Web Advertising

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COMP6218

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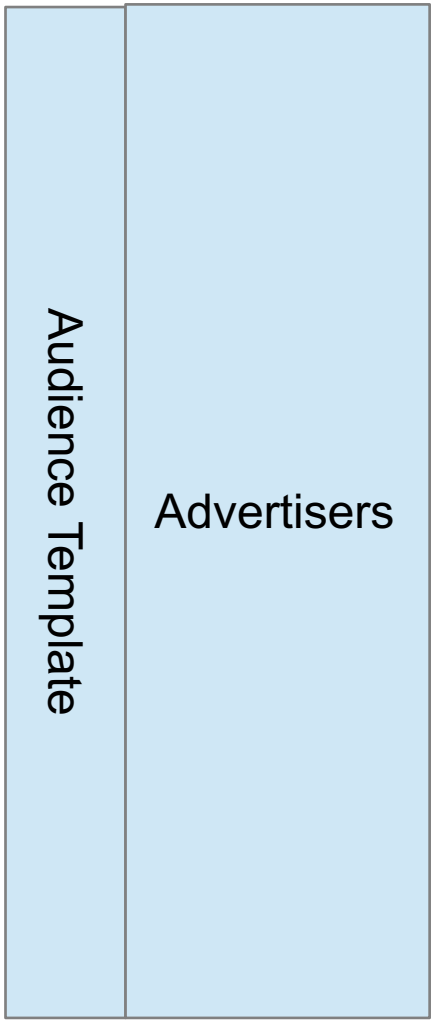
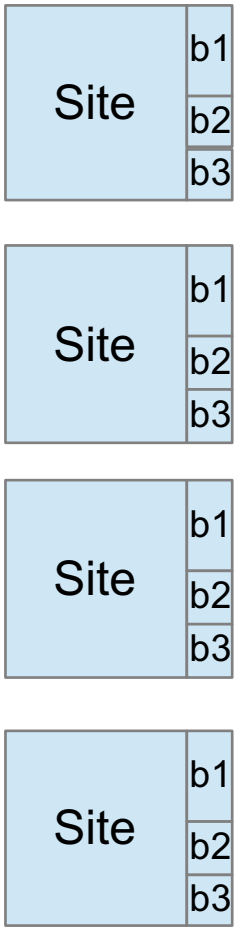
Introduction

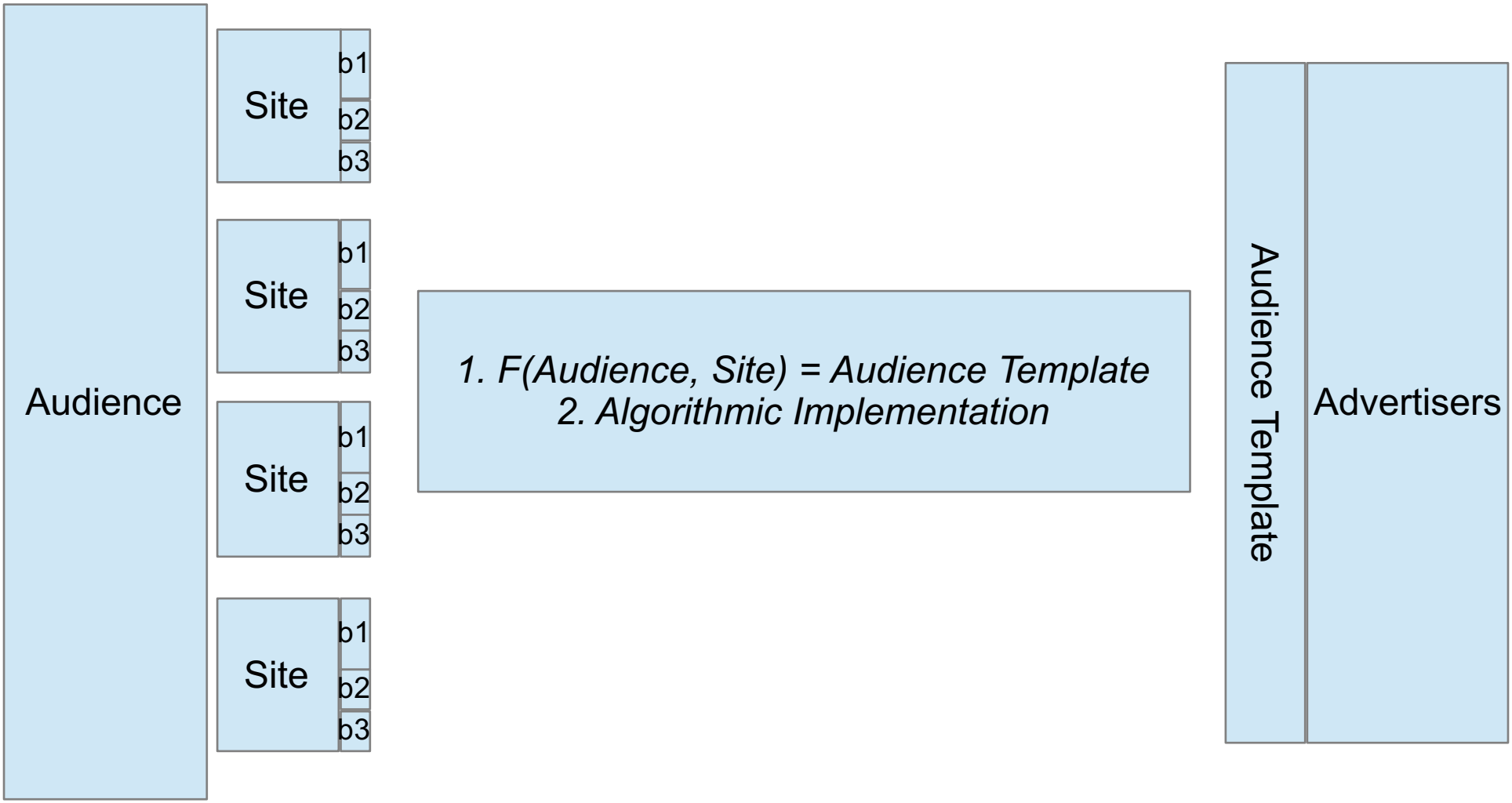
- Advertisers are people with something to sell.
- They want to find an audience who will buy their products.
- The audience template is something they will draw up that encapsulates some information about who they think this is.
- This template will contain things like
  - Socio-economic grouping
  - Income, personal finances
  - Family status
  - Home ownership
  - Past purchasing behaviour



- 'Audience' is what advertisers refer to people as
- This includes everyone online



- Sites are the websites the audience visits
- When a user clicks on a site this is called a page impression
- Banners are the parts of the page available to serve an add to
- Each page may have multiple banners so the impression is, in effect, sold multiple times
- These are not standardised but larger ones and ones in better positions are typically worth more



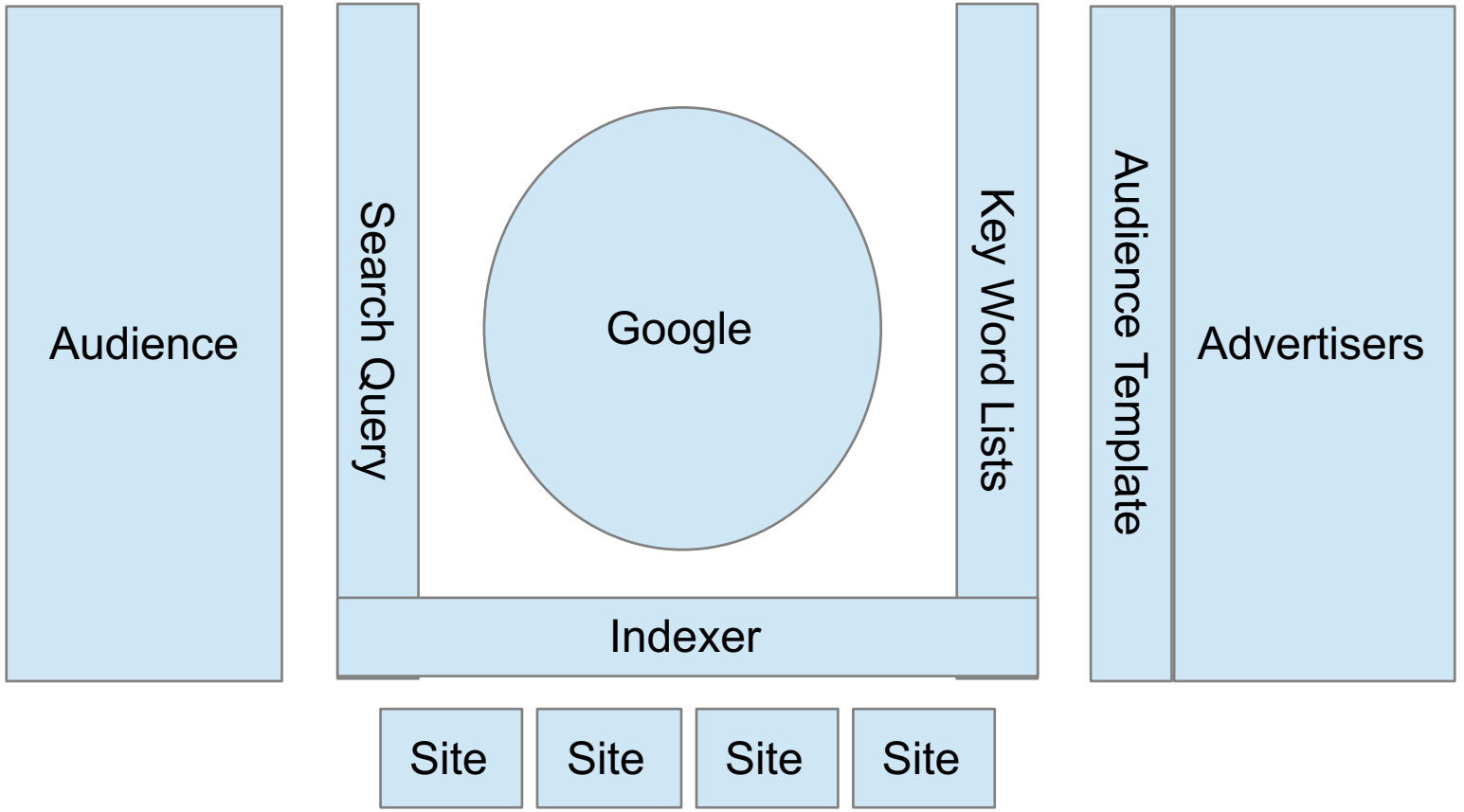
- The adserving industry can then be summarised as a series of systems aimed at providing a functional mapping for an audience template onto an audience-site pair
- There are 2 key problems
  - 1 = being able to provide the mapping that satisfies the template
  - 2 = being able to be action several mappings efficiently over time

- Important Notes
  - Advertising spend for a given audience template is agreed in advance
  - Metrics for return on this investment are unreliable
  - These include
    - Click through rates
    - Cost for acquisition of a new customer
  - As spending is essentially fixed sites compete to satisfy the audience template by acquiring greater amounts of information on their audience

Advertising Industry

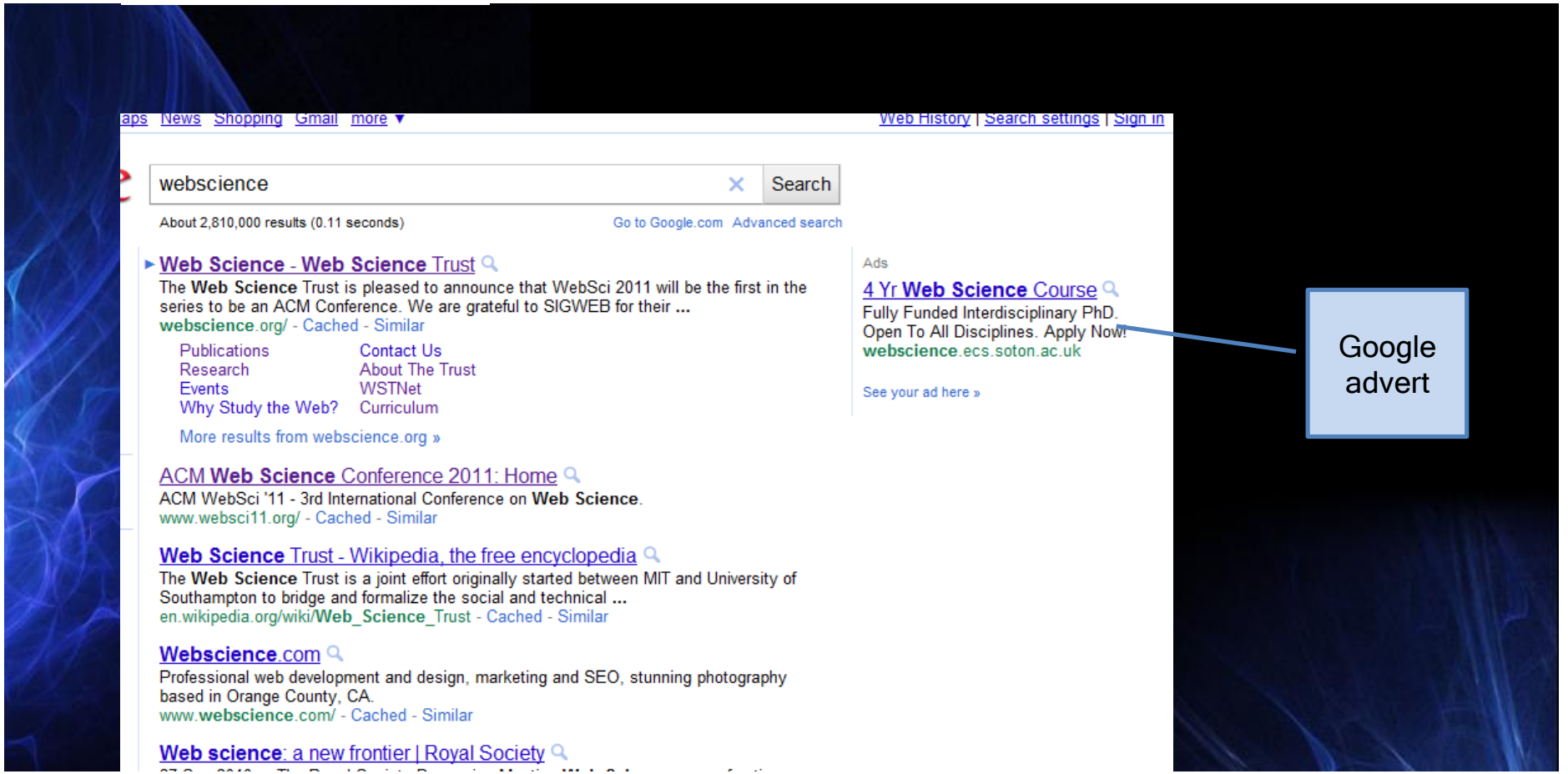
- Online advertising spend in 2009-10 was $27bn
- Search advertising is 65% of all online advertising spend
- Google has 90% of all search advertising

Google Model



- Google works by indexing the sites
- Then providing an integration to the advertiser – via google adwords
- This allows them to purchase against their audience template by considering which keyword searches map best to their template
- They then leverage their massive platform capabilities to action many such mappings at once

Sample Google Adwords



Sample Report

Google AdWords

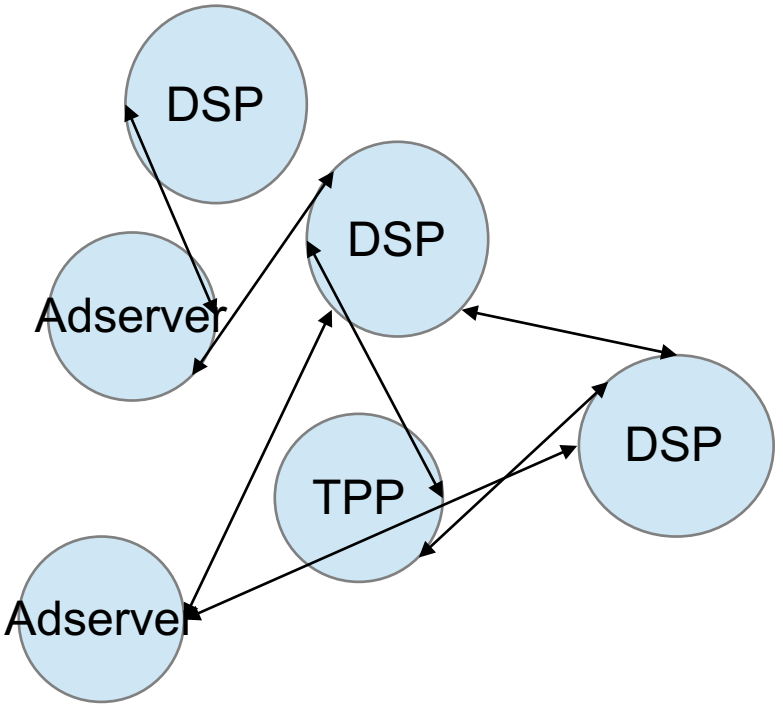
- Ad served **2,841,346** times since started in December
- Clicked on **2,185** times – Average click through 0.07%
- Consistent Average 12-17 clicks per day
- Total Cost (to date): £1,421.24 (£10/day capped)
- 22% of all traffic

Campaign Name	Impressions	Clicks	Conversion Rate	Comments
PhD Studentships	2,063,283	1,609	0.08%	Best performing
Web Science	593,230	218	0.04%	Moderate
Cybercrime	116,818	26	0.02%	Niche area – but ok results
Digital Economy	17,474	2	0.01%	Not performing (stopped)

- The Google model is very powerful for advertisers
- They get extra information on the audience and so Google can often provide a better fit for the audience template
- Google also has the infrastructure to serve the ad to its site based on complex contractual agreements with advertisers.

- To compete, a range of companies provide services to sites
  - Adservers – allow sites to have many outstanding contracts that can be served efficiently over time.
  - Demand Side Processors (DSPs) – algorithmically purchase against audience templates on behalf of advertisers
  - Third Party Providers (TPPs) – collect user information by cookie-ing large amounts of people or buying in socio-economic data and overlaying it onto the sites audience

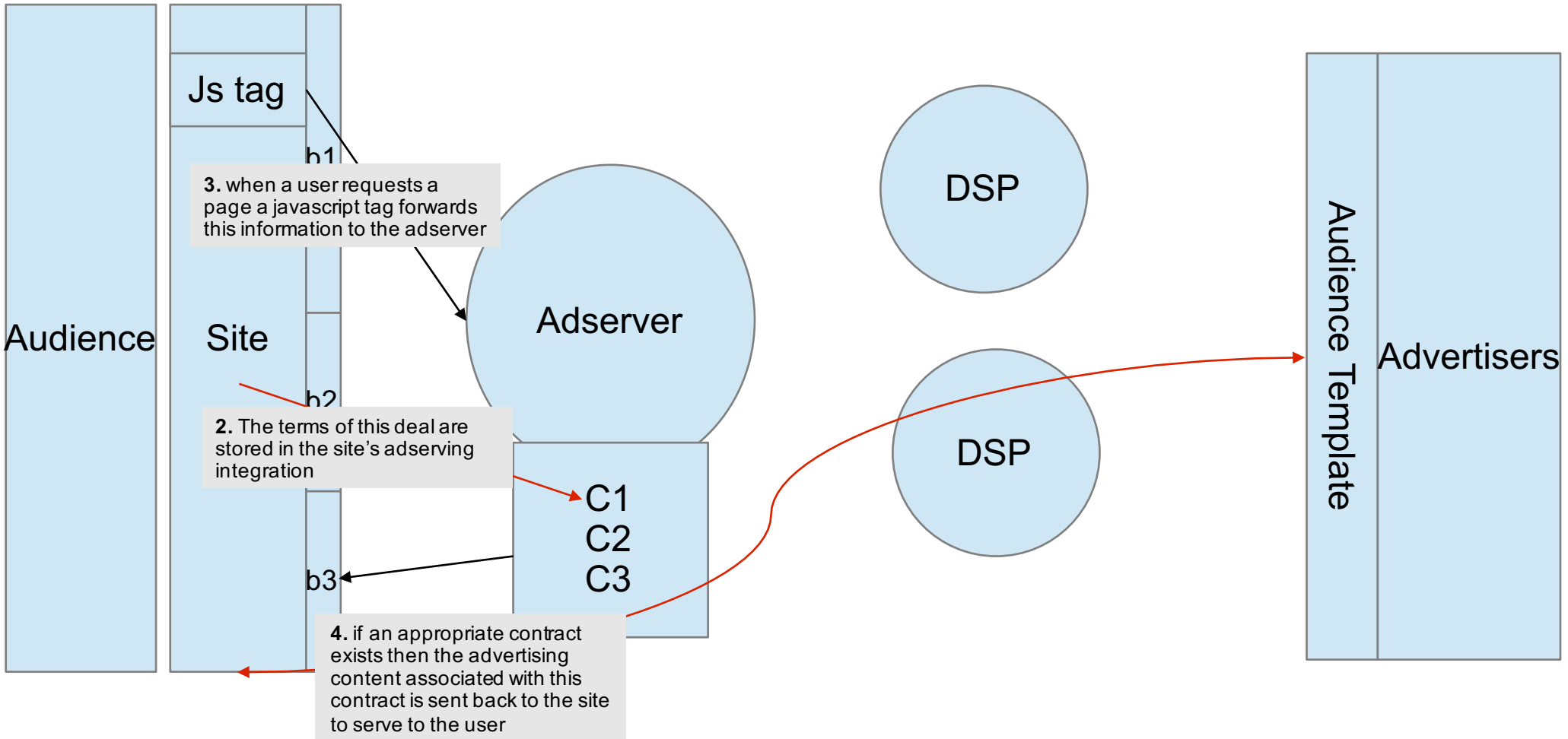
- These companies do not all talk to each other, do not use standardised information, do not all talk to every advertiser or site. The situation is a mess.



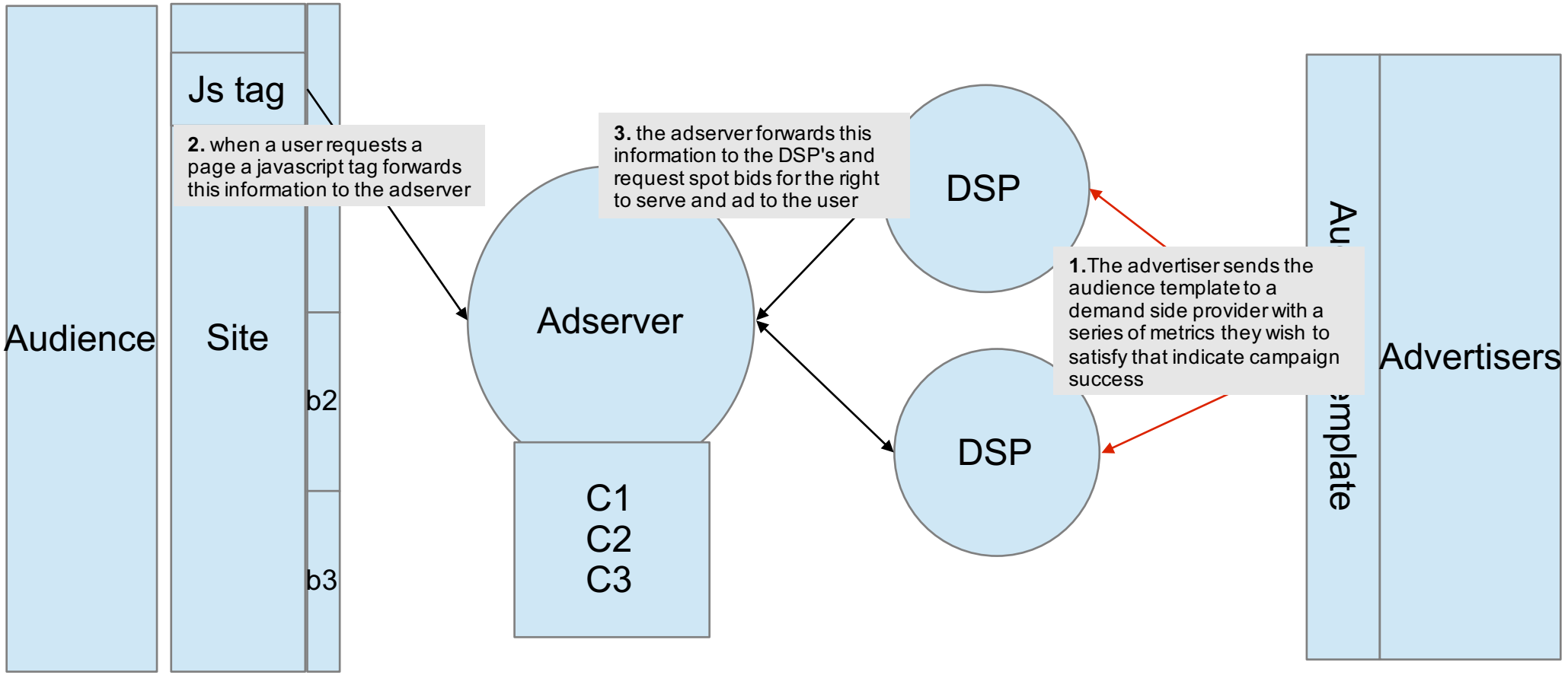
Purchasing and Serving Ads

(if you're not Google)

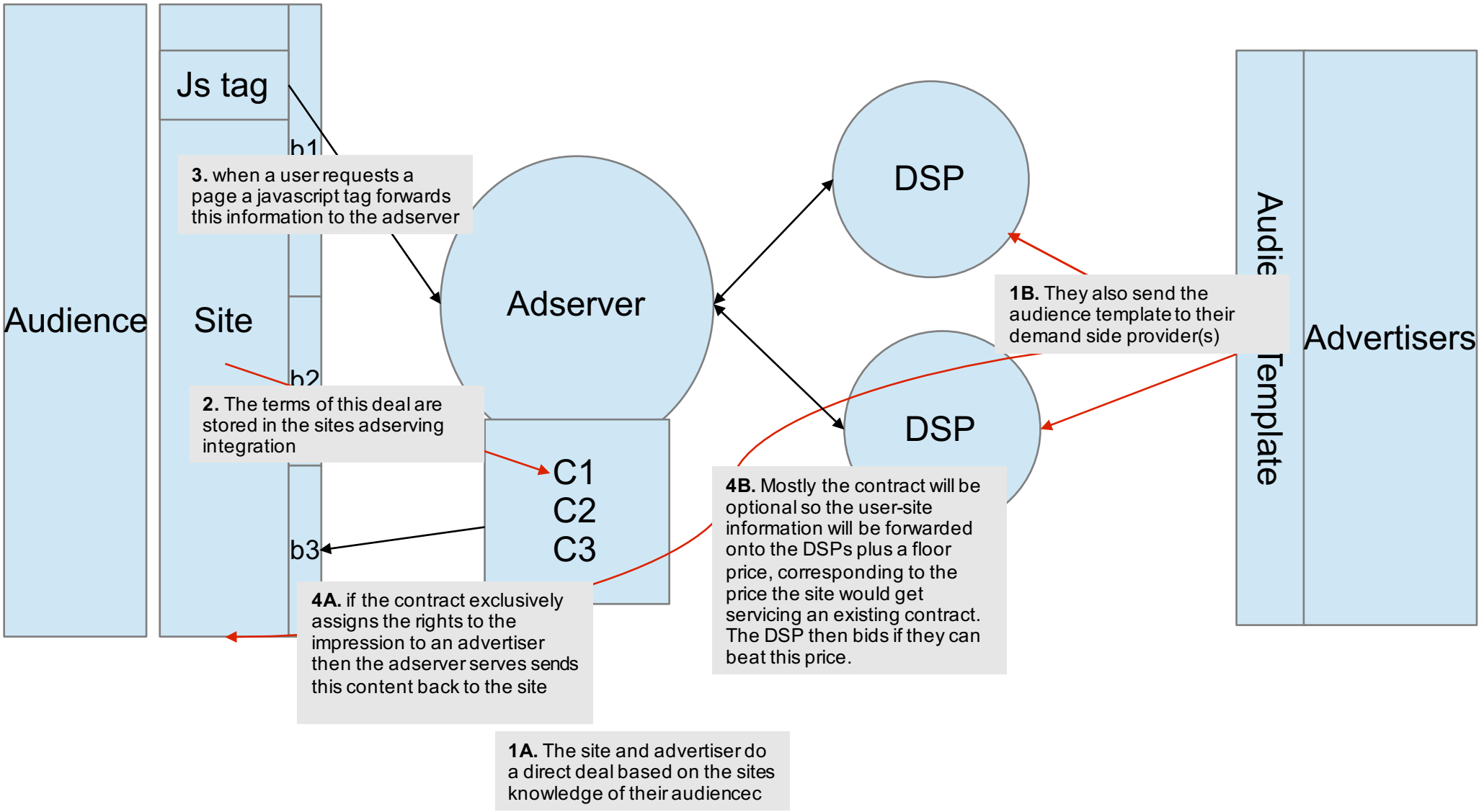
Contract Buying



Real Time Bidding

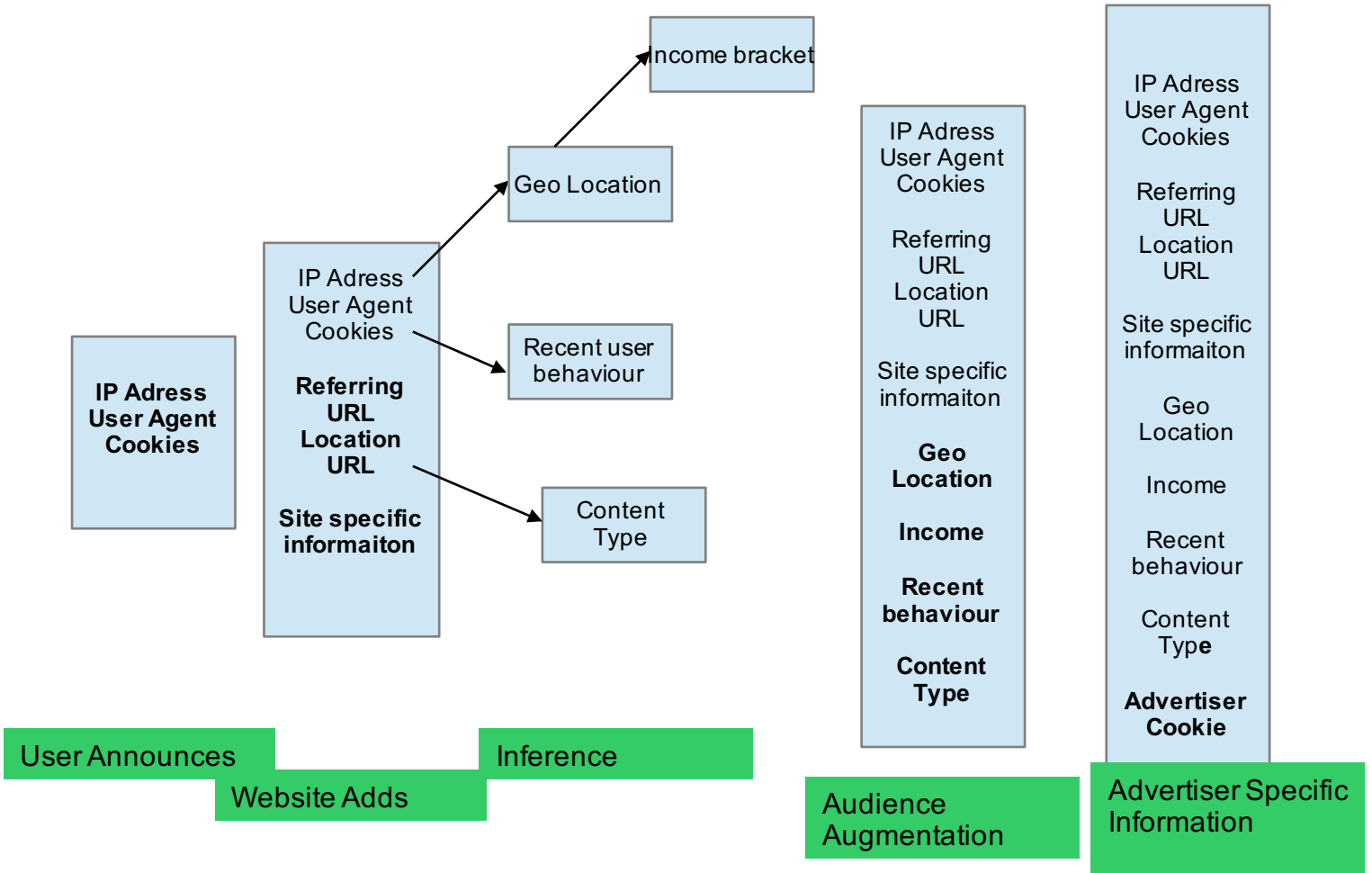


More Realistic View of the Situation

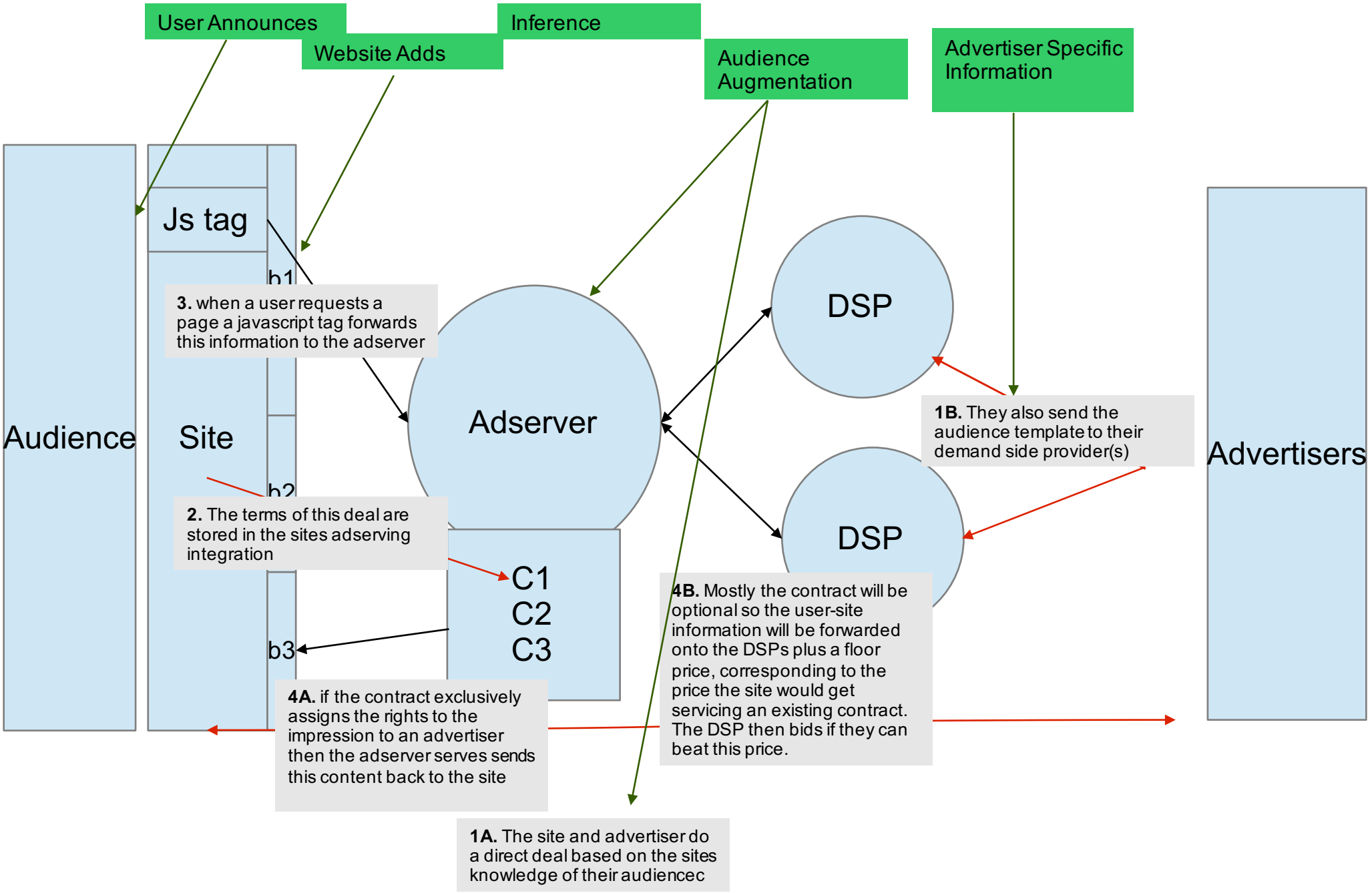


Third Party Information

- As well as the infrastructure sites must compete with Google on the information they can provide to map their audience to the advertisers template
- When the user presents themselves to the site they announce some limited information about themselves
- This information is augmented by mapping it to other datasets companies provide as audience augmentation services.
- Websites may also hold user data that they leverage in contract negotiations



Information Insertion Points



Browser Cookies

What is a cookie?

- Information that a site saves to your web browser
- Record your browsing activities
  - Pages and content you looked at
  - When you visited
  - What you searched
  - You clicked on an ad

Cookies & HTTP

```
GET /index.html HTTP/1.1
Host: www.example.org
```

browser -------→ **server**

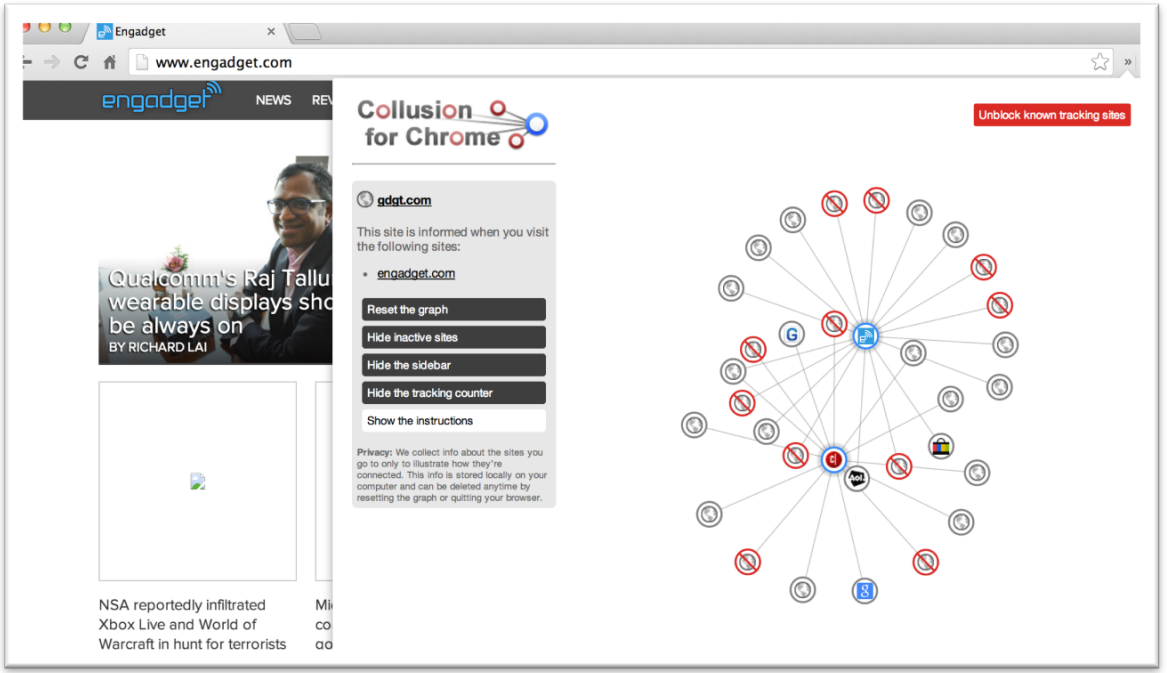
```
HTTP/1.0 200 OK
Content-type: text/html
Set-Cookie: name=value
Set-Cookie: name2=value2; Expires=Wed, 09 Jun 2021 10:18:14 GMT

(content of page)
```

browser ←------- **server**

```
GET /spec.html HTTP/1.1
Host: www.example.org
Cookie: name=value; name2=value2
Accept: */*
```

browser -------→ **server**



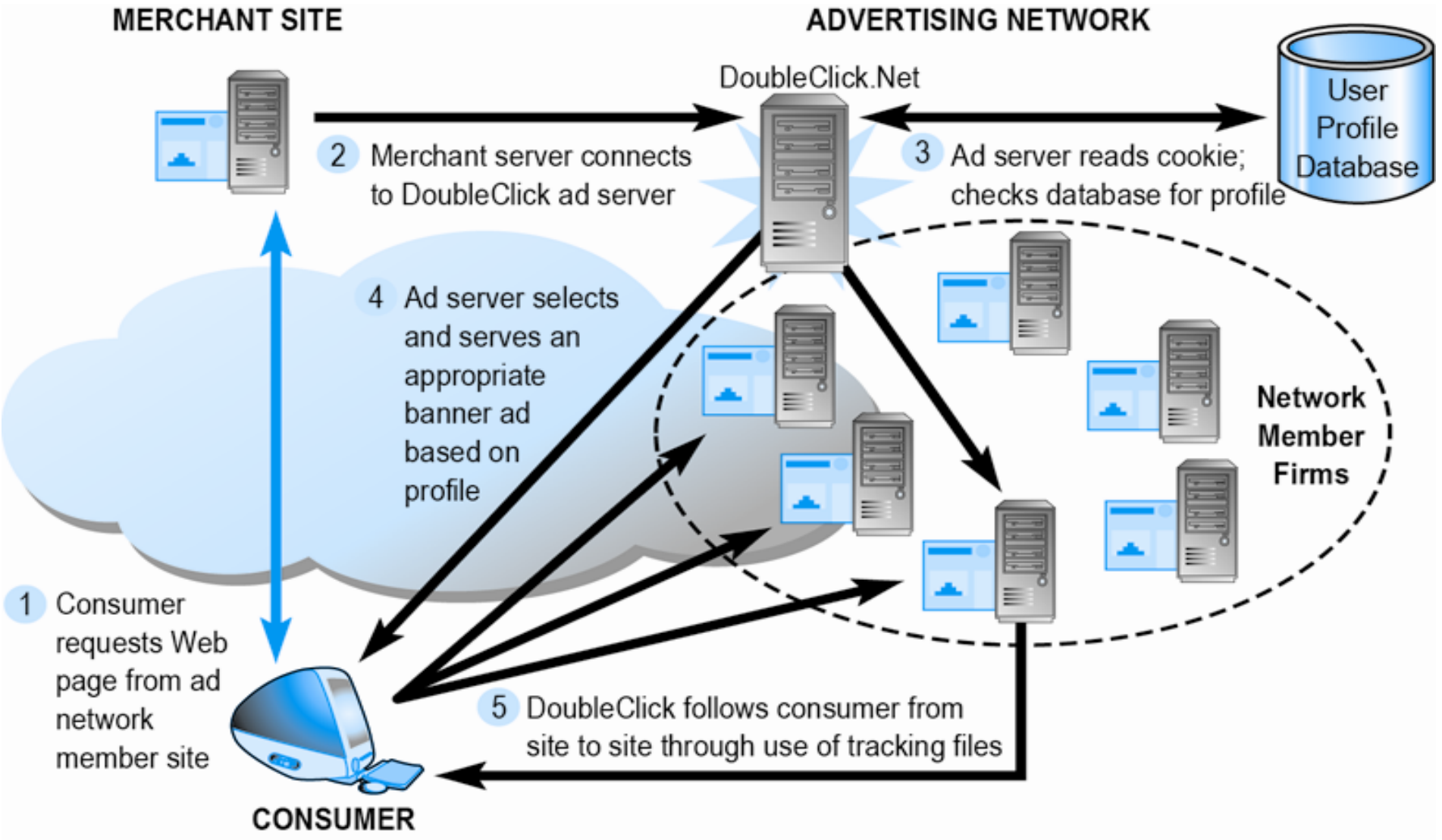
First Party vs Third Party Cookies

- First party cookies
  - Place by a site when you visit it
  - Make your experience on the web more efficient
  - For example:
    - Items in your shopping cart
    - Log-in name
    - Preference
    - Game scores
    - Sessions
- Third party cookies
  - Place by someone other than the site you are on
  - Include an advertising network or a company that helps deliver the ads you see
  - Deliver ads tailored to your interests

Transient vs. Persistent Cookies

- Transient Cookies
  - Jobs is to help “sessionize” your experience on a website
  - “set” when we visit the site, it disappears when we leave
- Persistent Cookies
  - Set the first time we visit the website
  - It will remain there for the duration that the website determines
  - Example
    - Analytics cookies are typically 18 months
    - Other can be 18 months to 18 years
  - Help identify a unique browser to our website, closest thing to tracking a “person”/”unique visitor”
  - Contain not always a Personally Identifiable Information (PII) data.
    - Random string of numbers or alphabets that only the company who set the cookie can read.

Cookie Tracking



Conclusions

- Client server Web is private two-party communication
  - But adverts are from a third party, on behalf of a fourth party, mediated by a fifth party
- Google try to occupy the whole service space themselves
- Everyone else has to piece it together with different specialist services (market ecology)
  - Buying and selling adverts, making contracts, gaining more intelligence about the viewers
    - NSA-style snooping to gain knowledge for the market to increase the value of transactions. Cookies!