playback Methods)
lurt	ext	ext	sdkver	h	api	comp	pub	etime	lang	w	name	500+ (Audit Status Codes)	4 (Creative Attributes)	3 (Creative Subtypes - Display)	1 (DOOH Venue Types)	31 (DOOH Venue Types)	500+ (Event Tracking Methods)	4 (Native Data Asset Types)	17 (Operating Systems)	3 (Playback Methods)
cat	link	type	reward	wratio	jstrk	comptype	content	dpi	embed	ppi	segment	1 (Category Taxonomies)	5 (Creative Attributes)	4 (Creative Subtypes - Display)	2 (DOOH Venue Types)	32 (DOOH Venue Types)	1 (Event Types)	5 (Native Data Asset Types)	18 (Operating Systems)	4 (Playback Methods)
cattax	asset	method	wlang	hratio	wjs	ext	domain	ext	producer	pxratio	ext	2 (Category Taxonomies)	6 (Creative Attributes)	1 (Delivery Methods)	3 (DOOH Venue Types)	33 (DOOH Venue Types)	2 (Event Types)	6 (Native Data Asset Types)	19 (Operating Systems)	5 (Playback Methods)
lang	ext	api	secure	expdir	pxtrk	delay	cat	id	data	js	id	3 (Category Taxonomies)	7 (Creative Attributes)	2 (Delivery Methods)	4 (DOOH Venue Types)	34 (DOOH Venue Types)	3 (Event Types)	7 (Native Data Asset Types)	20 (Operating Systems)	6 (Playback Methods)
attr	id	url	adm	ext	wpx	skip	sectcat	name	ext	lang	name	500+ (Category Taxonomies)	8 (Creative Attributes)	3 (Delivery Methods)	4 (DOOH Venue Types)	35 (DOOH Venue Types)	4 (Event Types)	8 (Native Data Asset Types)	21 (Operating Systems)	1 (Production Qualities)
secure	req	cdata	curlx	asset	ext	skipmin	id	domain	id	ext	ext	0 (Click Types)	9 (Creative Attributes)	1 (Delivery Methods)	6 (DOOH Venue Types)	36 (DOOH Venue Types)	5 (Event Types)	9 (Native Data Asset Types)	22 (Operating Systems)	2 (Production Qualities)
mrating	title	ext	display	ext	ptype	id	cat	name	ext	ext	ext	1 (Click Types)	10 (Creative Attributes)	1 (Delivery Methods)	7 (DOOH Venue Types)	37 (DOOH Venue Types)	500+ (Event Types)	10 (Native Data Asset Types)	23 (Operating Systems)	3 (Production Qualities)
init	image	mime	video	id	pos	ext	cattax	domain	ext	comp	ext	2 (Click Types)	11 (Creative Attributes)	1 (Delivery Methods)	8 (DOOH Venue Types)	38 (DOOH Venue Types)	1 (Expandable Directions)	11 (Native Data Asset Types)	24 (Operating Systems)	1 ( Size Units)
lastmod	video	api	audio	req	delay	ext	ext	cat	ptr	gdpr	ext	3 (Click Types)	12 (Creative Attributes)	1 (Device Types)	9 (DOOH Venue Types)	39 (DOOH Venue Types)	2 (Expandable Directions)	12 (Native Data Asset Types)	25 (Operating Systems)	2 ( Size Units)
display	data	ctype	ext	title	sk	id	id	cattax	carrier	ext	ext	4 (Click Types)	13 (Creative Attributes)	5 (Device Types)	10 (DOOH Venue Types)	40 (DOOH Venue Types)	3 (Expandable Directions)	500+ (Native Data Asset Types)	26 (Operating Systems)	3 ( Size Units)
video	link	dur	pos	img	ext	invol	episode	ext	cmnc	bc	ext	5 (Companion Types)	14 (Creative Attributes)	6 (Device Types)	11 (DOOH Venue Types)	41 (DOOH Venue Types)	4 (Expandable Directions)	1 ( Native Image Asset Types)	27 (Operating Systems)	>0 (Start Delay Modes)
audio	ext	adm	instl	video	mime	ext	title	id	id	ext	ext	6 (Companion Types)	15 (Creative Attributes)	7 (Device Types)	12 (DOOH Venue Types)	42 (DOOH Venue Types)	5 (Expandable Directions)	3 ( Native Image Asset Types)	28 (Operating Systems)	0 (Start Delay Modes)
audit	url	curl	topframe	data	method	api	series	buyeruid	ext	ext	ext	7 (Companion Types)	16 (Creative Attributes)	10 (Display Context Types)	13 (DOOH Venue Types)	43 (DOOH Venue Types)	1 (Feed Types)	500+ ( Native Image Asset Types)	500+ (Operating Systems)	-1 (Start Delay Modes)
ext	urlfb	ext	ifrbust	ext	playend	ctype	season	gender	geofetch	bapp	ext	8 (Connection Types)	17 (Creative Attributes)	14 (Display Context Types)	14 (DOOH Venue Types)	44 (DOOH Venue Types)	2 (Feed Types)	0 (Operating Systems)	1 (Placement Positions)	-2 (Start Delay Modes)
mime	trkr	mime	ciktype	ext	ext	ext	ext	keywords	geo	battr	ext	9 (Connection Types)	18 (Creative Attributes)	15 (Display Context Types)	15 (DOOH Venue Types)	45 (DOOH Venue Types)	3 (Feed Types)	1 (Operating Systems)	2 (Placement Positions)	0 (Volume Normalization Modes)
api	ext	api	ampren	ext	ext	ext	ext	consent	ext	ext	ext	10 (Connection Types)	19 (Creative Attributes)	500+ (Creative Attributes)	16 (DOOH Venue Types)	46 (DOOH Venue Types)	1 (IP Location Services)	2 (Operating Systems)	3 (Placement Positions)	1 (Volume Normalization Modes)
ctype	text	ctype	ptype	ext	ext	ext	ext	geo	type	ext	ext	1 (API Frameworks)	20 (Creative Attributes)	1 ( Creative Subtypes - Audio/Video)	17 (DOOH Venue Types)	47 (DOOH Venue Types)	2 (IP Location Services)	3 (Operating Systems)	4 (Placement Positions)	2 (Volume Normalization Modes)
w	len	dur	context	mime	ctype	minbitr	ext	isrc	data	lat	ext	2 (API Frameworks)	21 (Creative Attributes)	2 ( Creative Subtypes - Audio/Video)	18 (DOOH Venue Types)	48 (DOOH Venue Types)	3 (IP Location Services)	4 (Operating Systems)	5 (Placement Positions)	3 (Volume Normalization Modes)
h	ext	adm	mime	w	w	maxbitr	ext	url	ext	lon	ext	3 (API Frameworks)	22 (Creative Attributes)	3 ( Creative Subtypes - Audio/Video)	19 (DOOH Venue Types)	49 (DOOH Venue Types)	4 (IP Location Services)	5 (Operating Systems)	6 (Placement Positions)	4 (Volume Normalization Modes)
wratio	url	curl	api	h	h	delivery	ext	cat	type	accur	ext	4 (Connection Types)	23 (Creative Attributes)	4 ( Creative Subtypes - Audio/Video)	20 (DOOH Venue Types)	50 (DOOH Venue Types)	1 (Linearity Modes)	6 (Operating Systems)	7 (Placement Positions)	ext
hratio	w	ext	ctype	wmin	unit	maxseq	privpolicy	cattax	ua	lastfix	ext	5 (Content Contexts)	24 (Creative Attributes)	22 (Display Context Types)	21 (DOOH Venue Types)	51 (DOOH Venue Types)	2 (Linearity Modes)	7 (Operating Systems)	1 ( Placement Subtypes - Video)	ext
priv	h	status	w	hmin	mindur	comp	keywords	prodq	ifa	ipserv	ext	6 (API Frameworks)	25 (Creative Attributes)	6 ( Creative Subtypes - Audio/Video)	30 (Display Context Types)	22 (DOOH Venue Types)	52 (DOOH Venue Types)	1 (Location Types)	8 (Operating Systems)	2 ( Placement Subtypes - Video)
adm	type	feedback	h	wratio	maxdur	comptype	bundle	context	dnt	country	ext	7 (API Frameworks)	26 (Creative Attributes)	7 ( Creative Subtypes - Audio/Video)	31 (Display Context Types)	23 (DOOH Venue Types)	53 (DOOH Venue Types)	2 (Location Types)	9 (Operating Systems)	3 ( Placement Subtypes - Video)
curl	ext	init	unit	hratio	maxext	ext	storeid	rating	lmt	region	ext	8 (API Frameworks)	27 (Creative Attributes)	8 ( Creative Subtypes - Audio/Video)	32 (Display Context Types)	24 (DOOH Venue Types)	54 (DOOH Venue Types)	3 (Location Types)	10 (Operating Systems)	4 ( Placement Subtypes - Video)
banner	adm	lastmod	priv	ext	minbitr	id	storeurl	urating	make	metro	ext	1 (Audit Status Codes)	28 (Creative Attributes)	9 ( Creative Subtypes - Audio/Video)	500+ (Display Context Types)	25 (DOOH Venue Types)	55 (DOOH Venue Types)	1 (Media Ratings)	11 (Operating Systems)	5 ( Placement Subtypes - Video)
native	curl	corr	displayfmt	type	maxbitr	vcm	ver	mrating	model	city	ext	2 (Audit Status Codes)	29 (Creative Attributes)	10 ( Creative Subtypes - Audio/Video)	1 (Display Placement Types)	26 (DOOH Venue Types)	56 (DOOH Venue Types)	2 (Media Ratings)	12 (Operating Systems)	1 (Playback Cessation Modes)
event	ext	ext	nativefmt	len	delivery	display	paid	keywords	os	zip	ext	3 (Audit Status Codes)	30 (Creative Attributes)	11 ( Creative Subtypes - Audio/Video)	2 (Display Placement Types)	27 (DOOH Venue Types)	57 (DOOH Venue Types)	3 (Media Ratings)	13 (Operating Systems)	2 (Playback Cessation Modes)



**HEY MOM & DAD!**

You'll be  
glad to know that  
**NO PERSONALLY  
IDENTIFIABLE DATA**  
is transmitted by SMART TOY®.

**Good news, right?**



# Adequacy

# Summary



- 1. Ad auctions broadcast personal data widely in bid requests, hundreds of billions of times a day.**
- 2. There is no control over what happens to these data.**
- 3. This infringes key principles of the GDPR.**
- 4. Every brand is on the hook for this.**
- 5. This can be easily fixed, by fixing the standards level.**

**@johnnyryan**

**johnny@brave.com**

**For updates, sign up to Brave Insights, a mailing list for analysts,  
researchers, and regulators at**

**<https://brave.us18.list-manage.com/subscribe?u=e38d85b519352e2b40c9b899e&id=4384bd4cba>**