Outline

- Announcements
- Review: ERP
- Student Presentation
- E-commerce (cont’d)
- Student Presentation
- Information Technology

Announcements

- Key for Homework 2 will be on web site
- MIDTERM next Wednesday, November 2

Review: ERP applications

- 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
**The application suite**

PLM: product lifecycle management
SRM: supplier relationship management

**SAP ERP Solution Map**

**Student Presentations**

- 10/26
  - ?? (case: Alibris)
  - ?? (news story)
  - ?? (news story)

**Review: E-Commerce**

- **Major Categories**
  - Consumer (B2C)
  - Inter-consumer (C2C)
  - Inter-enterprise (B2B)

**B2C Examples**

- Amazon
- Travelocity
- Fry’s
- Barnes & Noble
- Zappos
- Nordstrom
- Buy.com

**Consumer e-commerce (B2C)**

- What are the advantages and disadvantages compared to a retail store or direct mail catalog?
Some Advantages

- **For the Consumer**
  - Check prices at many vendors with minimal effort
  - Anonymity
  - Mass customization
  - Order tracking
  - Recommendations

- **For the Business**
  - Global reach
  - Automate order taking (cost savings)
  - Price Discrimination

Recommender Systems

**How do they work?**

C2C Examples

- CarSoup
- eBay
- Yahoo! Shopping

Inter-Enterprise E-Commerce (B2B)

- **Procurement**
  - One enterprise purchases goods or services from another
- **Direct Procurement**
  - Ongoing, consistent, and scheduled procurement

- The relationship between firms involved in direct procurement often called a **Supply Chain**

Supply Chain Management (SCM)

**SCM** is the set of activities associated with managing a supply chain.

SCM (supply chain management)

- Need to manage the procurement of parts
  - Don't run out of any one
  - Don't order too many
  - Order far enough in advance
- **Ideally**
  - Know in advance
    - # cars
    - features
**SCM - Mass customization**

- Thousands of orders per day, each with different requirements!
- Adjusting orders from suppliers constantly according to demand
- Minimal inventories
  - Cut costs
  - Much more sensitive to errors or disruptions
- **Mass customization** requires sophisticated SCM

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**Networked Computing in direct procurement**

- **Electronic Data Interchange (EDI)**
  - Exchange order information between firms involved in direct procurement
  - Existed since 70's
  - Usually large firms who could afford proprietary communication links
  - Initially order and invoice

- **Financial EDI (FEDI)** later added EFT payment capability

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**Indirect Procurement**

- Sporadic purchase of goods and services to support organizational objectives
  - Example: Office Furniture, office supplies, etc.

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**The Founding of Alibris**

- In the rare, used, and out-of-print book business.
- Started as a small business named Interloc.
- Interloc's website
  - just a bulletin board service, or BBS, which only connected book buyers with various locally based suppliers from all over the country.
- Interloc made money by charging dealers a fee for listing their books on Interloc's servers.
- Consisted of 1,300 dealers and 5 million books

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**Alibris Goal**

- World wide place order with Alibris, first send from dealer.
- Fast Search (used by Amazon)
- Then controlled shipping/customer service
  - Sparks facility
- Increase their order fill rate and only do business with dealers with over 1,000 books in stock
- Collect 20% of sales and increase the sale price of the books.
Solution - results

- Thunderstone solved the crisis
  - "great uncertainty" that a small company could do it
  - Thunderstone could handle their software needs
- An investor offered $200,000 to keep the company afloat - demanded control over the company and the firing of most of the IT staff.

- This case shows (?) that a start-up can't be run by consultants.
- Alibris now has over 60 million used, new, and out of print books

Alibris

- Why did Interloc succeed so early on?

Alibris

- If Interloc is so successful, why change it?
- What will change as Interloc becomes Alibris?

Alibris

- Should Alibris actually buy books and fill up the Sparks facility?

Alibris

- Why is Alibris having so much trouble setting up simple e-commerce capabilities?
- Is this really that hard??
- Is it rare for a new software product from an established, reputable vendor not to work properly (who's that laughing out there!?)?
Alibris

- Should Alibris stick with Oracle? Or switch back to Thunderstone?

- Rejets "white knight" offer
- Manley secures another bridge loan
- Thunderstone's software works "well enough"
  - (What? You want it to work better than that?)
- 1 million books at Sparks warehouse by 2000
  - Originally all on consignment from dealers
  - Later, purchased books 'on spec'
- 2002 - Revenue $31 million, loss $7.2 million
- 2003 - Revenue $45.5 million, loss $4.8 million
- March 2004 files for "auction based" IPO
  - May 2004, withdraws IPO (initial public offering) after price too low
  - Relying on Private Financing (venture capital) until 2006 when it was purchased by a private equity firm

Data and information

- From a user (human) perspective...
  - ...recognizable patterns that influence you in some way
  - (perspective, understanding, behavior...)
- In the computing infrastructure, information has a somewhat different connotation as structure and interpretation added to data

Key concept

- The key commodity manipulated by information technology is information
- In order to be manipulated in a computing/networking environment, information must be represented by data

Information

What is information?
Data

- A bit is "0" or "1" — the atom of the information economy
- Data is a collection of bits, like
  - "01011011010110"
  - "00000111"
  - "110111010110111011011010"

Note: the terms data and information are not always used consistently!

Example

- Bits: 0, 1
- Data: A sequence of bits
  - 101111
- Interpretation, Structure:
  - Base-2 number (least significant bit is on the right)
  - Represents a number
    - 101111 → $2^5 + 2^3 + 2^1 + 2^0 = 47$
- On a higher level this number may represent something else
  - e.g. The amount of $$ in my bank account ❄️

Data Representation

- Takes the place of the original
- Equivalent to, in the sense that the original can be reconstructed from its representation
- Often the original can only be approximately reconstructed, although it may be indistinguishable to the user
  - e.g. audio or video

ASCII

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<th>Binary</th>
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</tr>
</tbody>
</table>

- Character encoding (128 characters=2^7)
- Note that this representation is not unique...
  - ...this one happens to be a standard (ANSI X3.110-1983)

A picture

This picture conveys information

This information is represented in this computer, but how?
**Representation of picture: image**

Expanding a small portion of the picture, we see that it is represented by square pixels:

- ...300 tall by 200 wide...
- ...with a range of 256 intensities per pixel

$$300 \times 200 \times 8 \text{ bits} = 480,000 \text{ bits (but it can be compressed)}$$

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**Color picture**

A color picture can be represented by three monochrome images:

- [RGB image]
- ...at the expense of three times as many bits

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**Terminology**

- **Representation**
  - Communicate data to another user or organization

- **Data processing**

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**Representation needs to be standardized**

- If the representation is not standardized, the information is garbled!

- Communicate data to another user or organization

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**Regeneration**

- Make a precise copy of the data (copy bit by bit)
- If you know the representation, this is equivalent to making a precise copy of the information
- Each such precise copy is called a generation
- The process is called regeneration

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**Replication of information**

Anything that can be regenerated can be replicated any number of times.

This is a blessing and a curse.
**Analog information cannot be regenerated**

Analog information can be copied, but not perfectly reconstructed. We may never know exactly what the original of this Rembrandt looks like (or exactly what this Rembrandt looked like originally).

**Discrete information can be regenerated**

Regeneration can preserve data (but not its original physical form). Regeneration is possible for information represented digitally (which is tolerant of physical deterioration).

\[
\begin{align*}
0 + \text{noise} & \equiv 0 \\
1 + \text{noise} & \equiv 1
\end{align*}
\]

**Replication of information requires knowledge of representation**

Replication preserves the integrity of the data, but that is not sufficient.

**Implications**

- Digital information can be preserved over time or distance in its precise original form by occasional regeneration
  - digital library
  - digital telephony
- Replication of data is easy and cheap

**Implications (con't)**

- Replication of information requires knowledge of the structure and interpretation
  - Standardization or some other means
- You can give away or sell and still retain
- Unauthorized replication or piracy relatively easy