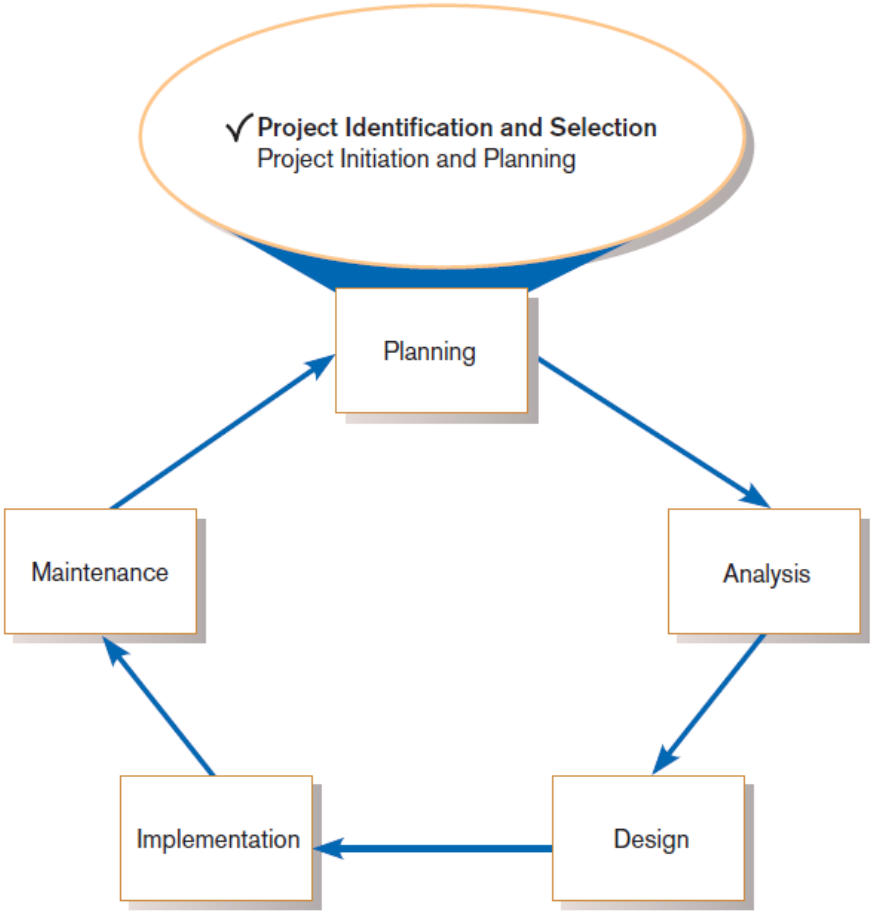
Ch4. Identifying and Selecting Systems Development Projects

- 描述 the project identification and selection process.
- 描述 corporate strategic planning and information systems planning process.
- 說明 the relationship between corporate strategic planning and information systems planning.
- 描述 how information systems planning can be used to assist in identifying and selecting systems development projects.
- 分析 information systems planning matrices to determine affinity between information systems and IS projects and to forecast the impact of IS projects on business objectives.
- 描述 the three classes of Internet electronic commerce applications: business-to-consumer, business-to-employee, and business-to-business.

1. Identifying and Selecting Systems Development Projects

IS development requests:

- To replace or to extend an existing system
- To make a system more efficient and less costly to operate
- To move it to a new operating environment
- A formal planning group that identifies projects for improvement



2. The Process of Identifying and Selecting IS Development Projects

(I) Identifying potential development projects

- Identification from a stakeholder group
  - ⇨ Top-down source are projects identified by top management or by a diverse steering committee.
  - ⇨ Bottom-up source are project initiatives stemming from(源自) managers, business units, or the

development group.

- The process varies substantially across organizations.

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.)

(II) 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
  - ⇨ IS projects that provide the greatest benefit to the value chain will be given priority over those with fewer benefits….

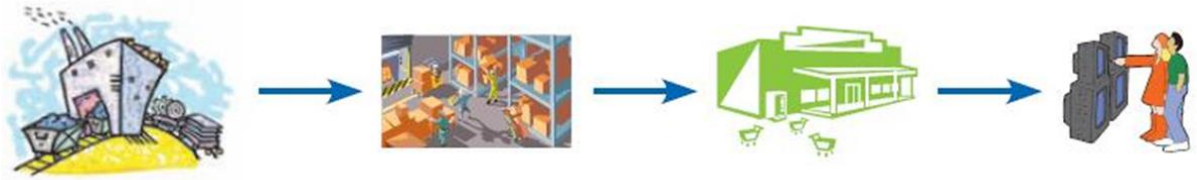
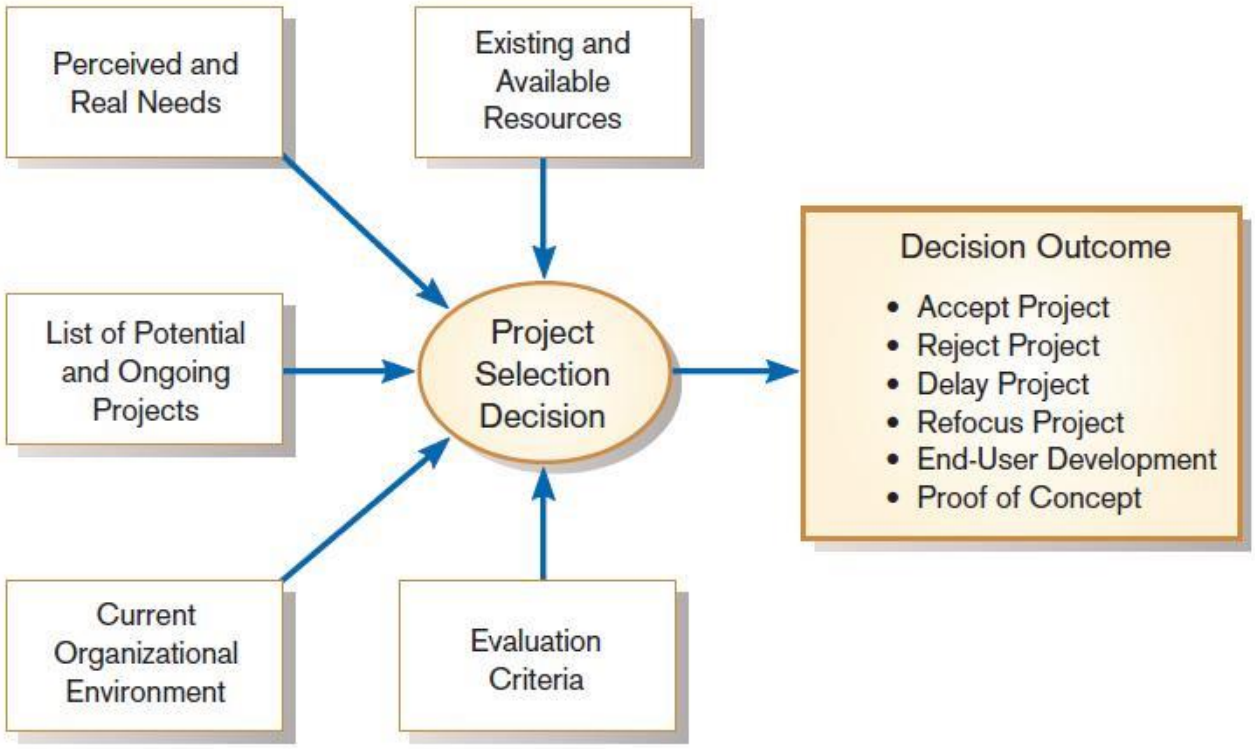


TABLE 4-2 Possible Evaluation Criteria When Classifying and Ranking Projects

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

(III) 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
  - ⇨ Business conditions change over time
  - ⇨ Relative importance of any single project may substantially change

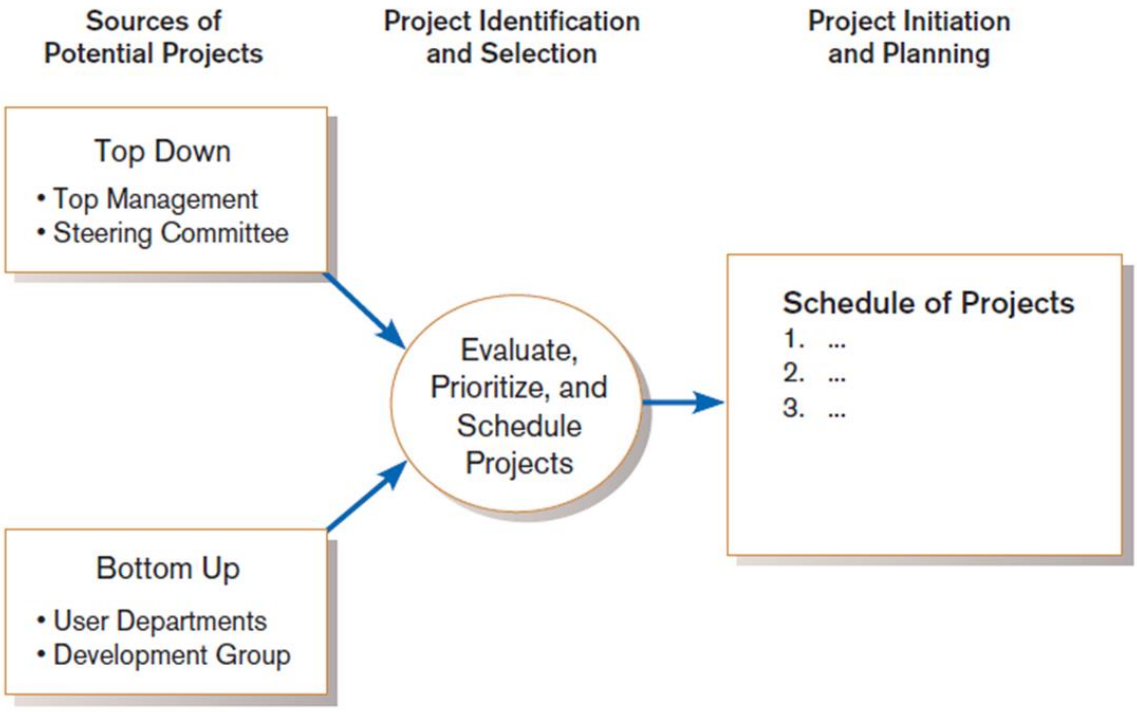


- One method for deciding among different projects or alternative designs
  - ⇨ For each requirement or constraint:
    Score = weight X rating
  - ⇨ Each alternative: sum scores across requirements/constraints
  - ⇨ Alternative with highest score wins

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

3. Deliverables and Outcomes

- Primary deliverable from the first part of the planning phase is a schedule of specific IS development projects.
- Outcome of this phase is the assurance that careful consideration was given to project selection and each project can help the organization reach its goals.
- Incremental commitment(漸增承諾): a strategy in systems analysis and design in which the project is reviewed after each phase and continuation of the project is re-justified
  - ⇨ A selected project does not necessarily result in a working system



4. Corporate and Information Systems Planning

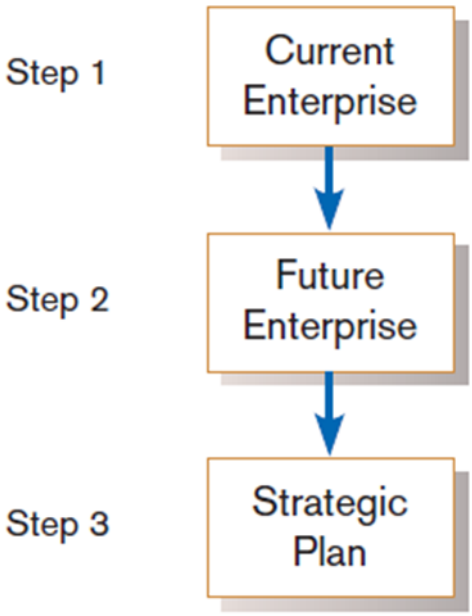
- Changes of informational needs vs. changes of business processes
  - ⇨ e.g., A university change its procedure for registering students
- To benefit from a planning-based approach for identifying and selecting projects, an organization must:
  - ⇨ Analyze its information needs thoroughly.
  - ⇨ Plan its projects carefully.

5. Reasons for 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

6. Corporate Strategic Planning

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



- Corporate strategy involves:

⇨ **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.

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

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.

⇨ **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

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.)

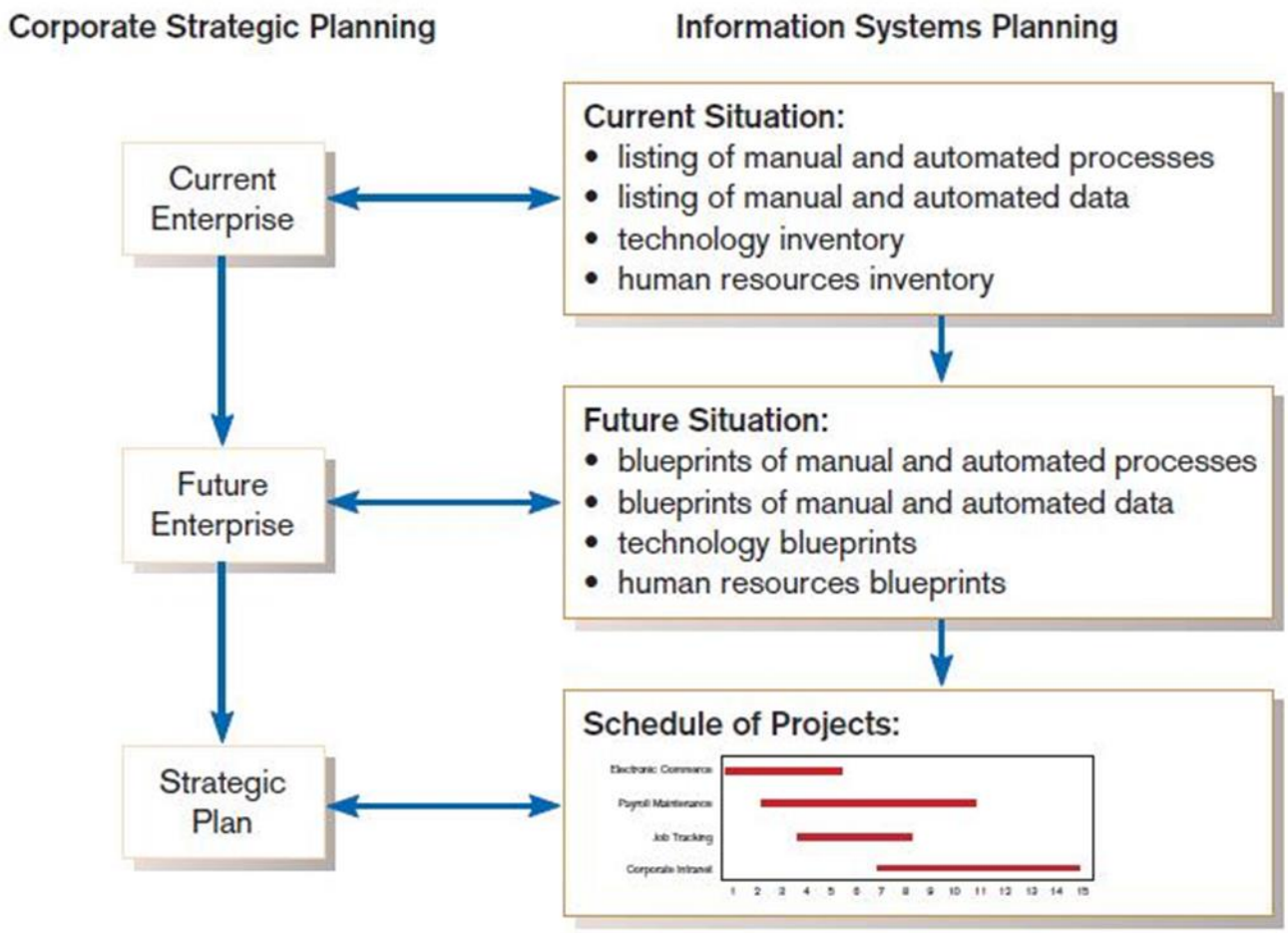
7. Information Systems Planning (ISP)

- 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(依照規則) with the

  organization's mission, objectives, and competitive strategy.
  - ⇨ ISP is a top-down process: ISP must look at IS and IT in terms of how they help the business achieve its objectives

- ISP: A **3-step** process
  - ⇨ To assess current IS-related assets
  - ⇨ To develop target blueprints of these resources
  - ⇨ To define a series of schedule projects to help move the organization from its current to its future desired state



- Numerous methodologies such as Business Systems Planning (BSP) and Information Engineering (IE) have been developed to support the ISP process; most contain the following 3 key activities
  - ⇨ Describing the current situation
  - ⇨ Describing the target situation, trends, and constraints
  - ⇨ Developing a transition strategy and plans

8. Describing The Current Situation

- **Top-down planning** attempts to gain a broad understanding of IS needs of the entire organization

  - ⇨ Begins by conducting an extensive analysis of the organization's mission, objectives, and competitive strategy and determining the information requirements needed to meet each objectives
  - ⇨ A high-level organizational perspective with active involvement of top-level management
  - ⇨ **Advantages:** broader perspective, improved integration, improved management support, better understanding

- **Bottom-up planning** requires the identification of business problems and opportunities that are used to define projects

  - ⇨ Can be faster and less costly, so may be beneficial in certain circumstances
  - ⇨ Often fails to view the informational needs of the entire organization, resulting in disparate IS and DB that are redundant or not easily integrated without substantial rework

- Information that must be collected to represent the current situation include the identification of all organizational location, units, functions, processes, data (or data entities), and IS

FUNCTIONS:
- business planning
- product development
- marketing and sales
- production operations
- finance and accounting
- human resources

...

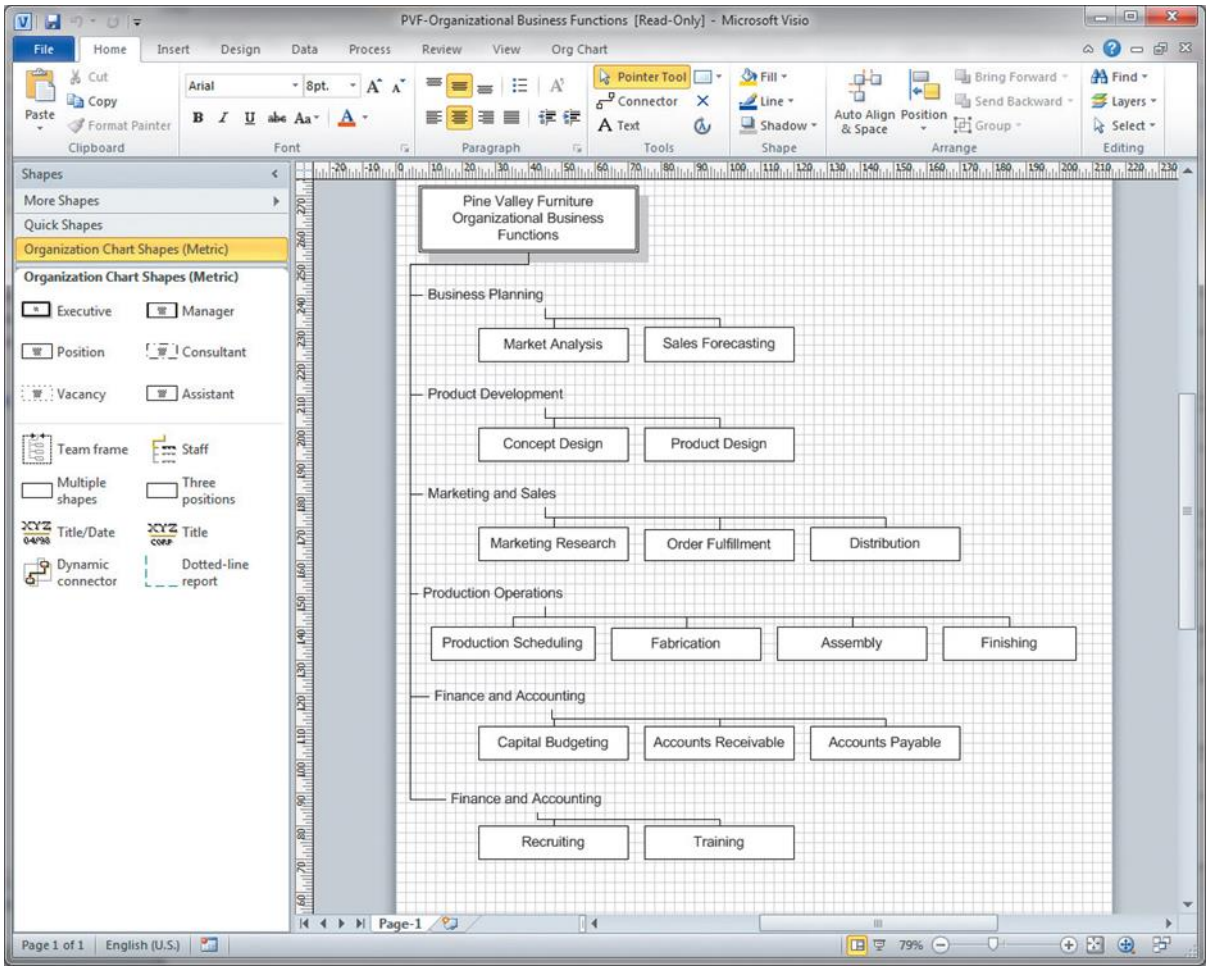
DATA ENTITIES:
- customer
- product
- vendor
- raw material
- order
- invoice
- equipment

...

INFORMATION SYSTEMS:
- payroll processing
- accounts payable
- accounts receivable
- time card processing
- inventory management

...

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



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

- 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

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

9. Describing The Target Situation, Trends, and Constraints

- The target situation consists of the desired state of locations, functions, units, processes, data, and IS
  - ⇨ Most lists and matrices will need to be updated to reflect this version
  - ⇨ The target situation must be developed in light of technology and business trends, in addition to organizational constraints

10. 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

- Mission and Objectives of IS
  - ⇨ Primary role IS will play in the organization to transform enterprise from current to future state

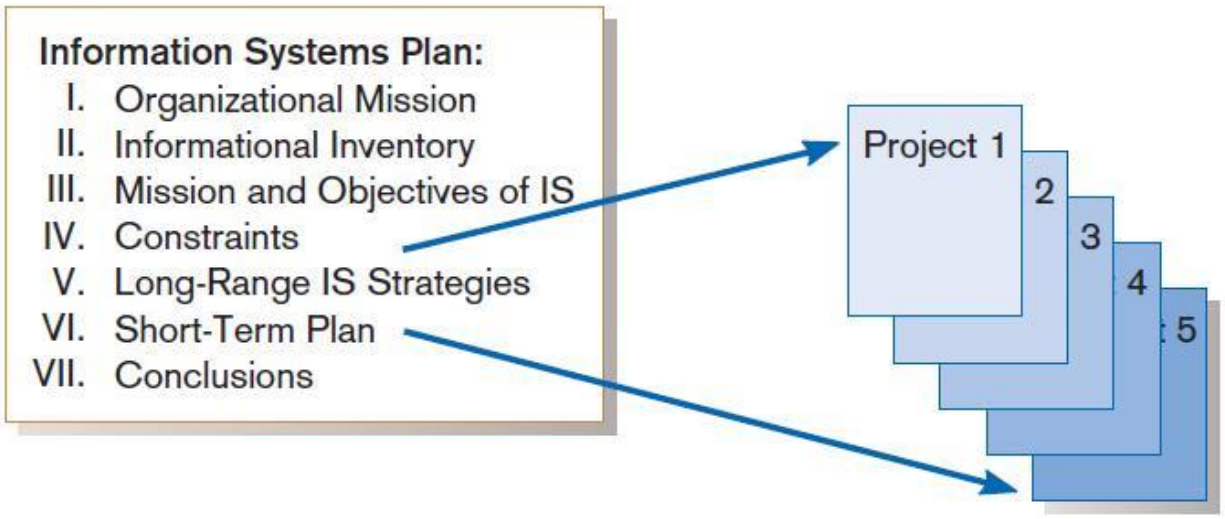
- Constraints on IS Development
  - ⇨ Limitations imposed by technology and current levels of financial, technical, and personnel resources

- Systems Needs and IS Strategy
  - ⇨ Summarize overall IS 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

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

plan



11. 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
- **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
- **Electronic data interchange (EDI):** the use of telecommunications technologies to directly transfer business documents between organizations

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

User	• Concern: Who is the user? • Example: Where is the user located? What is the user's expertise, education, or expectations?
Connection Speed	• 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	• Concern: What is the method of accessing the net? • Example: Web browser, Personal Digital Assistant (PDA), Web-enabled Cellular Phone, Tablet, Web-enabled Television