Information Systems
ISM 3011

Fall 2004
Unit 1B

Information System

• A set of interrelated components that collect, manipulate, and disseminate data and information, and provide feedback to meet an objective

• Examples: ATMs, airline reservation systems, course reservation systems

Data vs. Information

• Data: raw facts

• Information: collection of facts organized in such a way that they have value beyond the facts themselves

Data vs. Information

<table>
<thead>
<tr>
<th>Data</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-28-2003 Miller, John 37.40</td>
<td>Turnover 111.71</td>
</tr>
<tr>
<td>8-28-2003 Smith, Bill 23.20</td>
<td>Total sales by customer: Miller, John 77.40</td>
</tr>
<tr>
<td>8-27-2003 Burger, Mary 11.11</td>
<td>Smith, Bill 23.20</td>
</tr>
<tr>
<td>8-26-2003 Miller, John 40.00</td>
<td>Burger, Mary 11.11</td>
</tr>
</tbody>
</table>

Customers on August 28:
- Miller, John
- Smith, Bill
- Burger, Mary

Types of Data

<table>
<thead>
<tr>
<th>Data</th>
<th>Representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number data</td>
<td>Numbers, letters, and other characters</td>
</tr>
<tr>
<td>Image data</td>
<td>Graphic images and pictures</td>
</tr>
<tr>
<td>Audio data</td>
<td>Sound, voice, or tones</td>
</tr>
<tr>
<td>Video data</td>
<td>Moving images or pictures</td>
</tr>
</tbody>
</table>
Machine-readable Content vs. Unstructured Data

ORDER
QTYY=3
ITEMNO=1234

*Please send me 3 pieces of item no. 1234.*

Further Examples

<table>
<thead>
<tr>
<th>Good</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured text message</td>
<td>Fax Image</td>
</tr>
<tr>
<td>Vector drawing of a floor plan</td>
<td>Photo</td>
</tr>
</tbody>
</table>

The Characteristics of Valuable Information

<table>
<thead>
<tr>
<th>Characteristics of Valuable Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristics</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Accurate</td>
</tr>
<tr>
<td>Complete</td>
</tr>
<tr>
<td>Financial</td>
</tr>
<tr>
<td>Relevant</td>
</tr>
</tbody>
</table>

Timeliness

- How can barcodes on products help to improve the timeliness of stock-related data in a company?

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Should Information be “simple”? (p. 7)

- It should be well-structured and reduced to the relevant aspects.
- Defining the relevant data fields is a key task in IS design.
Relevance and Value of Information

- The text says that valuable data is "relevant" and that the value of information depends on the improved decisions they allow. Can we assess those two parameters in advance?

- The relevance of data and the value of information are usually not known before you need or apply them.

Put In Nonsense, Get Out Chaos

- Accurate data is crucial.
- False or ambiguous data propagates and puts the integrity of the whole Information System at risk.
- This is an even bigger danger when multiple systems work together and exchange data.

System and Modeling Concepts

- A set of elements or components that interact to accomplish goals
- Input
- Processing mechanism
- Output
- Feedback
- System boundary

Components of a System
System Performance and Standards

• Efficiency: output/input
• Effectiveness: extent to which system attains its goals
• Performance standard: specific objective of a system

System Variables and System Parameters

• System variable - item controlled by decision-maker
• System parameter - value that cannot be controlled

Systems Classification

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>Narrative</td>
<td>A model is based on words</td>
</tr>
<tr>
<td>Physical</td>
<td>A physical model is tangible</td>
</tr>
<tr>
<td>Schematic</td>
<td>A schematic model is a graphic representation</td>
</tr>
<tr>
<td>Mathematical</td>
<td>A mathematical model is an arithmetic representation</td>
</tr>
</tbody>
</table>

Modeling a System

• A model is an abstraction that is used to represent reality
  – 4 major types of models
    • A narrative model is based on words
      – Logical, not physical
    • A physical model is tangible
    • A schematic model is a graphic representation
      – Graphs and charts
    • A mathematical model is an arithmetic representation

Why makes it sense to use models instead of reality?

• Reality is complex. It is easier to understand the functionality of a system once it has been reduced to its essential structure.
• Automation implies that we treat a set of individuals or items equally. That means, we must find a form of representation which is suited for each.
Models should be validated!

What Is An Information System?

Components of an Information System

Computer-Based Information Systems (CBIS)

Components of a CBIS

“...changing the way organizations conduct business.”

What do you think is the better approach:
a) Write an individual program that exactly represents a company’s current processes?
b) Change the company’s processes to those already available in standard software?
c) First reengineer all processes and then write respective software.
Summary

- Data - raw facts
- Information - data transformed into a meaningful form
- System - set of elements that interact to accomplish a goal
- Systems development - creating or modifying existing business systems

Assignment for Next Class

- Read chapter 2 (p. 42 - 73)
- Self-Assessment test (p. 73)
- Check that you know the key terms listed on p. 74
- Prepare review questions 5, 14, 15, and 16 (p. 74)

Thank you!

The slides will be available on the internet at
http://ruby.fgcu.edu/courses/mhepp/
(-> CRN80097)