Managing Information Resources

Chapter 7

Introduction

“Managing information resources” initially meant managing data, first in files, then in corporate databases which were:
- Well structured
- Carefully defined, and
- Controlled by IS department

Next = expanded to include “information” (data with meaning)

Also = much talk of managing knowledge - Concepts, experience, and insight that provide a framework for creating, evaluating, and using information.

With the emergence of the Internet, talk has now turned to managing content:
- Text, graphics, sound, video and animation

Introduction cont.

• Data vs. Information vs. Knowledge
  - Data: facts devoid of meaning or intent
  - Information: data in context
  - Knowledge: information with direction or intent
    Tacit (undocumented) or explicit (documented)

Introduction cont.

• Corporate databases are still a major IS department responsibility
• Information in the form of documents (electronic or paper) and Web content has exploded the size of databases organizations now manage
• Knowledge management is becoming a key to exploiting “intellectual assets”
• Information resources need to be well managed as information becomes an important strategic resource

Managing Data

• Database management systems are the main tool for managing computerized corporate data
• They have been around since the 1960s and are based on two major principles:
  - A three-level conceptual model and
  - Several alternative ‘data models’ for organizing the data

Managing Data: The Three-Level Database Model

See Figure 7-1

- Level 1 - The external, conceptual, or local level, containing the various “user views” of the corporate data that each application program uses
  - Not concerned with how the data will be physically stored or what data is used by other applications

- Level 2 - The logical or “enterprise data” level
  - ‘Technical’ (human) view of the database = under control of the DBAs

- Level 3 - The physical or storage level, specifying the way the data is physically stored
  - End user not concerned with all these ‘pointers and flags’ (how the data is physically organized) = they are for use by the DBMS
Managing Data:
Four Data Models

The second major concept in database management is alternate ways to define relationships among data

1. Hierarchical model: structures data so that each element is subordinate to another in a strict hierarchical manner
   - Parent, child etc.

2. Network model: allows each data item to have more than one parent
   - Assembly part lists

3. Relational model: where the data is stored in tables.
   - Row of the table is called a tuple representing an individual entity
   - Column represents an attribute of the entity.
   - Relational systems are not as efficient as hierarchical or network database systems, but because relational systems allow people to create relationships among data on the fly, they are much more flexible
   - First used to handle end user queries – they are now widely used in high-volume transaction systems with huge files
   - Hence, they have become the database technology of choice in today’s systems

4. Object model: can be used to store any type of data, whether a:
   - Traditional name or address,
   - An entire spreadsheet,
   - A video clip,
   - A voice annotation,
   - A photograph, or
   - A segment of music
   - The tenets of objects have become increasingly important in the world of computing

Getting Corporate Data into Shape:
The Problem: Inconsistent Data Definitions

- Problem: data definitions incompatible from:
  - Application to application
  - Department to department
  - Site to site, and
  - Division to division
- Reason: to get application systems up and running quickly, system designers sought data from the cheapest source or politically expedient source
- Result: different files with:
  - Different names for same data, and
  - Same name for different data etc.

Managing Data: Four Data Models cont.

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Managing Data: Four Data Models cont.

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Getting Corporate Data into Shape

- The installation of company-wide software packages such as SAP, enterprise data warehouses, and intranets has once again brought to the fore the problems of “dirty data”
  - Data from different databases that has:
    - Different names
    - Uses different time frames, or
    - That otherwise does not match
Getting Corporate Data into Shape: The Problem: Inconsistent Data Definitions cont.

• Account Number
• AcctNum
• AcctNumb
• Acct#
• A/C Num

The use of DBMS - database management software, reduced, to some extent, the problems of inconsistent and redundant data in organizations

– However merely installing & running a DBMS is not sufficient to manage data as a corporate resource

• Database administration: concentrates on administering databases and the software that manages them

Getting Corporate Data into Shape: The Role of Data Administration

• Data administration is broader:
  – To determine what data is being used outside the organizational unit that creates it
  – Whenever data crosses organizational boundaries, its definition and format need to be standardized

• Data dictionaries are the main tools by which data administrators control standard data definitions

Getting Corporate Data into Shape: ERP (Enterprise Resource Planning)

• To bring order to the data mess, data administration has four main functions:
  1. Clean up the data definitions
  2. Control shared data
  3. Manage data distribution, and
  4. Maintain data quality

• ERP provided the means to consolidate data to give management a corporate-wide view of operations

Managing Information

• Once enterprises get their data into shape, that data can more easily be turned into information

“Information is power.”
“We are in the Information Age.”

• These and similar statements would lead you to believe that managing information is a key corporate activity
  – Technology = infrastructure;
  – Asset = information that runs on that infrastructure

Managing Information

Four Types of Information

• In Figure 7-3 we look at a matrix representing the full scope of data information resources:
  • Internal record-based information, such as those found in databases
    – There are others:
    • Internal document-based information, such as reports, opinions, e-mails and proposals. Pertains to concepts: ideas, thoughts, etc.
    • External/record-based information, such as acquisition from external databases.
    • External/document-based: WWW
Managing Information

Data Warehouses

- Data warehouse: Houses data used to make decisions
  - This data is obtained periodically from transaction databases
  - The warehouse provides a snapshot of a situation at a specific time
- Data warehouses differ from operational databases in that they do not house data used to process daily transactions
  - Operational databases have the latest data
  - Data warehouses ≠ not so ‘time critical’
- The most common data warehoused are customer data, used to discover how to more effectively market to current customers as well as non-customers with the same characteristics

Managing Information

Data Warehouses cont.

Key Concepts:

- Metadata: The part of the warehouse that defines the data. Metadata means “data about data.”
  - Metadata explains the meaning of each data element, how each element relates to each other, etc.
- Quality data: Is the cleaning process to adhere to metadata standards
  - The older the data the more suspect its quality
- Data marts: Is a subset of data pulled off the warehouse for a specific group of users

Managing Information

Data Warehouses cont.

5 Steps in a Data Warehousing Project:

1. Define the business uses of the data
2. Create the data model for the warehouse
   - i.e. defining the relationships between the data elements
3. Cleanse the data
4. Select the user tools
   - Consider the users point of view by selecting the tools they will use & then training them on tool use
5. Monitor usage and system performance

Managing Information

Document Management

- Even in today’s Internet-rich world, paper still plays a major role in most enterprises
- There is also a need to move seamlessly between digital and printed versions of documents; hence, the importance of document management
- The field of electronic document management (EDM) uses new technologies to manage information resources that do not fit easily into traditional databases
- Applying technology to process traditional documents makes a major change in what documents can accomplish in organizations
Managing Information

Document Management cont.

- Numerous EDM applications generate value. The ‘Big 3’ are:
  1. To improve the publishing process
  2. To support organizational processes
  3. To support communications among people and groups

- The concept of just-in-time (printing, publishing and forms processing) pervades the design philosophy in all three areas

Document Management:

Improving the Publishing Process

- Technology enables a major restructuring of the process of publishing and distributing paper documents
- Traditional Process – designed primarily for high volume and high quality documents – shown in Figure 7-6
- Process has inefficiencies:
  - Infrequent long print run requires storing documents which become obsolete between runs
  - 60% of the total cost of delivering theses documents is in storage & transportation

Document Management:

Supporting Communication Among People and Groups

- The value of documents is that they transfer information across time and space
  - Internet can help but often still rely on ‘paper’ documents
- EDM can be used to facilitate such communications among people and groups
Document Management: Supporting Organizational Processes

• Documents are still the vehicle for accomplishing most processes in organizations
  – Many such = “Workflow systems” – heavily based on the physical circulation of paper forms
• The use of technology to support processes generates significant value in reducing physical space for handling forms, faster routing of forms, and managing and tracking forms flow & workload
• In addition to improving transaction-oriented business processes with EDM, many organizations are improving the management processes of reporting, control, decision making, and problem solving as well

Managing Information
Content Management cont.

• To create a content management strategy, companies need to understand the three phases of the content management life cycle:
  – Managing Content Creation and Acquisition
  – Content Administration and Safeguarding
  – Content Deployment and Presentation
• Content is no longer static; it is active

Content Management:
Managing Content Creation and Acquisition

• Content creation and acquisition need to focus on creating content quality
  – That’s why it might be wise to buy some content from specialists – which is called syndicated content – rather than create it in-house
• The best organizational structure is to distribute content creation and maintenance to content-expert employees

Content Management:
Content Administration and Safeguarding

• The emphasis in this phase, like any operational phase, is efficiency
• Content management tools can be used to identify types of content and the business rules that apply to each type
• Whereas content creation should be distributed, content administration should be centralized

Content Management:
Content Deployment and Presentation

• The emphasis in this phase should be effectiveness:
  – Presenting the content so that it:
    • Attracts visitors
    • Allows them to navigate the site easily, and
    • Leads them to the desired actions
• Because this phase can determine the success of a firm’s e-commerce efforts, it’s best to design a Website beginning with this phase
• Today most Web sites need certain features to attract and keep visitors. Two of the most important are:
  1. Personalization = allowing visitors to customize how they view the page
  2. Localization = tailoring a site to a culture, market or locale
Content Management:
Managing Blogs

- **Blog** = short for “Web Log”
  - Web site where an individual makes intermittent Web postings – an online journal
- **Powerful tools**
  - Compete with major media
- Some forward thinking companies have recognized the power of this immediate form of publishing and communication
  - Used for crisis management
  - Employees need to be careful else = trouble
  - Opportunities and challenges for organizations

GROOVE NETWORKS
Case Example: Managing blogs

- Views personal websites and blogs positively
- Has issued Employee Guidelines for Personal Website and Weblogs
  - Make it clear to readers that the views you express are yours and not necessarily those of the company
  - Take care not to disclose any confidential information
  - Company
  - Third party
  - Since your site is a public space, be respectful to
    - Company
    - Our employees
    - Our customers etc.
  - …Finally, the company may request that you temporarily confine your commentary to topics unrelated to the company

Conclusion

- The job of managing information resources is widening significantly
- Not only must IS departments get corporate data in shape, but they also need to create and build an infrastructure for managing the full range of information types
- In some ways, the Internet helps because it gives companies an easily accessible place to store information
- On the other hand, the Internet has also contributed mightily to the information glut we all face