

Ad Exchange: What is it?

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The New York Times

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The New York Times

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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.

• FiveThirtyEight: In Looking Back, Voters Have Short Memories



0:00 / 7:01

African Elephants Die as Ivory Fuels Wars

By JEFFREY GETTLEMAN

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.

• Photographs | Graphic: Illegal Ivory Trade

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.



• Europeans Step Up Talks as Markets Grow Anxious 5:47 AM

OPINION »

EDITORIAL

Mr. Bernanke's Next Task

The Federal Reserve chairman seems to know the economy needs help, but will the Fed provide it?

• Comment

- Brooks: Obama's Speech
- Bruni: Paul Ryan's Curse
- Nocera: They're Not What They Used to Be
- Cohen: The Explanation Election
- Op-Ed: When It Pays to Talk to Terrorists

MARKETS »

At 7:50 AM ET

Britain	Germany	France
FTSE 100	DAX	CAC 40
5,702.51	6,979.97	3,434.09
-55.90	-34.86	-19.62
-0.97%	-0.50%	-0.57%

Data delayed at least 15 minutes

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Stock, ETFs, Funds Go

The New York Times

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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

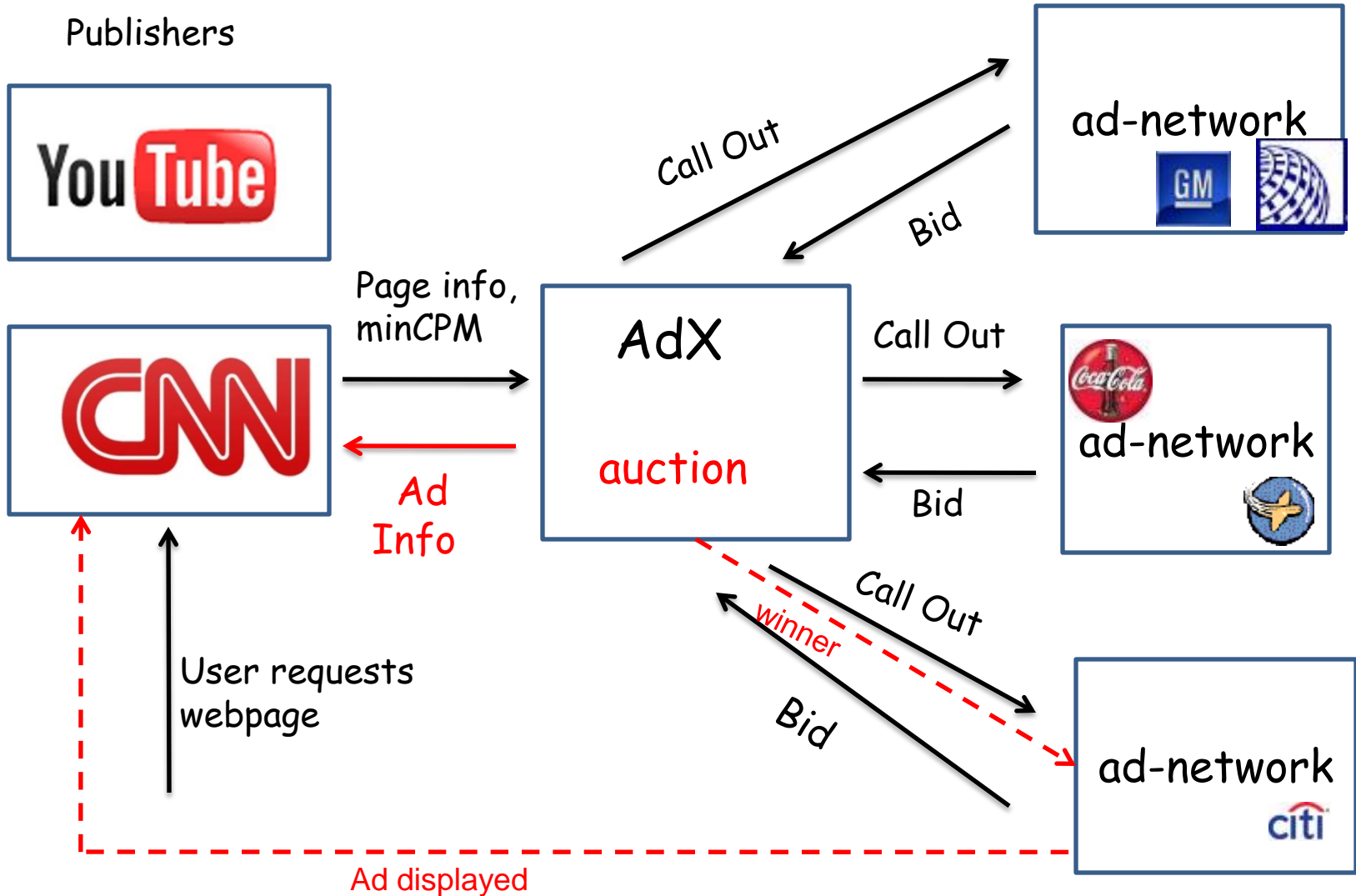
Alternative technology

- 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



Real Time Bidding

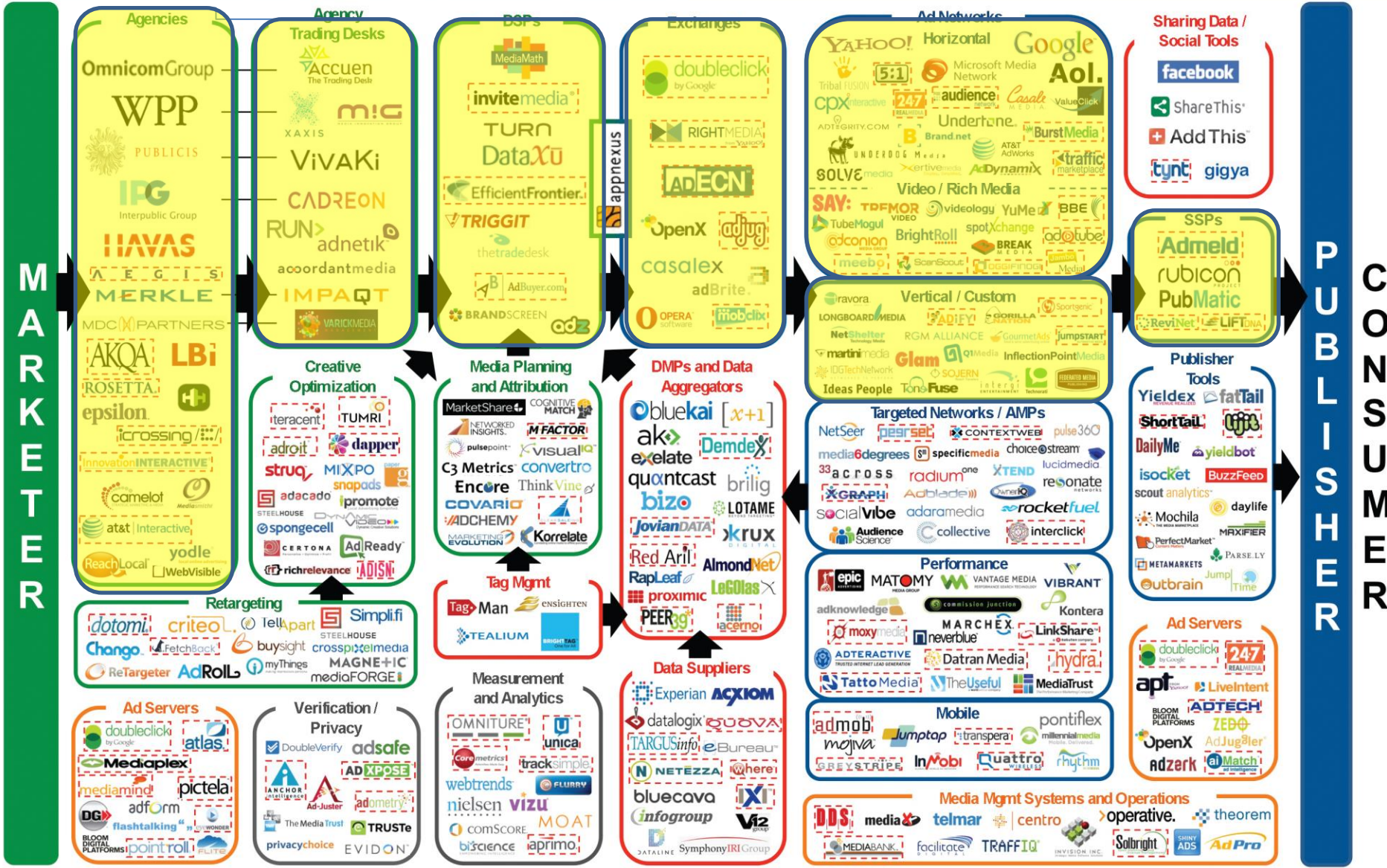
Advantages

- 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

DISPLAY LUMAscape



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

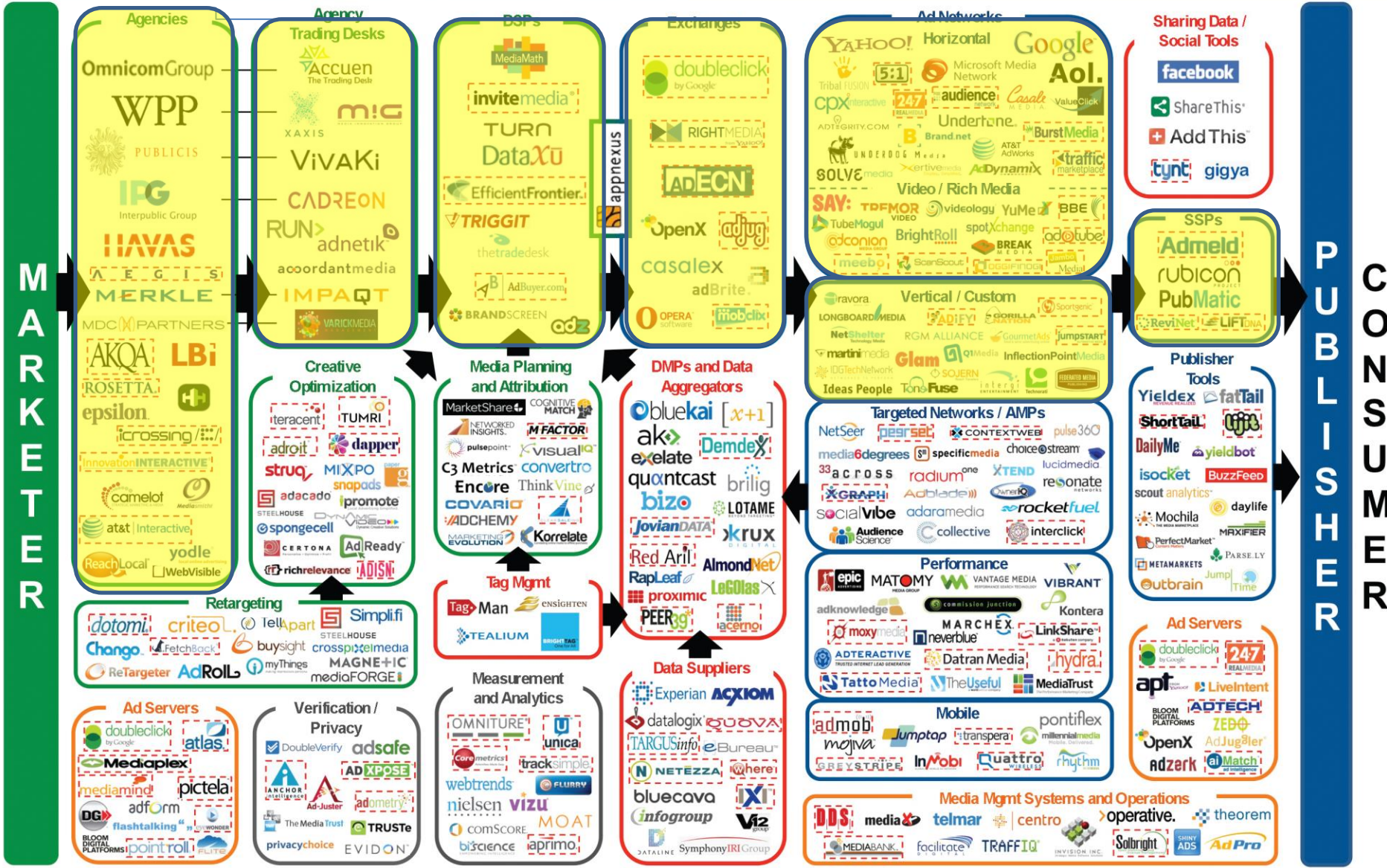
Ad media types

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

Payment charge

- per impression
 - CMP
- per click
 - online search
- per action
 - need to define “action”

DISPLAY LUMAscape



Denotes acquired company

Summary

- This week:
 - Ad Exchange in the real world
- Next week
 - The game
- To do:
 - start thinking about group formation
 - 3-4 students.