Perencanaan Sistem Informasi (PrSI)
(3 sks)

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Materi (1):

- IT Planning-A Critical Issue for Business
  - Business/importance and content
  - The evolution of IT planning
  - Issues in IT planning
  - A four stage model of IT planning

- Strategic Information Planning
  - BSP (Business system planning)
  - Stages of IT growth
  - Ends/means analysis
  - CSF (critical success factors)

- Information Requirements Analysis
  - Conducting a requirements analysis
  - Using the requirements analysis for planning
  - Resource allocation
  - Project planning

Turban, IT for Management, Hal. 515-556
Materi (2):

- Planning Information Technology Architectures
  - Centralize architecture
  - Noncentralize computing
  - Client/server architecture
  - IT infrastructure consideration
  - Choosing-among architecture options
  - End-user computing architecture
  - Issues
  - Reengineering legacy systems

- Other Issues in Planning
  - Guidelines for IT planning
  - Interorganizational and international systems
  - Managerial issues

IT Planning-A Critical Issue for Organizational

- How TruServ planned its informations technology
  - The problem
  - The solution
  - The results
IT Planning-A Critical Issue for Organizational

- The case of TruServ demonstrates to us the need for a formal IT strategic plan, especially for large corporations.

Different types of plans:
- Tactical,
- Strategic,
- End users
The topic of IT planning is very important for end users for the following reasons:

- End users do IT planning for their own units.
- End users must participate in the corporate IT planning. Therefore they must understand the process.
- Corporate IT planning determines how the IT infrastructure will look. The future of every unit in the organizations will be impacted by the infrastructure.

Alignment of the IT Plan with the Organizational Plan

The Relationship between Business, IS and IT Strategies
A Four-Stage Model of IT Plan

Generic Activity
- Strategic IT Planning
- Information requirements analysis
- Resource Allocation
- Project Planning

Major activities and outputs in the four stages of IT planning

**Strategic Planning**
- Set IS Mission
  - IS Charter
  - Current IS Capabilities
  - New opportunities
  - Current IS environment
  - IS image
  - Stage of IS maturity
  - IS personnel skills assessment

- Assess environment
  - Review strategic organization plan
  - Identify major IS components
  - IS personnel skills assessment

**Organizational Information requirements analysis**
- Set IS policies, objectives, & strategies
  - Organization structure
  - Technology focus
  - Resource allocation mechanism
  - Management processes
  - Functional capability objectives

**Resource Allocation planning**
- Assess organizational information requirements
  - Overall information architecture identification
  - Current information needs
  - Projected information needs

**Project planning**
- Assemble master development plan
  - IS project definition
  - Project ranking
  - Multiyear development schedule

- Develop resource requirements plan
  - Trend identification
  - H/W plan
  - S/W plan
  - Personnel plan
  - Data communication network plan
  - Facilities plan
  - Financial Plan

- Evaluate project and develop project plan
  - Project evaluation
  - Task identification
  - Cost estimates
  - Checkpoints
  - Completion dates
Business System Planning (BSP)

Business Strategies

Business Process

Applications

Data Class

Organizational Databases

Information Architectures

Information Gathering Techniques:
Overview Classes of Information* (3,9-26)

- Facts about the Mission
- Facts about the Organization Structure
- Facts about Business Activities and Data
- Facts about the Current System Environment
- Facts about the Current technical Environment
Information Gathering Techniques

- Describe techniques for gathering data about organization and the current information environment
- Consists of the sections:
  - Classes of Information
  - Review of written Information
  - Interviewing
  - Recording Information in IEF (Information Engineering Facility)
  - Matrices

Facts about the Mission

- This section discusses the facts that support the enterprise’s mission and its plan to accomplish that mission
- Representative method of classification:
  - Mission
  - Objective (other org.called goals)
  - Strategy
  - Goal (or strategies)
  - Plan (or tactics)
  - Critical Success Factor (CSF)
Mission

- The enterprise’s mission is a general statement of the purpose and nature of the enterprise.
- Each enterprise can be characterized by a single mission.
- Example: ?

Objective

- An Objective is a broad, longer term result that the enterprise wishes to achieve to support its mission.
- The planning horizon for an objective is generally between five and ten years.
- Example: ?
Strategy

- A Strategy is the means by which an Objective is achieved
- Each objective must be supported by a strategy
- Example: ?

Goal

- A goal is a specific target the enterprise wishes to reach at a specific point in time
- Each goal of the enterprise supports a single strategy (and, thus, a single objective)
- A strategy, on the other hand, is likely to be supported by many goals
- Example: ?
A Critical Success Factor (CSF) is a factor that has a major influence on whether the enterprise will achieve a particular objective or goal.

Some planners may refer to distinguish between positive CSFs (called facilitators) and negative CSFs (called inhibitors).

A goal or objective influenced by a facilitator will be at risk if the facilitator does not successfully occur, while a goal or objective influenced by an inhibitor will be at risk if the inhibitor does occur.

Example:

Facts about the Organization Structure

The organization’s structure reflects its general approach to fulfilling its mission.

The following terms are used to classify facts about the organization:

- Organizational Unit
- Organization Structure
- Organization Role
Organization Structure

- An organization structure defines the relationship between organizational units
- Example: ?

Organization Role

- An organization is a type of position that can be allocated to a person or an organizational unit
- It defines the kind of job being done
Facts about Business Activities and Data

- To develop the information architecture successfully, the planners must understand the underlying business activities the organization performs and the data affected by these activities.
- The following terms describe business activities during ISP (Inf.Strategy Planning):
  - **Business Function** (manufacturing, marketing, sales, shipping, etc)
  - **Business Process** (take an order, build a steering wheel, call a customer, etc)
- The following terms describe business data during ISP (Inf.Strategy Planning):
  - **Subject Area** (Vendors, Customers, Raw Material)
  - **Entity Type** (vendor shipment, customer billing location, etc)
  - **Relationship** (entity type CUSTOMER, entity type ORDER, etc)

Facts about the Current System Environment

- Are necessary to assess the coverage of business activities by the computer systems already in place.
- Classify:
  - Current System
  - Current Data Store
Facts about the Current Technical Environment

- Into two Classify:
  - Hardware Item
  - Software Product

Review of Written Information

- The project team should review all available pertinent documentation. This includes:
- Business documentation
  - Annual report
  - Business plans and forecasts
  - Organization charts and manuals
  - The corporate chart of accounts
  - Company handsbooks and manuals
  - Memoranda dealing with business practices
  - Advertising literature
Review of Written Information (2)

- Current systems environment documentation
  - System description
  - Data administration guidelines
  - System architecture documentation
  - System flowchart and database specifications
  - Memoranda dealing with system architecture
  - Information systems organization planning documents
  - Information systems organization charts
  - User manuals

Review of Written Information (3)

- Current technical environment documentation
  - H/W distribution lists
  - Capacity planning documents
  - System S/W lists
  - Data network documentation
  - Performance Statistics
  - H/W and S/W acquisition plans
Making The Initial Assessment

- Overview
- Identify and Record The Organization Structure
- Identify and rank Business Objectives
- Formulate Information Needs and Performance Measures
- Determine Potential Impact of IT
- Define Preliminary Information Architecture
- Interview Top Management
- Interview Middle Management
- Review The Initial Assessment

Using the IEF Second edition hal 38

Overview

- ....
  - ....

Using the IEF Second edition hal 38
Identify and Record The Organization Structure

- ..... 
- .......

Identify and Rank Business Objectives

- Classes Of Information
- Inputs
- Steps
- Deliverables
Classes Of Information

- Mission
- Objectives
- Strategy
- CSF
- Goal
- Plan
- Organization Structure

Inputs

- Written documentation :
  - Formal business plans (at multiple organization levels)
  - Annual reports
  - Strategic memoranda
- Organization Hierarchy Diagram
Steps

1. By reviewing available documentation, identify and list the mission, objectives, and strategies of the enterprise. For each objective, list its CSF.
2. Organize the mission, objectives, and CSF into a mission statement.
3. Record the objectives, strategies and CSF of each major org. unit. (see figure 4-3)
4. Relate the enterprise’s objectives to those of its major organizational units. (see figure 4-4). Prepare it manually as follows:
   - Place the corporate objectives on the horizontal axis
   - Place the objectives of each major organizational unit on the vertical axis
   - At each intersection:
     - Place D: directly satisfies the enterprise’s objective
     - Place I: indirectly related to the enterprise’s objective
5. Finally, assemble the objectives of the enterprise and each major organizational unit in priority sequence based on the available documentation.

Figure 4-3 Example of a Mission Statement

Mission
To Provide the maximum return for investors through the manufacture and distribution of farm machinery

Objectives
1. 35% market share in the southern US
2. Sales growth of at least 8% per year
3. ROI of 12% per year
4. Grow and maintain small machinery business at 20% of total sales
5. Grow and maintain aerospace business at 6% of total sales
Figure 4-3 Example of a Mission Statement (2)

**CSF**

1. Effective management of physical distribution channels
2. Selection of high quality supplies
3. Awarding of space station contract
4. Adequate information support
5. Customer satisfaction
6. Employee productivity
7. Successful integration of robotics

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Figure 4-4 Enterprise/Organizational Unit Objectives Matrix

<table>
<thead>
<tr>
<th>Objective Area</th>
<th>Marketing</th>
<th>Operations</th>
<th>Distribution</th>
<th>Personnel Staff</th>
<th>Financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grow sales in Southern States by 12% over 12 months</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce Service cost</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase QA Reduce failure rates to &lt; 5%</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce # of options by 50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve stock of standard items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automate engine production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set-up 3rd party US distributors</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open European distribution network</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce financial liability to investors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issue stock for plant capitalization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decrease absenteeism by 50%</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross train ops staff for auto plant and reduce</td>
<td>I</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setup European offices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Deliverables

- Mission statement
- List of objectives, Strategies, and CSF by organizational unit
- Enterprise Organizational Unit objectives Matrix
- Preliminary Rangked List of Objectives for the enterprise and each major business unit

Formulate Information Needs and Performance Measures (1)

- Information Needs, identify the information required to support each objective and CSF
- Performance Measures, ways to assess accomplishment of each objective
Formulate Information Needs and Performance Measures (2)

- Classes Of Information
- Inputs
- Steps
- Deliverables

Classes Of Information

- Information Need
- Performance Measure
- Organizational Unit
Inputs

- Written documentation available to the planning team largely the same set of documents used during the "Identify and Prioritize Objectives" substask
- Mission Statement
- List of Objectives, Strategies, and CSFs by Organizational Unit
- Enterprise/Organizational Unit Objectives Matrix
- Preliminary Ranked List of Objectives for the enterprise and each major business unit
- Organization Hierarchy Diagram

Steps(1)

1. Identify and record information needs. The characteristics critical during the initial assessment are:
   a. A description of the need
   b. How the information is or should be used
   c. The objective or CSF it supports
   d. The importance factor of the information need (a relative measure of its importance)
   e. Whether snapshot (occasionally updated) information can satisfy the need or current (continually updated) information is required
   f. Whether the information satisfying the need is summary, exception, detail, a correlation, or some other kind of information is required.

Planners can list information needs and their characteristics on a form similar to the one in figure 4-4 alternatively, they can be entered directly into the IEF.
2. List information needs on the vertical axis of the information need/organization matrix using the IEF planning toolset. The horizontal axis, representing organizational units, is pre-populated from the organization structure represented earlier in the organizational hierarchy diagram.

3. Relate each information need to the organization unit whose objectives or CSFs require the information using the information needs/organization matrix. Place a simple involvement indicator in each cell that represents an information need by an organization. An example of an information needs/organization matrix appears in figure 4-6 page of 43.
Steps(3)  Figure 4-6 Information needs/Organization Matrix

**Steps(4)**

4. Identify the performance measures used to assess each objective and record them on the vertical axis of the performance measure/organization in the IEF planning toolset. The horizontal axis of this matrix, representing organizational units, is pre-populated based on the organizational hierarchy diagram.

5. Relate the organization unit to the performance measures that monitor its objectives using the performance measure/organization matrix in the IEF planning toolset. Place a simple involvement indicator in each cell that represents an information’s monitoring by a performance measure.
Deliverables

- Is a brief statement of the areas in which new uses of IT can create or enhance business opportunities. It Called a statement of potential IT impact.

Determine Potential Impact of IT

- Identify potential uses of IT to further the mission of enterprise.
- IT in this context refers to computing H/W and S/W that can be used to create new business opportunities.
Classes of Information

- H/W Item
- S/W Product

Inputs

- Publications, such articles and product announcements
- Business documentation that addresses the current technical environment
- Business strategies that may rely on IT
Steps

1. Review the available technical documentation to determine the extent of IT usage within the enterprise
2. List technology, these technologies include four categories:
   a. Those that can become a product or service, or part of a product or service. For consolidated implements, the use of microprocessors to monitor engine performance falls into this category
   b. Those that deliver a product or service. For a banking concern, the introduction of an ATM falls into this category
   c. Those that can be used as marketing tools. For consolidated implements, providing large customers a means to enter orders online falls into this category
   d. Those that can be used to increase the organization’s competitive advantage. For consolidated implements, this might include the use of Just-In-Time inventory control S/W or Engineering Revision System that allows quick modification of components

Define a Preliminary Information Architecture

- **Construct a high-level Information Architecture that reflects the needs of the business**
- **Once verified, this preliminary architecture will become the foundation for developing the overall Information Architecture for the enterprise**
Classess of Information

- Business function
- Subject area

Inputs

- Company annual’s report
- Any models of the enterprise previously developed
- Organization Hierarchy Diagram
Steps

1. Identify the subject areas with which the business deals. Each subject area can potentially be decomposed into elementary data objects. An example of subject area list for consolidated implements appears in figure 4.7

2. Describe the associations between the various subject area diagram using the IEF data modeling tool. An association between two subject areas indicates a business relationship between one or more of their components. For example, one might associate a subject area called Customers, representing people or companies who buy the goods produced by an enterprise, with the subject area Products, representing the goods produced. Figure 4-7 Example of a subject area list

The subject area diagram uses two symbols, one to represent a subject area and one to represent the association between two subjects areas:

a. Double-bordered box containing the name of a subject area represents that subject area.

b. A line connecting two subject area boxes represents an association between those respective subject areas.

3. Identify the highest-level business function. A function hierarchy diagram representing only top-level function appears in figure 4-9 with a description of the product research function, appears in figure 4-10.

4. Decomposed the top-level business functions into lower-level business functions.
Figure 4-7 Example of a Subject Area List

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUSTOMER</td>
<td>Information about all persons or organisations who purchase products. Includes delivery and billing location</td>
</tr>
<tr>
<td>PRODUCTS</td>
<td>All goods manufactured and sold</td>
</tr>
<tr>
<td>RAW MATERIALS</td>
<td>Components used to manufacture products. While some are actually &quot;raw&quot; materials, others are pre-assembled parts</td>
</tr>
<tr>
<td>VENDORS</td>
<td>Suppliers of Raw Materials</td>
</tr>
<tr>
<td>BUYERS</td>
<td>Company personnel responsible for purchasing raw materials from Vendors</td>
</tr>
</tbody>
</table>

Figure 4-8 Subject Area Diagram

[Diagram showing the relationships between CUSTOMERS, PRODUCTS, RAW MATERIALS, SALESMAN, ORDERS, VENDORS, PURCHASE ORDERS, and BUYERS]
Figure 4-9 Top Level Function Hierarchy Diagram

ENTERPRISE

- PRODUCT RESEARCH
- MARKETING
- PURCHASING
- MATERIALS MANAGEMENT
- DISTRIBUTION

Figure 4-10 Report of Top-Level Function Definition

<table>
<thead>
<tr>
<th>Activity Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name : PRODUCT RESEARCH</td>
</tr>
<tr>
<td>Description : Research and Development of new products and major refinements to existing products</td>
</tr>
<tr>
<td>This function is primarily concerned with the subject areas PRODUCTS and RAW MATERIALS</td>
</tr>
<tr>
<td>Type : Function</td>
</tr>
<tr>
<td>Subordinate of : ENTERPRISE</td>
</tr>
</tbody>
</table>
Define The Information Architecture

- Present the activities required to define the information architecture.
- The task of defining the information architecture is composed of the following subtasks:
  1. Complete the function decomposition
  2. Analyze function dependencies
  3. Map function to organizations
  4. Build the entity relationship diagram
  5. Map entity types to information needs
  6. Record usage of entity types by function
  7. Review results

1. Complete the function decomposition

- Continue decomposing the business functions defined while constructing the preliminary information architecture
- Decompose business functions as far as possible, even, in some cases, into top-level business process.
- Verified the function decomposition up to this point to the greatest extent possible from their reading and interviewing.
- Since the initial function decomposition is the foundation of the activity side of information architecture, its must accurately reflect the business.
- As a very general guideline, this subtask typically results in the identification of from 50 to 100 functions and process
Classes of Information

- Business Function
- Business Process

Inputs

- Initial function hierarchy diagram
- Additional, detailed information regarding business activities discovered during the initial assessment
Steps

The rule of function decomposition are as follows:

1. Each function must decompose into least two subordinate functions or processes
2. Sibling (activities at the same level of hierarchy beneath a single higher-level function) must all be of the same type. That is, they must either all be functions or they must all be processes. The same higher level function must never decompose directly into both a function and a process
3. The same function must not appera twice in the same decomposition
4. The subordinate functions or process that compose higher-level function must reflect all aspects of that higher-level function. For example if function A decompose into functions W, X, Y, and Z, the statement A = W+X+Y+Z must be true

Some example of correct decomposition as well as some violations in figure 5.1.

Figure 5-1 Example of Correct and Incorrect Decompositions
The distinction between functions and processes at either end of the spectrum is usually fairly obvious.

For example, Purchasing is definitely a function, while Order Raw Materials is definitely a process.

Example Function:
- Marketing
- Manufacturing
- Sales or Selling
- Shipping

Example Process:
- Take Order
- Assembler Part
- Bill Customer

Deliverables

Complete function hierarchy diagram (including all of its supportive descriptive documentation)