CPSC156a: The Internet Co-Evolution of Technology and Society

Lecture 6: September 23, 2003

Introduction to Internet-based Business

Terminology (1)

Electronic commerce is a set of technologies, applications, and business processes that link business, consumers, and communities

- For buying, selling, and delivering products and services
- For integrating and optimizing processes within and between participant entities

Terminology (2)

- Information is anything that can be digitized, *i.e.*, encoded as bits. Examples include books, magazines, movies, music, web pages, software, and databases.
- Information industries are those that produce information goods and/or deliver information services.
- Networked industries are those that rely on customers' interaction. Networks can be real (as in the telecomm industry) or virtual (as in the PC-software industry).

The Internet is "an Interesting and Productive Forum" for Business

- Netscape
- Napster
- LimeWire
- KaZaa
- Amazon
- bn.com (Barnes & Noble)
- VeriSign
? Covisint
- eBay
- Google
- Yahoo
- AOL
- MSN (Microsoft)

The Internet is *Not* a Miraculous Forum for Business

In CPSC155b (Spr '01), but not in CPSC156a: Intertrust, Exodus, Ariba, OpenMarket, Pets.com,…

Still in, but for historical interest: Netscape and Napster

"The Internet Boom": c. 1997 – c. 2001

Existing Business Models for Information Products

- **Fee models**: Subscription purchase, Single-transaction purchase, Single-transaction license, Serial-transaction license, Site license, Payment per electronic use
- **Advertising models**: Combined subscription and advertising income, Advertising income only
- **"Free" distribution models**: Free distribution (no hidden motives), Free samples (*e.g.*, coming attractions), Free first version, Free information when you buy something else (complementary products, bundling)

Less Traditional Business Models for Information Products

- **Extreme customization**: Make the product so personal that few people other than the purchaser would want it.
- Provide a **large product in small pieces**, making it easy to browse but difficult to get in its entirety.
- **Give away digital content** because it **complements** (and increases demand for) the traditional product.
- Give away the product, **sell the service contract.**
- Allow free distribution of the product but **request payment** (Shareware).
- Position the product for **low-priced, mass market distribution.**

Network Effects

- A product or service exhibits network effects if its value to any single user is strongly positively correlated with the total number of users. Communication products and services are prime examples.
- Network-effected products and services exhibit long lead times followed by explosive growth. Example: Fax invented in 1843, offered by AT&T in 1925, and widely adopted in 1980s.
- "Network-effected" ≠ "mass-market"

* Network effects cut both ways!

Lock-in and Switching Costs

- Information industries often involve systems of interoperating components and durable complementary assets. Prime examples are Intel processors, Windows PC Platform, and numerous PC application programs.
- Often leads to technology lock-in and high switching costs
- Modular architectures and open standards are mitigating forces.
- "Network effects" ≠ "Strong lock-in"
- "High market share" ≠ "High switching costs"

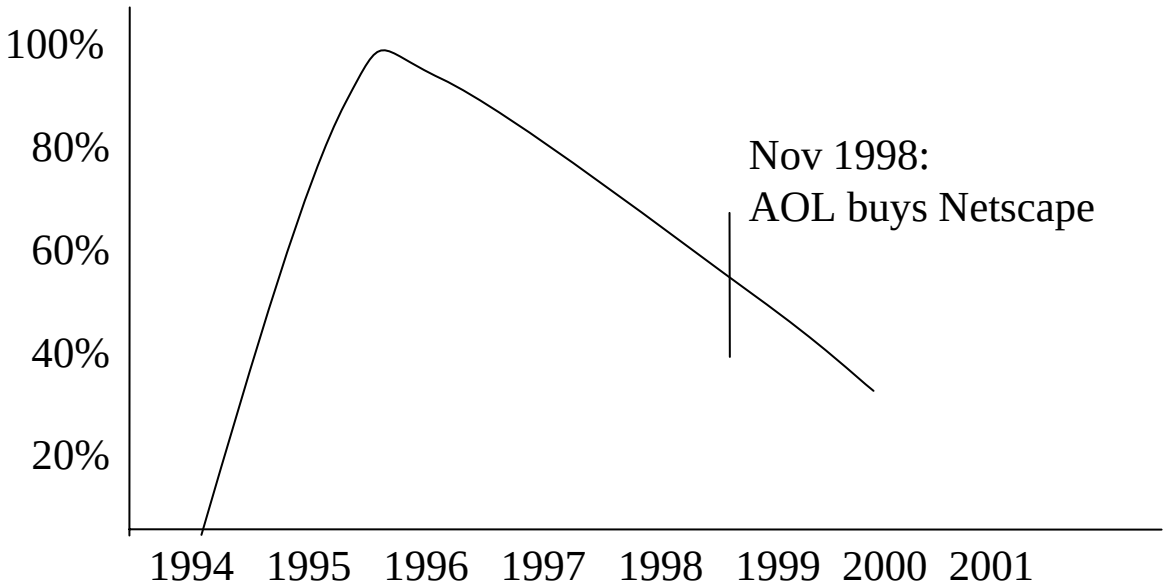
Discussion Points

- Have *you* been forced by network effects and systems effects to pay high switching costs?
- Do information industries have too much power over consumers?
- Note failed attempts to force switching: Quadraphonic sound, Picture Phones, DAT, DRMS-delivered MP3s,…
- Note upcoming attempt: "Trusted systems"

Textbook Case: Netscape

- **Late 1990:** WWW, HTTP, HTML, "Browser" invented by Tim Berners-Lee
- **Mid-1994:** Mosaic Communications founded (later renamed to Netscape Communications)
- **Summer of 1995:** Market share 80%+
- **August 1995:** Windows 95 released with Internet Explorer
- **January 1998:** Netscape announced that its browser would thereafter be **free;** the development of the browser would move to an **open-source** process.

Estimated Market Share of Netscape



NOTE: data are from different sources and not exact

Perfectly Captures the *Essence* of Internet Business

- Enormous power of Internet architecture and ethos (*e.g.*, layering, "stupid network," open standards)
- Must bring new technology to market quickly to build market share
- Internet *is* the distribution channel.
  - First via FTP, then via HTTP (using Netscape!)
  - Downloadable version available free and CD version sold

Uses Many "Information Business Models"

(esp. those that involve making money by "giving away" an information product)

Complementary products (esp. server code)

- Bundling
  - Communicator includes browser, email tool, collaboration tool, calendar and scheduling tool, *etc.* One "learning curve," integration, compatibility, *etc.*
- Usage monitoring
  - Data mining, strategic alliances
  - "Installed base" ≠ "Active installed base"

Browser as "Soul of the Internet"

- "New layer" (Note Internet architectural triumph!)
- Portal business
  - Early "electronic marketplace"
  - Necessity of strategic alliances
  - "Positive transfers" to customers
- (Temporarily?) Killed R&D efforts in user interfaces

Pluses and Minuses of Network Effects

+ Initial "Metcalf's Law"- based boom
+ Initial boom accelerated by bundling, complementary products, etc.
- Network effects $\neq$ strong lock in
  high market share $\neq$ high switching costs
- Network effects are strong for "browser" but weak for any particular browser.

Exposed the True Nature of Microsoft

- 1995: Navigator released; MS rushes IE to market.
- 1996: Version 3.0 of IE no longer technically inferior ("Openness" and standardization begets commoditization.)
- MS exploits advantage with strategic allies (Windows!).
  - Contracts with ISPs to make IE the default
  - Incents OEMs not to load Netscape products
  - Exclusive access to premium content (from, *e.g.*, Star Trek)
- 1998: MS halts browser-based version of these "strategies" under DoJ scrutiny of its contracts with ISPs.

Internet-ERA Anti-Trust Questions are Still Open

- Can consumers benefit from full integration of browser and OS?
- How to prevent "pre-emptive strikes" on potential competitors in the Windows-monopoly universe?
  - ("post-desktop era" technical Solution?)
- Remember: DoJ case was <u>not</u> about protecting Netscape!