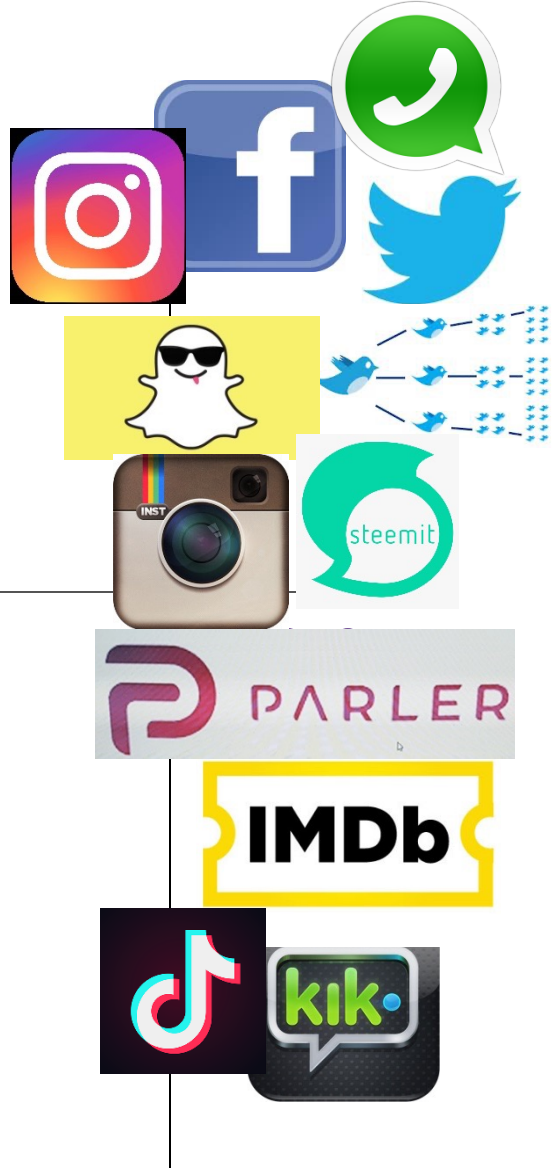
Social Media Analytics

MSBA, Session 1, Jan 24, 2022



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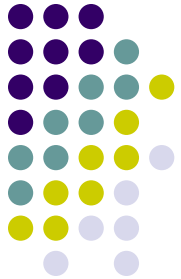
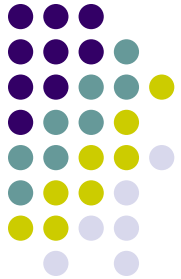
Course Details



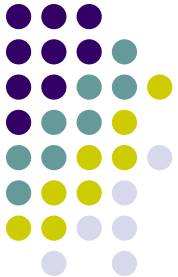
- 1 group assignment
  - Finding influencers, community detection
- Final project
- Final exam (online, date TBA)
- Readings
  - Parts of Easley & Kleinberg book (available for free from Cornell website)
  - Research articles (links provided in syllabus, some will be posted on Canvas)

Course Focus



- Not a course on social media advertising
- From content to connections
  - Extracting insights from a networked world
  - Why connections matter
  - Insights we can derive from connections
  - Predictions from connections
- Concepts are common to any kind of network
  - Social
  - Professional
  - Internal corporate
  - E-commerce, etc.
- But not just humans: Relationships between products, diseases, stocks, etc.

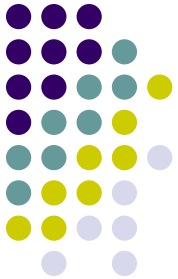
A Networked View of Stocks



	s_1	s_2	....	s_n
s_1	1	c_{12}	...	c_{1n}
s_2		1	...	c_{2n}
...			1...1	...
s_n				1

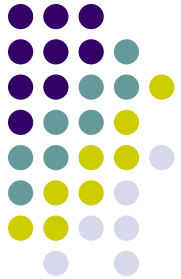
- Stocks s_i and s_j $(i \neq j)$ will have a link (edge) if price correlation $c_{ij} \geq$ threshold.
- Many important properties can be studied using network analytics
- E.g., which stock is most important in explaining price movements of the group?
- Other ways to create a network of stocks?

Topics to be Covered



- Unique aspects of social media
- Who's important: Attention & influence
- Visualization with networks
- Detecting communities
- Multi-mode networks
- Link prediction
- Homophily vs. social influence

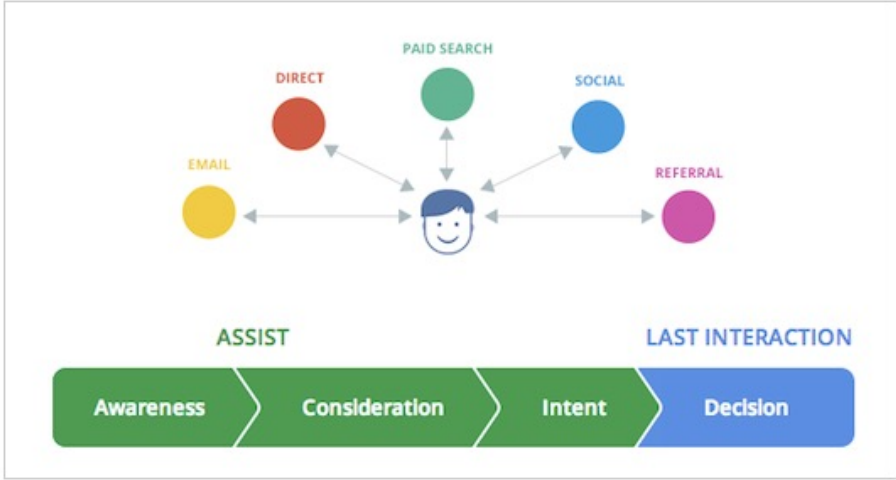
Learning Objectives



- Role(s) of social media in consumers' purchase decisions (esp. high involvement goods)
- Implications/insights about interplay between channels (e.g., social and paid search)

The Customer's Journey to Online Purchase

- Steps in a customer's buying decision
- Multiple "channels", multiple interactions before purchase

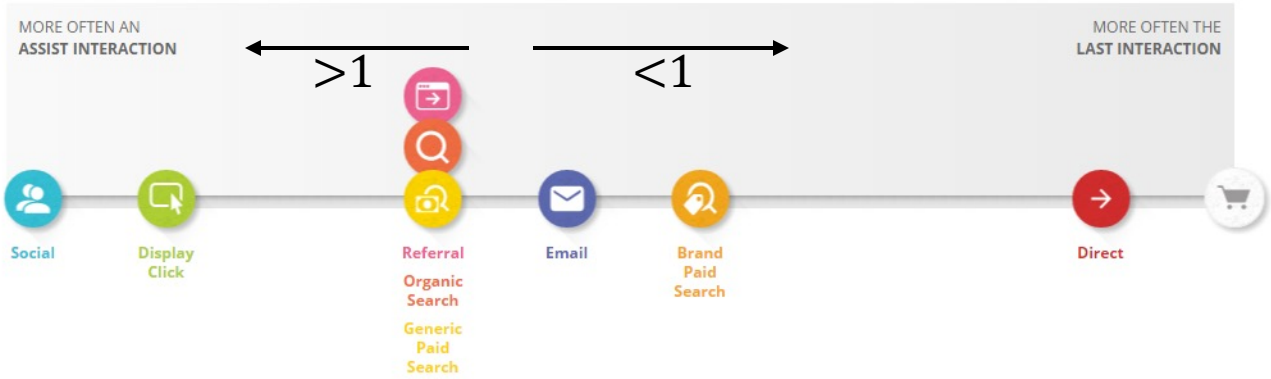


- A channel may be more important in "Assist" or "Last interaction" (conversion)
- Data collected from 36k businesses using Google Analytics

Source: http://analytics.blogspot.com/2013/04/introducing-customer-journey-to-online.html

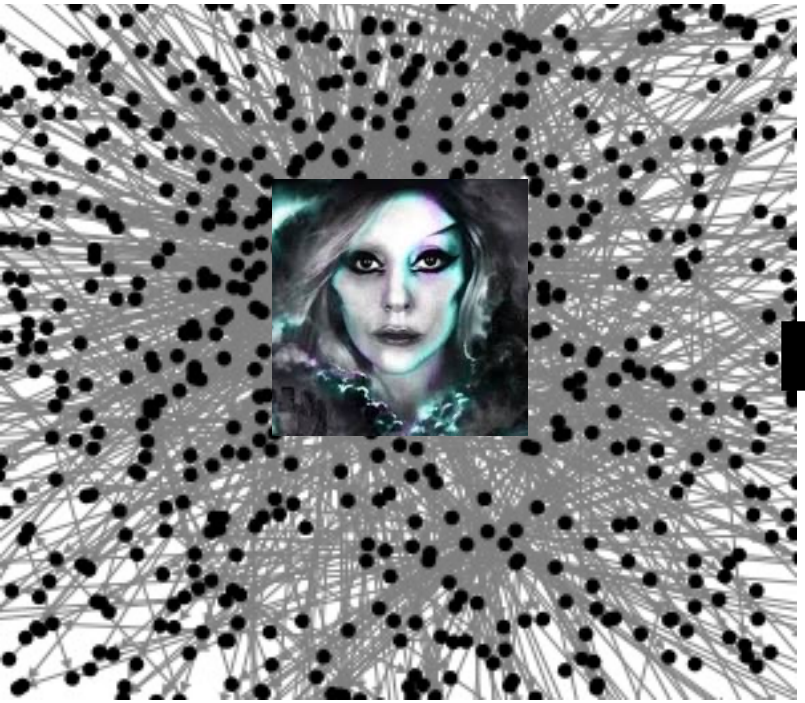
What Role Does Social Play?

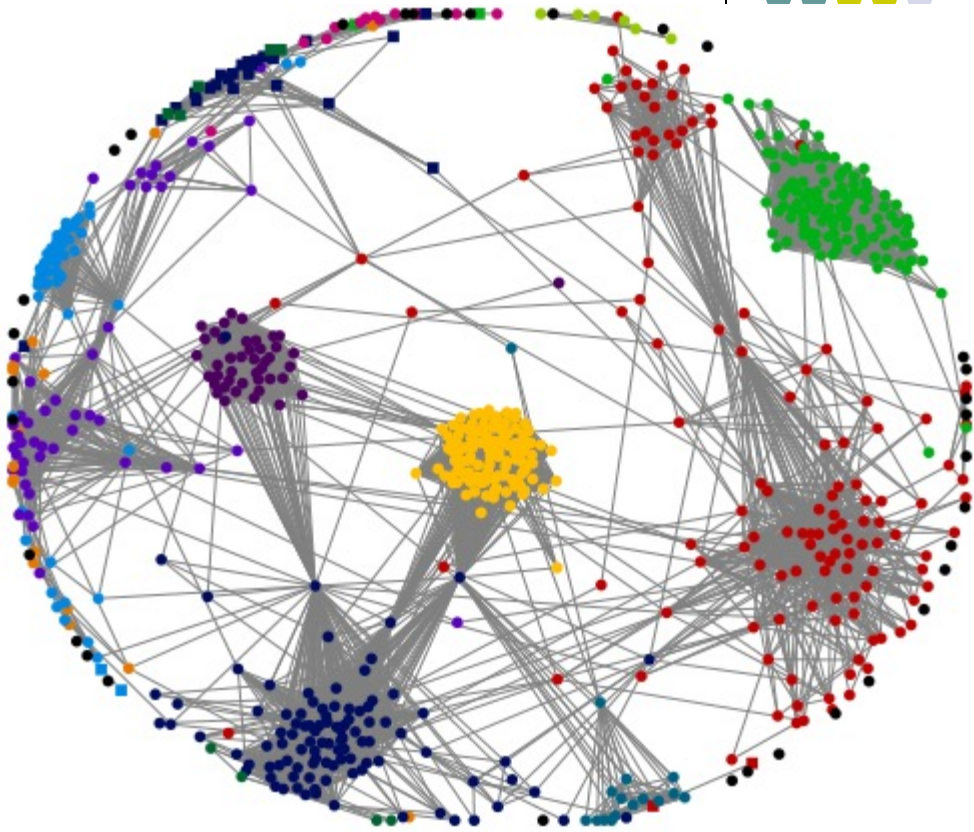
- *Assist interaction*: Any interaction that is on the conversion path but is not the last interaction.
- *Last interaction*: The interaction that immediately precedes the conversion (i.e., clicking on the buy button).
- Assist/Last interaction ratio = # times a channel was used in assist interaction / # times the channel was used for last interaction
- E.g., in automotive, users visited a retailer's website 30k times from a social site (e.g., Edmunds.com forum).
  - 21.5k times the user did not buy immediately, but came back later from another channel (say, paid search link) and bought.
  - 8.5k times users came from a social channel and bought immediately.
  - Assist/Last interaction = 21.5/8.5 = 2.5



Source: https://www.thinkwithgoogle.com/tools/customer-journey-to-online-purchase.html

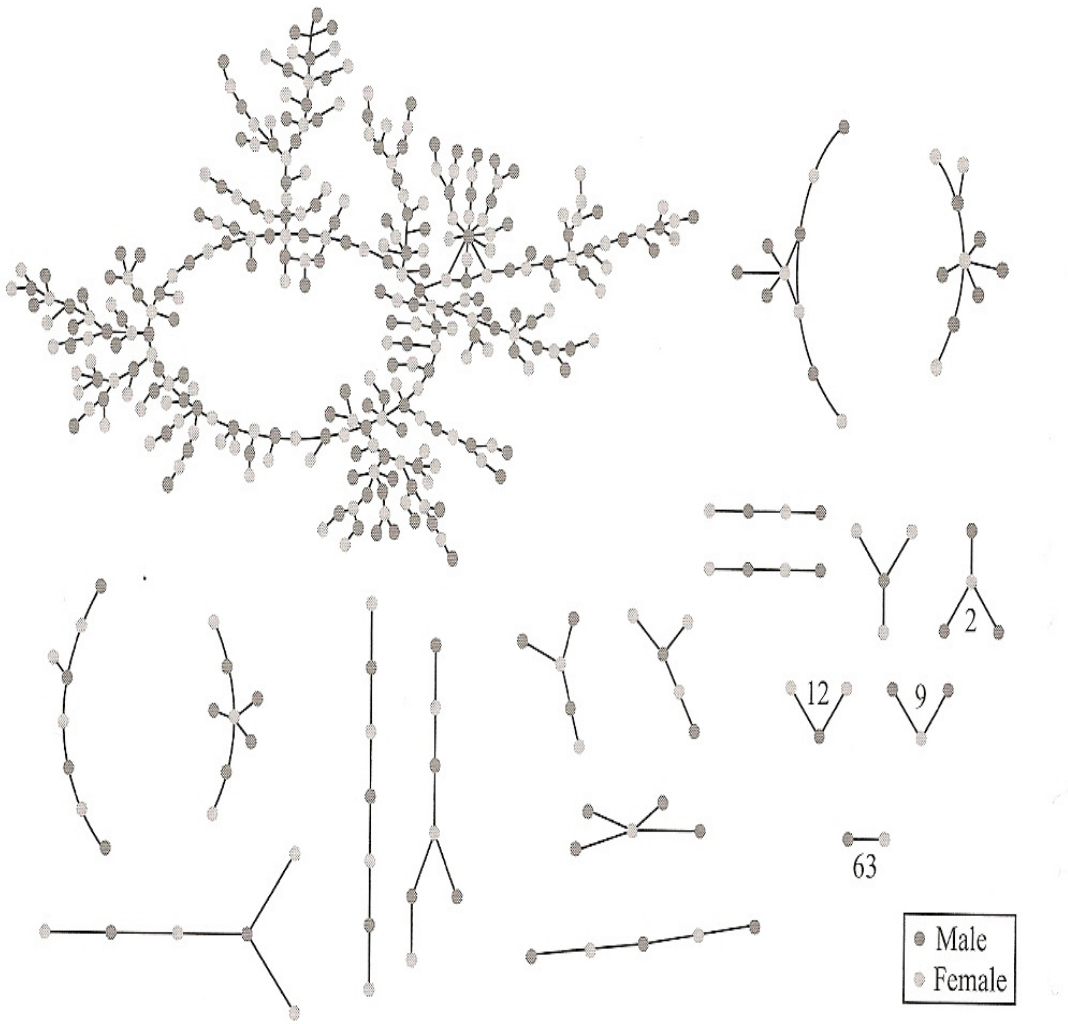
What's Unique About Social Media?
1. "Democratization of the Lady Gaga Effect"





- From channels to platforms
  - Conversations are now visible
  - Connections, attention, influence, etc. can be measured

2. Network Structure

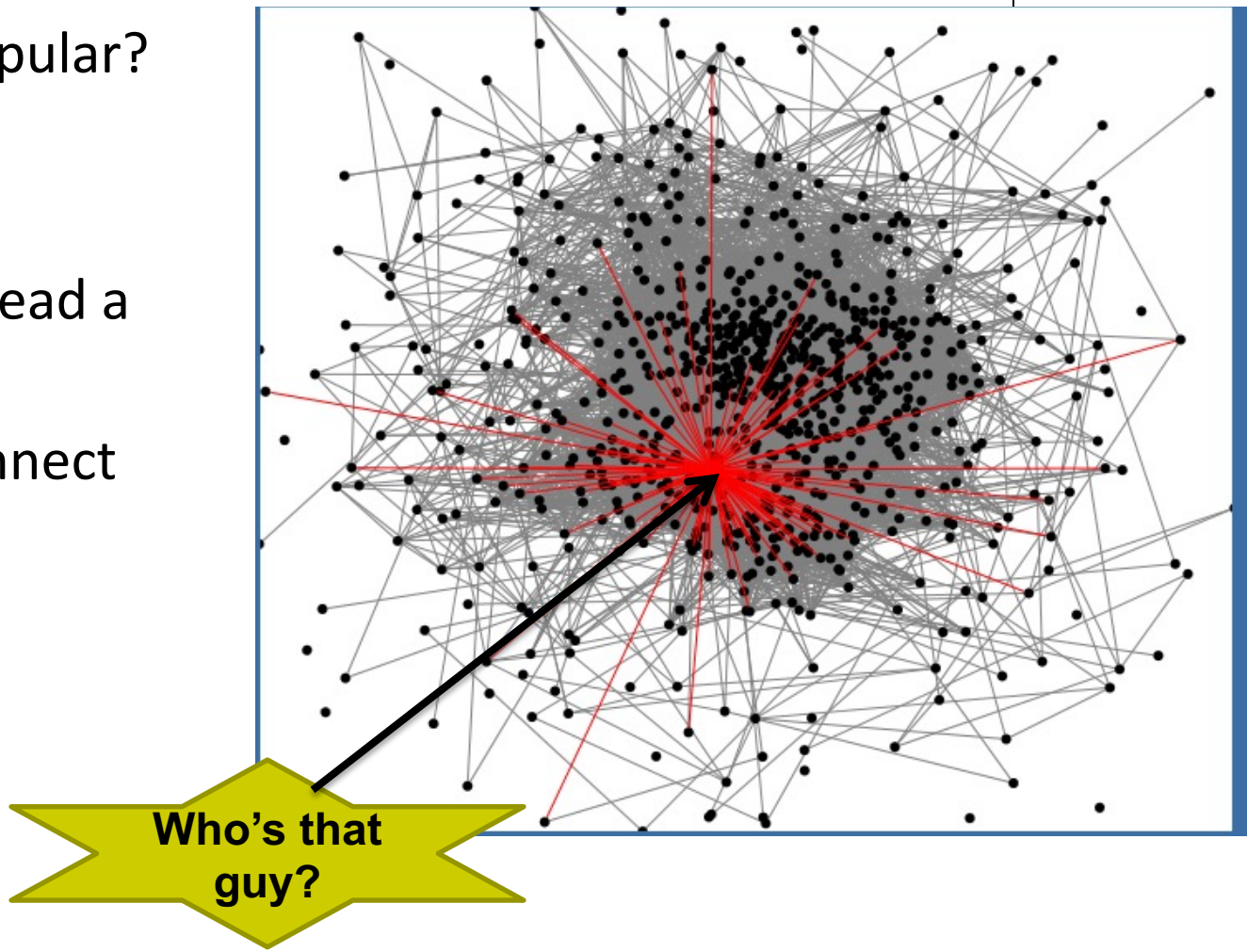


Can we learn from epidemiology?

Source: “Networks, Crowds and Markets”

Your Network Location Matters

- Who are most popular?
- Who are “best” connected?
- Who can help spread a message?
- Who can help connect diverse groups?

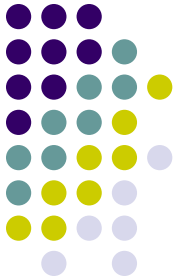


3. The Network Value of a Customer

- From Customer Lifetime Value (*CLV*) to Customer Influence Value (*CIV*)
- Customer Network Lifetime Value (*CNLV*) = *CLV* + *CIV*

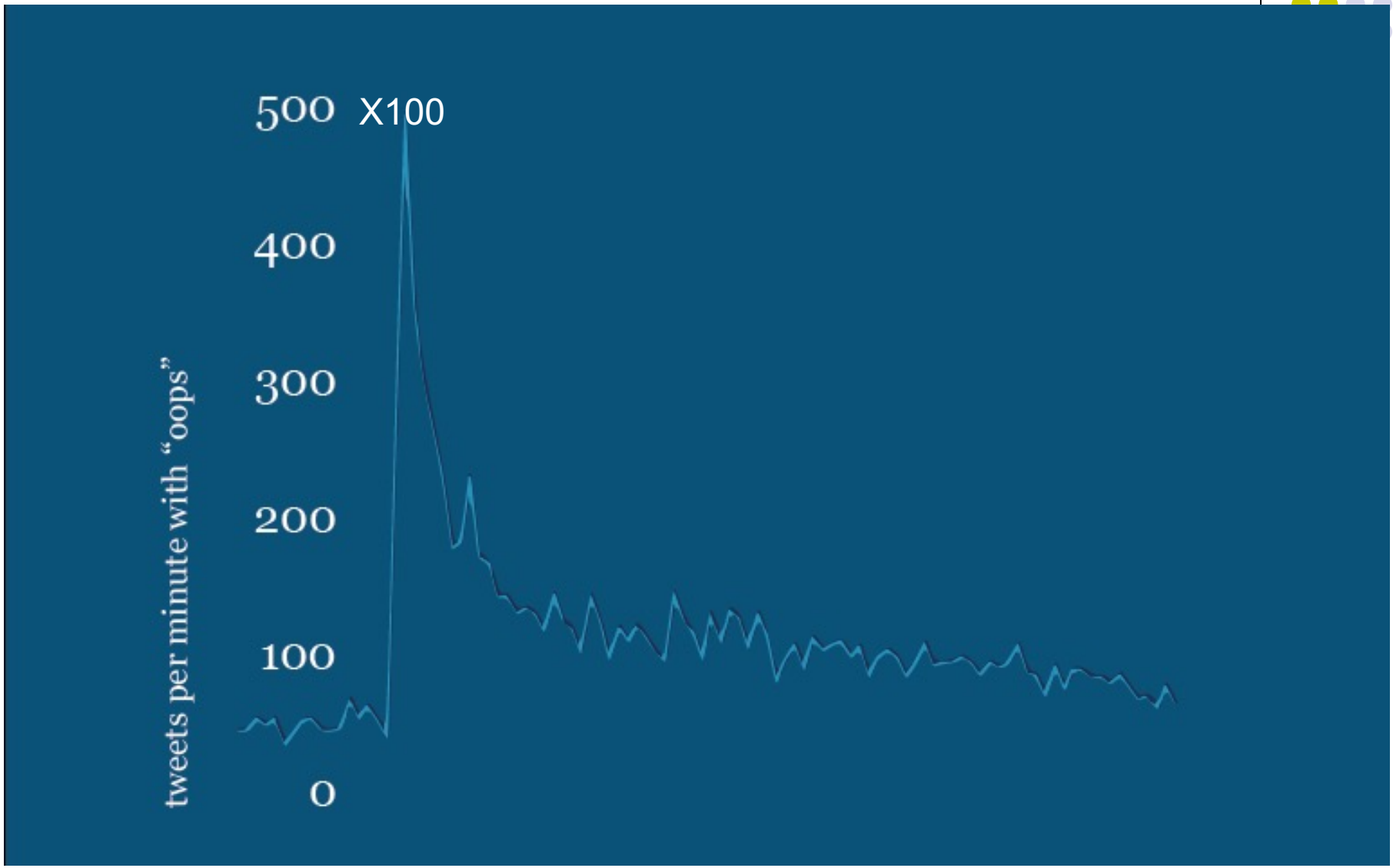
Image Source: http://www.wired.co.uk/news/archive/2012-08/13/customer-network-lifetime-value

4. Monitoring & Visualization Through Social Media



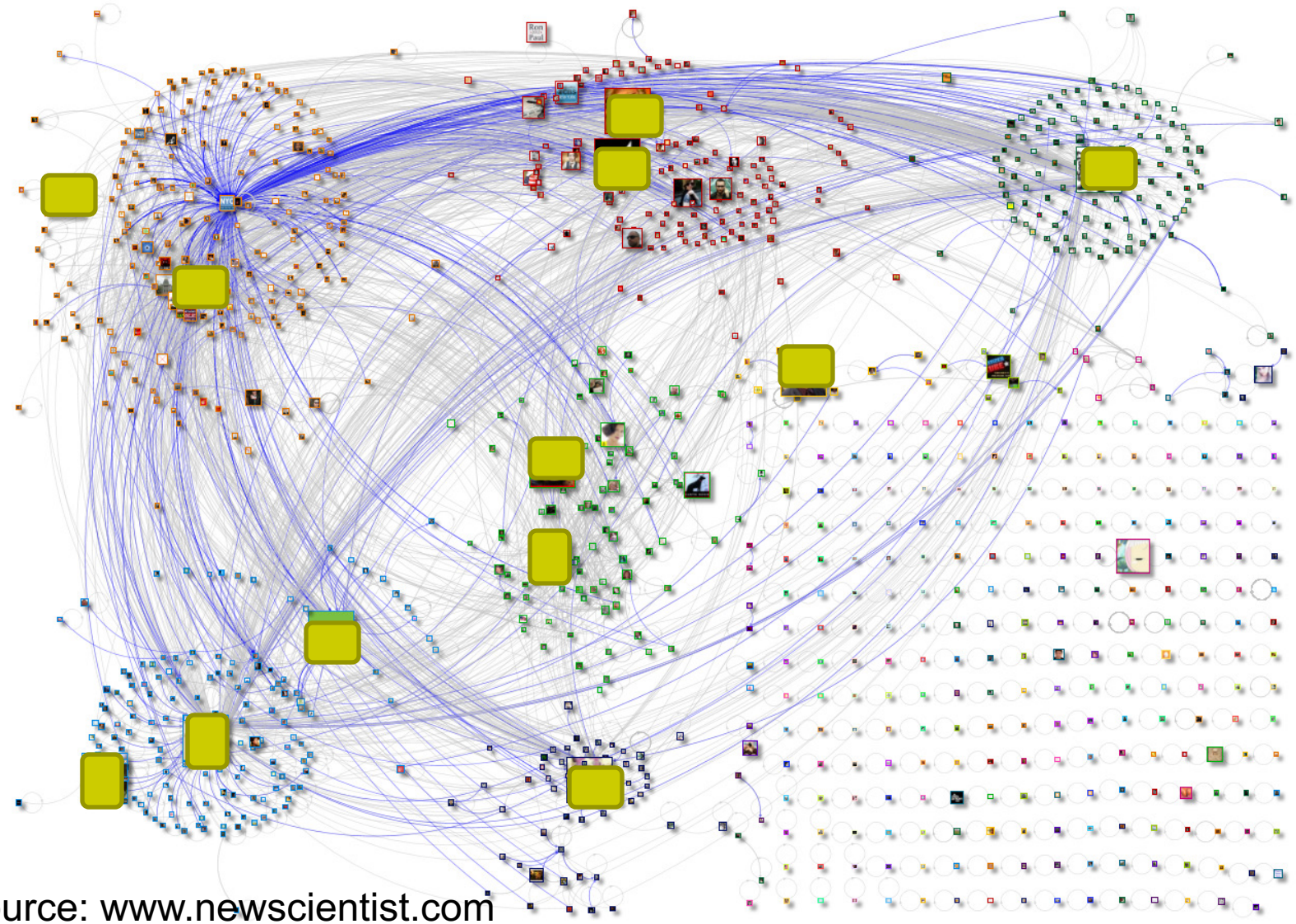
- Unprecedented real time visibility into
  - Public reactions
  - Emerging phenomena or events
  - Customer preferences

Real-time Assessment of Sentiment & Opinion: The "Oops" Tweets



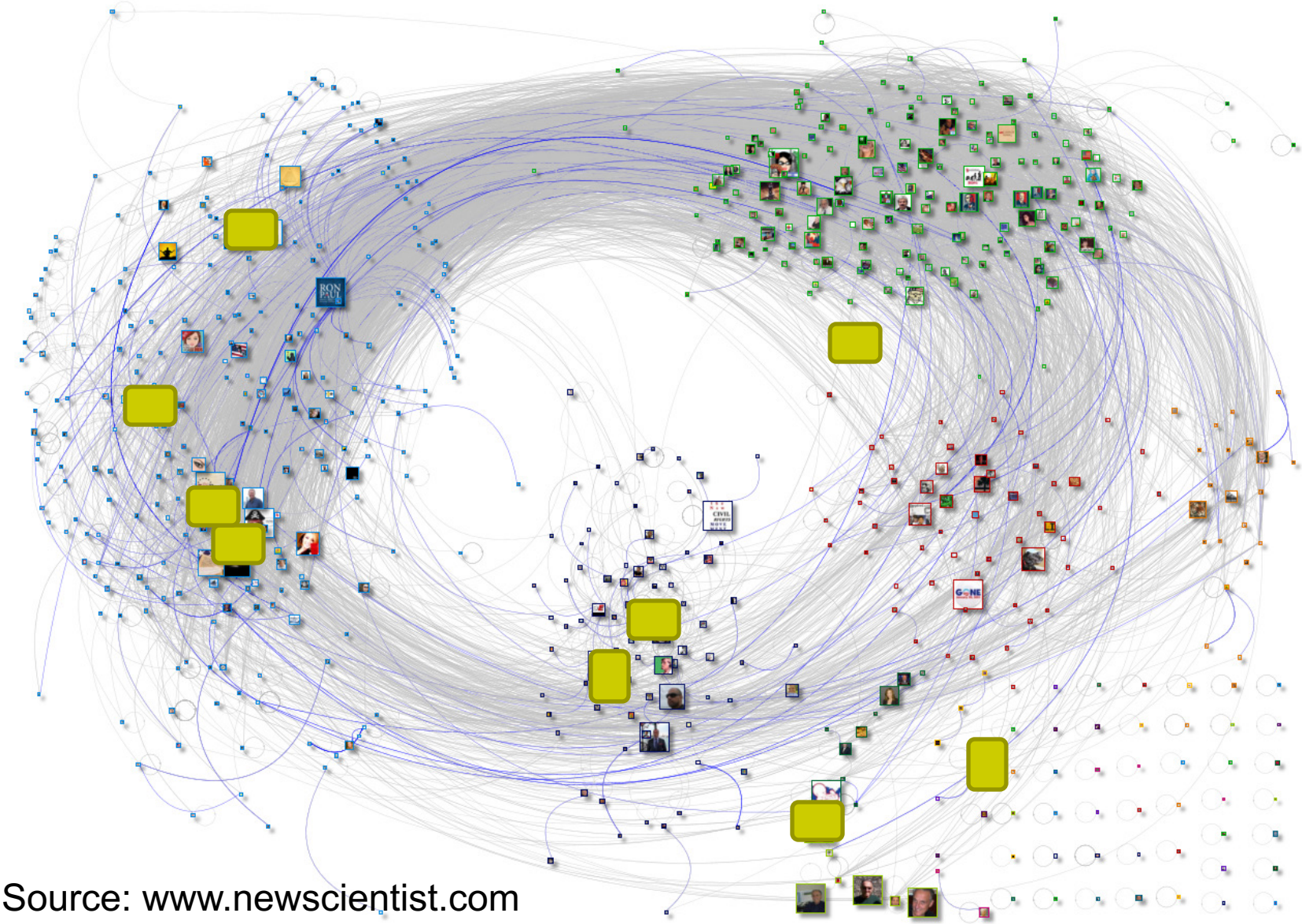
Source: April Underwood, Twitter

Tweets, Re-tweets: What do They Say?



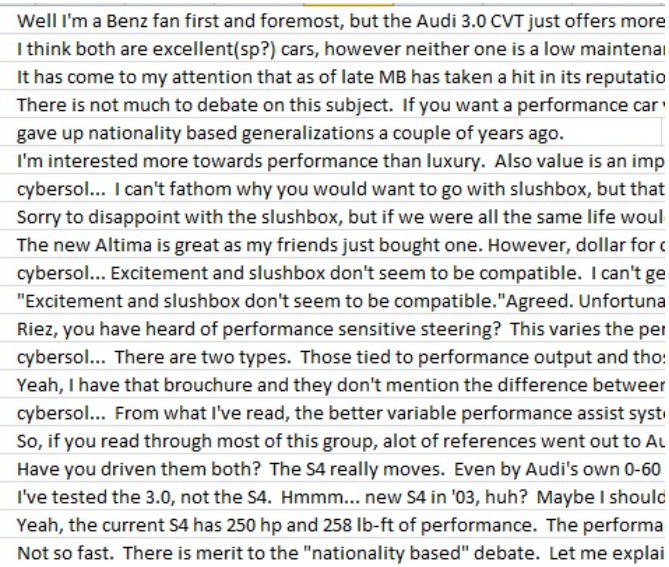
Source: www.newscientist.com

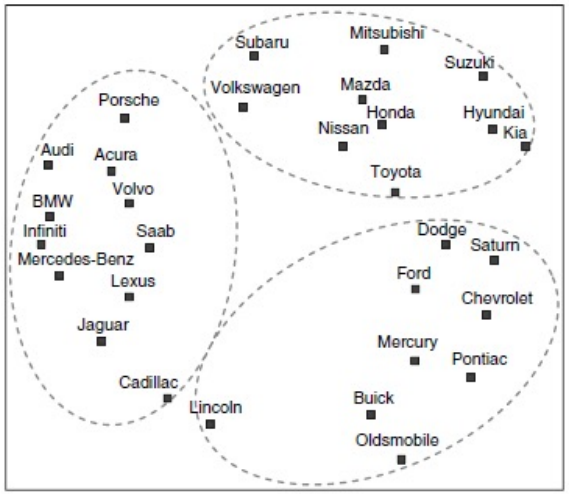
How is This Different From the Previous Network?



Source: www.newscientist.com

Business Implications of Social Media (Beyond Advertising and Promotions)



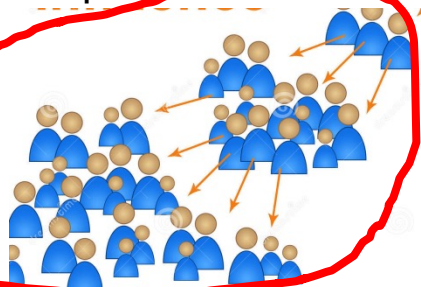


Obtain insights:
Analyze brand & product associations

Predict:
E.g., salesrank, retention, spend etc.

Metrics, metrics & more metrics

Create new products/services

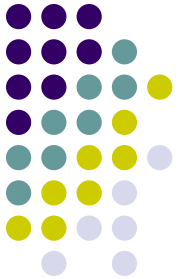


Who matter most:
Find influencers, groups with common interests

Takeaways

- Social media conversations create new opportunities for business
- Observe, engage & discover
  - Not just ‘a’ customer but customers embedded their social networks
  - Individual *CLV* to *CIV* and *CNLV*
  - The voice & connections of the customer

Next Class (1/26)



- Network metrics & applications
- Visualization of networks