How to Measure the Engagement of Affiliate Services under Tracking Prevention

Netware Congress 2022

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1985 - 1997, modeling and evaluation of optical access networks
at NTT Corporation Electrical Communication Laboratories
1992 - 1993, Visiting Senior Researcher at British Telecom Research Laboratories
1997 - 2003, telecom operation support system in NTT East Corporation
2003 - 2010, multi-service information and communication network design in NTT
2010 - present, data mining, systems methodology and information systems

current research interests

- Service design and function architecture of information systems
- Data mining and text mining
- Management of information reliability and consistency

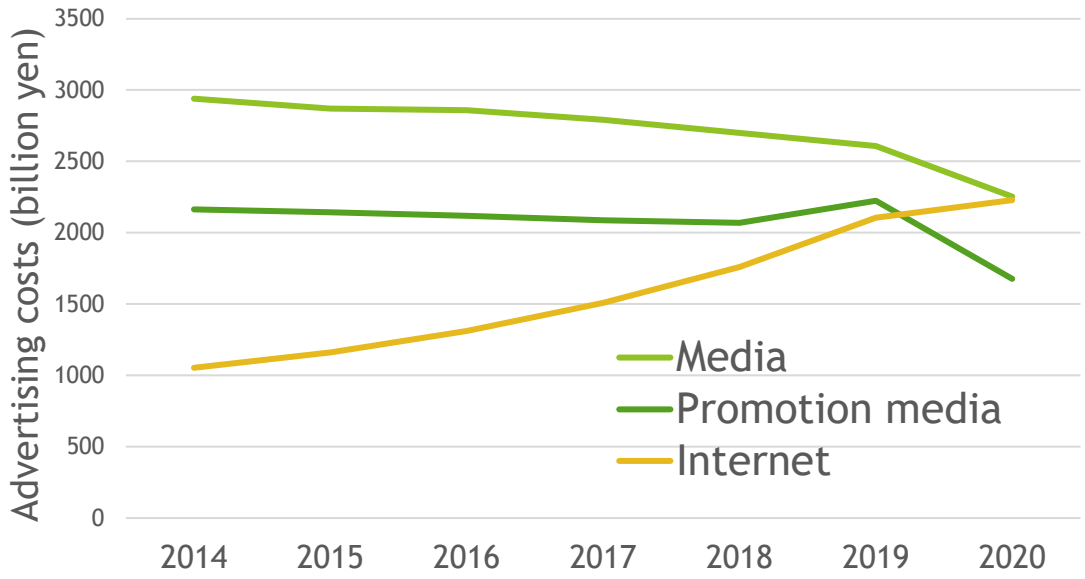
published books, more than 100 journal papers and conference proceedings of IEEE, KES, IARIA, etc. He received ICCGI 2016 best paper awards by IARIA.
He is a senior member of IEEE

Outline

1. *Trend of internet advertising*
2. *Privacy protection issue*
3. *Intelligent tracking prevention*
4. *Limitation of engagement*
5. *Affiliate services*
6. *Engagement method*
7. *New problem issue and countermeasure*
8. *Summary and Future Plan*

Advertising cost in Japan

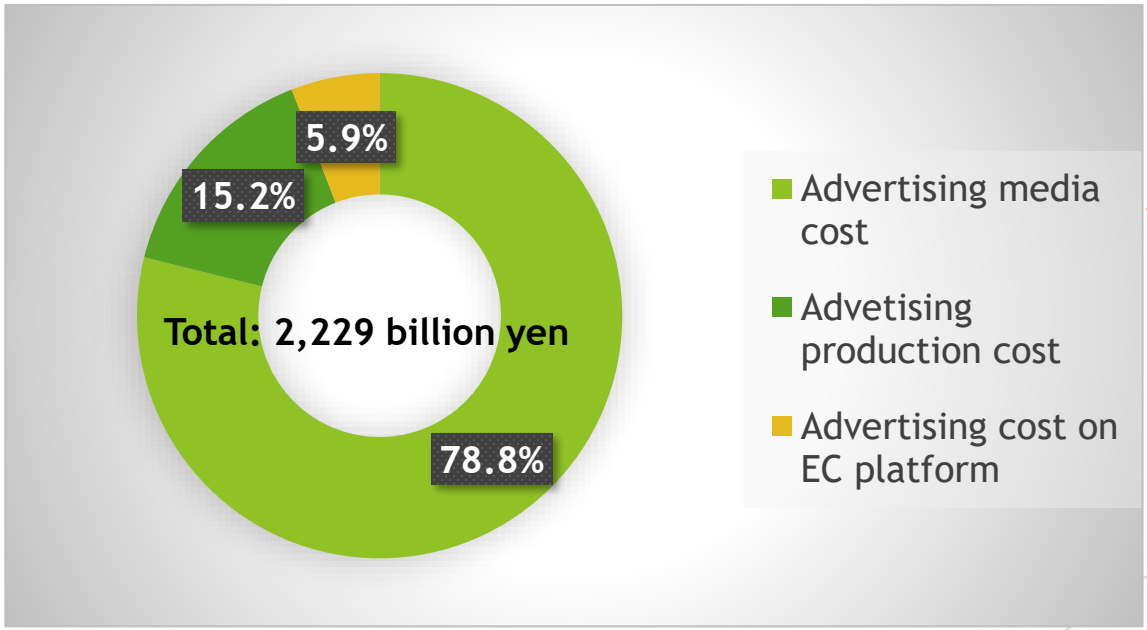
- ***Total advertising cost is 6.1 trillion yen in 2020***
- ***Decrease of media and promotion media***
- ***Increase of internet advertising***



Ref: https://www.dentsu.co.jp/knowledge/ad_cost/2020/

Internet advertising cost

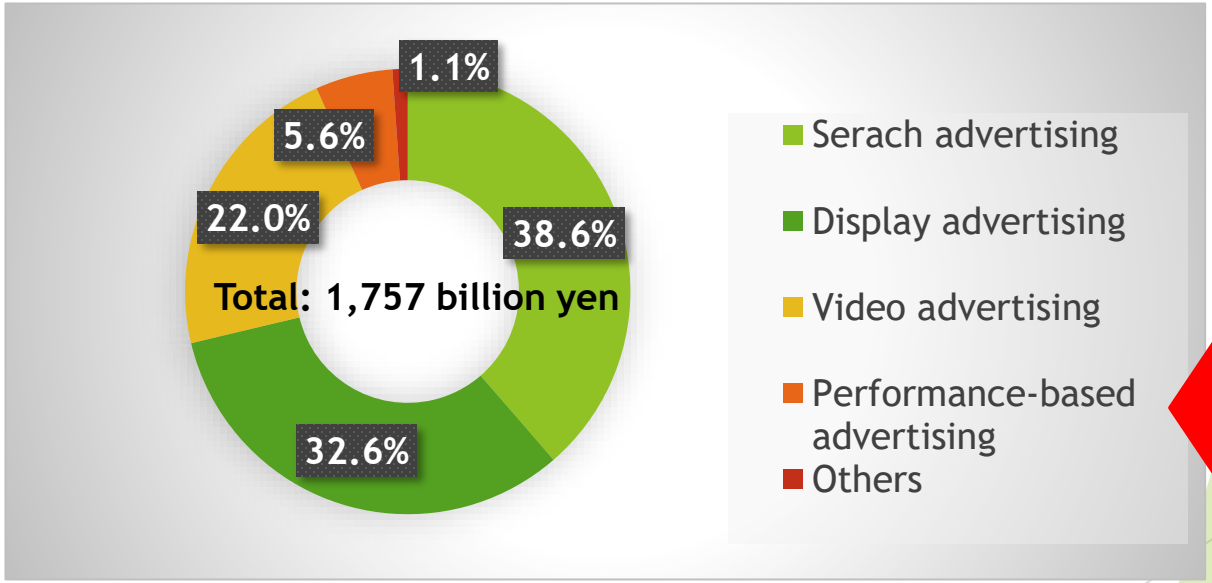
Advertising media cost is dominant



Ref: https://dentsu-ho.com/articles/7694

Advertising media cost

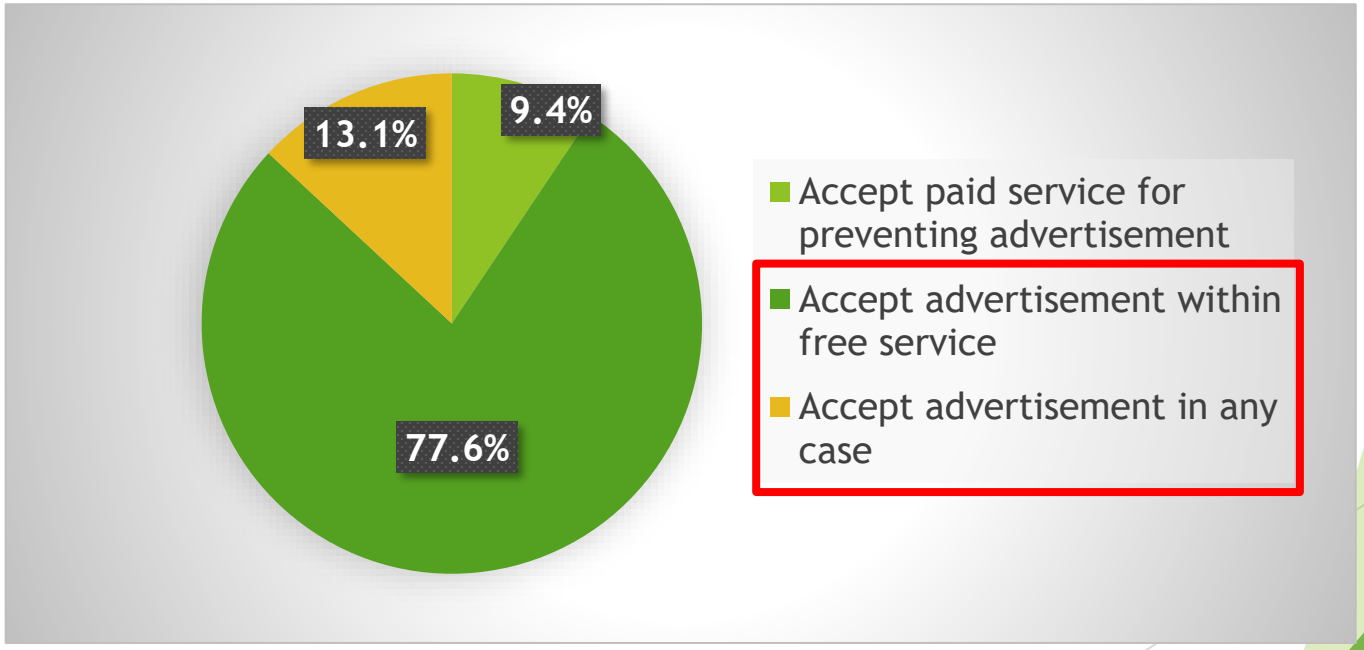
- *Search & display advertisings are dominant in 2020*
- *Video & performance-based advertisings increase*



Ref: https://dentsu-ho.com/articles/7694

Advertisement acceptance

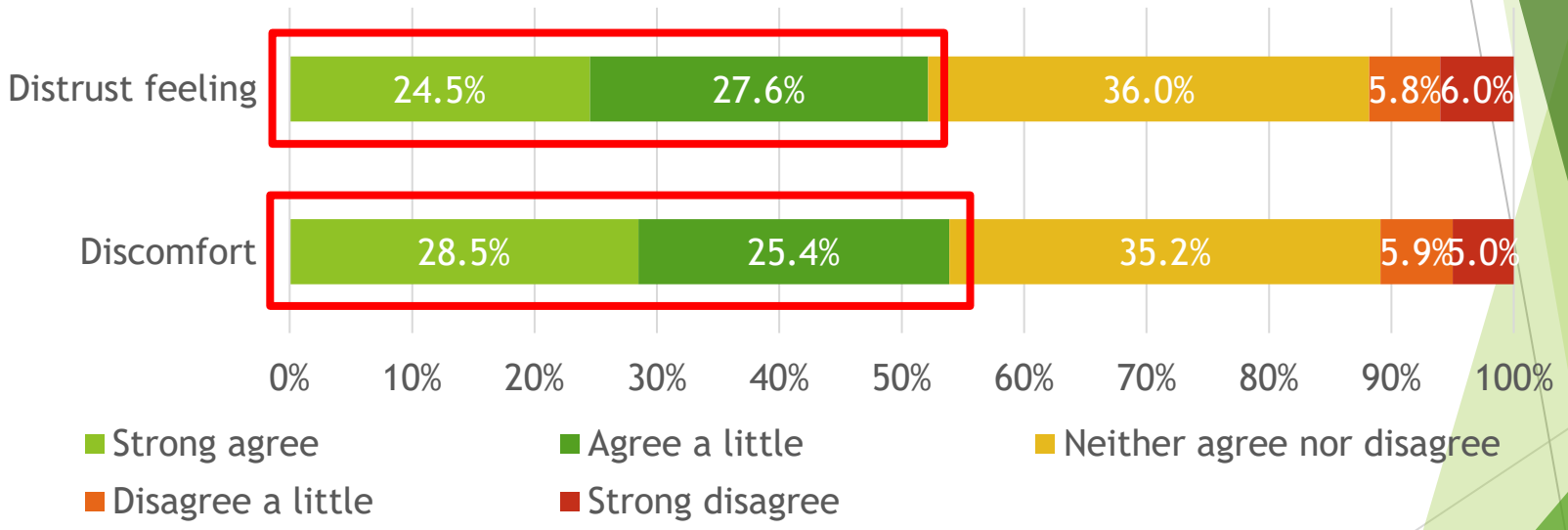
Advertisement acceptance is high



Ref: https://www.jiaa.org/wpcontent/uploads/2019/12/20191212_user_survey_release.pdf

User impression of tracking

More than 50% feel distrust and discomfort



Ref: https://prtimes.jp/main/html/rd/p/000000244.000003149.html

Tracking = cookie

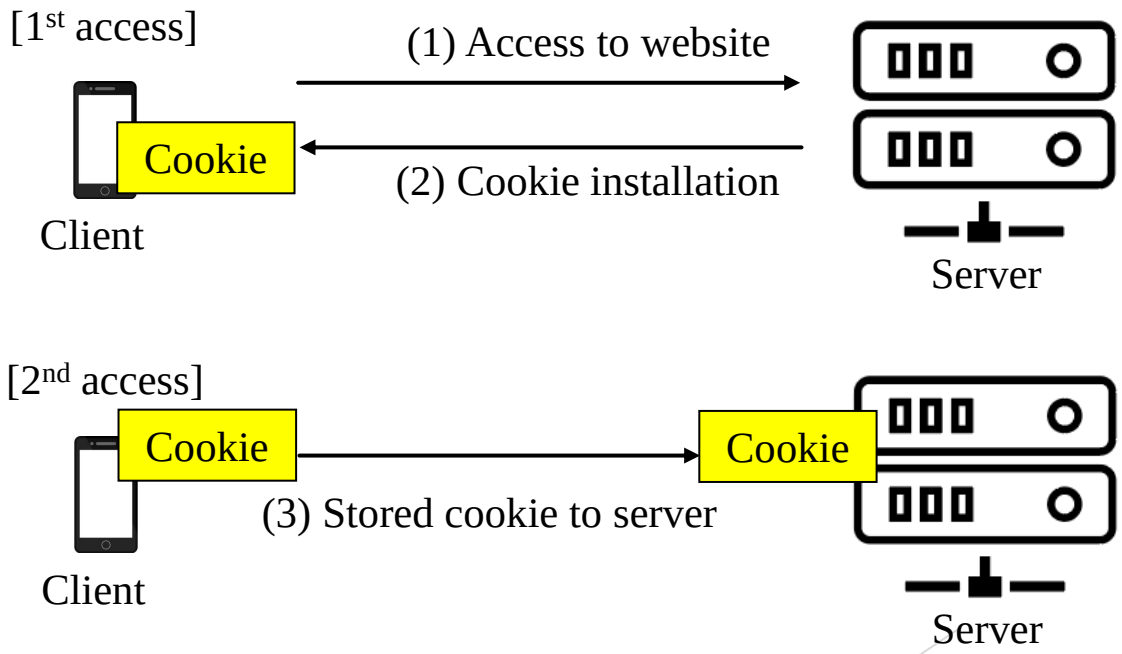
cookie is a mechanism

for temporarily storing information about a user

-visited website's homepage

-ID, password

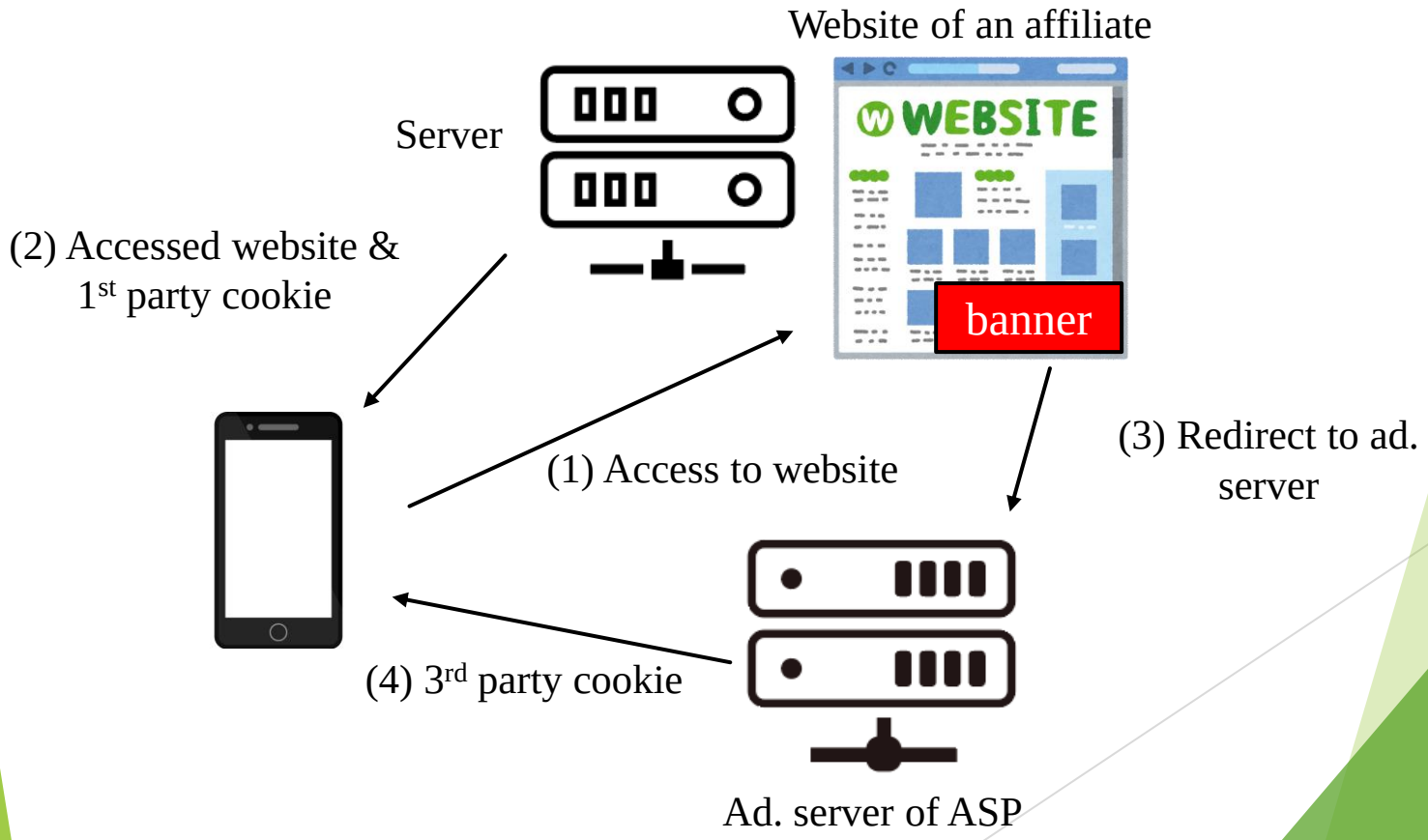
-number of visits etc.



Tracking mechanism by 3rd party

Functions:

- ***advertising targeting and retargeting***
- ***access status analysis and user analysis***
- ***personalization to improve user experience."***



Privacy protection issues

The Personal Information Protection Law requires

-the consent of an individual before their personal information is provided to a third party

-information associated with a browser or terminal identifier, such as a cookie or advertising ID cannot identify an individual

→ it is not regulated as personal information

→ Privacy protection is difficult to proceed, but becomes an important issue

Trend of intelligent tracking prevention (ITP)

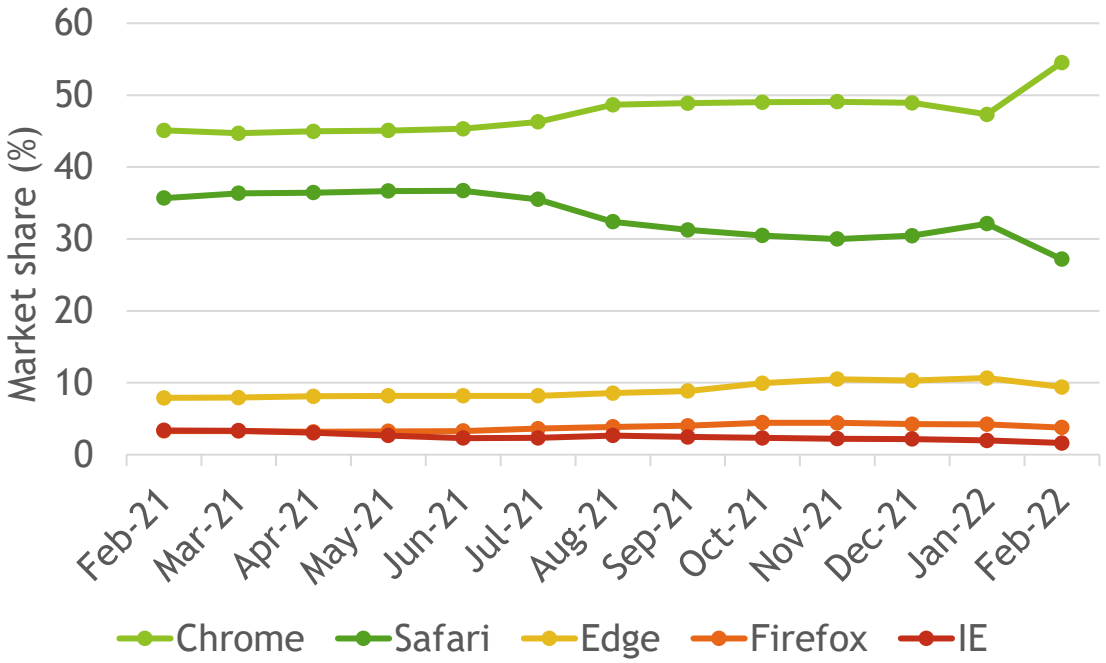
disgust and distrust towards the targeting by internet advertisements

→ privacy protection awareness increased and constrained

ITP Ver.	Publication date	Details
ITP 1.0	Sep. 2017	Constraint of third-party cookie (Invalid after 24 hours and deletion after 30 days)
ITP 1.1	Mar. 2018	Strong constraint of third-party cookie (Invalid after 24 hours without session update)
ITP 2.0	Sep. 2018	Strong constraint of third-party cookie (Prompt deletion without session update) Constraint of first-party cookie (The same constraint as that of the third-party cookie if the website is redirected by more than four domains)
ITP 2.1	Mar. 2019	Strong constraint of first-party cookie (Expiration date is seven days using JavaScript
ITP 2.2	May 2019	Strong constraint of first-party cookie (Expiration date is one day using JavaScript)
ITP 2.3	Sep. 2019	Strong constraint of first-party cookie (The same constraint with JavaScript for local storage)

Market share of browsers in Japan

- ***Chrome and Safari are dominant***
- ***iPhone users are dominant***

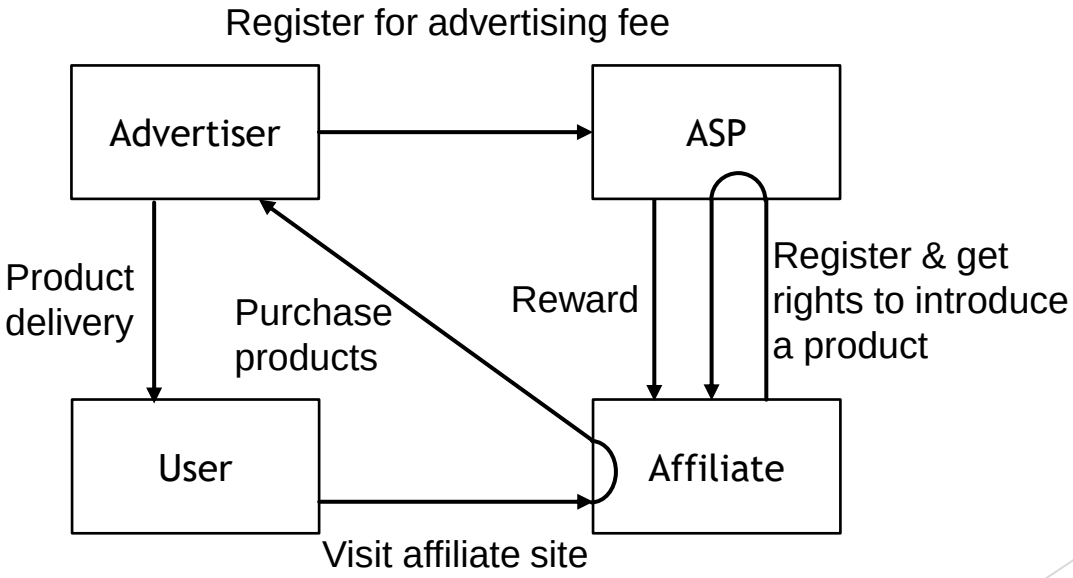


Ref: https://gs.statcounter.com/browser-market-share/all/ japan

Big effect for affiliate service

Affiliate service is performance-based advertising

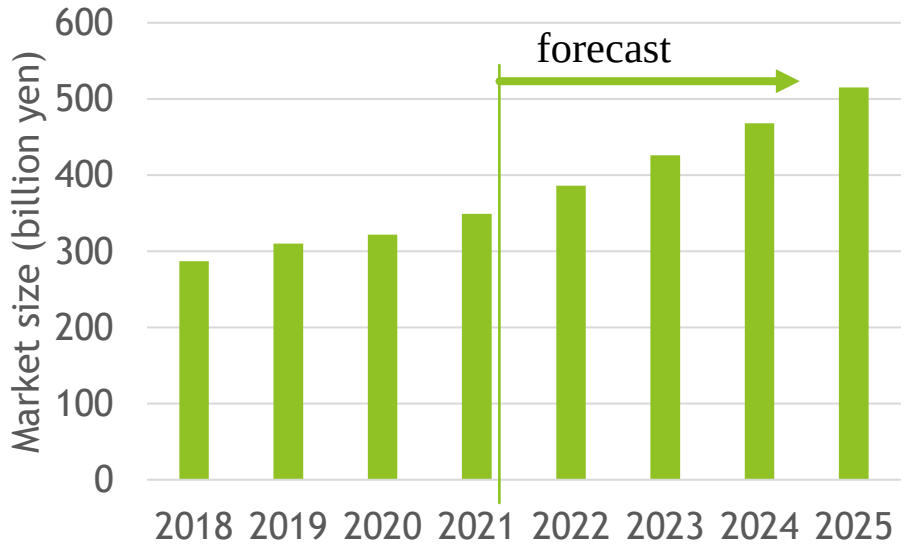
Cannot calculate engagement of affiliate



Market size of affiliate service

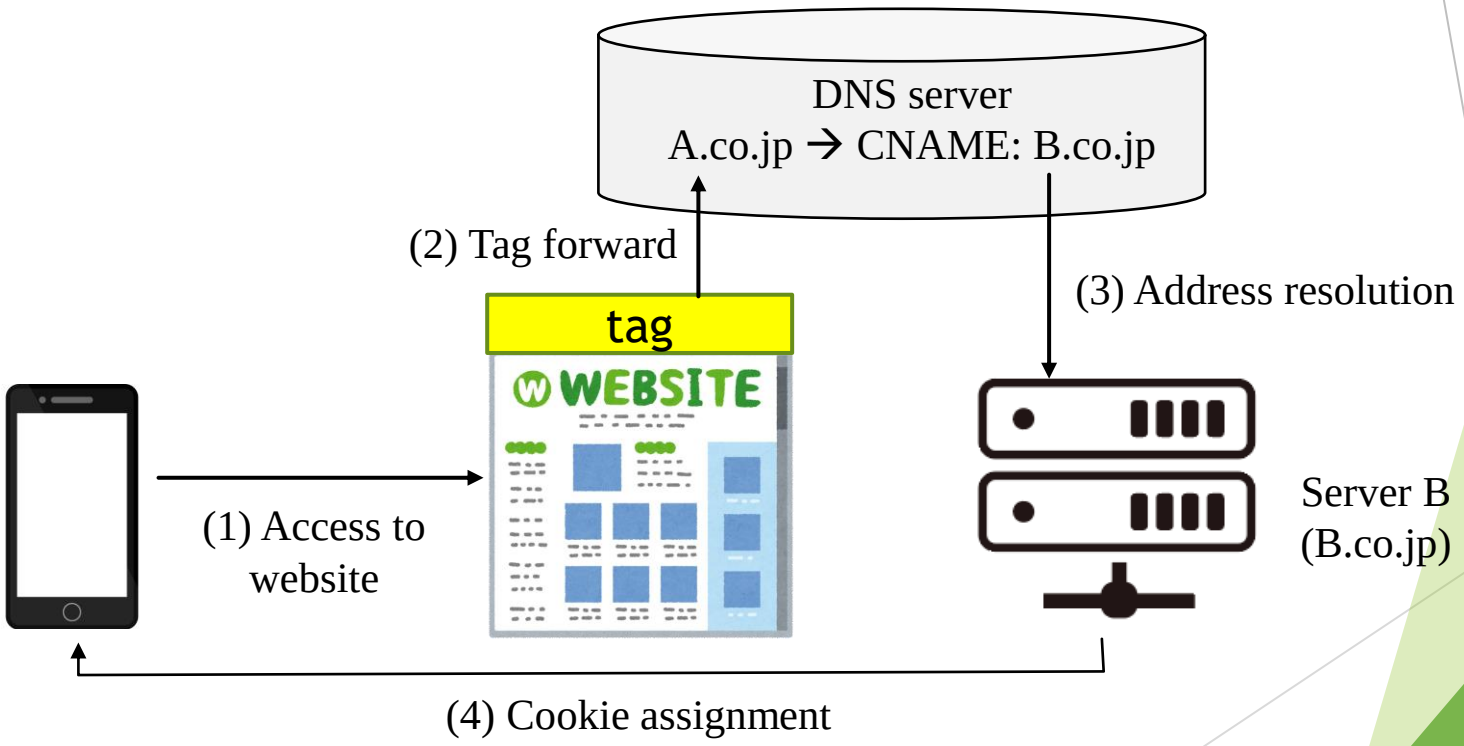
Affiliate market is growing to more than 500 billion yen in 2025

Population of affiliates is 3.87 and 4.35 million in 2011 and 2013, respectively



3rd party cookie doesn't work …

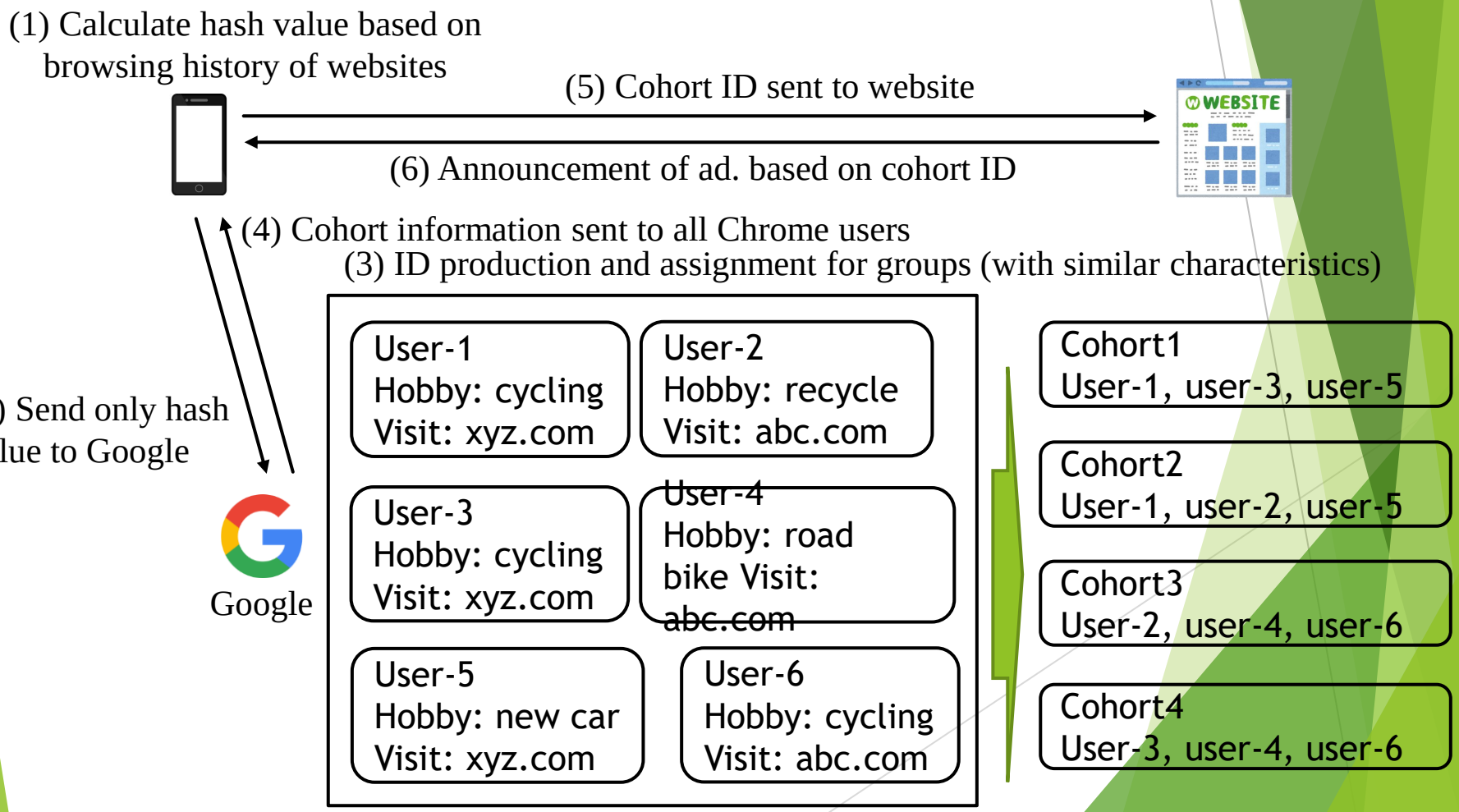
Using CNAME as issuing 1st party cookie



Proposal of Federate Learning of Cohorts (FLoC)

"FLoC" is one of the idea, but it has some problems

→ Google shifts to develop "Topics"



Necessary of improved scheme

Cookie restrictions such as ITP tend to get tightened

→ necessary to consider tracking without using cookies

→ enough to know the number of accesses, purchases, etc.

The information from the server-side access log

(1) request source IP address

(2) identity of the client

(3) user ID of the person requesting the resource

(4) accessed time

(5) request type and resource being requested

(6) HTTP response status code

(7) amount of data sent from the server to the client

(8) referral information (URL accessed most recent)

(9) user agent (OS and browser of the access terminal)

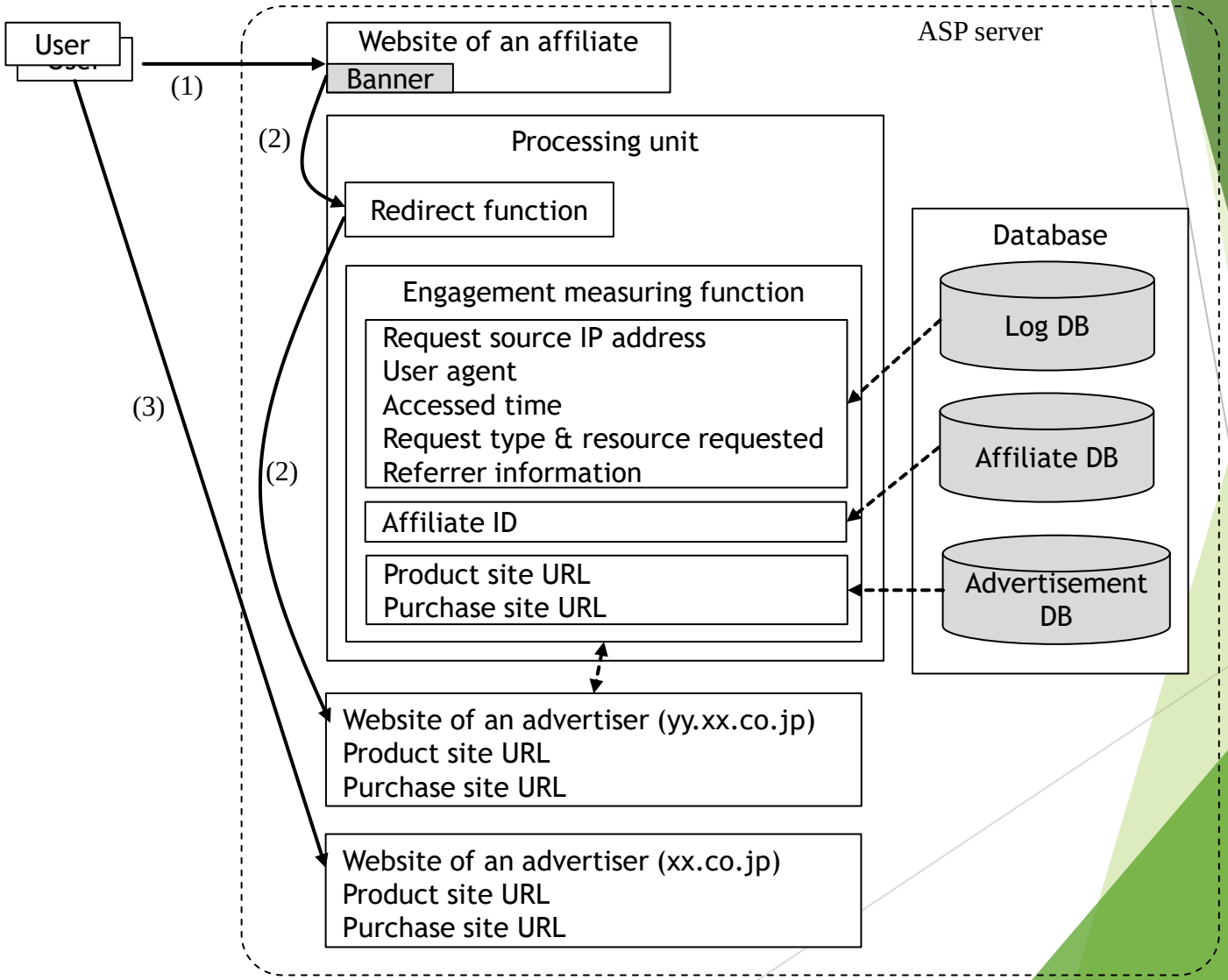
Server property (case1)

Access log

Server property / Player	*Affiliate/ provider*	ASP	Advertiser	
			Original	*Provider*
Affiliates	Measurable	Measurable	-	-
Advertiser	-	Measurable	Difficult to measure	Difficult to measure

Server structure of ASP (1)

Access log



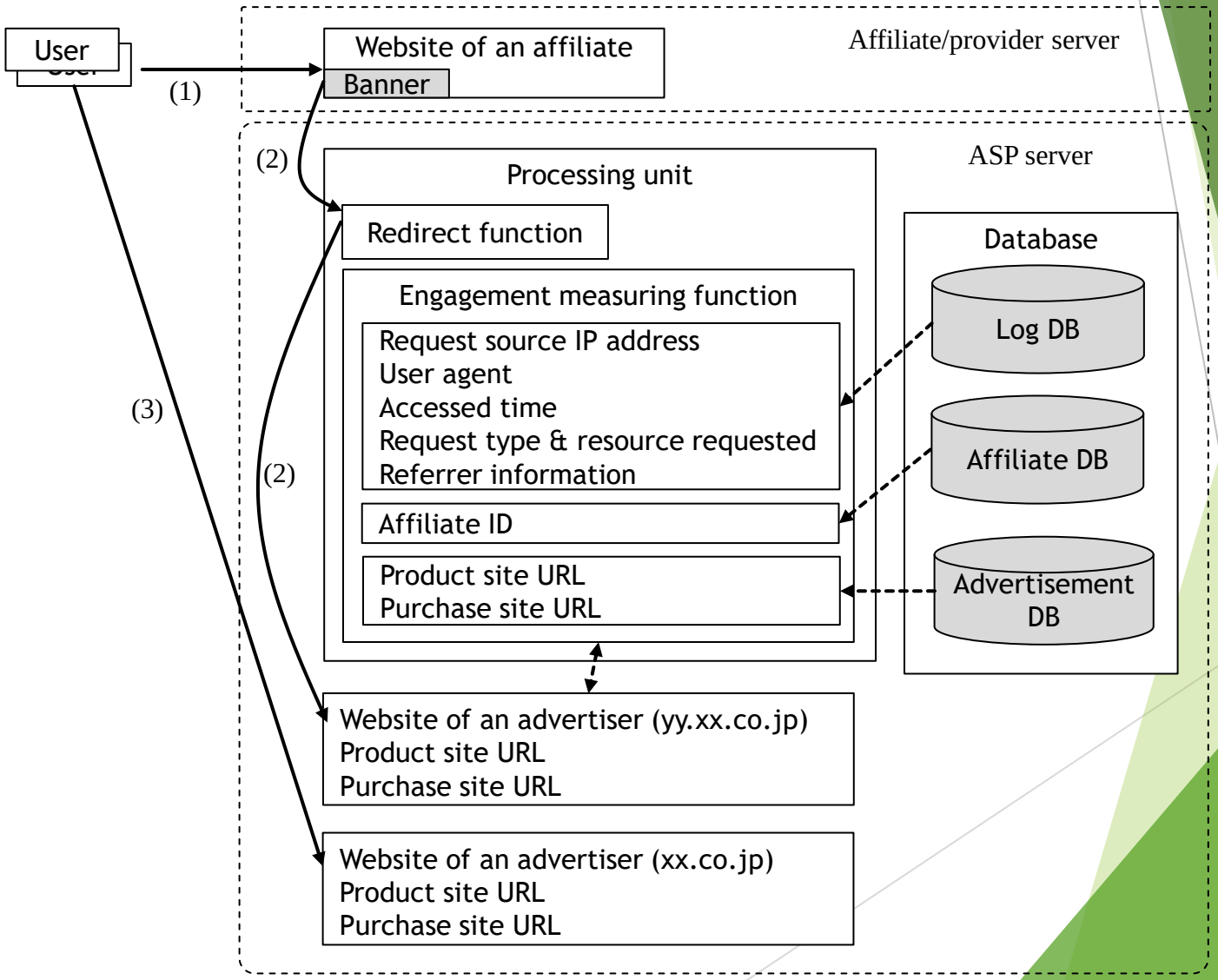
Server property (case 2)

Access log

Server property / Player	*Affiliate/ provider*	ASP	Advertiser	
			Original	*Provider*
Affiliates	Measurable	Measurable	-	-
Advertiser	-	Measurable	Difficult to measure	Difficult to measure

Server structure of ASP (2)

Access log



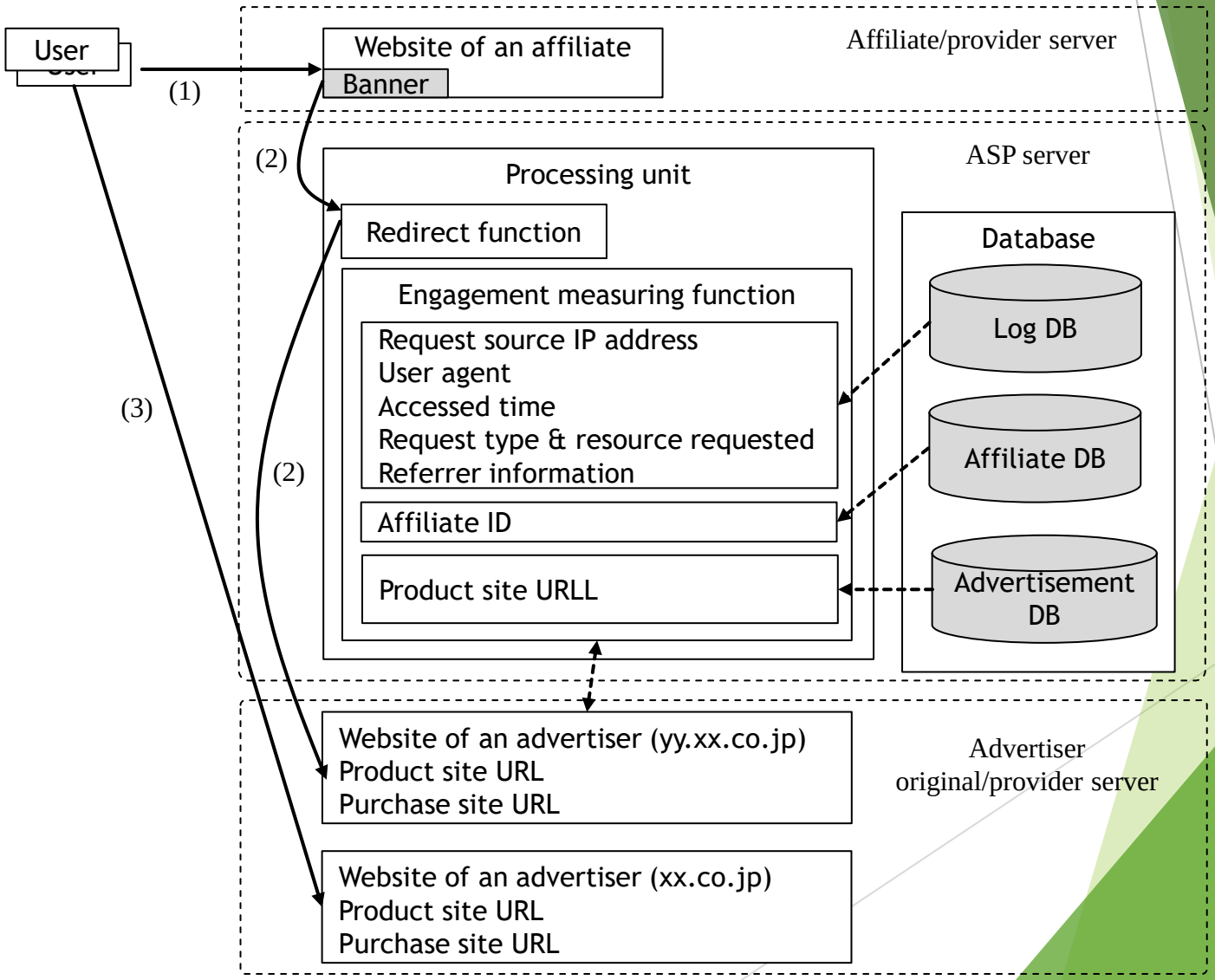
Server property (case 3)

Access log

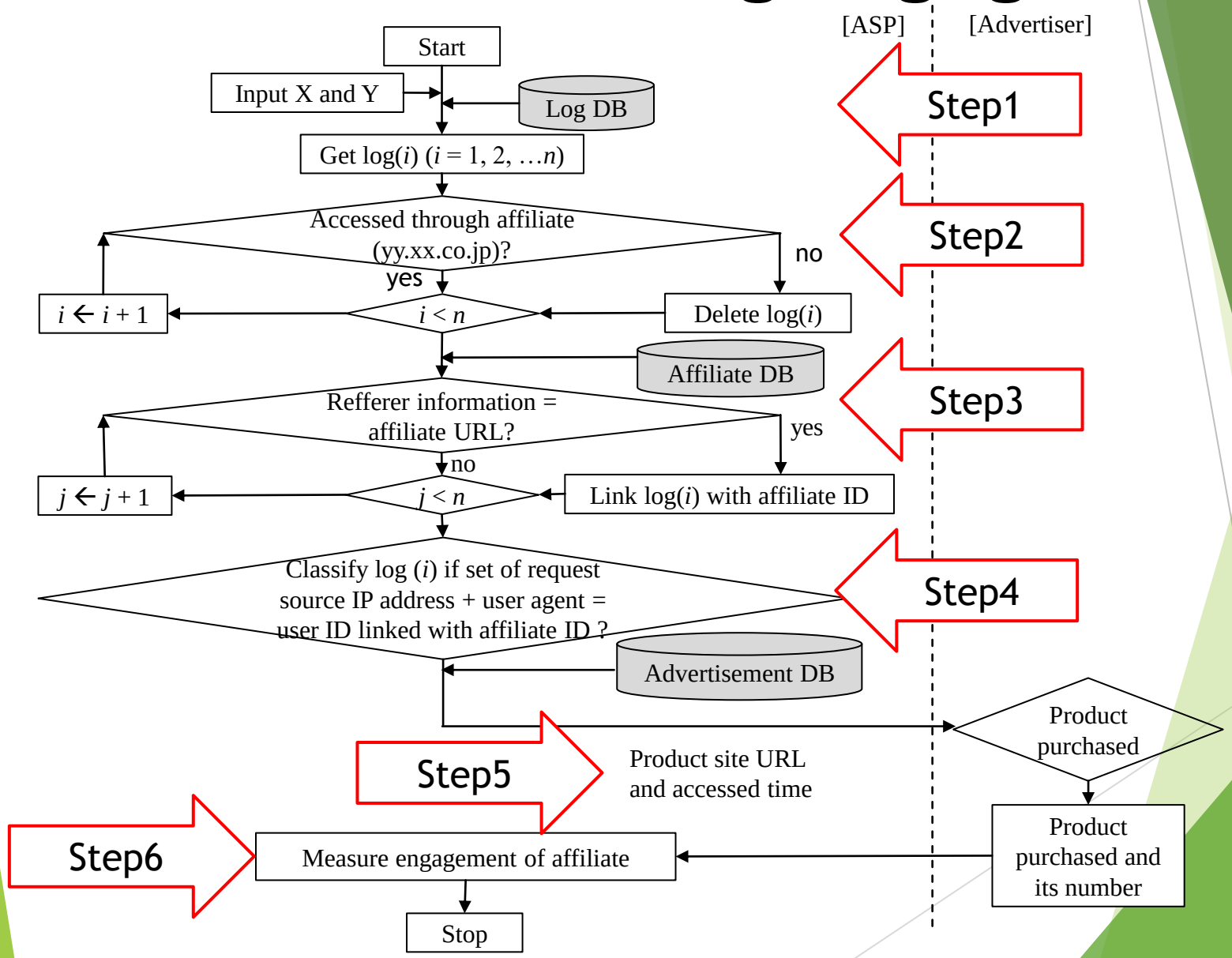
Server property / Player	*Affiliate/ provider*	ASP	Advertiser	
			Original	*Provider*
Affiliates	Measurable	Measurable		
Advertiser	-	Measurable	Difficult to measure	Difficult to measure

Server structure of ASP (3)

Access log



Flow of measuring engagement



Merit and limitations

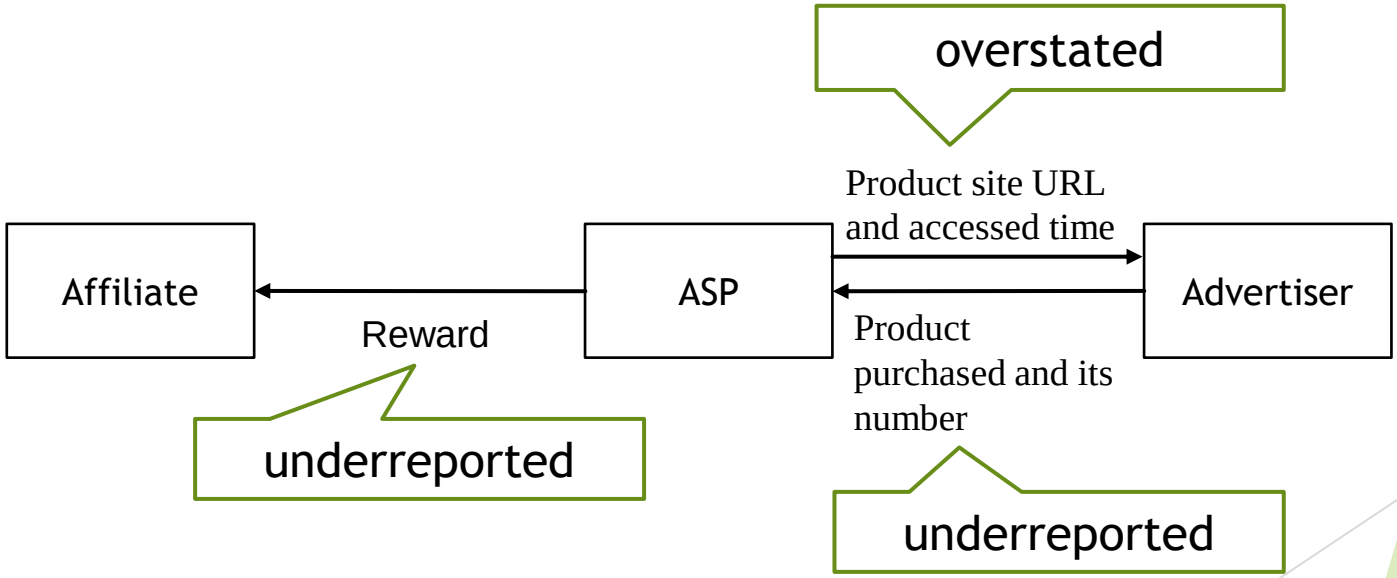
Privacy protection and calculation limitation

Announcement beforehand for collecting logs

Tracking method	Required information	Precision of tracking
Cookie	ID and password Visited websites Accessed time	Precise tracking per user until cookie deletion time. Tracking fails when cookies are blocked by users.
Access log	Request IP address User agent Accessed time Request content by user Affiliate ID Purchased product	Tracking per user fails if the logs have the same user information (accessed time, request IP address, user agent). Tracking per group with the same user information.

Newly concern for tampering

- ***the information based on the rewritten information will be transmitted***
- ***Difficult to detect who cheated while transmitting information***



Summary and future scope

- *method for measuring affiliate contribution in affiliate services without using cookies*

- *first issue: viewpoint of personal information protection*

→ *some countermeasures are necessary*

- *second issue: quantitative evaluation of log analysis methods*

→ *accuracy of the log analysis method with respect to the method of using cookies.*

- third issue: mechanism of reliability of information content and transmission that occurs between players.

Thank you for your attention