

22:010:622

Internet Technology and E-Business

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INTRODUCTIONS

- Name
- Rutgers ID #
- Home Town or Country
- Undergraduate Degree and School
- Work Experience
 - * Firm
 - * Job
- Computer Skills: Internet Skills
- Hobbies and Interests

BLACKBOARD

- gillett@everest.rutgers.edu
- www.rci.rutgers.edu/~gillett
- www.fom.rutgers.edu
- Login
- prg622-60_03
- Course Information
- Announcements
- Discussion Boards
- Etc.

SYLLABUS

- Memorandum
- Contact Information
- Description
- Grading
- Assignments
- Participation
- Examinations
- BlackBoard
- Academic Integrity
- Withdrawal Policy
- University Closings
- About the Instructor

TIMETABLE

- Preliminary at this stage
- Shows
 - * *Dates*
 - * *Topics*
 - * *Readings*
 - * *Deliverables!*

Group Discussions

- What is the Internet?
- What is Electronic Commerce?

OVERVIEW

- The E-Commerce and Telecom Revolution
- Analog v. Digital, modems, LANs
- Some History and Perspective
- Business and Technology

Technologies and Change

- Steam Engine and Industrial Revolution
- Telegraph and Telephone
- Internal Combustion Engine and the Car
- Antibiotics and DNA
- Motion Picture and TV
- Computer and Information Age and the Internet

Business Effects?

- Industrial revolution and Robber Barons
- Cars and Henry Ford's pay scales, unions, etc., suburbs and highways, trucks and trains
- Medicine and longevity
- Entertainment and Hollywood
- Silicon Valley and the computer

IT increasing Productivity

- Alan Greenspan
- Leverage of computer power
 - * Mundane tasks: adding up POS data
 - * Complex tasks: accounting, marketing, manufacturing, presentations
- Communication: email, video and telephone
- Automation: parts of the whole business process
- New industries: Web and computer industries

Key Business Issues

■ B2B and B2C

■ Marketing

- * Direct

- * Data

- * Instantaneous

■ Logistics

- * Buyer and Seller Efficiency

- * Tracking, Inventory Management, etc.

Effects of the Internet

■ Business Exposure

- * 24/7

- * Global

■ Cost Efficiencies

- * Logistics

■ More (accurate?) direct marketing

■ Higher hurdle to enter business?

■ Small specialists distributed globally

Internet's Other Possible Effects

■ Shorter work week?

- * Yes: leverage gets more value per hour
- * No: increased competition from around the world

■ More educated society?

- * Yes: focus on high level issues
- * No: once you fall behind, then it's over

■ If there is a dot-com stock collapse?

- * Slow advances and scarce funding
- * IT unemployment

Circuit and Packet Switching

- Classical Phone: Circuit Switching
 - * Analogue
 - * Complete and keep a single circuit
- Packet Switching:
 - * Digital
 - * Dynamically routes 'packets'
- Why Digital vs. Analogue?
- Morse Code and check-sums
- How does cost play a role?

Ubiquitous Access and the Telephone

- Connecting everyone
- Analogue (current proportional to sound)
- Distortion and noise
- Digital enabled by the transistor
- Error checking to maintain integrity
- Can “chop up” digital signals
- A-to-D and D-to-A

Modern Communication

- Modems: Modulating and Demodulating
- ASCII character set (and others)
- Digital and fiber optics
- Interference and capacity
- Parity bits (recall check-sums)
- 010101 parity = 0 (odd number of 1s)

LANs and WANs

- Ethernet and LANs “in the same building”
- Ethernet works on probabilistic methods
 - * Send and listen, with repeat randomly timed re-tries
- Xerox PARC (see also Windows and Allen Kay)
- Hub: interconnects LAN computers
- WANs: Wide Area Networks

Internet Key Protocols: TCP/IP

- TCP: Transmission Control Protocol
- IP: Internet Protocol
- Arpanet and the Backbone starting in 1982 and 1983
- Open System: RFCs from ARPA
 - * Why might some industries like closed systems?
- Many protocols build on TCP/IP
 - * Sendmail
 - * ftp and telnet

Related Issues and Paradigms

- Unix, AT&T Bell Labs and U.C. Berkeley
 - * Open system
 - * Integrated TCP/IP
- Microsoft: closed systems
- Netscape and IE wars
- NSF Net 1985 and CSNet, and much earlier: Bitnet
- IAB: Internet Architecture Board

More Internet Details

- NFS' proposal to make the Internet for Firms: 1987
- IBM, MCI and Merit (Michigan School System) formed ANS: Advanced Networking Services (non-profit)
- 1992 ANSNET build new WAN backbone 30x capacity of pre-92 Internet
- vBNS (research backbone)
- 1997 there were 179 countries on the Internet
- In 1999 a computer was added to the Internet every second

Business Aspects

■ Email

- * Concise
- * Quick
- * Globally Accessible
- * Complex Files

■ Interfaces to more general business issues in firms

Packet Switching

■ Why Computer Networks?

- * Sharing resources, transmission links, super computers, printers, etc.
- * Failsafe

■ Methods of Sharing

- * Taking turns
- * Pumping packets
- * Packets must be labeled

Reality Check

- Internet Growth: Myth and Reality by A. Odlyzko
 - * Internet traffic actually seems to be increasing by 100% per year, not by 300 or 400%
 - * Internet traffic is “bursty” - different from voice traffic
- Moore’s Law - Internet Version? 100% per year
- Voice Networks grow about 10% per year
- Cellular Grow 30 to 40% per year
- Private Network Traffic: 20-30% in 1980s and 30-40% in the 1990s
- Pentium IIIs are idle 99% of the time
 - * But they have “low transaction latency”

Reality Check

- Focus growth on simplicity
- Amortize costs properly
- Watch out for spikes in use that mislead
- What is ahead?
 - * Rich media
 - * Integration
 - * How much can this grow?

Assignments for Class 2

- Look up: T1 and OC3
- Discover whatever you can about DoCoMo using the World Wide Web