

Enterprise Systems

INSY 4103 – Lecture 2 - Functional Departments
and Silo systems

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Lecture Objectives

- At the end of the lecture students will be able to;
 - Understand major business process in enterprises
 - Understand the nature and development process of **silo systems**

Outline

- Functional Departments (HR, Finance, Purchasing, Supply ...)
 - Examples (business process)
- Silo systems development process (Analysis, design, Implementation (previous class examples and the current industrial projects))
- Silo systems architecture
- Gaps/challenges in implementing and using silo systems
- Class exercise

Functional Units

Cont...

- Operating a successful business typically involves some form of **organizational structure**.
- The functional structure is one type of organizational structure that helps companies manage employees and meet their business goals.
 - Other types of organizational structures include divisional, flat, flatarchy, hierarchical, matrix, network and team-based.
- A **functional organizational structure organizes a company into different departments** based on areas of expertise.

Cont...

- A company that has a functional structure tends to have the following three characteristics:
 - a top-down hierarchical structure,
 - department heads who report to senior management and
 - employees who specialize in certain tasks.

Cont...

- **Functional structure example:** Here's an example of a company that has a functional organizational structure.
- Company ABC manufactures **travel luggage** and has nearly 500 employees. It has adopted a **functional organizational structure** and created various departments including:
 - Finance
 - Marketing
 - Operations management
 - Human resources
 - Information technology
 - Engineering
 - Merchandising
 - Product development
 - Retail

Cont...

- Functional Silos
 - IS over the years have been divided **horizontally** by functions and **vertically** by hierarchical levels.
 - Silos are basically compartmentalized operating units isolated from their environment.
 - They are and have business processes.
- Example – from Our ERP projects (Business process of Supply, HR and Engineering)

Con....

- Horizontal Silos
 - The POSDCORB (Planning, Organizing, Staffing, Directing, Coordinating, Reporting and Budgeting) categorization.
 - Classification of organizations into **departments** like Accounting and Human Resources, reflects the breaking of complex tasks into smaller manageable tasks.

| Organization | | | | | | |
|--------------|------------|----------|-----------|--------------|-----------|-----------|
| Planning | Organizing | Staffing | Directing | Coordinating | Reporting | Budgeting |

FIGURE 2-1 Functional Model of Organization (POSDCORB) *Source:* Adapted from Bernard, C. (1938). *The Functions of the Executive*. Cambridge: Harvard University Press.

Cont...

- Vertical Silos
 - Organizations also divided roles in hierarchical layers from strategic planning to management control and operation control.

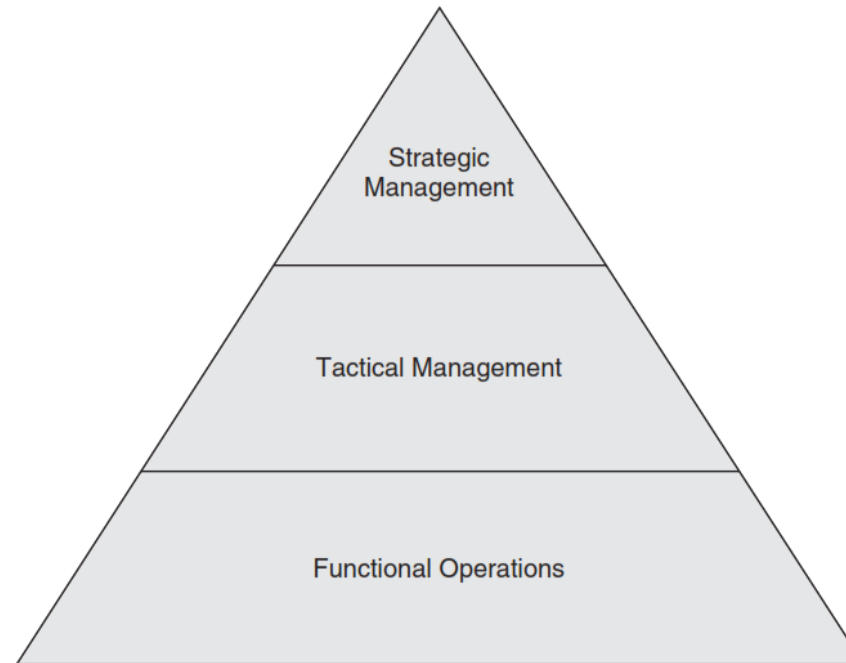


FIGURE 2-2 Hierarchical Model of Organization

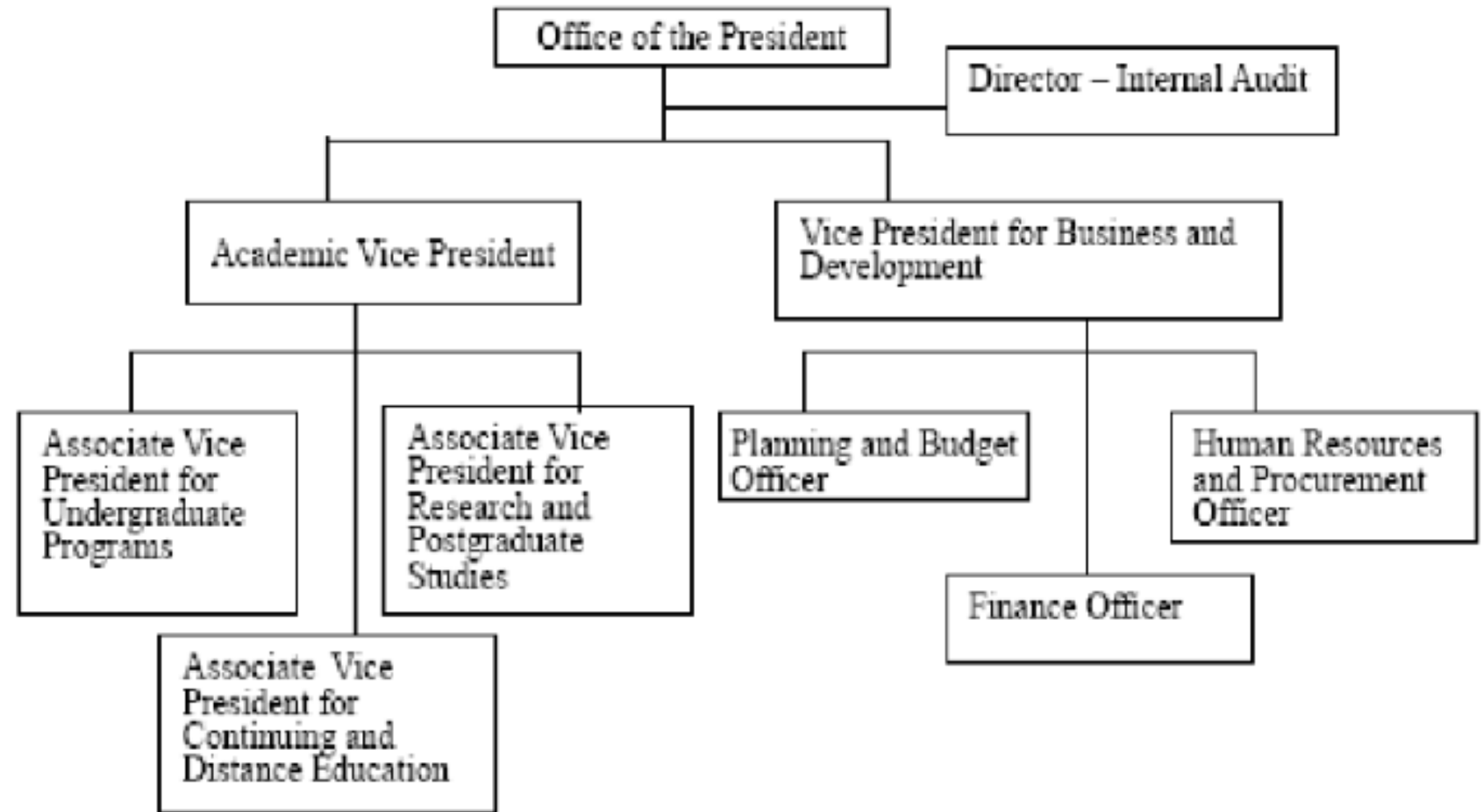
Cont...

- Organizational structure discussed above is way of representing and visualizing the relationship between functional silos / business process.
- The **problem** of functional silos gave birth to business process re-engineering (**BPR**).
- The **cross-functional business process** can involve people and resources from **various functional departments** working together, sharing information at any level of the organization.
- It **breaks the functional silos** by opening up the **informational flows** from one department to another.

Exercise 2.1

- Represent the organizational structure of AAU and identify the functional units/silos
- Suggest the potential number of silo systems it may require?

Cont...



Organizational structure: an Ethiopian university

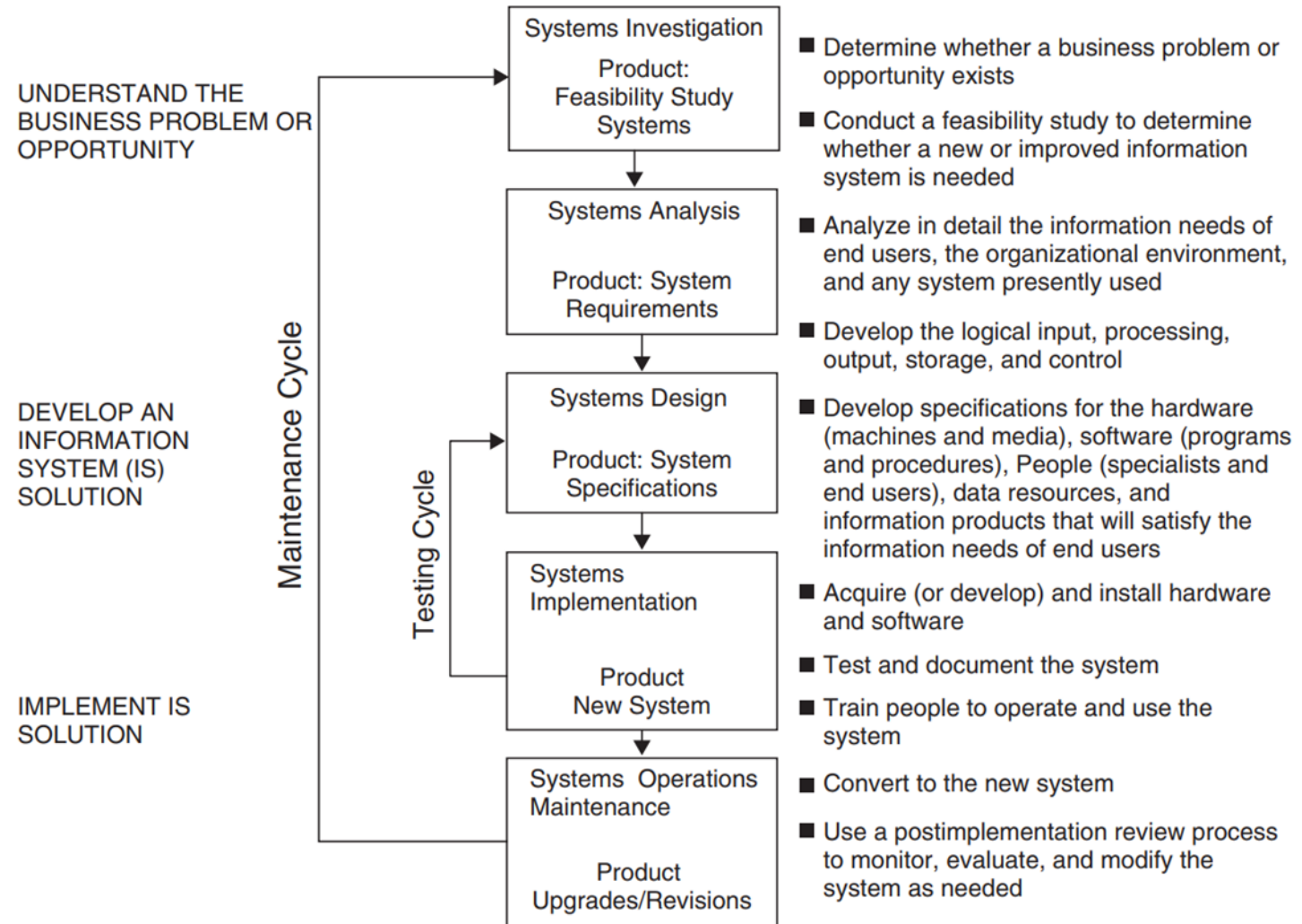
Exercise – 2.2

- Develop the organizational structure of the enterprise your senior project is based up on and indicate the **specific location/position** of the functional unit/business process you are trying to automate.

Silo systems development process

(Planning, Analysis, Design, Implementation, Maintenance)

Basic steps



Cont...

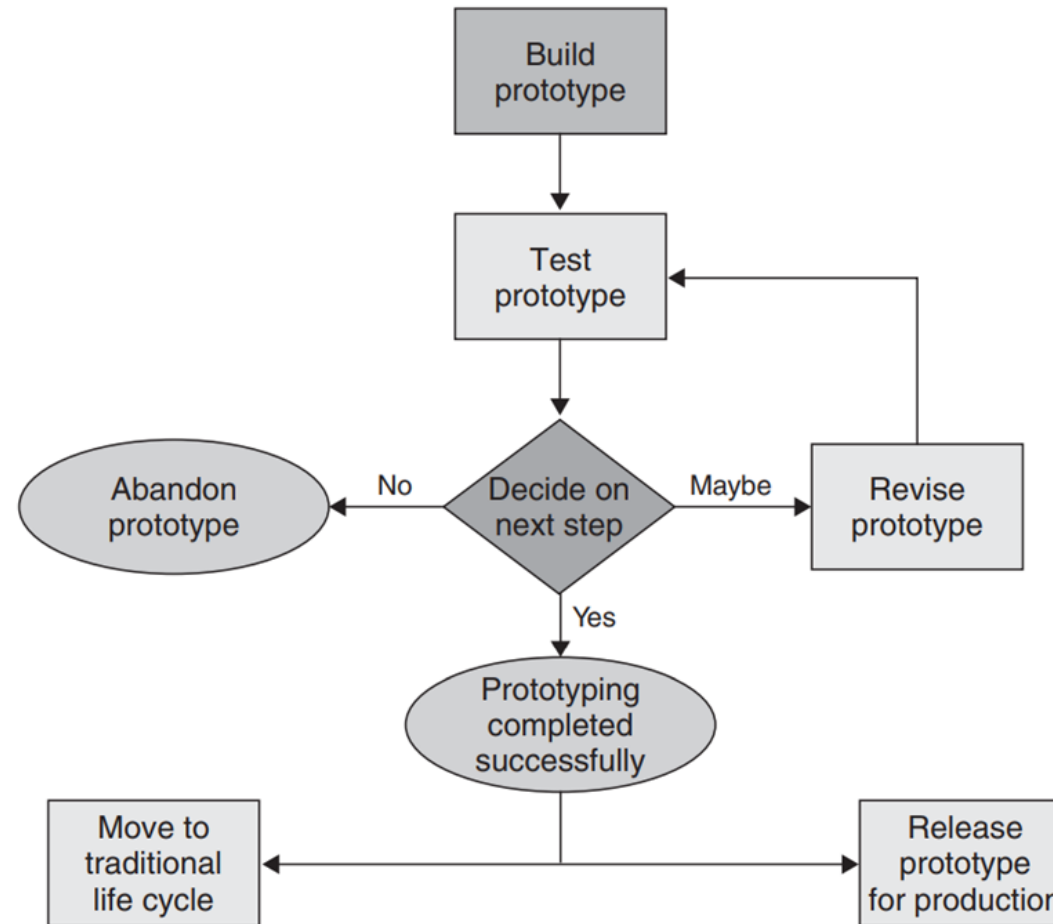


FIGURE 4-3 Prototype Development

Cont...

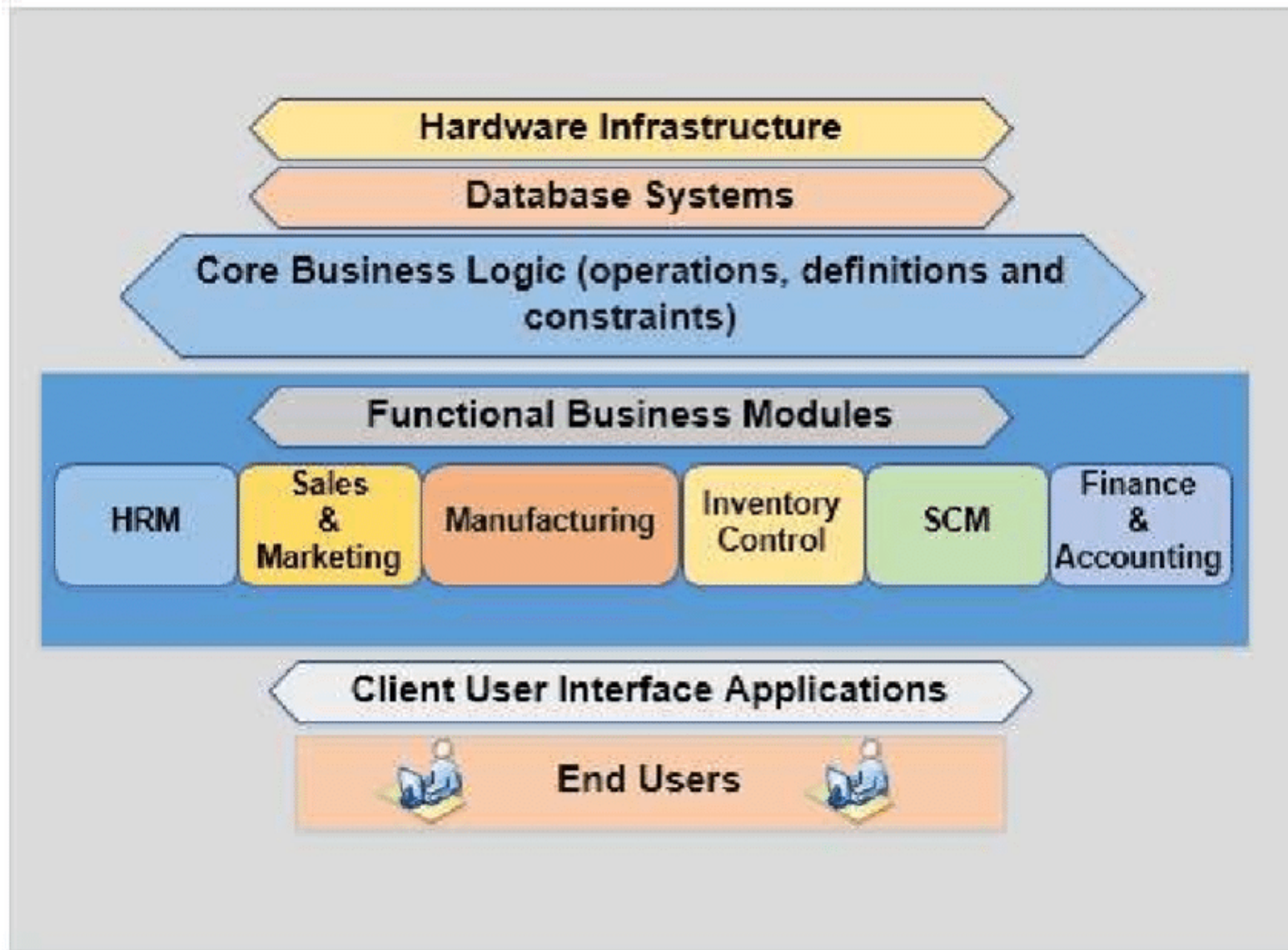
- Basic issues is silo systems development includes Identification and modeling of ;
 - Information needs - Inputs requirements
 - Key process/functions
 - Reports requirements

Exercise 2.3

- Develop
 - Functional model/use case of the system you are proposing on your senior project.
 - Data model representing the back end /database

Silo systems architecture

Enterprise systems architecture



Exercise 2.4 – silo systems architecture

- Let us consider three departments/functional units at AAU; Registrar/student records management, Dormitory Management and Library .
- Design systems architecture for each functional units listed above based on the enterprise systems architecture layout presented earlier.
- Enumerate at least two limitation of such disintegrated systems.

Gaps/challenges in implementing and using silo systems

Cont...

- **Duplicate data platforms and processes.** Data silos add to IT costs by increasing the number of servers and storage devices an organization needs to buy.
- **Inconsistent data.** Many data silos aren't consistent with other data sets. For example, a marketing team may format customer data differently than other departments.
- **Incomplete data sets.** Data silos lock data away from users who can't access them
- **Discourage** cross-department collaboration
 - Applications that don't talk to one another
 - Limited or lack of integrated information
 - Isolated decisions lead to overall inefficiencies
 - Increased expenses

Exercise 2.5 (Assignment)

- Develop a **functional model/use case** and **data model/ERD** for the following three functional silos at AAU
 - Registrar/student records management,
 - Dormitory Management and
 - Library

Summary

- Silo systems
- Functional units
- Silo systems development process
- Silo systems architecture
- Key challenges in use of silo systems

Review questions

- What is the difference between functional and cross-functional business organization?
- What is silos systems? What is its main limitation to enhance business performance?
- How can enterprise system concepts solves problem of silos systems?

Reference

- Motiwalla, Luvai F. & Jeffrey Thompson. Enterprise systems for management. Latest ed. Upper Saddle River: Pearson Prentice Hall
- Vivek Kale. 2019- Enterprise Process Management Systems: Engineering Process-Centric Enterprise Systems

Thank You