Networks and standards

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Outline

- Networks and systems
- Role of standards
- Standards alliances
- Standards wars

- Information Rules also deals with other topics such as pricing, versioning, lock-in, rights management, antitrust, etc.

Network externalities

- A good exhibits network externalities if its value to a user depends on number of other users
  - fax machine
  - email
  - video player + content
  - smart card user + merchants

Intellectual history

- Jeff Rohlfs (1973), AT&T Picturephone
- Katz-Shapiro (1985), business strategy

- Synonyms
  - network effects
  - demand side economies of scale
  - Metcalfe’s law (1980), ethernet

- Web site:
  - http://raven.stern.nyu.edu/networks/

Economic implications

- Positive feedback
  - success breeds success
  - failure breeds failure
  - demand side + supply side economies of scale make positive feedback especially strong

Economic implications, cont

- Multiple outcomes possible
  - high-adoption equilibrium
  - low-adoption equilibrium

- Critical mass
  - need to get above critical mass for the “good” positive feedback to work
  - no one wants to be stranded
  - products that are expected to succeed will succeed
**Econ 101: Demand and Supply**

- Price
- Quantity
- Demand
- Supply
- Dynamic adjustment

**Econ 2001: Network effects**

- Price
- Quantity
- Demand
- Supply
- Dynamic adjustment

**Analysis**

- 3 places where Demand=Supply
  - high: where you want to be
  - zero: where you might be
  - middle: unstable
    - critical mass

**Gaining critical mass**

- Two main strategies
  - standards alliances
  - standards wars
- Examples
  - standards alliances: CD, DVD
  - war: Beta v VHS, 56K modem wars, DVD v Divx

**Standards alliances**

- Change nature of competition: compete in the market rather than for the market
- Larger network externalities mean
  - gains for consumers, complementors
  - (potential) losses for incumbents
  - reward to alliance, but rich prize to winner of a war
- Example: VCRs

**Fundamental equation**

- Value to you = your market share x total value of market
- Strategies affect terms differently
- Network externalities can make the second term very large
- So should be some division of rewards that makes all the players better off than they currently are (or hope to be?)
### Forms of alliances

- **Open**
  - Ethernet - DIX (or DIX3)
  - Adobe - language specs

- **Closed**
  - IBM and Xerox wrt rights management
  - Sony and Phillips wrt CDs

### Standards wars

- **Competition for the market**
- **Examples**
  - Edison v Westinghouse in AC/DC
    - “the killer app”
  - 3Com v Rockwell/Lucent in 56 kbs modems
    - digital telephony (GSM, TDMA, CDMA)
    - licensing

### Strategies

- **Expectations management**
  - 56 kbs modem: ads for market share

- **Adapters and compatibility**
  - assurances for early adopters (modem wars)

- **Pre-emption**
  - danger: rapid technological change
    - Japan and HDTV
  - vaporware can be dangerous
    - Osborne, Intel

### Rival standards wars

- **There might be no winner**
- **Examples**
  - modem wars: truce
  - AM stereo: failure

- **Role of 3rd party arbiters**
  - DVD read and Hollywood
  - DVD write
  - Smart cards in Europe, campuses

### Summary

- “Give peace a chance”
  - alliances are usually better than wars, unless you have overwhelming advantage

- Third parties can help

- Deal from strength

- Exploit the network externalities

### Information Rules

- A Strategic Guide to the Network Economy
  - co-authored with Carl Shapiro, Haas School of Business
  - http://www.inforules.com
Information Rules