Ad Exchange: What is it?

Yishay Mansour
Mariano Schain
DEMOCRATIC CONVENTION

Without Spirit of ’08, Mutual Fears Reunite Democrats
By ADAM NAGOURNEY

The party is not as united as it was four years ago, but Democrats are finding common purpose in denying Republicans control of the White House and Congress next year.

Democrats Unveil Party Platform

Democrats Say U.S. Is Better Off Than Four Years Ago
By JIM RUTENBERG

The party’s message to wavering voters is that President Obama was the right choice in 2008, and that he has the country on its way to a recovery.

African Elephants Die as Ivory Fuels Wars
By JEFFREY GETTYLEMAN

Conservation groups say tens of thousands of elephants a year are being killed, more than at any time in the past two decades, as the ivory trade is increasingly militarized.

Money and People Leave Spain as Gloom Deepens
By LANDON THOMAS Jr., 12 minutes ago

While the situation in Spain is not as dire as that of Greece, some Spaniards are taking their euros, and sometimes themselves and their families, out of the country.

Opinion

Mr. Bernanke’s Next Task
The Federal Reserve chairman seems to know the economy needs help, but will the Fed provide it?

· Comment

MARKETS

At 7:50 AM ET

<table>
<thead>
<tr>
<th>Country</th>
<th>FTSE 100</th>
<th>DAX</th>
<th>CAC 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain</td>
<td>5,702.51</td>
<td>-55.90</td>
<td>-0.50%</td>
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<tr>
<td>Germany</td>
<td>6,979.97</td>
<td>-34.86</td>
<td>-0.57%</td>
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<tr>
<td>France</td>
<td>3,434.08</td>
<td>-19.62</td>
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</tbody>
</table>

Data delayed at least 15 minutes

GET QUOTES

Stock, ETFs, Funds
Classical Advertising

• Publisher:
  – TV, radio, newspaper, magazine, ...

• Advertiser
  – selling goods, services, candidates, ...

• Ad Agency
  – Handles the Advertiser advertising
Advertising Agency

• **Accounting Services**
  – Receives a budget, and deals with the accounting side of advertising

• **Creative**
  – content to the advertisements

• **Media Buying**
  – where to advertise and for how much

• **Production**
  – making the actual advertisements
Measuring Success

• Target attributes:
  – **Reach**: how many people was the campaign
  – **Frequency**: how many time a user saw the campaign
    • target numbers: 3-7 times
  – **Demographics**: who saw the campaign
    • gender
    • income
    • geographic
Internet Display Advertising

Mainstream Ads:
- Publishers:
  - Pre-sell impression
    - In bulk
    - Pay per impression
  - General categories
    - Demographics
    - Geography
- Advertiser

Alternative technology
- Sell in real time
  - “Stock market”
- Perform auction
  - Matching advertisers to impression slots
- Negligible end-to-end latency
AdExchange (AdX)

- **Two-sided market:**
  - buyers and sellers
  - Perishable inventory:
    - display ad slots (impressions)
- **Sellers: publishers sell impressions on their webpages**
  - Such as: Youtube, New York Times, CNN

- **Buyers: ad-networks**
  - Ad-network runs campaigns of multiple advertisers
    - Each ad-network can be viewed as a single advertiser with complex interests
AdX real-time information flow

Publishers

Page info, minCPM

User requests webpage

Ad Info

AdX auction

Call Out

Bid

User requests webpage

Ad displayed

Ad network

Call Out

Bid

Winner

Call Out

Bid

Ad displayed

Ad network

Ad network

Ad network

Ad network
Real Time Bidding

Advantages
- **Advertiser**
  - User targeting
    - Geographic
    - Advertiser Cookie
    - Web page
  - Better control on ROI
- **Publisher**
  - Inventory utilization
  - Utilize user info

Challenges
- **Real time**
  - Latency of 100-200 ms
- **Infrastructure**
  - Scale
  - Larger than search
- **Efficiency**
  - Publisher revenue
  - Advertiser ROI
users

• view content

• no clear intent
  – unlike search

• potential consumers

• User Attributes
  – location
    • IP address
  – Behavior
    • Cookies
    • user lists
  – Implicit attributes
    • Gender
Advertisers

• Types
  – Direct Sells Advertisers: specific product sell
    • Maximize Return on Investment (ROI)
  – Brand advertisers:
    • Hard to measure ROI

• Limitation:
  – Budget

• Mode of Operation:
  – Hire an Ad Agency (can be more than one)
Ad Agencies

• Plan Ad campaigns for advertisers
  – budget, goals, creative, media, production

• Aggregate multiple advertisers

• Have trading desks
  – actual low level purchasing decisions.

• Ad serving
  – rare
Demand Side Platforms (DSP)

- Input
  - Multiple Ad agencies
    - large demand

- Output
  - Multiple Ad Exchanges
    - large inventories

- Function:
  - real time bidding
  - Ad Serving
  - Optimization
  - Ad statistics

- Infrastructure
  - Ad servers
Ad Exchange

• Input:
  – user page requests

• Output:
  – Allocation of Ads

• Infrastructure

• Auction:
  – Second price
    • reserve price
  – Clearing house

• Neutrality

• Fees
Supply Side Platforms (SSP)

• Managing Publisher Inventory

• Keep track of user attributes
  – cookies
  – geographic
    • IP address
  – device
    • mobile, PC,

• Optimize prices

• Merge reservation and real time
Publishers

• Own the web site

• Provide the content
  – what the users want to see

• Sells impressions:
  – reservations vs. real time

• Controls Ads content and media types
Ad media types

- text
  - can be multiple ads together
- display
  - banner
  - size of Ad
- video
- flash
- overlay
Payment charge

• per impression
  – CPM

• per click
  – online search

• per action
  – need to define “action”
Summary

• This week:
  – Ad Exchange in the real world

• Next week
  – The game

• To do:
  – start thinking about group formation
  – 3-4 students.