Information Systems Management

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Syllabus

1. **Introduction to Information Systems**
2. **Information Systems in Organizations**
3. **IT/IS investment evaluation and performance evaluation**
4. **Different types of Business Information Systems**
5. **Acquiring IT/IS infrastructure capabilities**
6. **Security, Privacy, and Ethical Issues in information Systems**
7. **Using IS/IT governance framework**

Topic 5: Acquiring IT/IS infrastructure capabilities

Reference: Laudon K., Laudon J. "Management Information Systems" 13th Edition, Pearson Education Limited

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Topic 5: **Acquiring IT/IS Infrastructure Capabilities**

1. IT infrastructure
2. Acquiring IS infrastructure and services
3. Souring and outsourcing IS services and applications
4. IT infrastructure management

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Intended Learning Outcomes

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- Define IT infrastructure
- Identify IT infrastructure capabilities
- Describe the components of IS infrastructure
- Identify the steps in IS acquisition
- Evaluate major IS acquisition options and criteria for option selection
- Take decisions regarding IT infrastructure management

Introduction

❑ Growing importance of electronic infrastructure and declining importance of physical assets and location

❑ More and more of a company's cash flow is online

❑ Longer term decisions about IT /IS investments differentiate company's competitive capabilities

❑ New IT infrastructure opportunities test many decision making processes

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IT Infrastructure

Set of H/W and S/W required to operate entire enterprise

❑ **Technical-IT infrastructure**

• Technology,
• Applications, and
• Data,

❑ **Human-IT infrastructure**

• Data workers and information management personnel
• Knowledge and capabilities required to manage organizational **IT resources**

IT Infrastructure and Business Capability
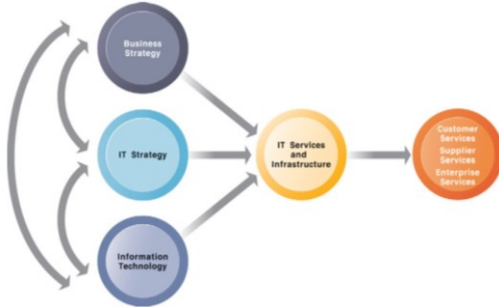
Effective IT Infrastructure

❑ **Flexible**

• Characterized with connectivity,
• compatibility, and
• modularity.

❑ **Robust**

• provide data and information to users with the appropriate levels of accuracy, timeliness, reliability, security, and confidentiality

• enables employees to perform their duties, having both the available technology and the necessary technological skills.

Levels of IT Infrastructure
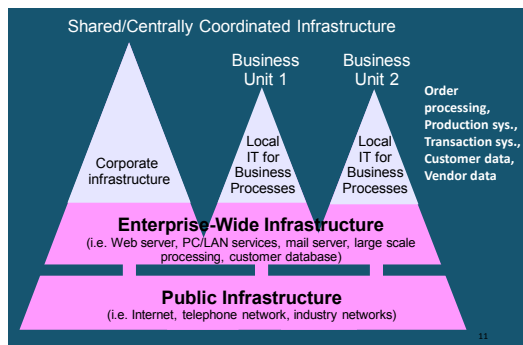
IT infrastructure Investments

• **Enterprise-wide IT infrastructure**

• Support long-term , enterprise-wide strategies

• Responsive to the demands of business-unit strategies

• **Investments at different business units**

• Often made independently of a short-term, catch-up or bleeding-edge strategy

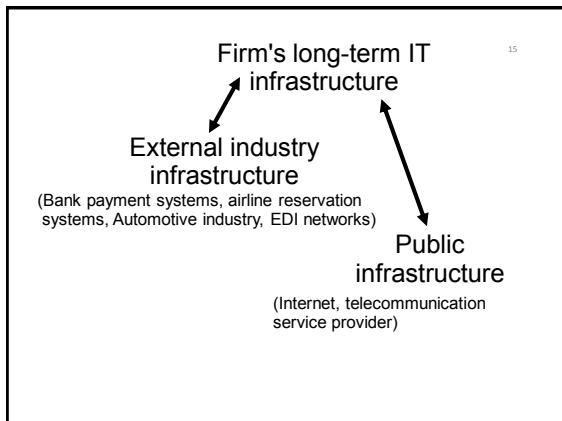• Resulting technologies are often incompatible

Factors to be Considered when Acquiring IT Infrastructure

- Dependability
- Manageability
- Adaptability
- Affordability

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Issues in IT infrastructure Investments

- **Overinvesting**
  - Leads to wasted resources that weigh heavily on the bottom line
- **Underinvesting/ implementing wrong infrastructure**
  - Result in delays
  - Rushed implementations
  - Islands of automation
  - Limited sharing of resources, information and expertise

Firm's long-term IT infrastructure 15

External industry infrastructure
(Bank payment systems, airline reservation systems, Automotive industry, EDI networks)

Public infrastructure
(Internet, telecommunication service provider)

Take decisions regarding IT infrastructure acquisition considering;

- Strategic issues
- Technical issues
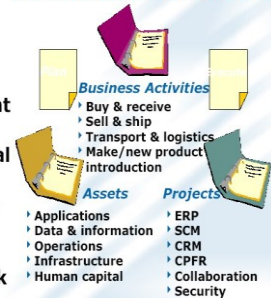- Competitive issues
- Financial and
- Organizational issues

Consider IT Portfolio and IT architecture

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What Does an IT Portfolio Look Like?

The Business and IT Portfolio

- An IT portfolio is ...
  - A set of managed IT *investments*
  - allocated to investment *strategies*
  - according to an optimal *mix*
  - based on assumptions about future *performance*
  - to maximize value/risk *tradeoffs*

Business Activities
- Buy & receive
- Sell & ship
- Transport & logistics
- Make/new product introduction

Assets
- Applications
- Data & information
- Operations
- Infrastructure
- Human capital

Projects
- ERP
- SCM
- CRM
- CPFR
- Collaboration
- Security

IT Architecture

- A set of rules and policies to govern the use of IT and plots paths for future business
- It is not set in concrete and must be reviewed
- Usually, a technical guideline rather than a tool for decision making
- Has to cope with business uncertainty and technological changes
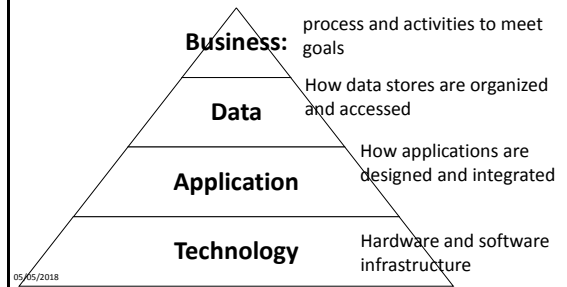- Evolves over time, is documented and accessible to managers

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Content of a Typical IT Architecture

- Computer (h/w and operation system)
- Communication and telecommunication systems
- Data (data assets, usage, storage and control)
- Applications (functionalities, relationship between other applications and guides to install and use)
- Work (standard processes, measures of success and work policies)

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Components of IT Architecture

Business: process and activities to meet goals

Data How data stores are organized and accessed

Application How applications are designed and integrated

Technology Hardware and software infrastructure

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Uses and Benefits of IT Architecture

- Maintain a close alignment between IT deliverables and business requirements.
- Improve ability to respond quickly to business changes.
- Develop closer partnerships between business and IT groups.
- Reduce the risk of failed or unnecessary ISs.
- Reduce complexity of existing ISs.
- Improve efficiency of new IT systems.
- Ensure that legal and regulatory requirements are being met.

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HOMEWORK: ACTIVTY -**1**

1. Read the following webpage and prepare a note

http://www.ericsson.com/news/141016-ericsson-acquires-sentilla-to-enhance-cloud-management-and-analytics-capabilities_244099435_c

2. Describe the importance of converged systems and hyper-converged systems

IS Infrastructure

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IS infrastructure and services

IS Infrastructure: Hardware

- An integral part of infrastructure
  - Computers
  - Networking devices

Hardware solutions

- Fluctuating computing needs - On-demand computing
- Large scale problems – Grid computing
- Cost issues related to bandwidth and processing speed - Edge computing
- Low reliability and high maintenance cost - Autonomic computing
- Cost, access and software select and update issues - Cloud Computing

On-demand computing

- Allocate available resources based on users' needs (on a pay-per-use basis)
- Rent resources from an external provider- Utility computing
  - Rent resources for processing, data storage, or networking, on an as-needed basis
  - Tenant receives a monthly bill for the services used
  - Service provider should do the tasks such as managing, maintaining, and upgrading the infrastructure
 - All charges are added to the utility bill

Grid computing

- To overcome cost or use limitations
  - Supercomputers are very expensive, cannot afford or justify
  - Some tasks are beyond the capacity of a available supercomputers
  - Can solve very large-scale problems as well as multiple smaller problems
  - Dedicated grids
    - To perform the grid's computing tasks and
    - overcome speed issues

Edge computing

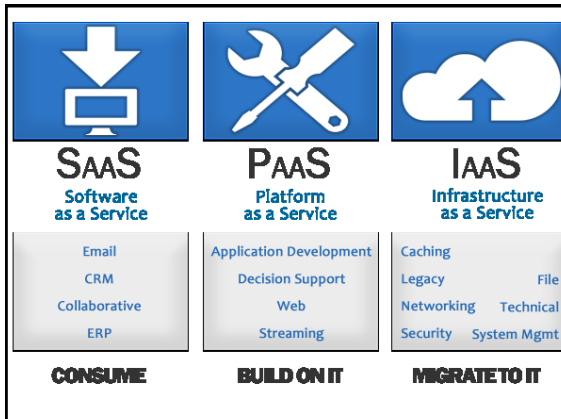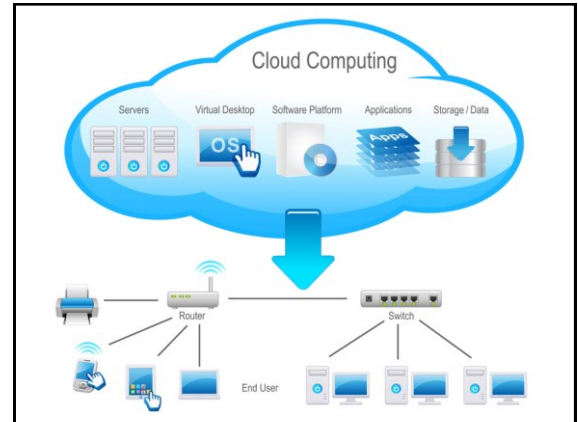For bandwidth and processing speed issues
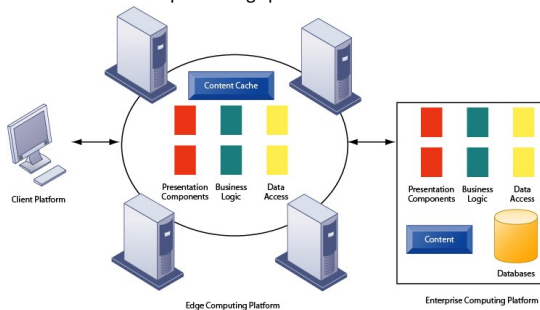
Autonomic computing

Green computing

- Minimize the impact on the environment
- Adopt better practices and technologies for designing, developing, using and disposing hardware
- Reduce power consumption

Cloud Computing


IS Infrastructure: Software

- Organizations have to rely on a variety of different software
- Continuously upgrading OSs and applications can be a huge cost factor (for labour and s/w)
- S/W infrastructure mgt. Approaches
  - using open-source software,
  - integrating various software tools
  - using application service providers

Using Open Source Applications

- Open Source – free and source code is available for use and/or modification
- Open source operating systems - e.g. Linux
- Open source application software – e.g. Apache Web Server

Integrating s/w tools

- Using software products which can interoperate very well
- Using web services which allow interaction of different programs and databases over a network (service-oriented architecture - SOA)
  - e.g. Google to integrate search functionality and
  - MapQuest to provide guests with an interactive map to the company head office and branches
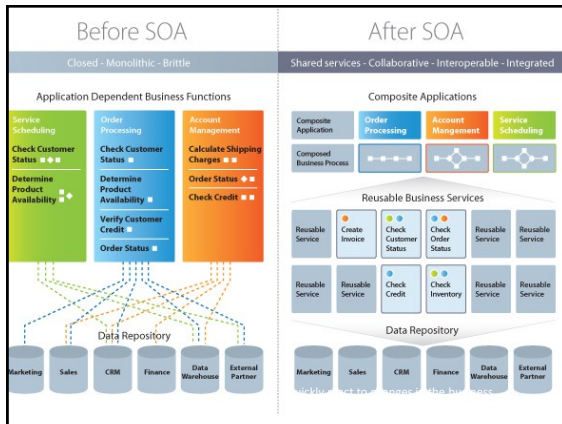
Software issues

- Bugs
  - Using a patch management software (e.g. Windows Update Service)
- Licensing
  - license violations can lead to fines and public embarrassment
  - licenses differ in terms of restrictiveness
  - Shrink-wrap license /click-wrap license
  - Enterprise license /volume license
- Software asset management

Software asset management

- Perform a software inventory,

- Match the installed software with the licenses,

- Review software-related policies and procedures, and

- Create a software asset management plan

ACTIVITY

1. Describe four major types of hardware solutions.
2. Describe what SOA is.
3. What is a software bug?
4. What is software asset management?