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)

Outline

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

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**

**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

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**Indexers**

Classifies information

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**Indexers/Organizers - Librarians**

(assists and guides user to needed info)

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**Librarians**
**Push vs. pull**

- **User**
  - Control over what is provided
  - Intermediate cases:
    - Notification
    - Subscription

- **Publisher**
  - Control over what is provided
  - Time when it is provided
  - Publisher (autonomous source)

**Characteristics of information pull and push**

<table>
<thead>
<tr>
<th></th>
<th>Pull</th>
<th>Push</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>User requests 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**

**Pull: work**
- Brainstorming
- Accessing documents

**Push: attention**
- Notification of topic
- Notification of document availability
- Reminder of deadlines

- Newsgroups and Web
- Email

Adapted from slides for Understanding Networked Applications
By David G. Messerschmitt. Copyright 2000. See copyright notice.
Some modalities of information access

Push
Pull
Subscribe
Aggregator, filter, consolidate
Delegation
Agent
Intermediary

Enterprise Applications

Types of organizational applications

1. Departmental
   - Supports a single functional department
   - Example: An accounts management application for an accounting department
2. Enterprise
   - Supports enterprise-wide processes and goals
   - Example: Coordinate information between functional departments involved in fulfilling an order
   (or manufacturing, or other cross-functional processes)
3. Commerce
   - Supports the purchase/delivery of goods/services
   - Example: Product support over the Internet
   - Example: Product returns handling

Student Presentations

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

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

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

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

So what exactly is ERP??

Enterprise Resource Planning (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

- **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

**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 X 8 months X 160 hours / month X 100 hour = $10 million

**IT-Personnel beyond original 20**
- 80 personnel X 4.5 months X 160 hours / month X 100 hour = $5.7 million

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

Was this really a success?!