Class Announcements

- Reading for next time
  - Cisco Case

- Assignment 2 due Monday 4/20

- Folio 1 due Monday 4/27

- Business Paper Proposal Due in 1 week - Wednesday 4/22!
Class Announcements

- Project proposals due in 7 days!!
  - 1-2 pages
  - Give a plan describing what you will do
  - Cite some references, and show that you have started your research!

- Speakers next class
  - 4/20 Daniel Meconitas (Cisco Case)
  - 4/22 Juliana Hyun (Alibris Case)
  - ...only three slots left to fill!!
THE DECLINE IN AMERICAN BROADCASTING
1. “The Not So Big Four” 
*The Economist* print edition
April 8, 2009
The Economist: 

2. “Beyond the 30 second spot” 
Source: ANA/ Forrester
March 22, 2006
Marketing Today: 
http://www.marketingtoday.com/research/0306/tv_advertising_less_effective.htm
The Big Four Television Networks

- ABC
- FOX
- CBS
- NBC
Main Ideas

1. “Broadcast television is declining at an accelerating rate”
2. Most advertisers are spending their budget on web advertising vs. TV advertising
3. Networks commissioning fewer pilot shows
The Decline

It is no surprise that less people are watching national broadcast television. Now there are more options to view shows, such as dish, cable, etc which offers hundreds of channels.

Prime time ratings drop for these four big broadcast networks.
Not watching the detectives
US broadcast networks’ prime-time rating
% of households*

NBC  ABC  CBS  FOX

11  9  7  5


*TV season Sept-May, Mon-Sat 8-11pm, Sun 7-11pm; % of households with a TV watching a given network

Source: Nielsen Media Research
Advertisers role

Advertisers are focusing a big portion of their budget on Web advertising to attract a wider audience.

Looking for alternative ways to advertise, such as advertising through DVRs, TV program sponsorship, etc.
Networks and Low Ratings

- Shows such as E.R. have been replaced by talk shows and reality shows, which then viewers opt out of watching that specific network anymore.

- Pilot shows are being replaced by “relatively cheap half-hour comedies.” Most of these shows never last too long.
Porter’s Terminology

- Competitors: FOX, ABC, CBS, NBC
- Substitutes: Dish Network, Cable, Online Television Shows
- Buyers: Advertisers
- Sellers: Networks
The Best Strategy

1. For Networks, the best way to bring ratings up would be to show better pilot shows.

2. Come up with shows that involve audience interaction, such as American Idol or Who Wants to Be a Millionaire.

3. Cater to a wider audience by having an array of shows instead of just one or two mediocre comedies.
Summary of How Article Relates to ISM 50 Concepts

1. The decline of traditional media in the presence of new media is a challenge and we are studying how businesses can use information systems to improve efficiency.

2. We are also learning how ISM is designed to support businesses and so if advertisers want to make money, they have to come up with strategic ways to market.

3. This problem can be compared to Elliot’s presentation last week on the decline of the newspaper.

4. People are upgrading, buying new gadgets and electronics, leaving the traditional ways of news source and entertainment behind.
Information Management and Information Access

by

David G. Messerschmitt
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A hierarchy

**Data**: numbers, character strings, etc.

**Information**: recognizable patterns organized so as to inform or influence us in some way

**Knowledge**: concepts, relationships, truths, principles.

**Wisdom**: insight or judgement

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What can networked computers do for us?

page 41 “Knowledge and wisdom are almost exclusively the domain of people, not computers.”

page 46: “There can be no substitute for a reference librarian, even for a digital library. The librarian can formulate more sophisticated searches and can formulate better strategies for finding useful information.”
How does computer intelligence differ from human intelligence?

Course on Godel, Escher, Bach, with references:
http://www-personal.umich.edu/~jlawler/geb.html

IEEE and ACM publish a series of journals on that subject

search for articles: AI in Business Information Systems

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An illustration of Godel’s Theorem

http://www.youtube.com/watch?v=8TDSLaDZHLo

Adapted from slides for Understanding Networked Applications
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Contemporary engineering application: SAS Enterprise Miner

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Back to the hierarchy...

**Data**: numbers, character strings, etc.

**Information**: recognizable patterns organized so as to inform or influence us in some way.

**Knowledge**: concepts, relationships, truths, principles.

**Wisdom**: insight or judgement.

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Classify these

- “XV”, “SF”, 34, “CN”, 16
- The 49-ers won Super Bowl XV by a score of 34 to 16.
- The National Football Conference wins 17 out of 20 Super Bowls on average.
- The best team usually wins.

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Roles in information access

User

Author or publisher

Indexer or organizer

Librarian or teacher or interpreter

Recommender

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Classify these

Relative to *A Streetcar Named Desire*:
- Tennessee Williams
- Actor
- Critic
- Playbill magazine

Relative to *Understanding Networked Applications*:
- D.G. Messerschmitt
- Morgan Kaufmann
- Amazon.com

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Exercise

User

Author or publisher

Indexer or organizer

Librarian or teacher

Recommender

How are these roles being changed by networked computing?
Some modalities of information access - 1

Agent
- Delegate
- Search, navigate, browse

Intermediary
- Subscribe
- Aggregate, filter, consolidate

Agent

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Searching the web

from Messerschmitt, p. 50

- How do you search the web?
- Are you satisfied with your search results, or is there room for improvement?
Two web search alternatives in 2009

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Two web search alternatives in 2009

Adapted from slides for *Understanding Networked Applications*
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What are Google’s advantages?

Business model is simple: be the best in the world at search, and in return they get the most viewers for their ads

- Ingredients for executing that model:
  - Don’t be evil (what does that mean?)
  - Fast!
  - Always evolving

- How do Google’s other products augment their business model? (Or not)

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Google’s Advantages

- How do customers bid for key words? (Adwords program.)

- Example of Google’s tools for its business customers:
  - http://www.youtube.com/watch?v=IUkndmlaoGE&feature=PlayList&p=96382D7913797880&playnext=1&playnext_from=PL&index=1

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By David G Messerschmitt. Copyright 2000. See copyright notice
Point of View: Google is a menace!
- Peter Wilson, author

http://www.guardian.co.uk/commentisfree/2009/apr/05/google-internet-piracy

- **Premise 1**: “Google is just an amoral menace. The ever-growing empire produces nothing but seems determined to control everything.”

- **Premise 2**: “If indeed a new era of global responsibility has come into being with measures that actually restrain banks and isolate tax havens, it may be time for the planet's dominant economic powers to focus on the destructive, anti-civic forces of the Internet.”

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Point of View: Google is a menace!

http://www.guardian.co.uk/commentisfree/2009/apr/05/google-internet-piracy

- Newspapers must give free content up to Google, or perish
- Google prevents authors and content creators (the hard-working people) from being paid for their work

  - Should we enforce tighter regulations on the Internet to avoid “legalized piracy?”
  - How are other industries handling copying problems?

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By David G Messerschmitt. Copyright 2000. See copyright notice
Porter: **Strategy and the Internet** - value of information in the information age, of networked computing - 1

- The Internet is the prime example of networked computing discussed in Messerschmitt

- The Internet has helped consumers through cheap or free distribution of what used to be proprietary information

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But the rise of the Internet has distorted business judgment—bz. chase hard-to-capture network effects, while free dissemination diminishes the value of previously working business models (the music industry...)

The basic laws of economics were not repealed by the Internet. The effect on business has been on the whole destructive, because the pricing power of suppliers has eroded.

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What makes a sustainable business model for an information intermediary?

- Google, web search aggregator
- ...
- eBay, Craigslist, and other market platforms that match buyers and sellers
Result of all this: information by itself is less valuable (?)

- What about knowledge and wisdom?
- Demand for higher education!
Push vs. pull

User

Control over what is provided
Time when it is provided

Intermediate cases:
Notification
Subscription

Publisher

Push

Pull

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### Proper roles of push and pull in a workgroup

<table>
<thead>
<tr>
<th>Pull: work</th>
<th>Push: attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorming</td>
<td>Notification of topic</td>
</tr>
<tr>
<td>Accessing documents</td>
<td>Notification of document availability</td>
</tr>
<tr>
<td></td>
<td>Reminder of deadlines</td>
</tr>
</tbody>
</table>

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Question

What are some differences between push and pull with respect to:

- invasiveness on the user?
- refinement of the information received?
- timeliness with which information received?

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Proper roles of push and pull in a work group - 2

see sidebar, p. 50

- “Best modality for collaboration mixes the push and pull models”
- ISM 50
  - class web page
  - discussion forum
  - teaching staff email access
  - other?
Push vs. Pull in Business Information Systems

- Siemens AG knowledge management system: database, chat room, and search engine

- Frito-Lay HHC system
  - used for 13 years, up through the network era
Recap: some modalities of information access - 3

Push
- Aggregate, filter, consolidate
- Subscribe
  - Intermediary
  - Delegate
  - Agent

Pull
- Search, navigate, browse

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Aids in finding useful information

Besides the information content itself, other aids:

- reference to related information: hyperlink
- list of content: index
- description of content: metadata
- judgment of content: recommendation

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Exercise from Geary’s talk

Give an example of the following functions in the context of movie rentals:

Hyperlink
Index
Metadata
Recommendation
Comment on the following widely held beliefs (at their time):

- “the movie will displace legitimate theater”
- “television will displace movies”
- “remote learning will displace the university campus as we know it”

What does this suggest about networked applications?
Applications

- What is an application?
  - Computer software that performs useful capabilities for a user, organization, incorporating storage, manipulation, and communication of information.

- An organizational application
  - Supports an organization

- Often called enterprise application
  - (An enterprise is an organization with a commercial mission - but the term is used for non-profit as well)
Types of organizational applications

- **Departmental**
  - Supports a single functional department
  - Example: An accounts management application for an accounting department.

- **Enterprise**
  - Support enterprise-wide processes and goals.
  - Example: coordinate information between functional departments involved in fulfilling an order.
    (or other cross functional process.)
Some Types of Organizational Applications

- **Worker Collaboration**
  - Example: video conferencing, web conferencing

- **Operations and Logistics**
  - Example: coordinate movements of goods between sites.

- **Decision Support**
  - Summarize info for executives (e.g., market share, stock price, longitudinal trends - digital dashboard)
  - Knowledge Management (e.g., SME guide)
  - Organize and retrieve knowledge in company’s documents and databases (e.g., data warehouse)
Examples

Software Merchant

- Customer Relationship Management
  - Maintain a case file of customer questions and complaints.
  - Website of Freq. Asked Ques. And documentation.
  - Chat application for customers to communicate with tech-support personnel.
  - Problem escalation process
Examples

On-Line Stock Trading

- Information Management application for paying customers
- Specialized software to interface with
  - customers
  - stock exchange
  - Customer’s bank
Examples

University
  - Student information system
    - Registration, grades, transcripts, classroom scheduling
  - Portal
    - Account information
    - Schedule of classes
    - Advising information
    - Student organizations
    - News
  - Learning management system (WebCt)
    - Course syllabus
    - Grading information
    - Office hours
Some more terms

**Transaction Processing Systems** record and process data from business transactions.

**Batch Processing** - transactions are accumulated over a period of time and processed periodically.

In **Online Transaction Processing (OLTP)**, transactions are processed immediately.
Examples of transaction processing

- **Batch**
  - You purchase something with a *credit card* (or a check) and it is processed with other like transactions once a day

- **OLTP (Real time)**
  - You purchase something with a *debit card* and the amount is immediately deducted from your account
Some More Terms

- A **workflow** application supports ongoing repetitive tasks.
  - Example: An application that passes a case summary of a customer from customer service to tech support.
  - Example: An application that moves an admitted student from applicant to enrolled status.
So what exactly is ERP??
Enterprise Resource Planning

- Automation of core business functions
- Interoperable software applications
- Includes hardware and software
- Integrated database infrastructure
MRP (Material or Manufacturing Resource Planning)

- Take:
  - Product Demand forecasts
  - Inventory Balances
  - Replenishment Lead Times

- Develop a Production schedule for a single plant

- At this Point, it is a planning tool
Later on More capabilities added

- Order Processing
- Product Costing

- The planning tool begins to take more and more of an active roll in the business processes.
A desire to Link Across Functional Departments of firm

- Each functional department had its own *legacy* application
  - Programmed in different languages
  - Different Data formats

- Often some data was shared between departments by duplicating it or manually reentering it.
MRP evolves into ERP

- A common software architecture with modules to support different business functions.
  - Accounting, finance, sales, HRM, material management, etc...

- **Key features:**
  - Multi-functional
  - Integrated
  - Modular
What is software architecture?

“The structure of the components of a program/system, their interrelationships, and principles and guidelines governing their design and evolution over time.”

Source: April 1995, IEEE Transactions on Software Engineering

Components include: communication protocols, user interface, data access, design elements, performance expectations
ERP Overview

![ERP Overview Diagram]

- CENTRAL DATABASE
- Human Resources
- Financials & Accounting
- Bolt-ons
- Customers
- Sales & Distribution
- Inventory & Manufacturing
- Suppliers

ARCHITECTURE

INDUSTRY SOLUTIONS
ERP

- How would you design an ERP?
- Design a user interface for each module
  - Ask user to fill in certain “fields” at particular times.
  - Set up a sequence of events
    - When the sales department enters an order, that event triggers an event at the manufacturing department.
- But by doing this, aren’t we presuming a particular business process?
Current ERP Vendors?

- SAP
- Oracle
- PeopleSoft
- invensys
- SSA Global Technologies
- SCT/Sunguard (Universities)
Questions

How standardized are organizational processes?

- Customer service
- Finance
- Manufacturing
Fundamental options

- Customize the application to existing organization?

OR

- Mold organization to off-the-shelf application?
  - Is software a good way to propagate best practices?