

IDENTIFYING AND SELECTING SYSTEMS DEVELOPMENT PROJECTS

Systems Analysis and Design

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

LEARNING OBJECTIVES

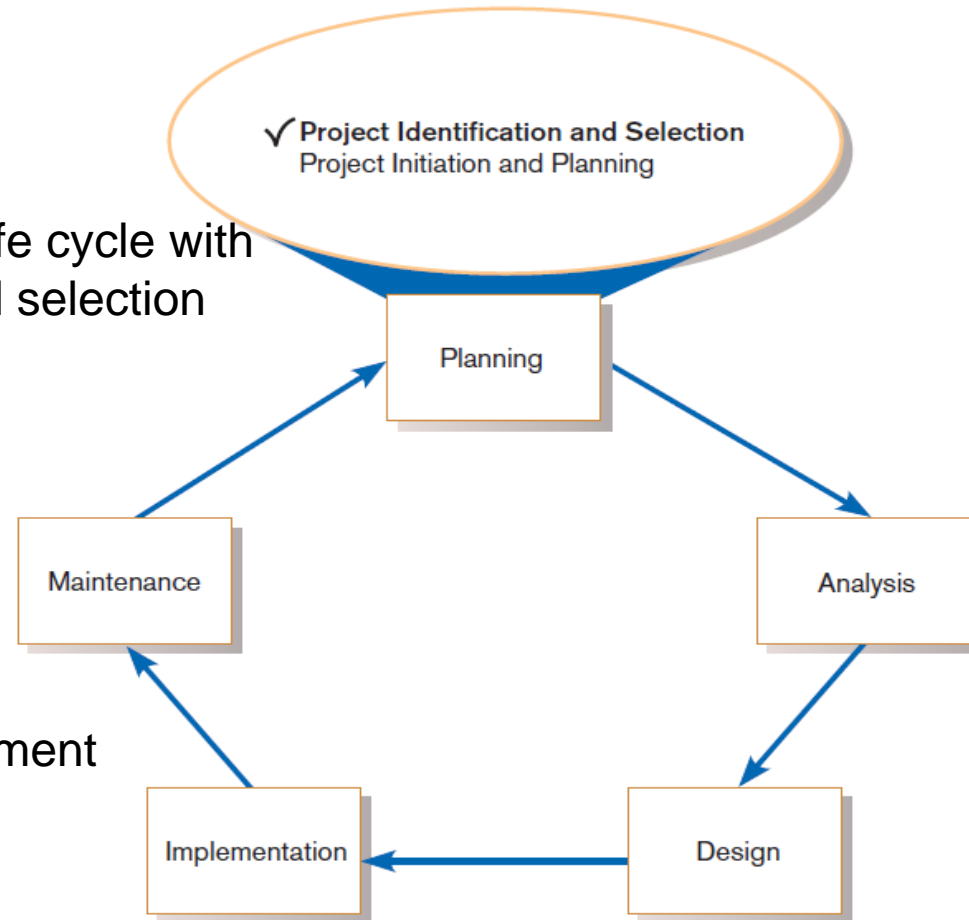
- ✓ Describe the project identification and selection process.
- ✓ Describe corporate strategic planning and information systems planning process.
- ✓ Describe the three classes of Internet electronic commerce applications: business-to-consumer, business-to-employee, and business-to-business.

IDENTIFYING AND SELECTING SYSTEMS DEVELOPMENT PROJECTS

Systems development life cycle with project identification and selection highlighted

Three main steps:

1. Identifying potential development projects
2. Classifying and ranking IS development projects
3. Selecting IS development projects



Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS

1. *Identifying potential development projects*

- Identification from a stakeholder group
 - Each stakeholder group brings their own perspective and motivation to the IS decision.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS (CONT.)

- *Top-down source* are projects identified by top management or by a diverse steering committee.
- *Bottom-up source* are project initiatives stemming from managers, business units, or the development group.
- The process varies substantially across organizations.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

The Process of Identifying and Selecting IS Development Projects (Cont.)

TABLE 4-1 **Characteristics of Alternative Methods for Making Information Systems Identification and Selection Decisions**

Selection Method	Characteristics
Top Management	Greater strategic focus Largest project size Longest project duration Enterprise-wide consideration
Steering Committee	Cross-functional focus Greater organizational change Formal cost–benefit analysis Larger and riskier projects
Functional Area	Narrow, nonstrategic focus Faster development Fewer users, management layers, and business functions involved
Development Group	Integration with existing systems focus Fewer development delays Less concern with cost–benefit analysis

(Source: Based on McKeen, Guimaraes, and Wetherbe, 1994; GAO, 2000.)

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS (CONT.)

2. *Classifying and ranking IS development projects*

- Using value chain analysis or other evaluation criteria

Value chain analysis: Analyzing an organization's activities to determine where value is added to products and/or services and the costs incurred for doing so; usually also includes a comparison with the activities, added value, and costs of other organizations for the purpose of making improvements in the organization's operations and performance

The Process of Identifying and Selecting IS Development Projects (Cont.)



Organizations can be thought of as a value chain, transforming raw materials into products for customers

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS
(CONT.)

TABLE 4-2 Possible Evaluation Criteria When Classifying and Ranking Projects

Evaluation Criteria	Description
Value Chain Analysis	Extent to which activities add value and costs when developing products and/or services
Strategic Alignment	Extent to which the project is viewed as helping the organization achieve its strategic objectives and long-term goals
Potential Benefits	Extent to which the project is viewed as improving profits, customer service, and so forth, and the duration of these benefits
Resource Availability	Amount and type of resources the project requires and their availability
Project Size/Duration	Number of individuals and the length of time needed to complete the project
Technical Difficulty/Risks	Level of technical difficulty to successfully complete the project within given time and resource constraints

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS (CONT.)

3. *Selecting IS development projects*

- Based on various factors
- Both short- and long-term projects considered
- Most likely to achieve business objectives selected
- A very important and ongoing activity

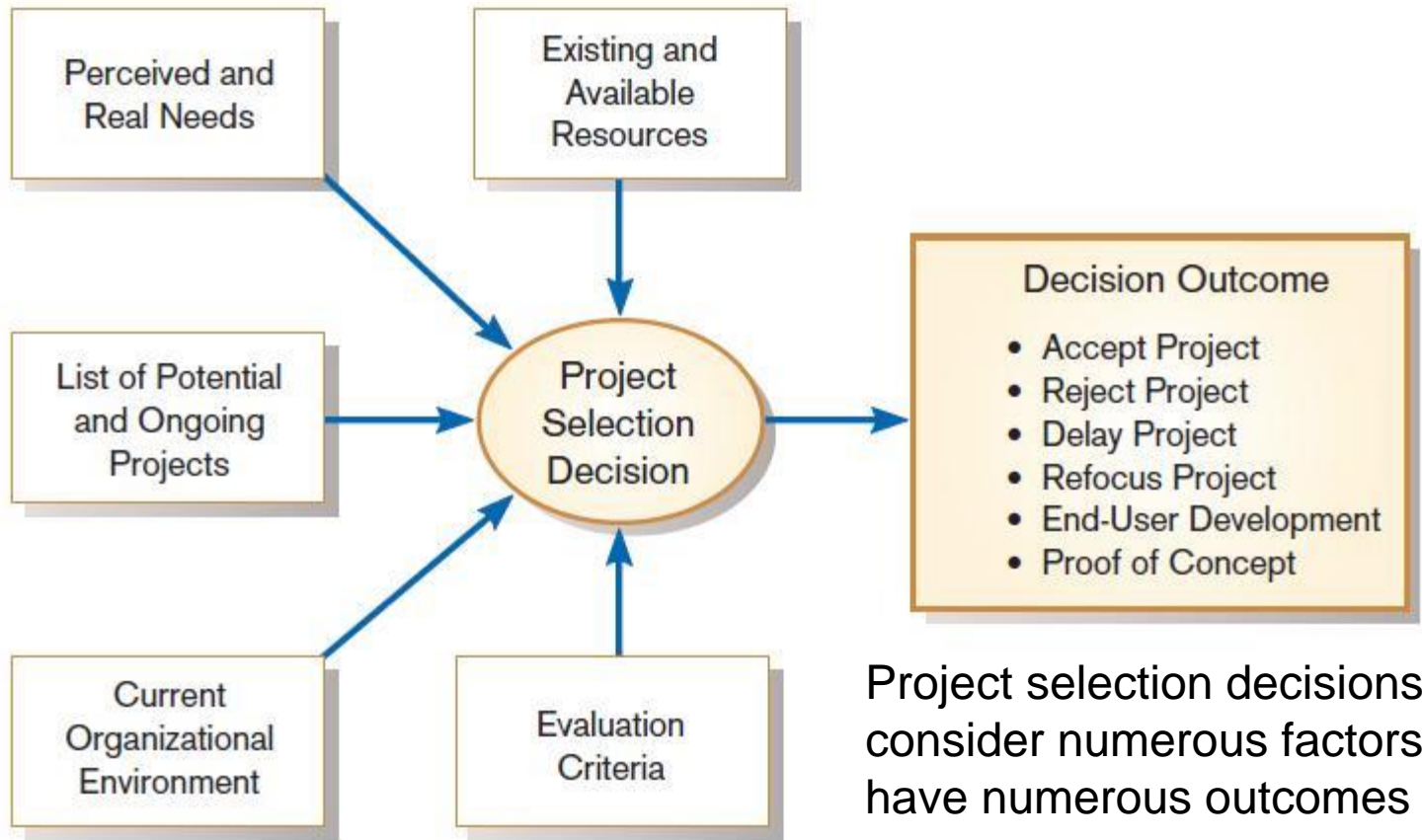
Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS (CONT.)



Project selection decisions must consider numerous factors and can have numerous outcomes

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS
(CONT.)

One method for deciding among different projects or alternative designs:

- For each requirement or constraint:
Score = weight X rating
- Each alternative: sum scores across requirements/constraints
- Alternative with highest score wins

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

THE PROCESS OF IDENTIFYING AND SELECTING IS DEVELOPMENT PROJECTS
(CONT.)

Criteria	Weight	Alternative A		Alternative B		Alternative C	
		Rating	Score	Rating	Score	Rating	Score
Requirements							
Real-time data entry	18	5	90	5	90	5	90
Automatic reorder	18	1	18	5	90	5	90
Real-time data query	14	1	14	5	70	5	70
	50		122		250		250
Constraints							
Developer costs	15	4	60	5	75	3	45
Hardware costs	15	4	60	4	60	3	45
Operating costs	15	5	75	1	15	5	75
Ease of training	5	5	25	3	15	3	15
	50		220		165		180
Total	100		342		415		430

Alternative
projects and
system design
decisions can be
assisted using
weighted
multicriteria
analysis

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

DELIVERABLES AND OUTCOMES

Primary deliverable from the first part of the planning phase is a schedule of specific IS development projects.

Outcome of the next part of the planning phase—project initiation and planning—is the assurance that careful consideration was given to project selection and each project can help the organization reach its goals.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

DELIVERABLES AND OUTCOMES (CONT.)

Incremental commitment: a strategy in systems analysis and design in which the project is reviewed after each phase and continuation of the project is rejustified

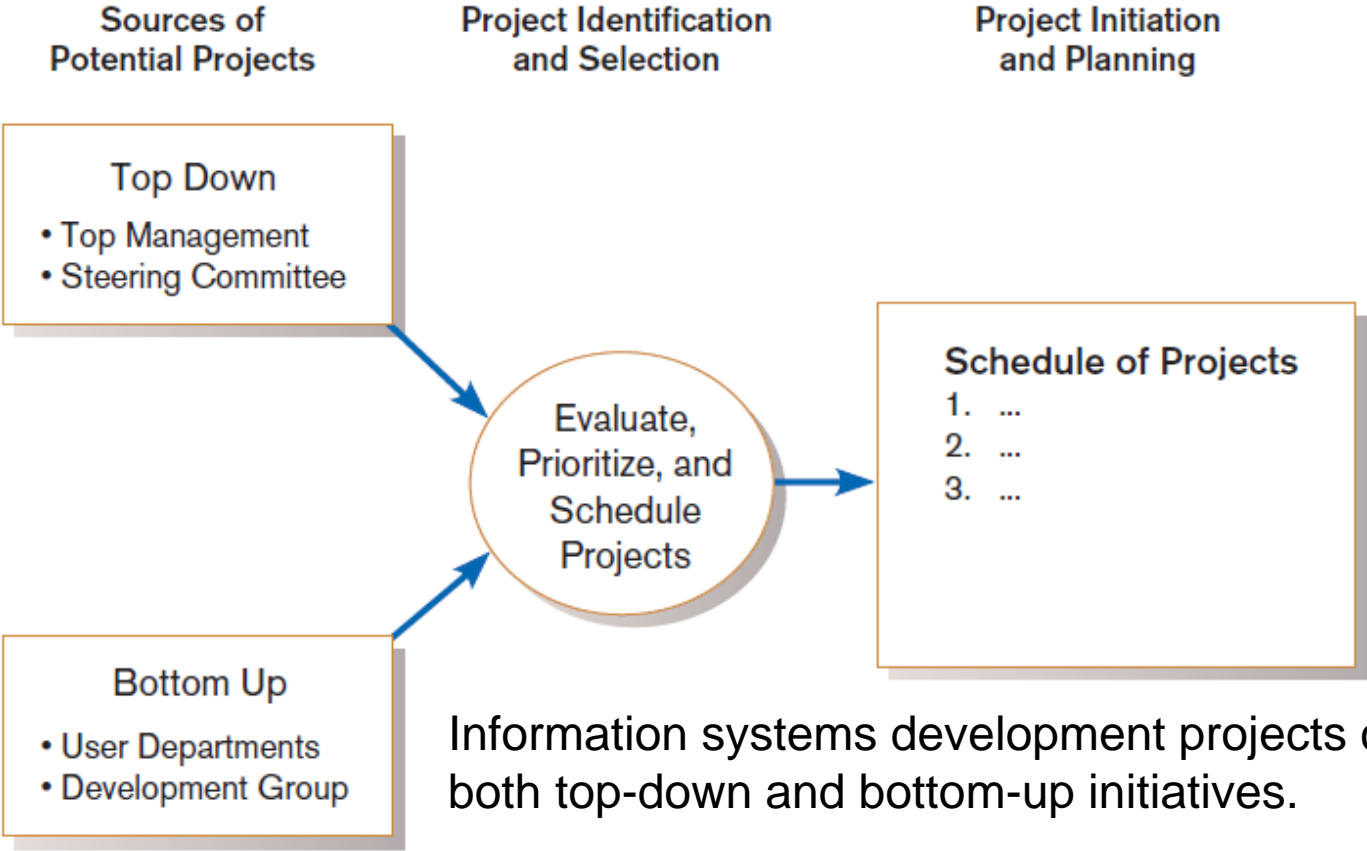
Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

DELIVERABLES AND OUTCOMES (CONT.)



Information systems development projects come from both top-down and bottom-up initiatives.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

CORPORATE AND INFORMATION SYSTEMS PLANNING

To benefit from a planning-based approach for identifying and selecting projects, an organization must:

- Analyze its information needs thoroughly.
- Plan its projects carefully.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

REASONS FOR IMPORTANCE OF IMPROVED PLANNING

- Increasing cost of information systems (40% of organizational expense)
- Lack of cross-organizational applications and systems
- Systems don't address critical strategic problems
- Too much data redundancy, lack of data quality
- High system maintenance costs
- Long application backlogs

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

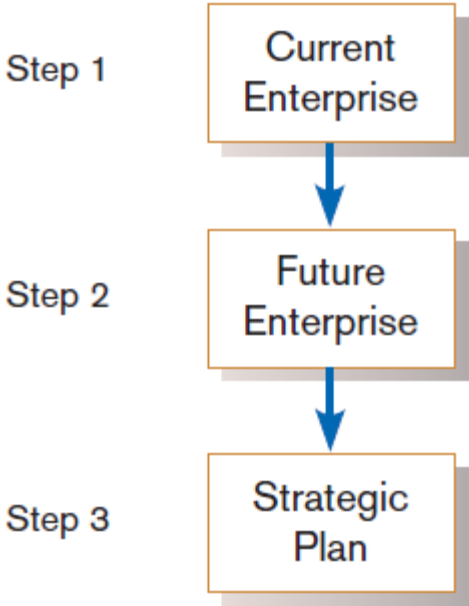
Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

CORPORATE STRATEGIC PLANNING

Ongoing process that defines mission, objectives, and strategies of an organization

Corporate strategy involves:

- Mission statement
- Objective statements
- Description of competitive strategy



Corporate strategic planning is a three step Process.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

CORPORATE STRATEGIC PLANNING (CONT.)

Mission statement: a **statement** that makes it clear what business a company is in

Pine Valley Furniture
Corporate Mission Statement

We are in the business of designing, fabricating, and selling to retail stores high-quality wood furniture for household, office, and institutional use. We value quality in our products and in our relationships with customers and suppliers. We consider our employees our most critical resource.

Mission statement (Pine Valley Furniture)

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

CORPORATE STRATEGIC PLANNING (CONT.)

Objective statement: a series of statements that express an organization’s qualitative and quantitative goals for reaching a desired future position

Sometimes called “critical success factors”

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:

Identifying and
Selecting Systems
Development Projects

CORPORATE STRATEGIC PLANNING (CONT.)

Pine Valley Furniture
Statement of Objectives

- 1. PVF will strive to increase market share and profitability (prime objective).
- 2. PVF will be considered a market leader in customer service.
- 3. PVF will be innovative in the use of technology to help bring new products to market faster than our competition.
- 4. PVF will employ the fewest number of the highest-quality people necessary to accomplish our prime objective.
- 5. PVF will create an environment that values diversity in gender, race, values, and culture among employees, suppliers, and customers.

Statement of
Corporate
Objectives
(Pine Valley
Furniture)

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

CORPORATE STRATEGIC PLANNING (CONT.)

Competitive strategy: the method by which an organization attempts to achieve its mission and objectives

Main types:

- Low-cost producer
- Product differentiation
- Product focus or niche

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

CORPORATE STRATEGIC PLANNING (CONT.)

TABLE 4-3 Generic Competitive Strategies

Strategy	Description
Low-Cost Producer	This strategy reflects competing in an industry on the basis of product or service cost to the consumer. For example, in the automobile industry, the South Korean-produced Hyundai is a product line that competes on the basis of low cost.
Product Differentiation	This competitive strategy reflects capitalizing on a key product criterion requested by the market (for example, high quality, style, performance, roominess). In the automobile industry, many manufacturers are trying to differentiate their products on the basis of quality (e.g., "At Ford, quality is job one.").
Product Focus or Niche	This strategy is similar to both the low-cost and differentiation strategies but with a much narrower market focus. For example, a niche market in the automobile industry is the convertible sports car market. Within this market, some manufacturers may employ a low-cost strategy and others may employ a differentiation strategy based on performance or style.

(Source: Based on The Free Press, a Division of Simon & Schuster Adult Publishing Group, from Porter, 1980. Copyright © 1980, 1998 by The Free Press. All rights reserved.)

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:

Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (ISP)

An orderly means of assessing the information needs of an organization and defining the systems, databases, and technologies that will best meet those needs

ISP must be done in accordance with the organization’s mission, objectives, and competitive strategy.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

Parallel activities
of corporate
strategic planning
and information
systems planning

Corporate Strategic Planning

Current
Enterprise

Future
Enterprise

Strategic
Plan

Information Systems Planning

Current Situation:

- listing of manual and automated processes
- listing of manual and automated data
- technology inventory
- human resources inventory

Future Situation:

- blueprints of manual and automated processes
- blueprints of manual and automated data
- technology blueprints
- human resources blueprints

Schedule of Projects:

Project	Start	End
Electronic Commerce	1	5
Payroll Maintenance	2	11
Job Tracking	4	8
Corporate Intranet	7	15

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

Top-down planning attempts to gain a broad understanding of information system needs of the entire organization and offers:

- Broader perspective.
- Improved integration.
- Improved management support.
- Better understanding.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:

Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

Bottom-up planning identifies IS development projects based on solving specific operational business problems or taking advantage of specific opportunities.

- Can be faster and less costly, so may be beneficial in certain circumstances.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

FUNCTIONS: <ul style="list-style-type: none">▪ business planning▪ product development▪ marketing and sales▪ production operations▪ finance and accounting▪ human resources...	DATA ENTITIES: <ul style="list-style-type: none">▪ customer▪ product▪ vendor▪ raw material▪ order▪ invoice▪ equipment...	INFORMATION SYSTEMS: <ul style="list-style-type: none">▪ payroll processing▪ accounts payable▪ accounts receivable▪ time card processing▪ inventory management...
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Information systems planning information
(Pine Valley Furniture)

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

Functional Decomposition: breaking high-level abstract information into smaller units for more detailed planning

Introduction

Identifying and
Selecting Systems
Development Projects

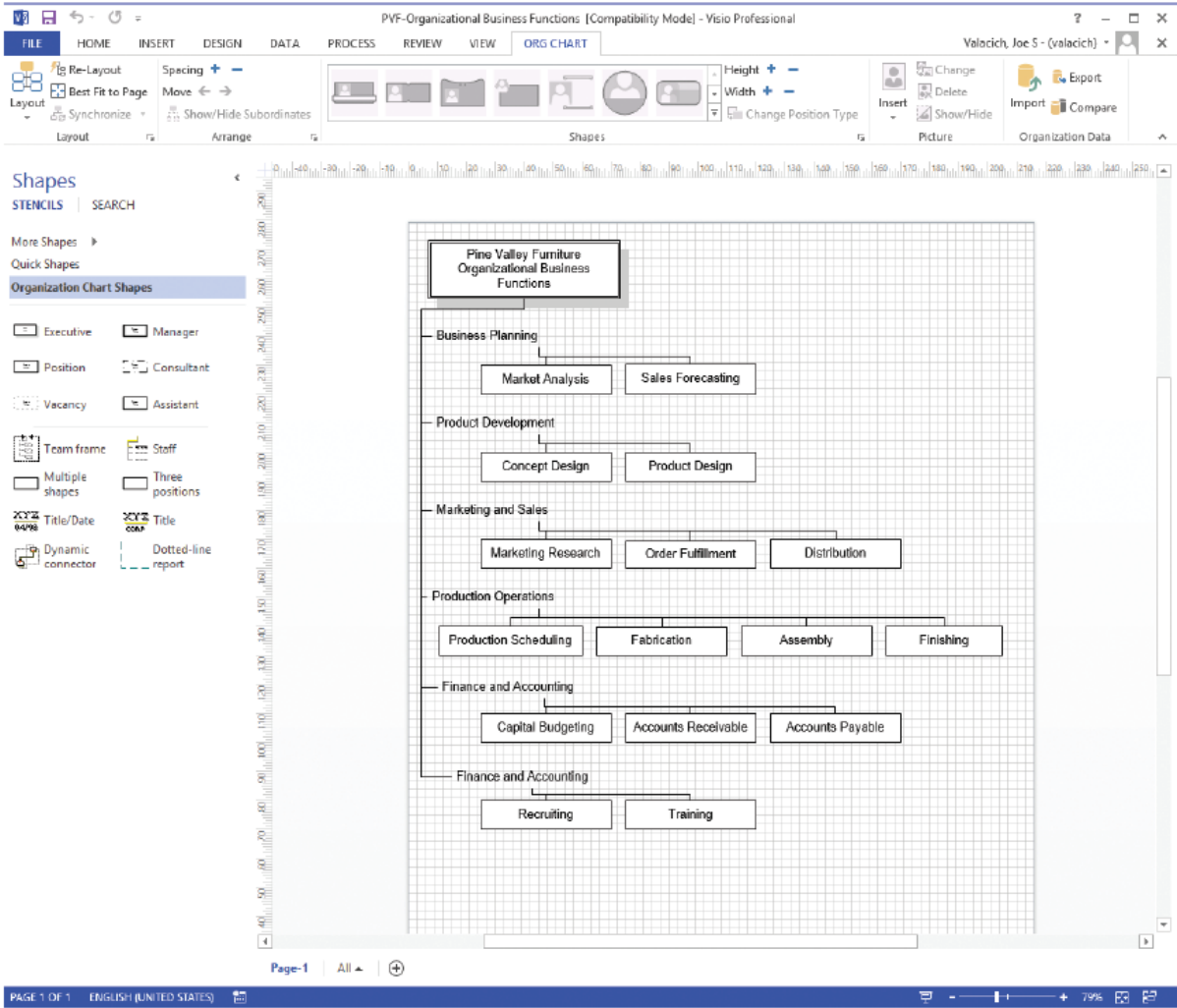
Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

Functional
decomposition of
information
systems planning
information (Pine
Valley Furniture)

(Source:
Microsoft
Corporation.)



Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

IS planning matrices describe relationships between pairs of organizational elements (location, function, business unit, objective, process, data, information system).

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

TYPES OF PLANNING MATRICES

Location-to-Function

Location-to-Unit

Unit-to-Function

Function-to-Objective

Function-to-Process

Function-to-Data Entity

Process-to-Data Entity

Process-to-Information
System

Data Entity-to-Information
System

Information System-to-
Objective

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS PLANNING (CONT.)

	Customer	Product	Vendor	Raw Material	Order	Work Center	Equipment	Employees	Invoice	Work Order	...
Marketing and Sales											
Marketing Research	X	X									
Order Fulfillment	X	X			X				X		
Distribution	X	X									
Production Operation											
Production Scheduling						X	X	X		X	
Fabrication						X	X	X		X	
Assembly						X	X	X		X	
Finishing						X	X	X		X	
Finance and Accounting											
Capital Budgeting					X	X	X				
Accounts Receivable	X	X	X	X	X				X		
Accounts Payable											
...											

Data Entity-to-Function matrix (Pine Valley Furniture)

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

MAKING SENSE OF THE MATRICES

IS planning takes place prior to project identification and selection

“Behind the scenes” analysis

Matrices: as-is (current) and to-be (future, target)

CASE tools help via:

- Managing information
- Matrix construction
- Matrix analysis (affinity clustering)

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

AFFINITY CLUSTERING

Arranging planning matrix information so that clusters of information with a predetermined level or type of affinity are placed next to each other on a matrix report

Affinity – the extent to which information holds things in common

Example: Function – to – Data entity matrix

- Functions using similar data entities placed in adjacent rows
- Data entities used in common by processes in adjacent columns

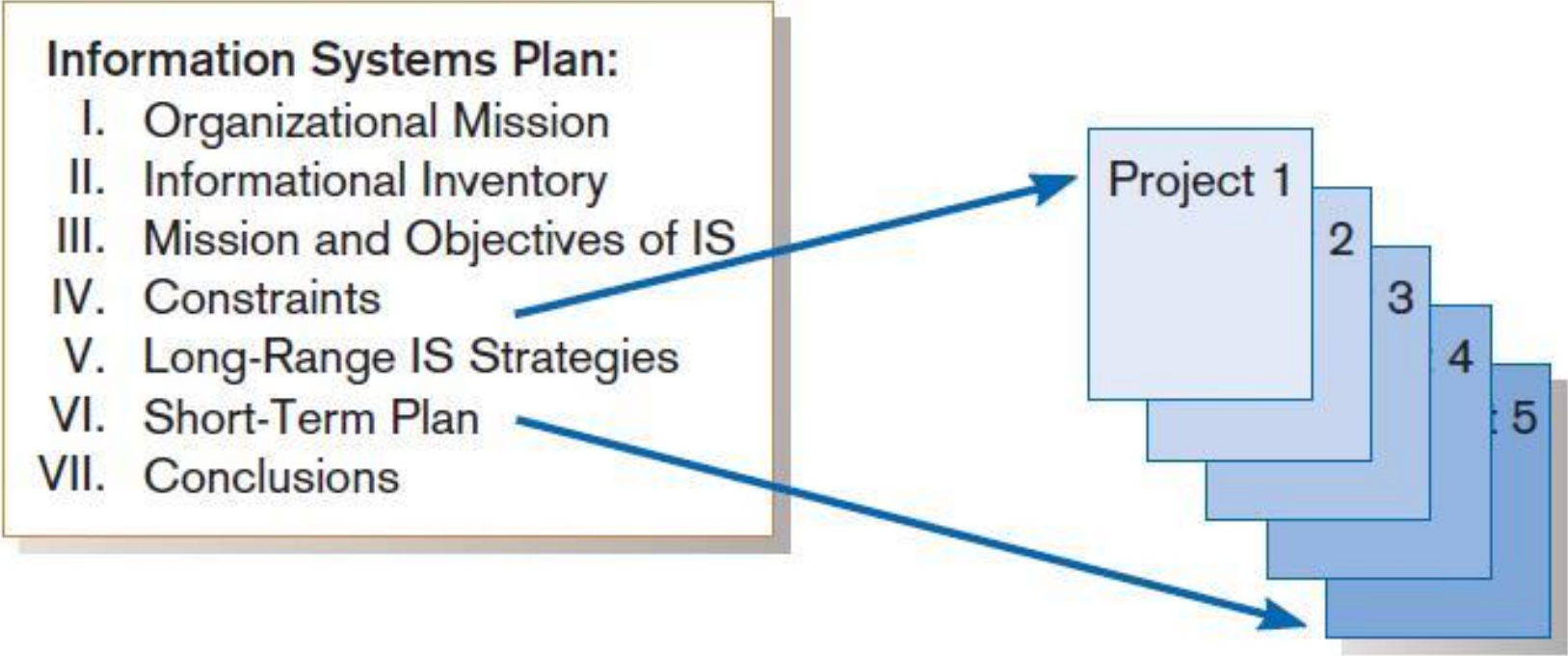
Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

INFORMATION SYSTEMS (IS) PLAN



Systems development projects flow from the information systems plan.

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

IS PLAN COMPONENTS

Organizational Mission, Objectives, and Strategy

- Brief description of mission, objectives, and strategy of the organization

Information Inventory

- Summary of processes, functions, data entities, and information needs of the enterprise

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

IS PLAN COMPONENTS (CONT.)

Mission and Objectives of IS

- Primary role IS will play in the organization to transform enterprise from current to future state

Constraints on IS Development

- Limitations imposed by technology and current levels of financial, technical, and personnel resources

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:

Identifying and
Selecting Systems
Development Projects

IS PLAN COMPONENTS (CONT.)

Systems Needs and IS Strategy

- Summarize overall information systems needs in the company and set long-term (2-5 year) strategies for filling the needs

Short Term Plan

- Detailed inventory of present projects and systems and detailed plan for the current year

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

IS PLAN COMPONENTS (CONT.)

Conclusions

- Unknown but likely events that can affect the plan, presently known business change elements and their impact on the plan

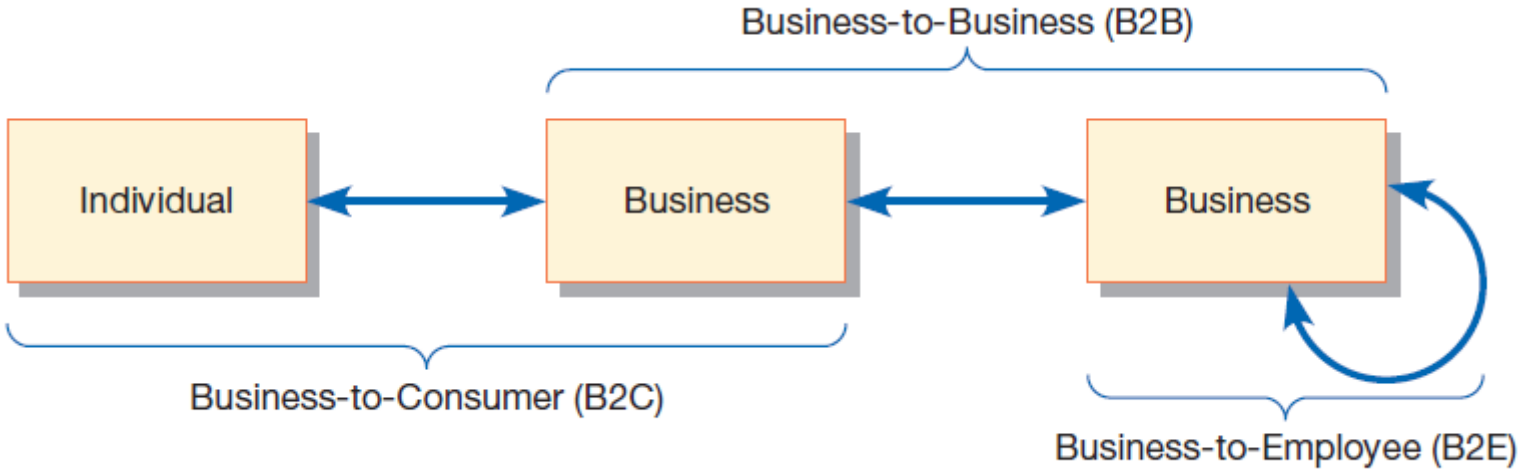
Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

ELECTRONIC COMMERCE: IDENTIFYING AND SELECTING PROJECTS



Three possible modes of electronic commerce

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

ELECTRONIC COMMERCE APPLICATIONS AND INTERNET BASICS (CONT.)

Business-to-consumer (B2C): electronic commerce between businesses and consumers

Business-to-business (B2B): electronic commerce between business partners, such as suppliers and intermediaries

Business-to-employee (B2E): electronic commerce between businesses and their employees

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

ELECTRONIC COMMERCE APPLICATIONS AND INTERNET BASICS

Internet: a large worldwide network of networks that use a common protocol to communicate with each other

Electronic Commerce (EC): Internet-based communication to support day-to-day business activities

Electronic data interchange (EDI): the use of telecommunications technologies to directly transfer business documents between organizations

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

ELECTRONIC COMMERCE APPLICATIONS AND INTERNET BASICS (CONT.)

TABLE 4-5 Unknowns That Must Be Dealt with When Designing and Building Internet Applications

User	<ul style="list-style-type: none">• Concern: Who is the user?• Example: Where is the user located? What is the user’s expertise or education? What are the user’s expectations?
Connection Speed	<ul style="list-style-type: none">• Concern: What is the speed of the connection and what information can be effectively displayed?• Example: Modem, Cable Modem, DSL, Satellite, Broadband, Cellular
Access Method	<ul style="list-style-type: none">• Concern: What is the method of accessing the net?• Example: Web Browser, Personal Digital Assistant (PDA), Web-enabled Cellular Phone, Tablet, Web-enabled Television

Introduction

Identifying and
Selecting Systems
Development Projects

Corporate and
Information Systems
Planning

Electronic Commerce
Applications:
Identifying and
Selecting Systems
Development Projects

SUMMARY

In this chapter you learned how to:

- ✓ Describe the project identification and selection process.
- ✓ Describe corporate strategic planning and information systems planning process.
- ✓ Describe the three classes of Internet electronic commerce applications: business-to-consumer, business-to-employee, and business-to-business.