

The Rise of Business Networks

Lecture 7

Spring 2014

Credit:

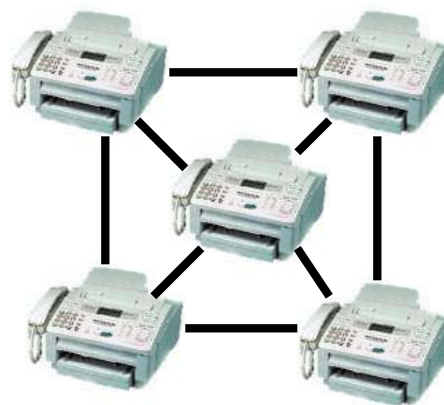
Michael J. Mauboussin

Legg Mason

Network Effects - Defined

- Network effects exist when the value of a good increases as the number of people using the good increases
- Metcalfe's Law: $\text{value} = n^2 - n$

members (n)	value
3	6
10	90
20	380
100	9,900



Strongest forms of Network Effects

- Transactions



- Community



- Devices



QWERTY



AustinVentures

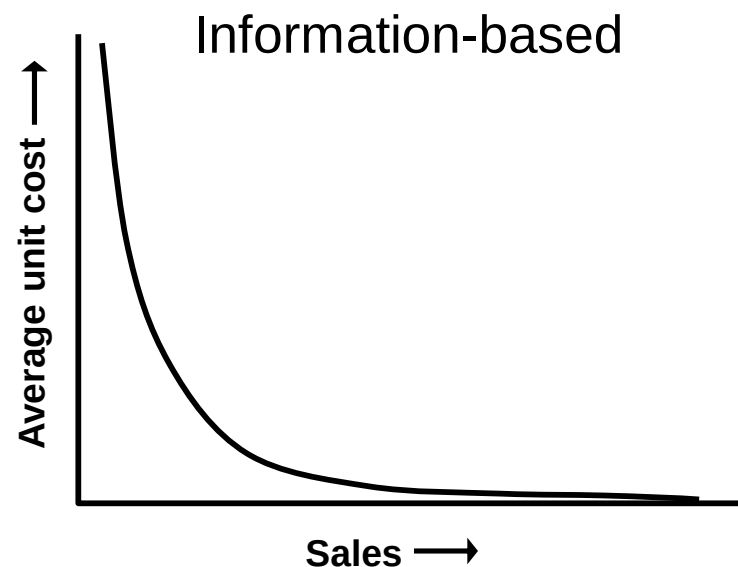
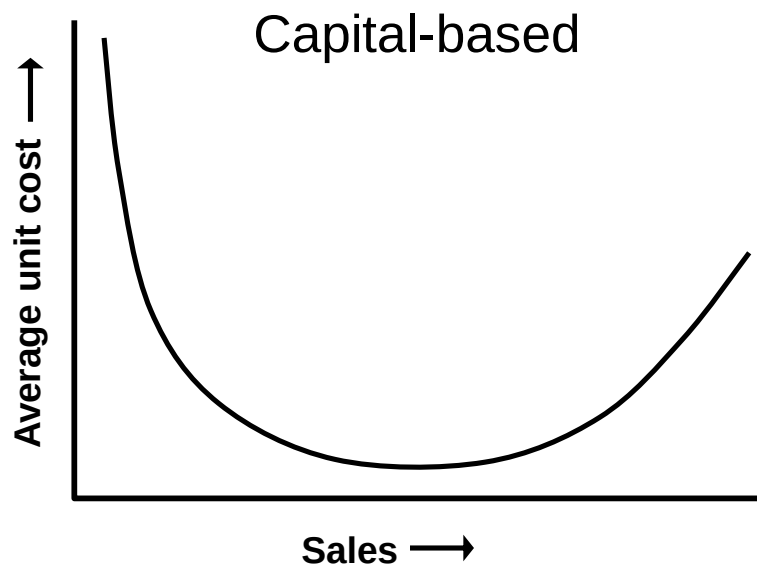
Network Economics: Different from Neoclassical Economics

- Key Issues
 - Revenue sources
 - Cost characteristics
 - Sustainable competitive advantage

Network Economics

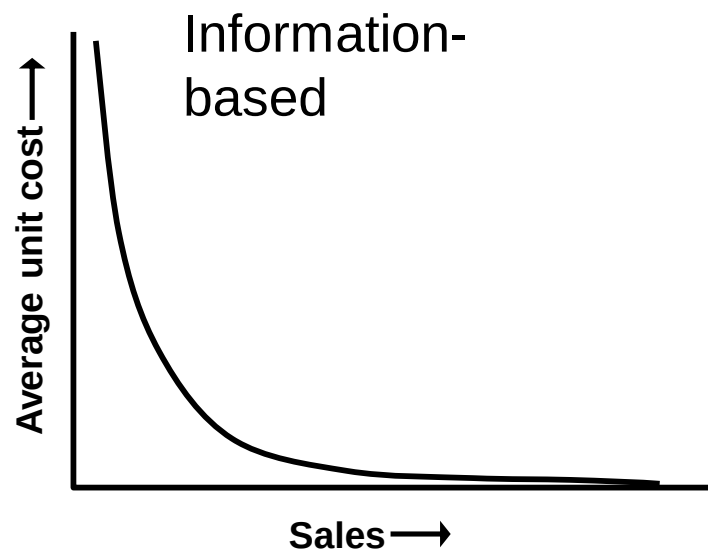
Costs

Scalability is a company's ability to grow sales in excess of costs



Network Economics

Costs



Ex.  vs.



Profit Margin:

eBay 24.2%

Wal-Mart 3.5%

Operating Margin:

eBay 25.8%

Wal-Mart 5.8%

(2008)



Austin Ventures

Sustainable Competitive Advantage

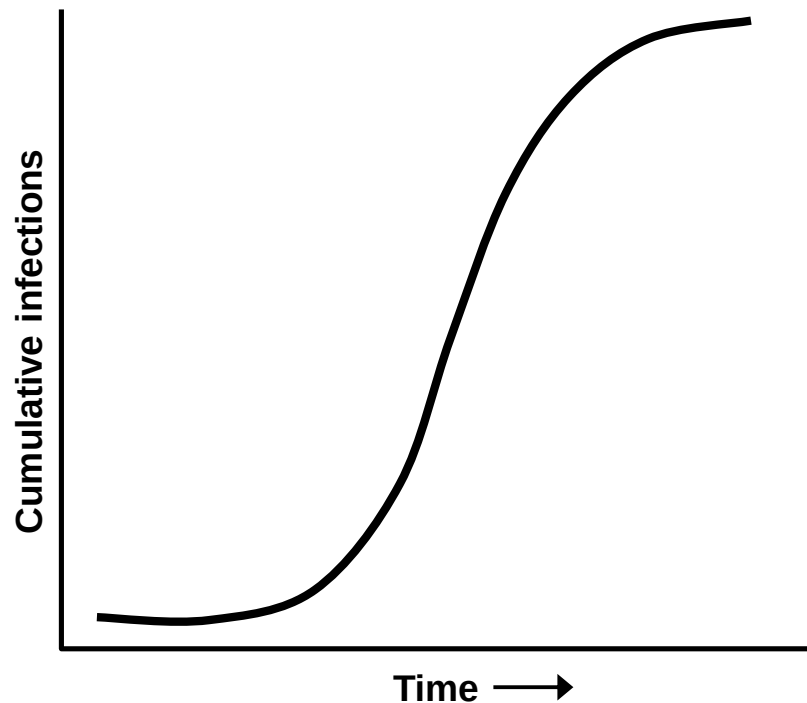
- Dominant networks are difficult to dislodge because of switching costs
- A switching cost is the cost a user bears when they switch from one system to another
 - Learning costs
 - Interactivity costs
- Modest increases in retention lead to huge jumps in customer NPVs



Mechanics of Network Formation – How Does it Happen?

Catch the bug

Disease Propagation



- Interaction
- Contagiousness

You need both to have an epidemic

Network Formation – What’s this got to do with the Flu?

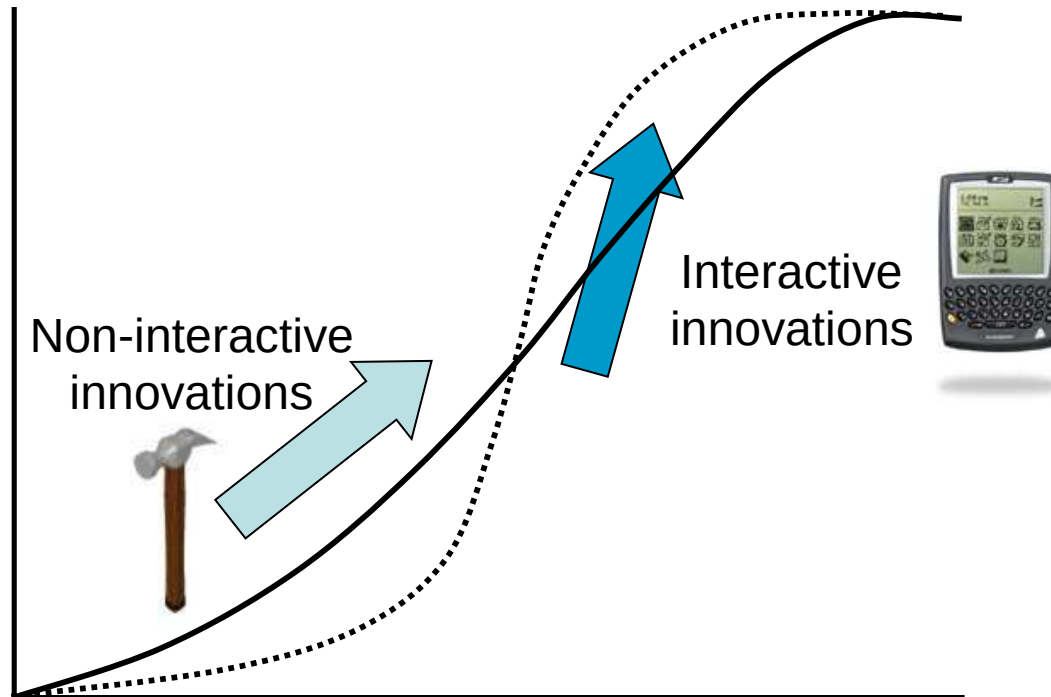
Business analogs

Interaction = “small world” effect

Contagiousness = adoption thresholds

Network Formation – Adoption of a Cool New Thing

Non-Interactive vs. Interactive



Non-interactive innovations – more attractive to future adopters

Interactive innovations – early adopters influence later adopters, and *vice versa*

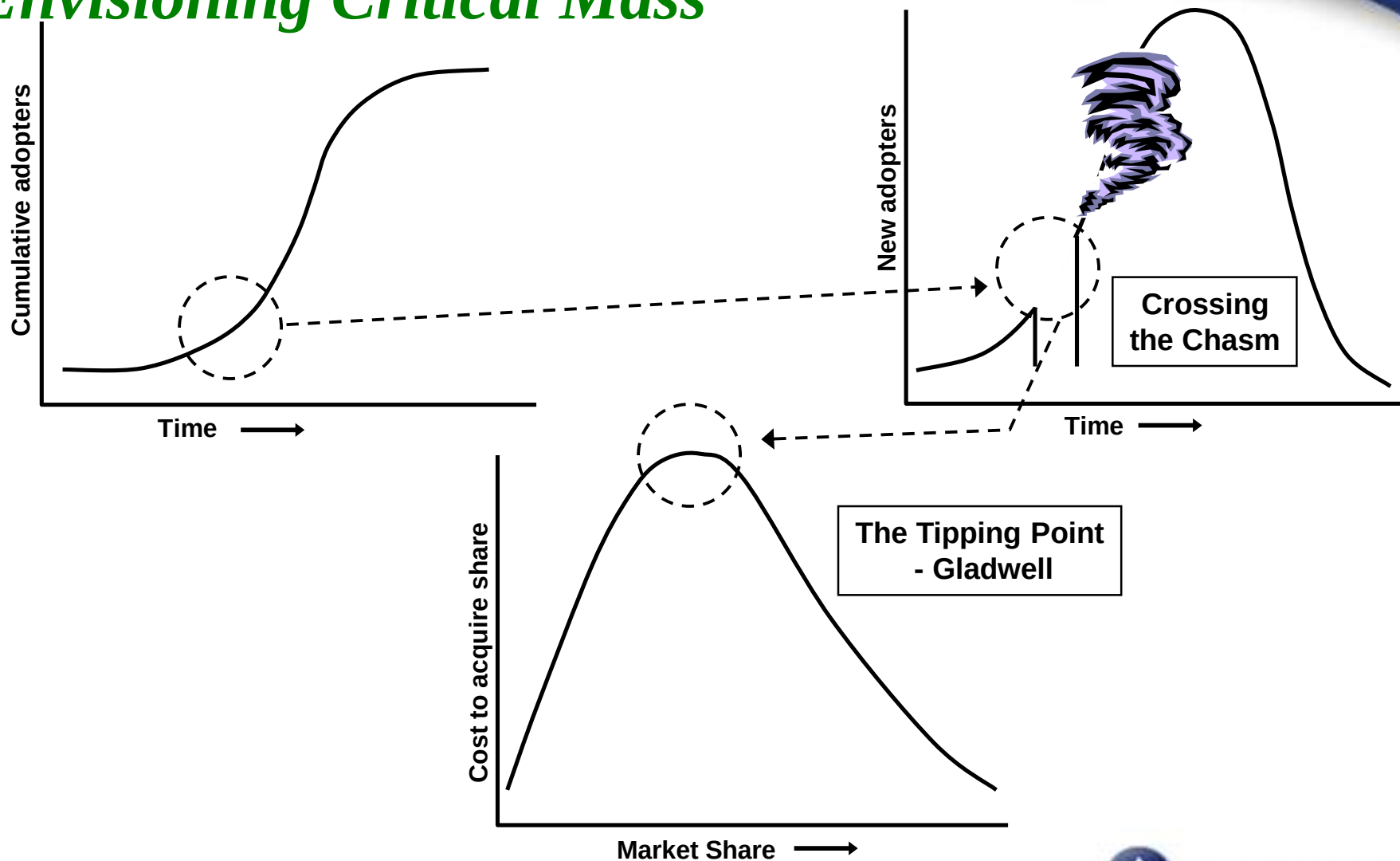
Critical mass

- Critical mass - idea from physics
 - Uranium must be condensed so as to assure a self-sustaining chain reaction
- Critical mass occurs when a network grows at an increasing rate
- “When year-to-year growth approaches or exceeds 100%, and when quarter-to-quarter growth is also rapidly accelerating.”

-Gorilla Game

Network Formation

Envisioning Critical Mass

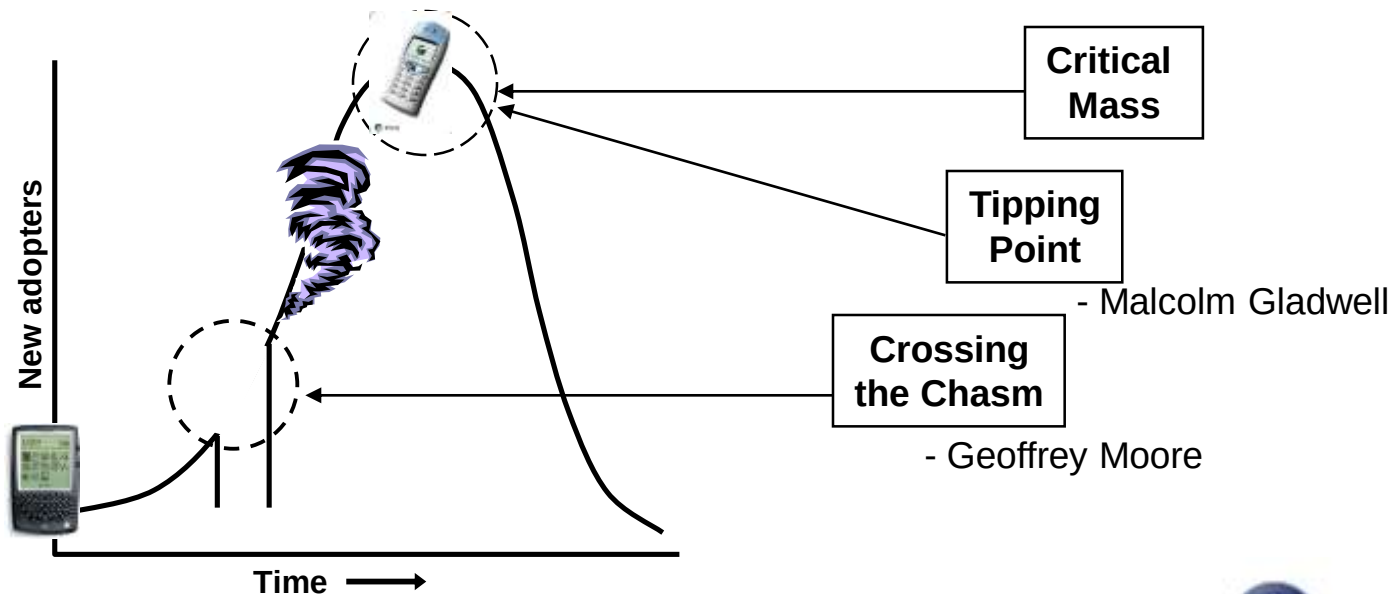


Network Formation

Crossing the Chasm – When a new innovation moves beyond “early adopters” and becomes widely accepted.

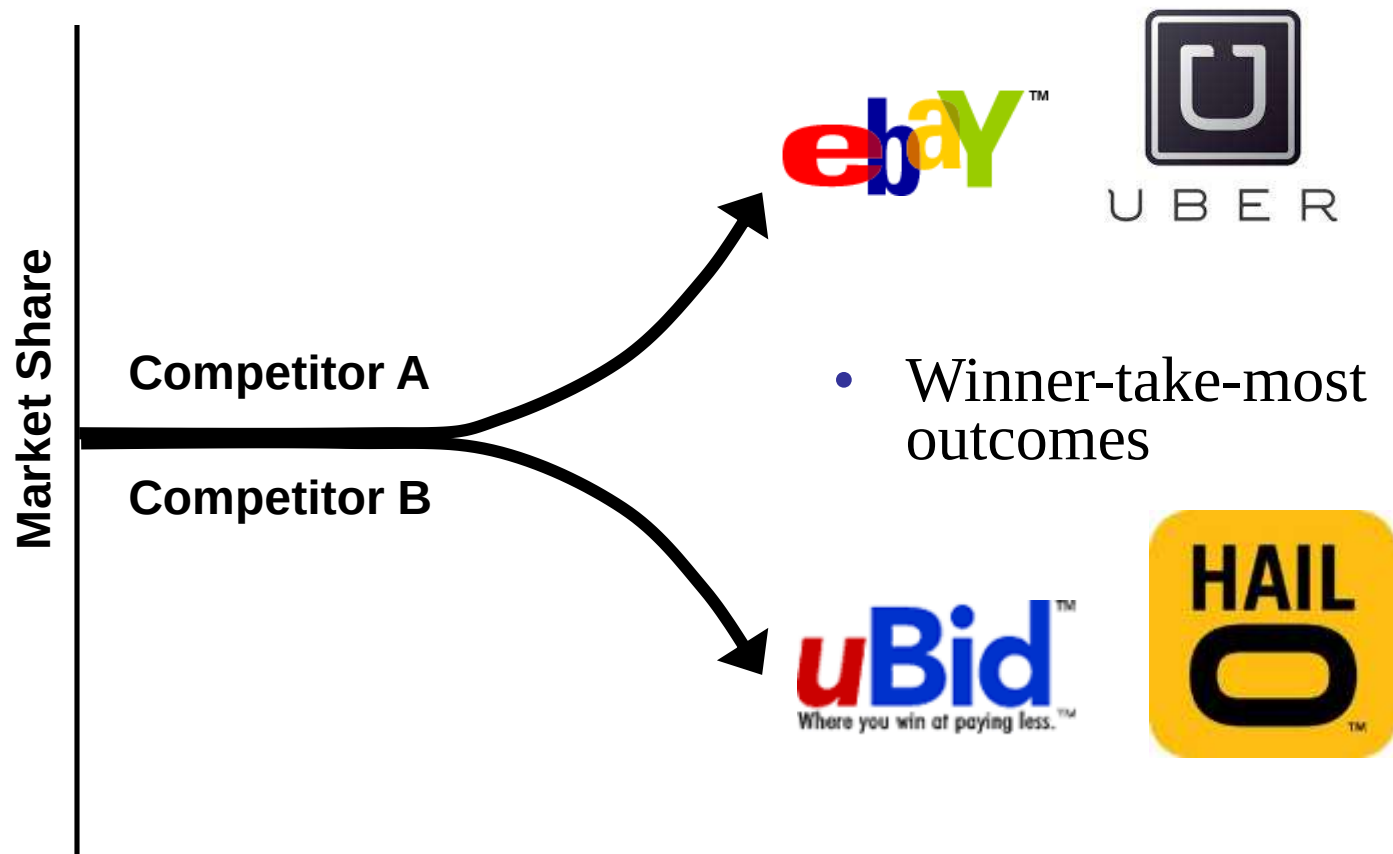
Critical Mass – Enough participation in a system such that its growth becomes self-sustaining. Often occurs when a product or service reach mass market.

Tipping Point – Point at which a new innovation achieves critical mass. Can occur through word of mouth, contagiousness, connectors & experts.



Network Formation

Tippy markets



Mechanism

- Adoption Threshold
 - Defined by how many other people must engage in an activity before a given individual joins
 - People are influenced by what others do
 - Adoption is more heavily influenced by adoption in a user's *personal* communication network than by *aggregate* adoption

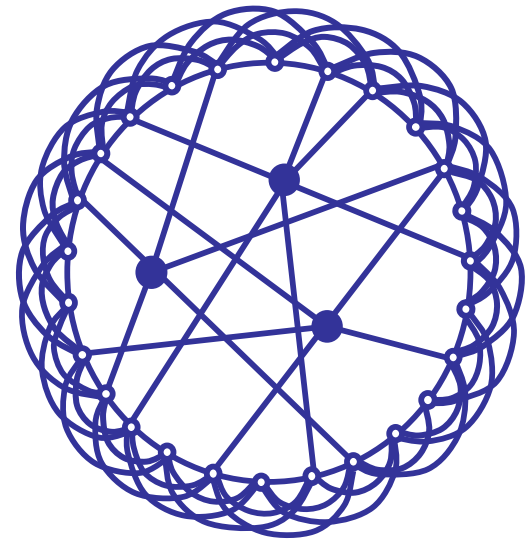
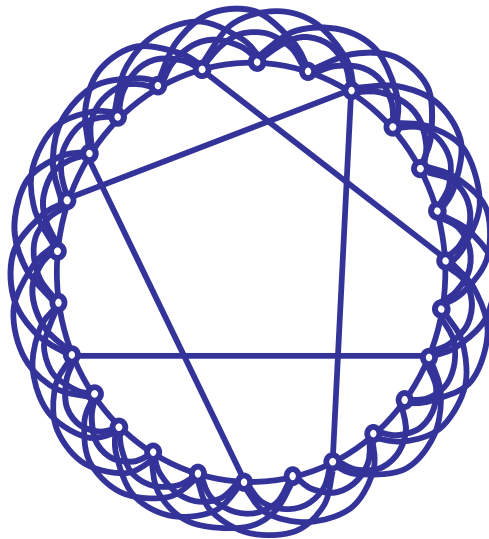
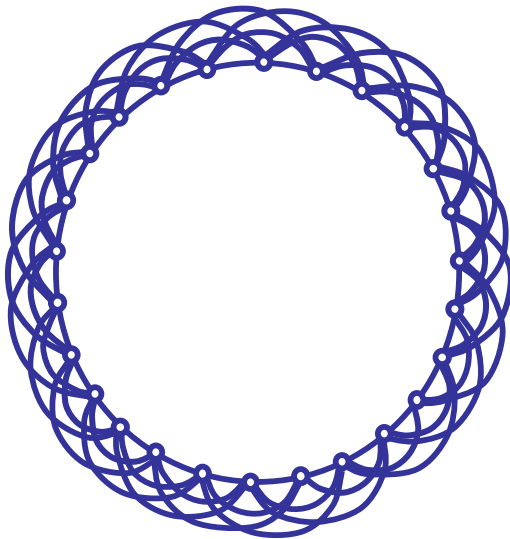
Mechanism

- Small World effect
 - “Six degrees of separation”
 - (Friendster, Kevin Bacon, aSmallWorld.net)
 - “Clustering” is the degree to which connections to one node also connect to one another. It’s the degree to which your friends are likely to know one another
 - A few random links between clustered groups *dramatically* reduces the degree of separation
 - With communications technology, this predicts fast network formation

Mechanics of Network Formation

Mechanism

- Small World effect



Behavior of Networks: Increasing Returns

Networks display Increasing Returns:

Increasing returns are the tendency for that which is ahead to get farther ahead, or for that which loses advantage to lose further advantage.

They are mechanisms of positive feedback that operate - within markets, businesses, and industries - to reinforce that which gains success or aggravate that which suffers loss.

Increasing returns generate not equilibrium but instability: If a product or a company or a technology—one of many competing in a market—gets ahead by chance or clever strategy, increasing returns can magnify this advantage, and the product or company or technology can go on to lock in the market.

A phenomenon where success (in a given market or technology) aids in further success.

(Ex. Positive Feedback: A company's reputation, a friend's review of a movie)

Behavior of Networks: Increasing Returns

Recall Network Effects?

They are an example of increasing returns in action, where the more participation in a given network increases the overall value of the network exponentially.



- (Bob) Metcalfe's Law: $\text{value} = n^2 - n$

Dependence on Initial Conditions - Particular path leading to dominance, dictated by initial choice / condition



QWERTY Steam vs. Internal Combustion

First Mover Advantage – Position of strength attained by getting to market first

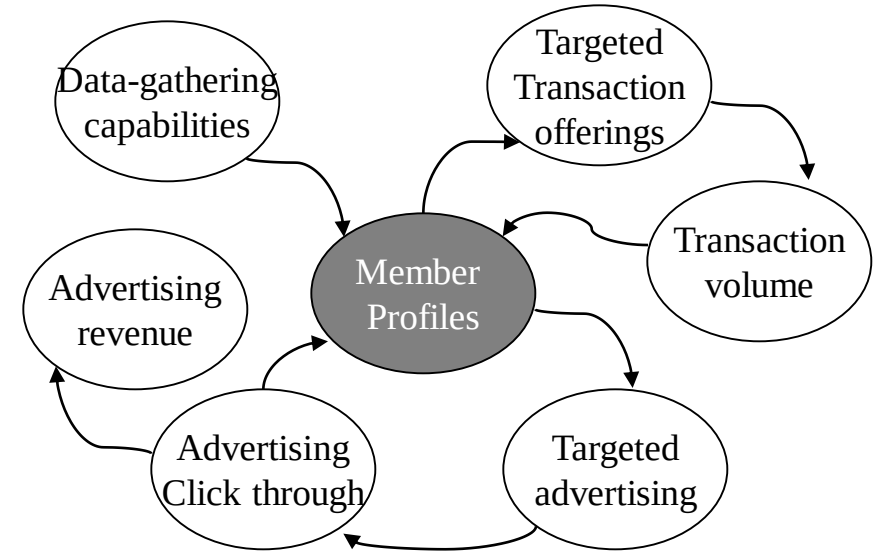
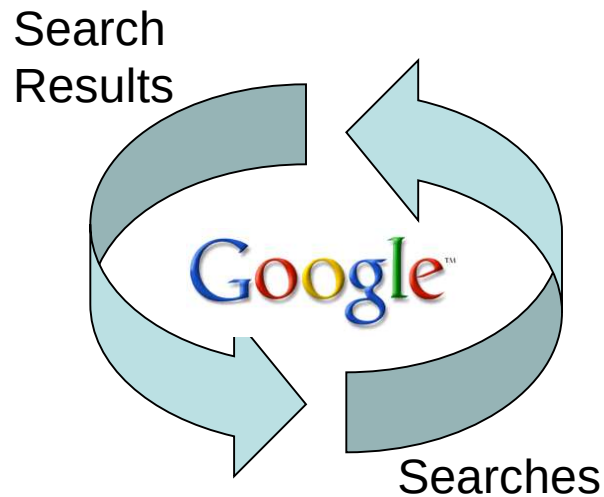


Microsoft

Behavior of Networks: Increasing Returns

Positive Feedback Loops

Participation in a system increases the value of the system (information)



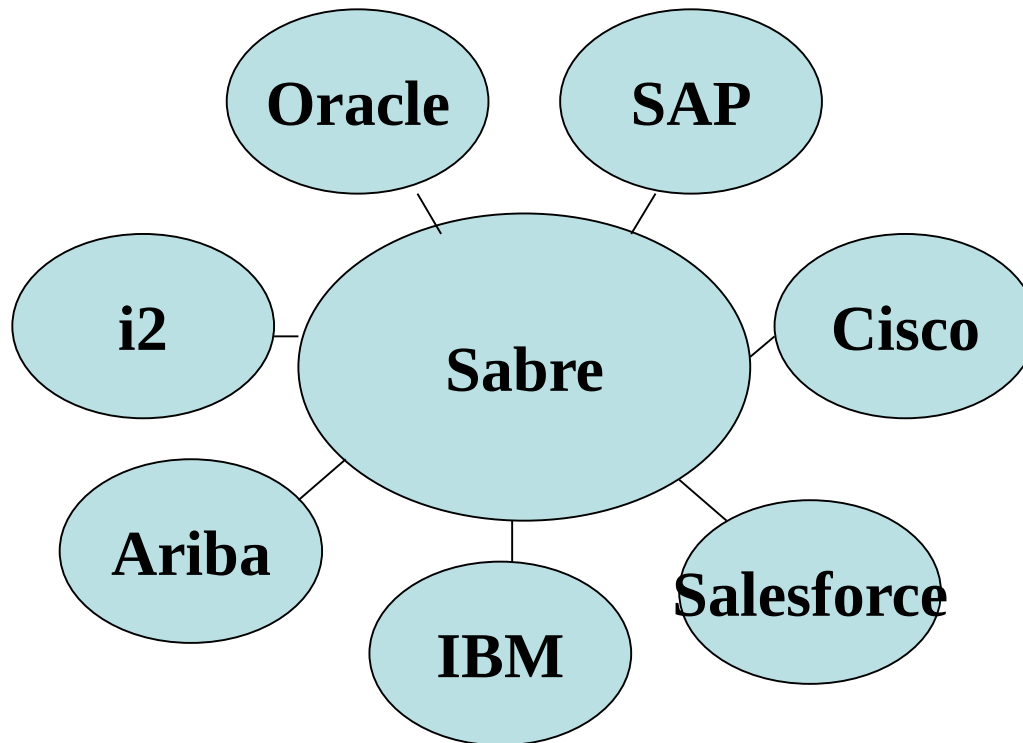
From original Google business plan

Conclusion

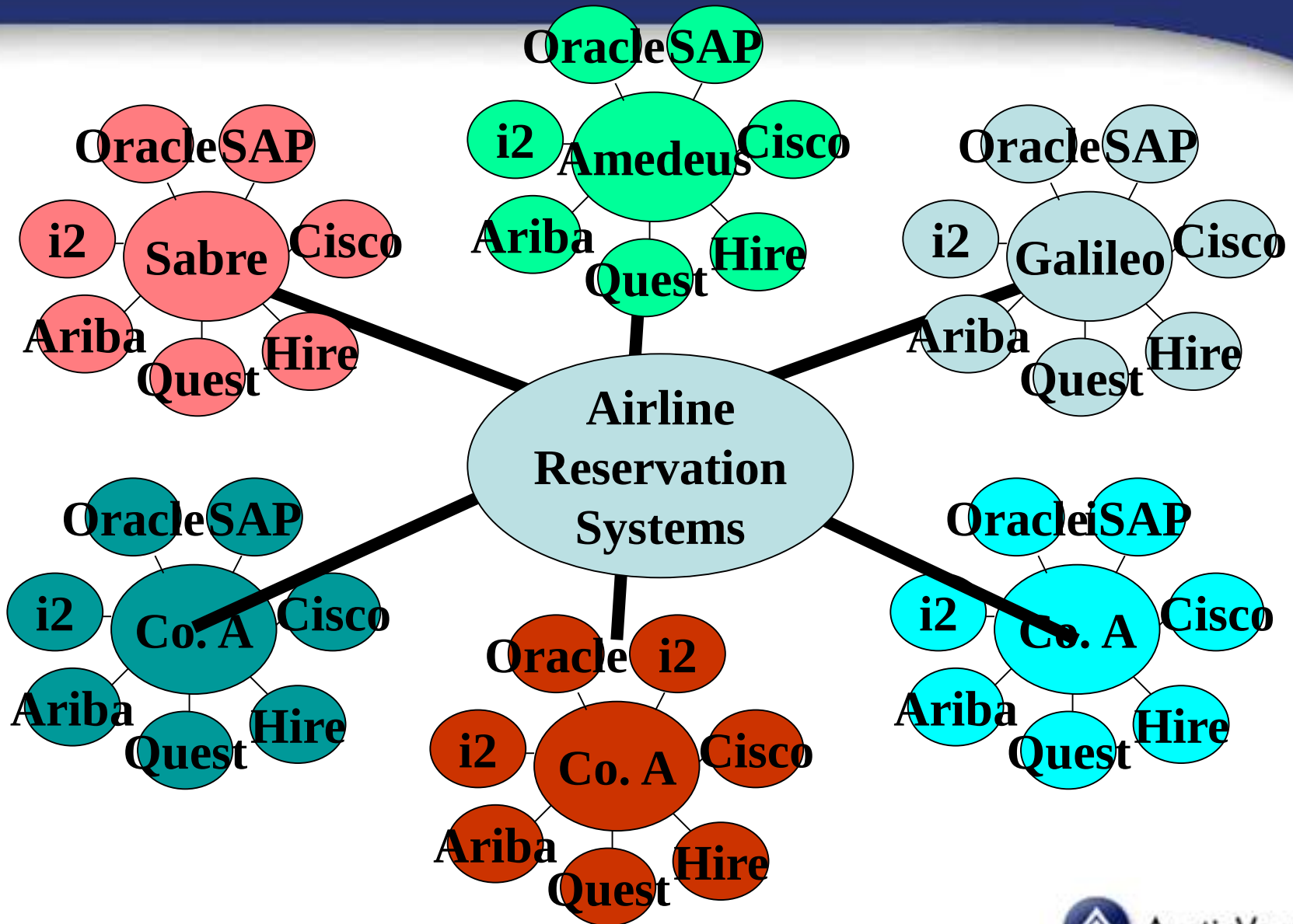
- Networks are, and will continue to be, a central part of the economic landscape.
- The network game is winner-take-most. There isn't much of a prize for second place.
- The economics for the companies that with network-based businesses are extraordinary.

Business Networks Are Everywhere

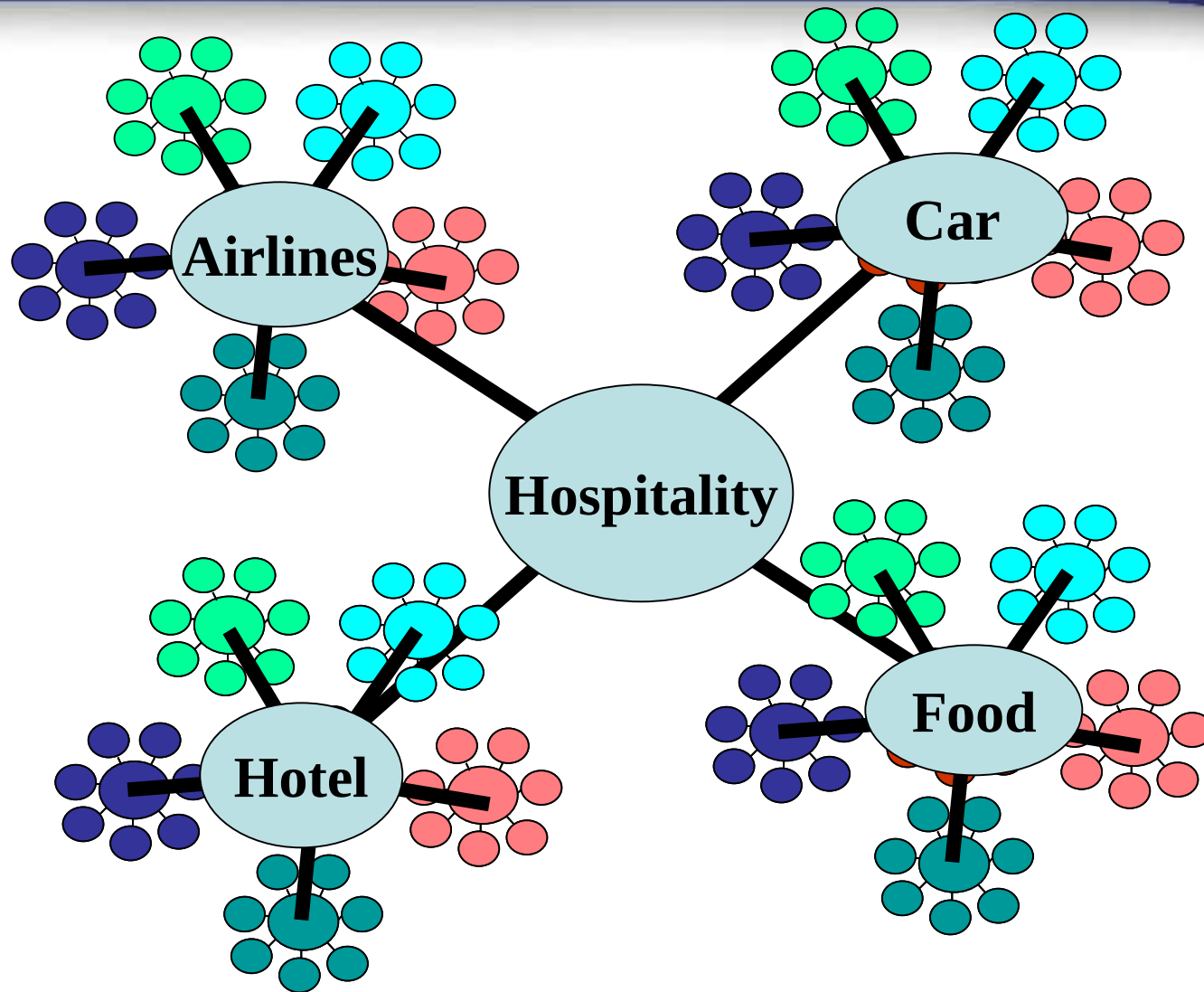
Travel Industry - Sabre's Network



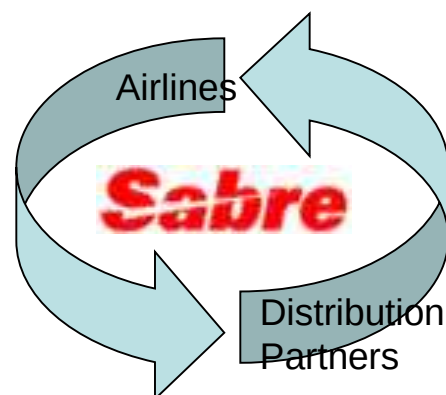
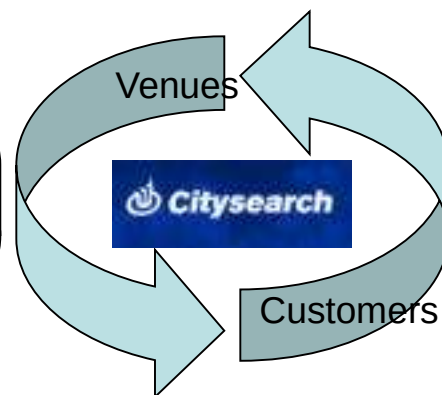
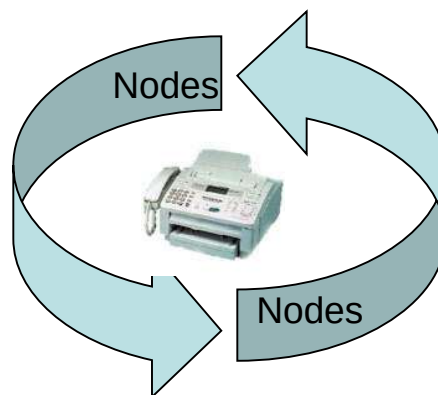
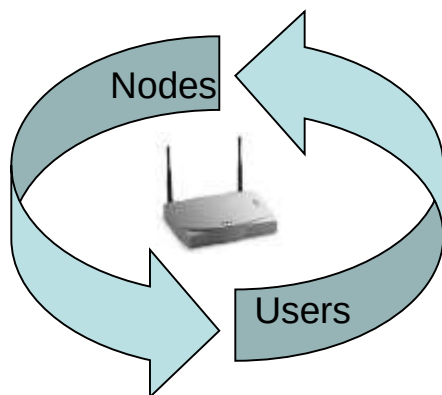
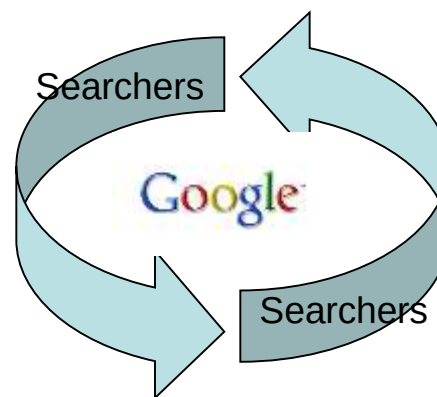
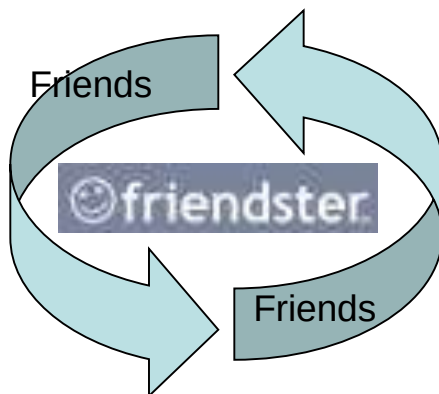
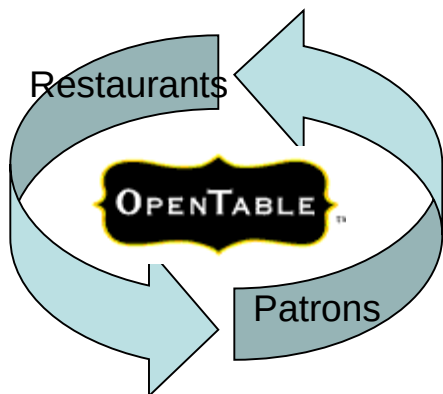
Network of Companies – Transportation



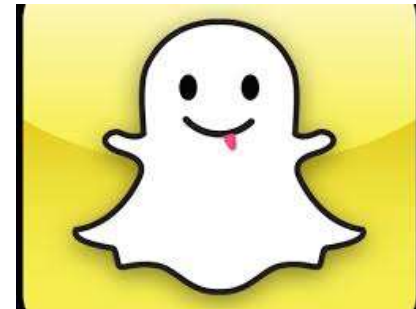
Interconnected Networks



Indeed...Networks are Everywhere



Consider How Many Networks are Constantly Forming..



Just Remember.....

GIBB - Beware of Good Idea, Bad Business.

Just because you have increasing returns, positive feedback loops, critical mass, etc...doesn't mean you have a great business, it could be a GIBB....

Just because you have a fast growing network, with increasing returns/networks effects and you've crossed the chasm...doesn't mean it will be worth a lot (e.g. Friendster).



You are here