

A Revenue Sharing Mechanism for Federated Search and Advertising

FSE Characterization

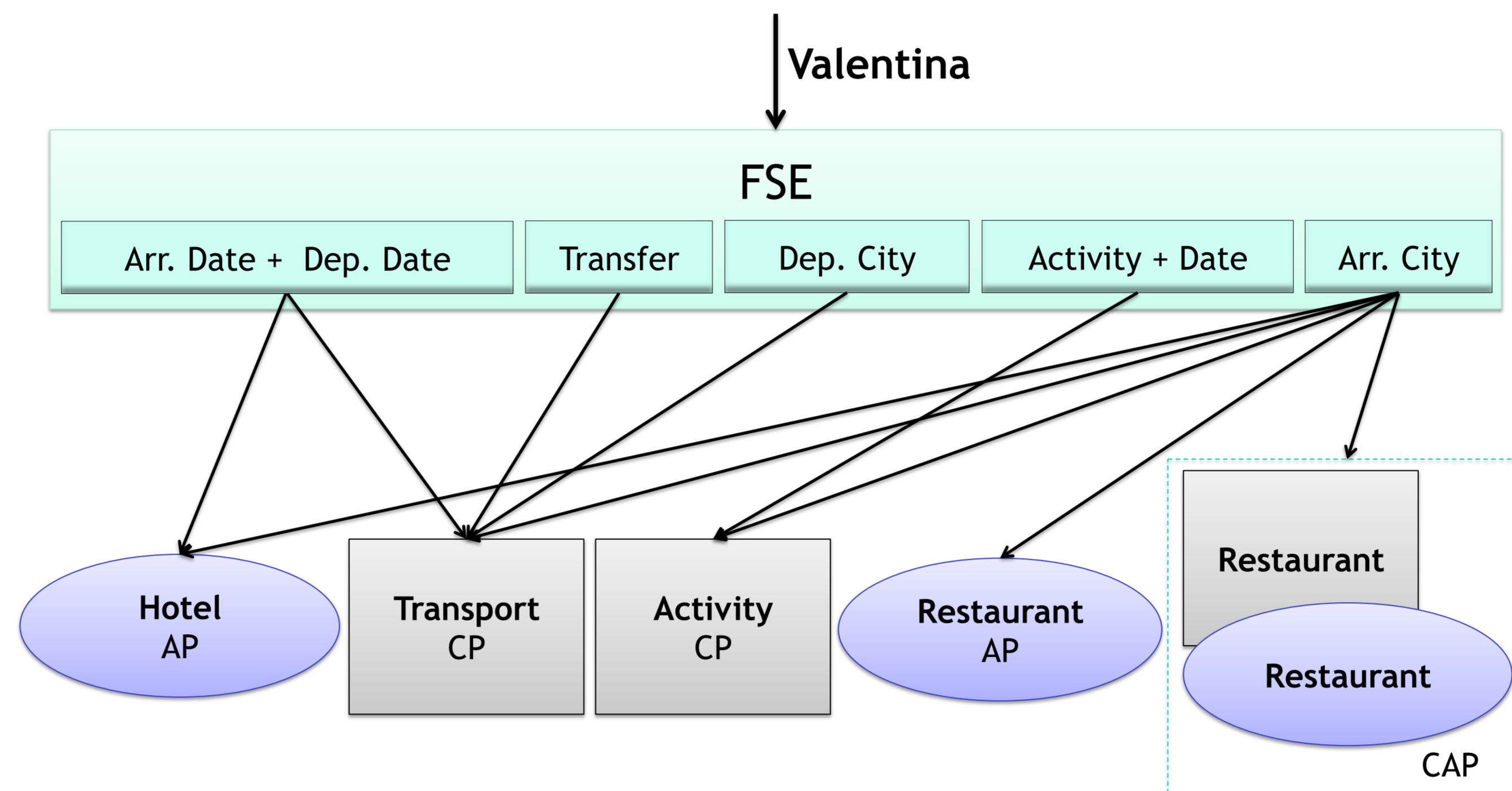
Business cases:

1. Multi-domain search
2. Meta-search

The FSE collects **contents** and **advertisements**, and publish them together in every result page generated as a response to a user query

Classes of sources:

- Content-only Providers (CPs)
- Content and Advertising Providers (CAPs)
- Advertising Providers (APs)



- Valentina is planning her holiday in Lyon. She wants to book her flights from/to Milan to/from Lyon, find a hotel and a few restaurants. She also wants to see an art exhibition during her stay
- Multi-domain query:
Arr. Date: April 14-th, 2012
Dep. Date: April 22-nd, 2012
Transfer: airplane
Dep. City: Milan
Arr. City: Lyon
Activity: art exhibition
Act. Date: April 21.st, 2012

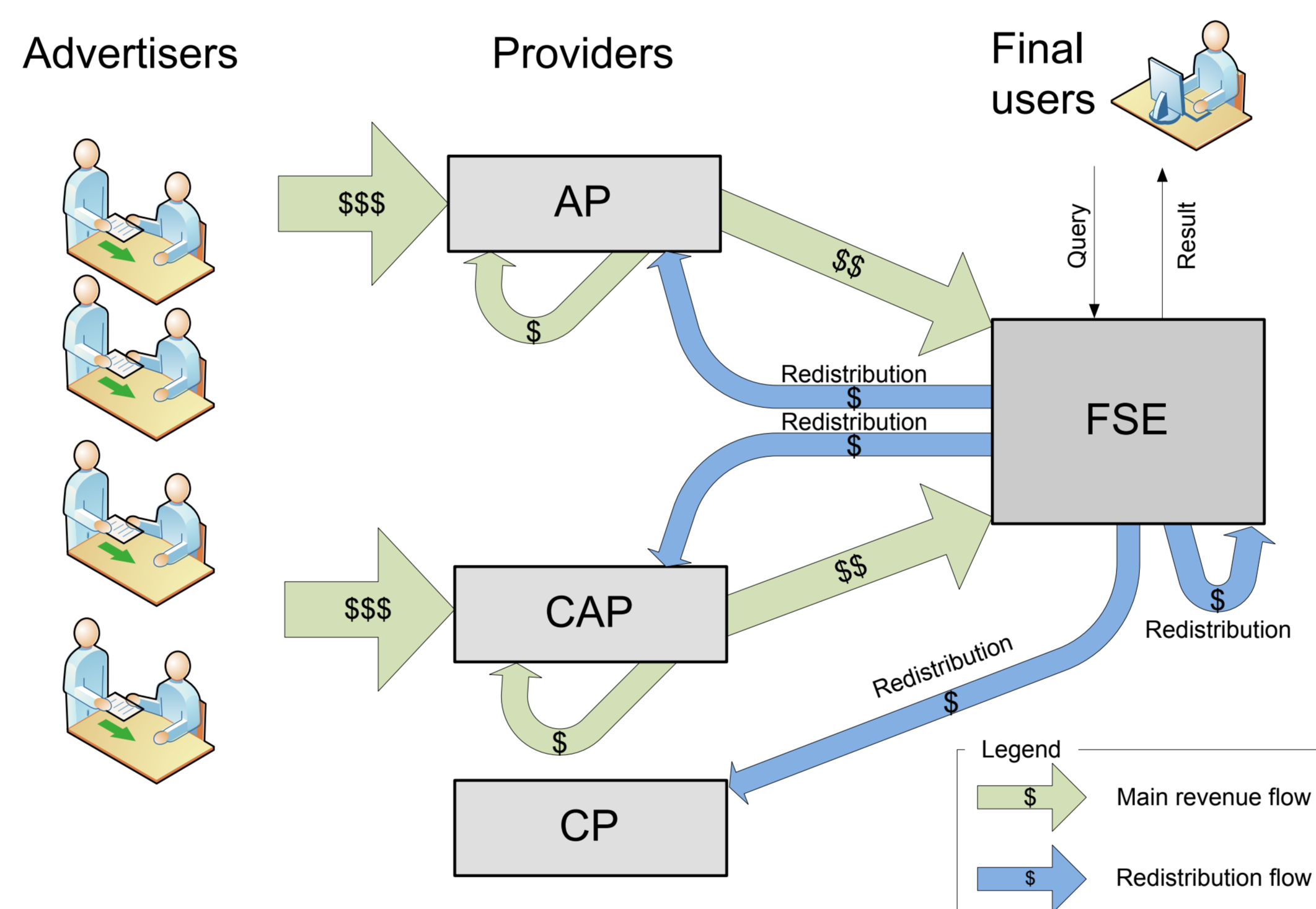
Revenue Sharing Mechanism

Aim:

- To provide the **appropriate incentives to all the providers of information** in a way that they are motivated to continue the partnership

Assumptions and requirements:

- The only *revenue sources* of the system are the advertisers
- The FSE can integrate different *heterogeneous* providers
- To grant *adequate compensation* to every provider, a redistribution of the revenue may be necessary
- The approach must grant *flexibility* to the needs of both the FSE and the providers



Crucial Points:

- The mechanism aim to produce an allocation that maximizes the total revenue of the system
- The mechanism needs to elicit private information from the providers
- Providers could misreport their information if they gain more by doing so

The Redistribution Mechanism:

- It is an extension of the Cavallo's redistribution mechanism
- The novelty is that the *redistribution is parametric*: a weight is assigned to each providers' class
- The mechanism is *asymptotically optimal*: it is not possible to redistribute more without creating incentives for some providers to misreport

Experimental Evaluation

Tested Configurations:

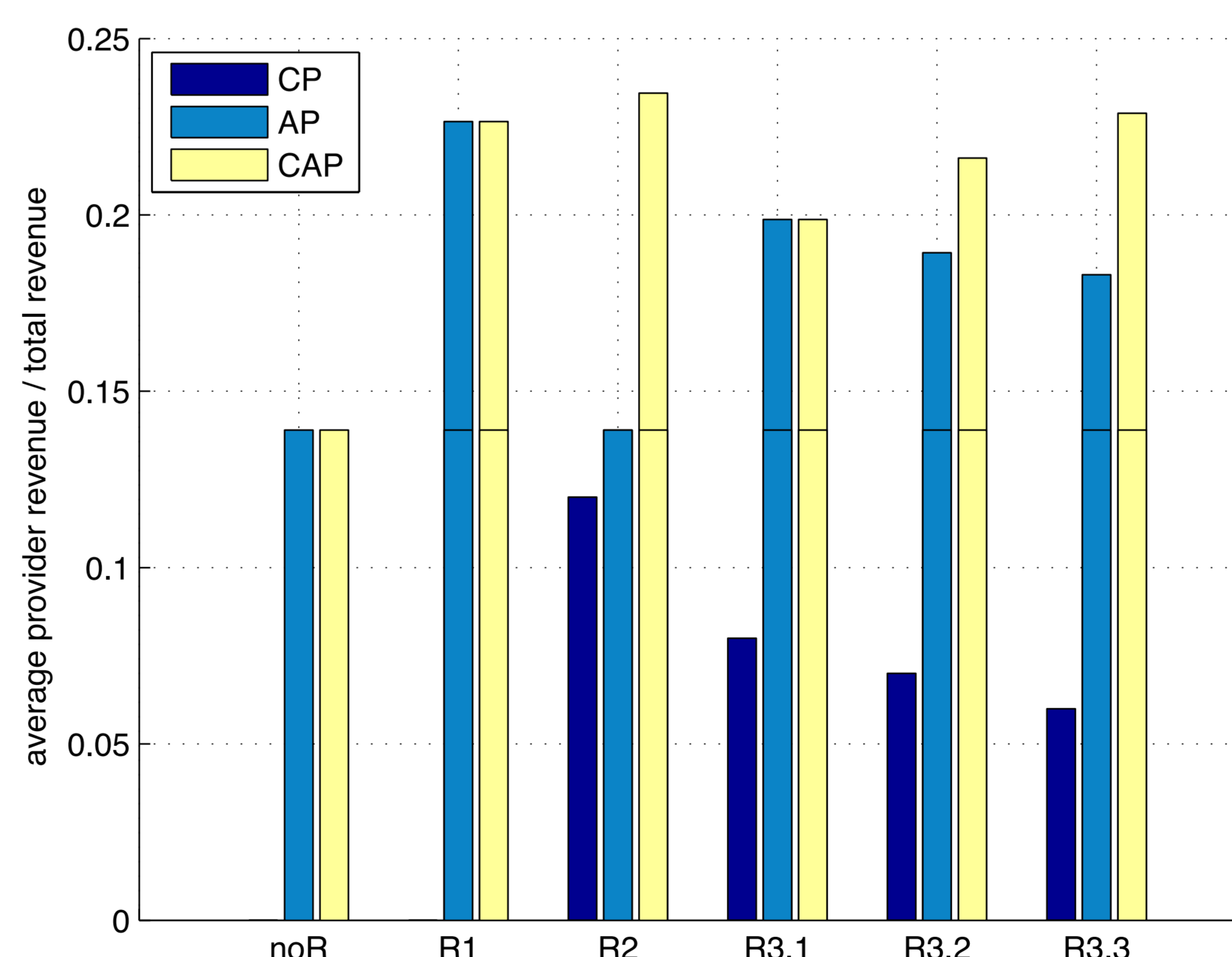
- noR: no redistribution
- R1: CPs' weight is zero
- R2: APs' weight is zero
- R3.1: the three providers' classes have equal weight
- R3.2 and R3.3: the CAPs' weight is higher than the one of the other classes (in R3.3 it is higher than in R3.2)

FSE's expected revenue:

- 49.3% of the total revenue with no redistribution
- < 10 % with redistribution (lower incomes for the FSE but higher motivation for the providers)

Dataset:

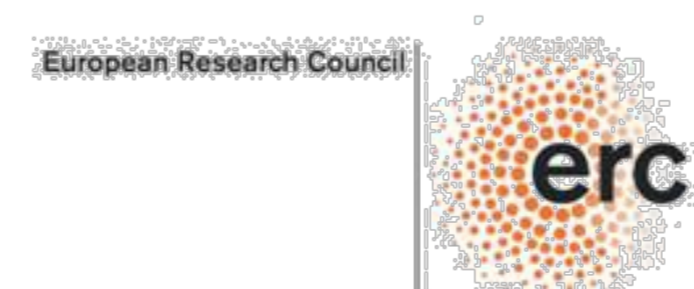
- Yahoo! WebScope A3 set of bids and ads



- Average redistribution of each single CP, AP, and CAP as a ratio of the total revenue
- The revenue of the APs and CAPs is composed by two parts:
 - what they receive without redistribution (below the line)
 - and the redistribution (above the line)
- The revenue of the CPs is due only to the redistribution

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<http://www.search-computing.org>

References

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