

CSC 301: Computer Center Management

Lecture Slides 2: Overview of
Computer Center

Various Names of Computer Center

- **Data Processing Center:**
 - To process business data (Sales, Deposit/Withdrawal, Airline Ticketing, Student Registration, etc.) and produce summary report or other business documents
- **MIS Center:**
 - To provide information for managers and executives for making timely and quality decisions (usually continuing the work of data processing.
- **Data Center:**
 - To provide data for use by all departments (e.g. center to provide criminal records, population records (Khonthai.com), etc.)
- **Office Automation and Internet Center:**
 - To provide services to all departments with office automation and communication systems.
- **Computing Service Center (or Computer Center or IT Service Center):**
 - Basically, to provide services of all types related to business data processing, business applications, and maintenance services to all departments in the organization.

Services Provided by Computer Center

- To provide computer-related services to personnel and customers
- To provide advice and consultancy for users
- To provide systems development services to users
- To provide data entry services for users
- To create and maintain IT standards and procedures
- To provide IT acquisition services to users
- To keep and protect IT and data assets
- To ensure that the organization has adequate/advanced IT progress, which is in line with the organization's vision
- To ensure that services provided are meeting with users' requirements

Richardson Nolan's Six Stages of Growth in Computer Center

- **Initial Stage**
 - At this stage, personnel has never used computer before. They have just start using computer with not much knowledge about it. This stage can take place in any department in the organization.
- **Contagion Stage**
 - There is growth in expenditure for acquisition of computers as most departments seem to need computers for their task at all levels. Needs for computer in normal operations become stronger, and widespread throughout the organization.
- **Control Stage**
 - The organization starts to take filtering and controlling actions on acquisition of computers with references to expected results. Costs/Benefits consideration is made on each and every acquisition against expected business results or contributions by those departments to organization as a whole.
- **Integration Stage**
 - Realized that there are increasing unnecessary repetition of data capturing, and processing throughout the organization, thus, it starts to integrate all of them together to reduce repetition and redundant efforts. An improvement toward more productivity and better efficiency in managing data.
- **Data Administration Stage**
 - The stage with active Data Sharing and Data Protection. Network(Internet) and Database has started being used at this stage.
- **Maturity Stage**
 - The concept of Total Quality Management (TQM) is implemented, at this stage, the Computer Center is capable of handling changes in people and technology quite well, it can manage to adapt and change in accordance with environmental changes.

Computer Center and Its Presence in Organization

- A single unit within each department.



- A separated unit under Chief Executive Officer at the same level of authority as other functional departments



Computer Center Designs

- **Physical Computer Center Setup**

- 1. Site Selection
- 2. Designing office and rooms
- 3. Designing the whole center
- 4. Detailing the facilities
 1. Raised floor: let the wind blow under the floor
 2. False ceiling
 3. Air conditioner
 4. Smoke and heat detectors
 5. Rooms to be designed
 6. Machine room
 7. Operator working area
 8. Storage for paper, tapes, disks and outputs
 9. Customer engineer working area
 10. Technician area
 11. System development areas: for system analysts and programmers

12. Library: for storing books, journals and software
13. Conference and meeting rooms
14. Training rooms
15. Director rooms
16. Secretary rooms
17. Operator and guest areas
18. Canteen
19. Toilet
20. Rest rooms
21. .Areas for storing power units and air conditioners: such areas are needed to be designed so that there will be no harm in case of power supply shortage

Computer Center Designs (Contd.)

- We have to be careful about small things such as:
 - Dust
 - Transportation for the staffs
 - Pest
 - Bedrooms for night shift operators
 - Transportation to the site .
 - Burglar

Backup Sites (Alternative Site Arrangement for Disaster Recovery)

Arrangement	Costs	Features
Reciprocal site:	Low	Coordination and capacity problems with other user may make this unworkable Bilateral agreement to allow others to use their system in the event of the destruction of the other's facilities. <ul style="list-style-type: none"> • Both systems should be similarly configured • Both should have excess capacity
Service Bureau	Moderate	Most specializing in providing disaster recovery services are geographically limited. This typical services have come back to attention of Corporate client once again due to the following reasons <ul style="list-style-type: none"> • Fast improvement in technology • Popularity of outsourcing concept •A contract for emergency services with a firm specializing in disaster recovery
Additional Site:		
Cold site	Low	<ul style="list-style-type: none"> • May take a substantial period of time to obtain and install system • Preparing the site to be ready for instiallation of equipment by having proper environment, power, etc., without hardware really installed.
Warm site	Moderate	<ul style="list-style-type: none"> • Must work closely with vendor to gurantee quick delivery of critical componets • Almost similar to cold site alternative, except that there will be very expensive hardware installed
Hot site	High	<ul style="list-style-type: none"> • Great if company can afford it • Having fully operational data center at the other location

Computer Center Operations

- **Management of Services on Daily Operations**
 - Service Planning: know our customers and their expectation
 - Define service level: Determine what can be done for customers. Computer Center Manager need to understand what is expected by customers and draft out Service Level Agreement for further discussion with customers
 - Make agreement with customers: It's needed to tell customers the truth regarding what computer center can deliver
 - Provide services to customers:
 - Organize staffs to provide agreed services
 - Prepare people and resources for such services
 - Assist customers when system is down, i.e. to recover the system within the pre-agreed period
 - Collect information about the services provided, e.g. usage period, usage information, etc.
 - Measure provided services: Analysis of services provided
 - Improve services to better satisfy customer's needs

Computer Center Operations (Contd.)

- **Kinds of Services by Computer Center**

- Providing computing capability, running programs and producing reports, printing documents, providing operations services, make sure that good performance is provided
- Providing Internet services: Set up Internet and Email accounts, managing mailbox, providing disks spaces for Web, providing security and virus warning, etc.
- Providing helps: Help users to solve computer usage problems, help users to develop simple applications, help users to keep their data, help on security
- Providing system development services: Develop system for users
- Providing data entry services: This is to capture data into the systems, during these days, such function seems to be obsolete now. Such services may include storing data in database, data protection by data backup and recovery. Scanning images into the systems is also considered as a part of this function.
- Providing consultancy services: Purchasing devices, installing hardware & software, help users to work more efficiently
- Providing training for users, recently, the use of e-Learning concept of training also implemented

Computer Center Operations (Contd.)

- Managing End-User Computing
- User Computing - Technique that will allow Computer Center Manager to manage users' own development well.
 - Develop policy on user purchase - create standard specifications for hardware and software to be purchased
 - Develop help desk function - have a group of computer staffs to help solve problems for users
 - Communicate Standards throughout organization - such standards as: data standards, standard codes, naming convention, standard data backup practices, etc.
 - Create regulations to protect users work and system security

Computer Center Operations (Contd.)

Types of Users

Category	Description
Indirect End-Users	Use information generated from the Information Systems but do not directly interact with systems
Nonprogramming End-Users	Interact with systems by entering data and getting results from production systems
Direct End-Users	Do their own programming and data analysis on the computer systems using specially designed programming tools
Information System Professionals	<p>They are experts in system analysis, design and programming</p> <p>This typical users should be considered a type of Specialists rather than a type of end-users, and in this table, computer staffs can be considered as this typical user type</p>

Computer Center Operations (Contd.)

- **Phases of End-User Computing**

Category	Description	Possible Strategy
1. Feasibility	Evaluation of possible technology	Limited laissez-faire with top-management support
2. Development	Introduction of technology to the general user	Development of support facilities and technology standards
3. Growth	Proliferation of technology with goal of sophisticated users	Stricter control of resource acquisition and usage
4. Maturity	Strong base of sophisticated users	Managed like any business unit - primary support at departmental level

Security:

Security Policies (subject to BS7799 (British Standard) / ISO17799)

- 1. Securing hardware, peripheral and other equipment
 - Purchasing and installing hardware - done by central office
 - Cabling, UPS, printer and modem
 - Consumables
 - Outsourced Equipments
 - Using secure storage
 - Documenting hardware
 - Other hardware issues
- 2. Controlling access to information and system

Security:

Security Policies (subject to BS7799 (British Standard) / ISO17799)

3. Processing information and document

- Network
- System operation and administration
- Email and the WWW
- Telephone and fax: Policy in deciding which info can be faxed
- Data management
- Backup and recovery, and archiving (=permanent storage)
- Document handling
- Securing data
- Other information handling and processing

4. Purchasing and maintaining commercial software

- Purchasing and installing software
- Software maintenance and upgrade
- Other software issues

5. Developing and maintaining in-house software

- Controlling software code
- Software development
- Test and training
- Documenting
- Other software development

6. Combating cyber crime

Security:

Security Policies (subject to BS7799 (British Standard) / ISO17799)

7. Complying with legal and policy requirement

- Complying with legal obligations
- Complying with policies
- Avoid litigation
- Other legal issues

8. Planning for business continuity

- Business continuity management

9. Addressing personnel issues relating to security

- Contractual documentation
- Confidential personnel data
- Personnel information security responsibility
- HR management
- Other HR issues

10. Controlling e-commerce information security

- Digital signature
- Other e-commerce issues

Security:

Security Policies (subject to BS7799 (British Standard) / ISO17799)

11. Delivering training and staff awareness
12. Dealing with premises related consideration
 - Premises security
 - Data stores
 - Other premises issues
13. Detecting and responding to IS incidents
 - Reporting information security incidents
 - Investigating information security incidents
 - Corrective activities
 - Other information security incident issues
14. Classifying information and data
 - Setting classification standard
 - Information access policies

Risks Assessment

Major Categories of Exposures	
Exposure	Discussion
Destruction of Assets	Broad category that involves all of the physical facilities associated with computing
Loss or Alteration of Data	The most important aspect of data processing is teh corporate data. Its loss could ruin the company.
Faulty Software	The category most likely to cause problems involving security and integrity
Inappropriate Use of Facilities	Difficult to detect and apprehend individuals involved in these activities

Exposure	Loss Exposures for Payroll System			Expected Loss
	Type of Loss	Magnitude of Loss (per month)	Probability of Loss	
Change of Employee Time Card	Overpayment of Employee	\$4,000	.002	\$80
Fictitious Employees	Payment to Persons Not on Payroll	\$50,000	.005	\$250
Selling List of Employees	Loss of Valuable Employees	\$10,000	.05	\$500
Making Employee Compensation Public	Employee Dissatisfaction	\$20,000	.01	\$200
Printing Duplicate Payroll Checks	Double Payment of All Paychecks	\$500,000	.0001	\$50

Managing Risks

- To prevent from being reliable to only one group of personnel by concentrating duties, it is recommended to segregate duties into separated parts.
- Example:

Duty	Discussion
Authorization of Transactions	In paying employees, this would involve signing the paychecks. Some instances may dictate multiple authorizations.
Custody of Assets	This not only involves physical custody of asset but also the ability to have the asset moved. A foreman in a warehouse may never touch the inventory but can have subordinates relocate the inventory.
Recording Transaction	This involves the records that are used to control and verify the validity of the transaction.
Verifying Correctness	This occurs after the transaction is concluded to control the operations.

- An example in banking business is that a bank may separate its risks by letting 2 VPs to hold 2 sets of numbers to be used for PIN Code generation.

Performance Evaluation

- *Computer Performance Evaluation is the measurement and evaluation of the performance of a computer system, aimed at ensuring that a minimum amount of effort, expense, and waste is incurred in the production of data-processing services, and encompassing such tools as canned programs, source program optimizers, software monitors, hardware monitors, simulation, and bench-mark problems. Abbreviated CPE.*
- **Performance Evaluation**
 - Computer Center Must announce the service level policies on:
 - Operating Labor
 - Uptime
 - Time to repair
 - Response time
 - Objectives are to collect data about the usage & performance
 - Evaluate whether the performance is acceptable
 - If not, find out the problems and change the configurations, change the system software, recognize the disks, etc.
 - Prepare reports to the top management
 - System programmer is in charge of these tasks
- **Performance Improvement: Alternatives:**
 - Buy new CPU
 - Reconfigure programs
 - It is cheaper to do so, and in some cases, it may solve all problems by just doing so

Performance Evaluation

- Tools for Collecting Data about Usage
 - Most companies have software to collect all system data
 - IBM has its Software Management Facilities (SMF), which collect data about all usage on various devices
 - Microsoft also has software to collect data about usage
- System Programmers must:
 - Have some ideas about performance: start the job with the least turnaround time first
 - Know all system functions very well
 - Develop system operations model
 - Compare performance data with the model
 - Stimulate the new operations model
 - Change the physical model
 - Recollect, recompare, and readjust again