NBA 600
Digital Goods
Class 5, Wed 10/31
(originally Mon 10/29)

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Administrative

- Project proposals due
- Quiz 1 graded
- Short paper assignment, due 11/14
  - Originally due 11/12
- Make-up class session
  - Tuesday Nov 6?

Quiz 1 Main Points

- Fedex and Internet
  - At first enabled them to broaden their strategy of sharing info with customers to retail arena, replacing lost document shipping business
  - Then became easier for competitors to copy because unique private network no longer advantage
- Metcalfe's law
  - For n nodes value is n^2-n, or proportional to number of links rather than nodes

Quiz 1 Cont'd

- Walmart use of IT
  - Spend where it is strategic, and tightly manage costs everywhere else
  - Strategic in supply chain because with their scale they can lock-in suppliers in ways competitors cannot
- Power law vs. normal distribution
  - Normal distribution, majority near middle
  - Power law distribution, vast majority at extreme (low end)

Information Goods

- What are information goods?
  - Text: books, periodicals
  - Images: photos, movies
  - Sound: music
  - Structured data: directories
- Also often called digital goods
- Distinguishing goods from services
  - Distributed to the consumer versus provided per interaction
  - Web search, Tivo?

Economics of Information Goods

- Producing first copy is generally sunk cost
  - Not recoverable if production halted
    - In contrast, for other capital investment can often recover some costs by selling
- If additional copies are cheap for anyone to produce then hard to recover cost
  - Physical copies provide some barriers
    - Centralized facilities (e.g., presses)
    - Degradation of (analog) copies
- Information goods are experiential
  - Need to expose customers to build market

Contradictions of Information Goods

- Natural to want to protect such goods against copying
  - Marginal cost of producing additional copy is small
    - Near zero for digital network distribution
    - Regardless of number of copies
  - Control who can make copies (supply) to make business profitable
- But can conflict with need to distribute widely to encourage sales via experience
  - E.g., music business, payment for radio play

Some Cautionary Tales

- Content that is relatively easy for anyone to re-create from scratch
  - E.g., listings, directories
- Content that is more difficult to create
  - Substitutes – understanding why people buy
    - E.g., Encarta (CD) vs. Britannica (print)
    - What acts as substitute
  - Illicit copying
    - E.g., Music, movies
    - Protection vs. customer convenience
    - Exposure/experience

NYNEX and Directory Listings

- 1986 NYNEX CD of NY area phone listings
  - Sold for $10k a copy
- Executive saw big opportunity, started own firm – Pro CD
  - NYNEX refused to grant license
  - Hired low paid workers to type all entries in
  - Sold CD's for hundreds of dollars each
- Others saw profit opportunity
  - Low barrier to entry
  - More suppliers than demand, with sunk costs
    - Quickly drove price to marginal cost – near zero

Encyclopedia Britannica

- Barriers to entry in late 1980's
  - High: lots of work required to create content
    - Creative work protected by copyright
- CD encyclopedias appeared in early '90's
  - Microsoft purchased third rate Funk & Wagnall to create Encarta in 1992
  - Sold for around $70
  - Printed copies sold for $1500-$2200 a set
    - In 1990 generated about $650M revenue
- Britannica viewed these as "toys"
  - But consumers used them as substitutes

Britannica's Fall

- Revenue fell by over half in a few years
  - Clear that CD's were serious threat
- Management did little – classic case of?
  - Channel conflict: sales force remained powerful
    - CD's would not generate $100's in commissions
    - Offered CD as supplement to printed version
    - Sold CD alone for $1,000, but no buyers
- In 1996 company was sold
  - Now offers CD as well as online service
    - Superior quality allows price premium over competitors, but price only about $50/copy

What was Britannica Selling?

- Parental fears of not providing best for their students
  - Own studies showed encyclopedia use was low after initial novelty
- Did PC's become substitute for parents "doing best for their child"?
  - Similar price points in 1990's
    - Now considerably lower
- Encyclopedia CD just one of many added bonuses to PC?

Change in Encyclopedia Industry

- Total revenue now fraction of 1990
- What if Britannica had aggressively competed with $100 CD product?
  - "Defensive" introduction
    - Vs. $70 for lower quality Encarta
  - Better yet led the way
    - Before Microsoft bought Funk & Wagnall
- Are CD encyclopedias following print?
  - Largely given away
  - To what degree is Web search a replacement?

Versioning Information Goods

- Multiple versions priced for different segments of the market
  - Long pre-dates digital era, but now more opportunities for versioning
- Distinguished by content or packaging
  - Common for many goods, not just information
- Differences between versions
  - Features or functionality
  - Delaying introduction
    - Hardcover then later paperback books
    - Film release, then video, then television

More on Versioning

- Uses of reverse delay
  - NYT audience prefers to read printed version and to search online
    - So charge for search but not reading online
  - In contrast to WSJ which charges for all online access
    - Differences in audience and content from NYT
- Reduced value versions
  - With digital content often can degrade value
    - Less features, lower resolution, slower
    - Sometimes lower value has higher production cost, e.g, Wolfram research

Number of Versions

- Usually have at least three for software
  - Low-priced: focus on price over functionality
    - E.g., personal, essentials,
  - Mid-priced: balance of two
  - High-priced: for those who want all functions
    - E.g., professional
- Majority will avoid extremes
  - With three choices about half generally buy mid-priced version
  - Example: Quicken (name inflation)
    - Deluxe, Premier, Home & Business

Logic of Free Version

- For physical goods, generally too expensive to give away for free
  - Marginal cost is not low
- For digital goods, marginal cost near zero and experience important
  - Build interest and market by giving away
- Free versions (or cheaper ones)
  - Limited functionality or time period
  - No support
  - Limited use: personal or educational only

Strategic Uses of Free Version

- Building awareness – "advertising"
  - E.g., demo games with limited levels
- Gaining follow-on service/support sales
  - E.g., Linux companies, McAfee
- Creating network (critical mass of users)
  - E.g., Adobe PDF no value until widely used
- Attracting audience
  - Advertising model
- Gaining competitive advantage
  - E.g., IE over Netscape

Generality of Limited Use Versions

- Works less well for consumer than corporate goods
  - Individuals harder to police than companies
- Software copy protection abandoned in 1980's recently was tried again
  - E.g., Intuit Turbotax
    - Considerable negative reaction from customers
  - Important to understand goal of protection
    - Generally can be circumvented by experts
    - Limiting casual sharing – hard to distinguish legitimate and illegitimate uses

In the Internet Age

- Effect of Internet on digital goods
  - Cheap (at least marginal cost) distribution not only production
    - E.g., copying a CD vs. downloading a file
  - Larger opportunity to cheaply reach potential audience
    - E.g., no payment for access to limited radio stations
  - Potential increased ease-of-use for consumers
    - Remote sharing (online communities)
    - Multiple devices

Understanding Value of Digital Goods

- Digital goods largely used for activities that are hard to measure
  - Entertainment
  - Communication
  - Education
- Leisure activities may often substitute for one another
  - E.g., video games vs. tv, cell phones vs. music
- Particularly important to characterize true source of value

Goods vs. Services

- Some information well suited to being provided as a service
- Can be less susceptible to unwanted copying
  - Consumer/user must interact with provider
  - E.g., software as service, Salesforce.com
- Potential difficulties moving to service models only to protect content
  - Some things consumers expect to "own"
  - E.g., music services versus own copies

Next Time

- Music industry, video industry (movies and tv)