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
- prg622-40_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-trys
- 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
- Prepare an 8-10 minute presentation:
  - Introducing yourself
  - Discussing your interests in this course and your pre-existing skill set
  - Demonstrating one or more Web Sites, e.g.:
    - Personal Web Site
    - Business Web Site
    - A site you have found especially interesting or valuable