TIM 50 - Business Information Systems

Lecture 7

Instructor: Terry Allen
UC Santa Cruz
10/19/2011

Most slides are by Professor John Musacchio

Outline

- Announcements
- Information Management
- Student Presentation (news)
- Enterprise Applications
- Enterprise Resource Planning
- CISCO case
Announcements

- Business Paper proposals due today!
- Online Forum on course web page
  - alternative way to earn participation points!
  - how it relates to class
  - Use terminology from class
- Make-up class here, Friday 10/28
- Assignment 2 will post tonight, due 10/28
- Reading for next time (10/24):
  - Messerchmitt 3.4 - 3.6 (pp. 83-98)
  - Alibris Case (reader pp. 137-148)

TIM 50

http://courses.soe.ucsc.edu/courses/tim50/Fall11/01

Instructor
- Terry Allen (terry_allen@hotmail.com)
  - Office Hours:
    - Mon. & Wed., 7:00 - 8:00 p.m. here and in E2-563
    - Tues., 4:00 - 5:00 p.m. in E2-563
    - Tues., 5:00 - 6:00 p.m. in E2-563 if
      - Students are still dropping in at 5:00 p.m., or
      - You have asked in advance by email for me to stay late, or
      - Some other student has asked me to stay late

TA
- Huascar Sanchez (hsanchez@soe.ucsc.edu)
  - Office Hour: Wednesday, 10:00 - 11:00 a.m. in Jack's Lounge
- TBD ()
  - Office Hour: TBD
Announcements

Forthcoming presentations

- 10/24/2011
  - ?? (news story)
  - ?? (Alibris Case)

- Send me your slides the night before
  - Failing to do so may result in loss of points (after 9 p.m.)

Information Management
(Review)
What is Information?

- **Data**
  - Numbers, Character strings, etc.

- **Information**
  - Recognizable patterns of data organized so as to inform or influence the user in some way

- **Knowledge**
  - Concepts, relationships, truths, principles derived from information, leavened with some amount of judgment

- **Wisdom**
  - Insight or judgment acquired from extensive knowledge and (usually) experience

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 Bowl’s on average.

- The best team usually wins.
Classify these

- 47, 560, 134

- My bank account has 47$ in it  :-(

- My net worth, including my bank account and subtracting the debts is 560$

- At the rate my net worth is increasing, and given my age and expectations for retirement income, I can’t retire until age 134...

Roles in information access

User

Author or publisher

Indexer or organizer

Librarian or teacher or interpreter

Recommender

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In the Networked Era...

User

Author or publisher

Indexer or organizer

Librarian

Recommender

How are these roles being changed by networked computing?

Finding useful information..

- **Search**
  - Item search
  - Topic search

- **Browse**
  - “Explore” in a less definite way in order to find useful information
  - Iterate/refine searches

- **Navigate**
  - Follow directions/links to find information
  - On the web you do all of these!
Others can help....

- **Author:**
  - Hyperlink
    (Reference to related information)

- **Author or third party:**
  - Index
    (List of content)
  - Metadata
    (Description of content)

- **Third party:**
  - Reviews or recommendations
    (judgment of content)

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**Exercise**

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

- Hyperlink
- Index
- Metadata
- Recommendation

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Authors - Publishers
Creates information - verifies, makes available

Indexers
Classifies information
Indexers/Organizers - Librarians (assists and guides user to needed info)

Librarians
Recommenders

Recommenders

What do customers ultimately buy after viewing this item?

- Canon PowerShot A330 8MP Digital Camera with 4x Optical Zoom
- Canon PowerShot A540 8MP Digital Camera with 4x Optical Zoom
- Canon PowerShot A540 10MP Digital Camera with 4x Optical Zoom
- Canon PowerShot A710 IS 7.1MP Digital Camera with 6x Image Stabilized Optical Zoom

Customers who bought this item also bought:
- Lexar Media 1 GB Secure Digital Memory Card (SD) (Part#-23) (Retail Package) by Lexar
- Sony ECG-34H4 Super Quick Worldwide Battery Charger with 4 AA NiMH Batteries by Sony
- 1GB Secure Digital by SanDisk

Explore similar items: Electronics (122) Camera & Photo (13)
**Push vs. pull**

- **User**
  - **Pull**
  - **Control over what is provided**
  - **Time when it is provided**

- **Publisher**
  - **Push**
  - **(autonomous source)**

Intermediate cases:
- Notification
- Subscription

**Question**

What are some differences between push and pull with respect to:
- invasiveness with respect to the user?
- suitability of the information received?
- timeliness of the information received?

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Characteristics of information pull and push

<table>
<thead>
<tr>
<th>Control</th>
<th>Pull</th>
<th>Push</th>
</tr>
</thead>
<tbody>
<tr>
<td>User requests</td>
<td>specific information</td>
<td>User subscribes to information in general</td>
</tr>
<tr>
<td>Notification</td>
<td>User submits question- publisher answers</td>
<td>Publisher provides useful notifications- user decides what to do</td>
</tr>
<tr>
<td>Timing</td>
<td>Information is user-directed</td>
<td>Information provider-directed</td>
</tr>
</tbody>
</table>

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>

Newsgroups and Web Email

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Some modalities of information access

- **Pull**
  - Search,
  - navigate,
  - browse

- **Push**
  - Subscribe
  - Aggregate,
  - filter,
  - consolidate

- **Intermediary**
  - Delegate

- **Agent**

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**Student Presentations**

- **10/19/2011**
  - Sean Phillips (news story)
  - Lee Der Lan (Cisco Case)
Enterprise Applications

Applications

- **What is an application?**
  - Computer software that performs useful capabilities for a user or organization
  - Stores, manipulates, and/or communicates information.

- **An organizational application**
  - Supports an organization

- **Often called enterprise application**
  - (An enterprise is an organization with a mission (usually commercial, of course))

- **Managing an organization:**
  - coordination+communication
Types of organizational applications

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

2. **Enterprise**
   - Support enterprise-wide processes and goals.
   - Example: coordinate information between functional departments involved in fulfilling an order.
   (or manufacturing, or other cross-functional process.)

3. **Commerce**
   - Supports the purchase/delivery of goods/services
   - Example: product support over the Internet
   - Example: product returns handling

Classification of organizational applications

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

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

- **Decision Support**
  - Summarize info for execs.

- **Knowledge Management**
  - Organize and retrieve knowledge in company’s documents and databases

- **Customer outreach**
  - Can the network offer new ways to connect to customers?
Examples of organizational applications

- **Customer care (software4u.com)**
  - FAQ - knowledge base
  - Customer service & tech support

- **On-line Bookselling (books4u.com)**
  - Specialized software to interface with: customers, stock exchange, Customer's bank

- **On-line Stock Trading (stocks4u.com)**
  - Information provider

- **Floral delivery service (flowers4u.com)**
  - Suppliers and small businesses without IS

Departmental Applications

- **On-line Transaction Processing**
  - record and process data from business transactions.
  - Info resides in Database Management System (DBMS)

- **Workflow**
  - A workflow application supports ongoing repetitive tasks.
  - Example: An application that passes a case summary of a customer from customer service to tech support.
Business Process Re-engineering

- Also called Business Transformation

- Radical re-thinking and re-design of business processes
  - Enabled by Networked Information Systems
  - Minimize cost/time, increase efficiency, improve quality
  - Combine what people can do well with what computers can do well

- 5 phases

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Business Process Re-engineering

- Analysis
  - of business requirements and costs
- Design
  - of individual activities
  - of information and materials' flow
- Development
  - of application
- Deployment
  - Including training, testing, installation (may have pilots)
- Operation
  - Supporting the application (production, sales, distribution etc.)

- Analogous to a software application's lifecycle
Enterprise Resource Planning (ERP)

So what exactly is ERP??
Material (Manufacturing) Requirements Planning - MRP

- The precursor of ERP
- MRP: A production planning and inventory control system
  - Take:
    - Product Demand forecasts
    - Inventory Balances
    - Replenishment Lead Times
  - Develop a production schedule for a single plant

MRP

- Initially was a planning tool
  - WHAT items are required
  - HOW MANY are required
  - WHEN are they required
- Later other functionalities were added
  - Order Processing
  - Product Costing
- The planning tool begins to take more and more of an active role in the business processes
A desire to Link Across Functional Departments

- 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.

MRP evolves into ERP

- ERP applications support different business processes that are standardized across organizations
  - Accounting, sales, HRM, material management, CRM, supply chain management, project management, etc...

- Key features:
  - Multi-functional
  - Integrated
  - Modular
Information Integration

- Key issue
- Should integrate different data/applications
- CONSTRAINT: Legacy Applications
  - Applications developed using obsolete technology and worked well for many years...
    - e.g. most commercial applications were built using COBOL
  - ...until not anticipated problems occurred
    - e.g. the Year 2000 (Y2K) problem
    - Some applications were built 40 years ago
    - The programmers used last 2 digits to represent the year: "1/1/00" => 1900 or 2000?
  - Y2K made many enterprises replace their legacy systems with ERP 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
    - E.g. When the sales department enters an order, that event triggers an event at the manufacturing department.
Fundamental options

- **Build in-house?** using a company's own funds, staff, or resources.
- **Customize the off-the-shelf application to existing organization?** refers to products that have already been designed and made.
- **Mold organization to off-the-shelf application?**
  - Adapt business processes to "Best practices"
  - When there exist compliance requirements or when process is a commodity
- **If all companies use the same "best practices" how can they gain competitive advantage?**
  - Can ERP vendors even penetrate the 'trade secret' barrier?

ERP Implementation

- Very complex application
- Typically not implemented “in-house”
  - Purchase off-the-self solution and customize it
  - Adapt existing applications to "speak" with ERP modules
  - Hire consultants to help you (e.g. KPMG, Accenture)

- Top-5 ERP Vendors [Gartner Dataquest (2005)]:

  - [SAP](#)
  - [Oracle](#)
  - [Sage](#)
  - [Microsoft](#)
Decision Support

- ERP support enterprise operations AND managerial decisions
  - Provision of timely Information - as it happens
  - Tools for data summarization and presentation - data aggregation and summarization
  - Knowledge management & discovery - search tools

Decision Support

- Knowledge management systems: Turn data and information into knowledge
  - **Data warehouses** store operations’ historical data
    - Provide functionalities for summarizing, aggregating, reporting on these data
    - OLTP (on-line transaction processing) vs. OLAP (on-line analytical processing)
  - **Data mining** is the process of *discovering* patterns in large amounts of data
  - We will elaborate later in the quarter
The CISCO Case

Cisco Summary

Success Factors
- Cross-Functional Team of top people
  - People from across the company involved
- Hungry Vendors
  - Oracle and KPMG needed this to succeed
- Strong Support from Top Management
- Favorable Hardware Contract
- Rapid Prototyping - conference room pilots
- Aggressive pace

Good management or luck?
Cisco Summary

Challenges

- Poor testing Strategy
- Inadequate Hardware
- Software required more modifications than originally hoped.

Cisco Summary

What did it cost?

Costs Beyond original budget:

Non-IT Personnel In Project

- 80 personnel × 8 months × 160 hours / month × 100 hour = $10 million

IT-Personnel beyond original 20

- 80 personnel × 4.5 months × 160 hours / month × 100 hour = $5.7 million

Actually cost more than 15 million more than the original budget of $15 million!

Was this really a success?!