

E-Commerce: Doing Business on the Internet

(The Co-Evolution of Technology and Business)

CPSC 155b, Spring 2003

T, Th: 1-2:15 pm

<http://zoo.cs.yale.edu/classes/cs155>

Overview

- Introduction to electronic commerce
- Emphasis on Internet business
- Underlying technological developments
- Business models
- Legal, social, and political implications

Partial Outline

- Internet Basics
- Digital Copyright
- Web Searching
- Privacy, Values-Sensitive Design, and Other Policy Issues
- B2C, B2B, and C2C
Technologies and Companies

Examples of Technological Developments

- Mass-market computing and networking
- World Wide Web
- Digital music, images, text, etc.
- "Search" and other massive-scale data processing
- "Strong" cryptography

Examples of Business Developments

- New ways to conduct old business
 - New companies
 - New capabilities for old companies
 - Death of some old companies
 - "Empowered consumers" ??
- New types of business
- (Qualitatively more) massive scale
- Internet boom and bust

Examples of Conflicts

- Privacy vs. efficiency
- Anonymity vs. accountability
- Commerce vs. law enforcement
- Standardization vs. innovation
- Global technology vs. local expectations

Schedule

Jan. 28: First HW Assignment Due

Feb. 18: Second HW Assignment Due

Feb. 27: First Exam

Mar. 6: Third HW Assignment Due

Apr. 1: Fourth HW Assignment Due

Apr. 15: Fifth HW Assignment Due

Apr. 24: Second Exam

Requirements

- Reading assignments
(approx. 50-75 pages/week)
 - Material available online will be posted on the course web page, with a limited number of copies available outside the TA's office.
 - Material available only in print form will be distributed in class or assigned from the textbook.
- 5 written HW assignments (10% each)
 - Available one week before due date
- 2 in-class hour exams (25% each)

Textbook

Trust and Risk in Internet Commerce,
L. Jean Camp (MIT Press, 2000).

This book is on reserve in the Engineering and Applied Science Library (Becton Center, 15 Prospect Street).

Contains readings on:

- How the Internet works
- Privacy and protection mechanisms
- Electronic business transactions

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Thurs 11am-12 noon

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Note: Do not send e-mail to Professor Feigenbaum, who suffers from RSI. Contact her through Ms. Paige or the TA.

TA: Vijay Ramachandran

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Office Hours:

Mondays and Wednesdays

3pm-4pm

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Previous Renditions of CS155

Spring 2001:

<http://www.cs.yale.edu/~jf/cs155.html>

Fall 2001:

<http://zoo.cs.yale.edu/classes/cs155/fall01>

Old course material is available from the websites listed above. The class will be slightly different this semester; use the above for background information only.

Rules and Guidelines

- Deadlines are firm. Dean's excuses are needed for all make-up exams or late homeworks. Hand them in promptly.
- You are responsible for all content of lectures and the class webpage.
- No "collaboration" on homeworks.
- Pick up your graded homeworks and exams promptly, and tell the TA immediately if one is missing.

Questions?

Telephone Network

- Connection-based
- Admission control
- Intelligence is "in the network"
- Traffic carried by relatively few, "well-known" communications companies

Internet

- Packet-based
- Best effort
- Intelligence is "at the endpoints"
- Traffic carried by many routers, operated by a changing set of "unknown" parties

Business Question:

How to price Internet service?

Technical and Business Question(s):

How to provide different QoS levels and how to charge for them?

Technical, Business, and Policy Question:

Does "intelligence at the endpoints" make sense for a mass-market public infrastructure?

Shift to Internet Causes

- Changes in existing businesses
(e.g., telepresence)
- New ways to do old kinds of business
(e.g., WWW-based retail)
- New kinds of businesses
(e.g., portal companies)

As an infrastructure for communication, business, and almost all forms of human interaction, the Internet is new, rapidly changing, and inherently less manageable and controllable than older infrastructures.

Leads to questions about:

- Privacy
- Authenticity
- Accountability
- Jurisdiction

Co-Evolution of Technology and Business*

- "Information Economy"
- Network Effects
- Open-Source Movement
- Internet-Architectural Principle of "Layering"

* Robert Glushko, CommerceOne

Changes in the Technology and the Economics of Publishing

- Computers and Digital Documents
- WWW-based Publication
- Internet Distribution

Technical Question:

Is copying, modification, and redistribution of copyrighted material now uncontrollable?

Business Question:

Is it possible to make money distributing copyrighted material (e.g., popular music) over the Internet?

Technical and Business Questions

To what extent do encryption, digital signature, and other well understood security technologies make Internet content distribution manageable and profitable?

- What other technology is needed?
- What is the role of "circumvention" in effective development and deployment of relevant technology?

Technical, Business, and Legal Questions

- Is current copyright law technically feasible to implement and deploy on the Internet?
 - "copy-centric"
 - "fair use is a defense, not a right"
 - DMCA / CBDTPA
- To what extent is copyright compliance monitorable? To what extent should it be monitored?

WWW Searching

Technical Question: How to do it?
(short answer: Linear Algebra)

Business Questions:

How to make a business out of it?
What is the role of advertising?

Legal and Ethical Question:

What conclusions should be drawn about people (by, e.g., gov't, employers, insurance companies...) based on what they search for and what they find (a "TIA" question)?

WWW-Based, B2C Retail

Business Question: What to sell?

Business and Technical Question:

How and to what extent to capture and use customer information?

- Massive scale
- Variable quality
- Numerous formats and intermediaries

Business and Technical Question:

How feasible and effective is online advertising?

Business, Legal, and Ethical Questions:

Who owns transaction data? To whom can it legally be sold? What can legally be done with it?

Technical and Business Question:

Is there an inherent tradeoff between personalization/efficiency and privacy?
(a "cookie" question)

WWW-Based, B2B “Exchanges”

Economics and **CS** Challenge:

Market Design

Technical, **Business**, and **Legal** Question:

Do “industry-sponsored” electronic market places promote monopoly and monopsony?

Technical Challenge: XML and other language-design questions

Company Studies

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

Reading Assignment For January 16

- Chapter 1 of Information Rules, Shapiro and Varian, Harvard Business School Press, 1999 (Print form only)
- Executive Summary of The Digital Dilemma, National Research Council, 2000 (http://books.nas.edu/html/digital_dilemma/)
- "The Myth of Internet Time," Andrew Odlyzko, 2001 (<http://www.dtc.umn.edu/~odlyzko/doc/internet.time.myth.txt>)