USTP
1927
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

COLLEGE OF INFORMATION TECHNOLOGY AND COMPUTING

ELECTIVE 4 (IT 415)

Junar A. Landicho

junarlandicho@ustp.edu.ph

Motivation is what gets you started. Habit is what keeps you going.”

Jim Ryun

Topic 5: Identifying and Selecting Systems Development Projects

Objectives

By the end of this topic, students will be able to:

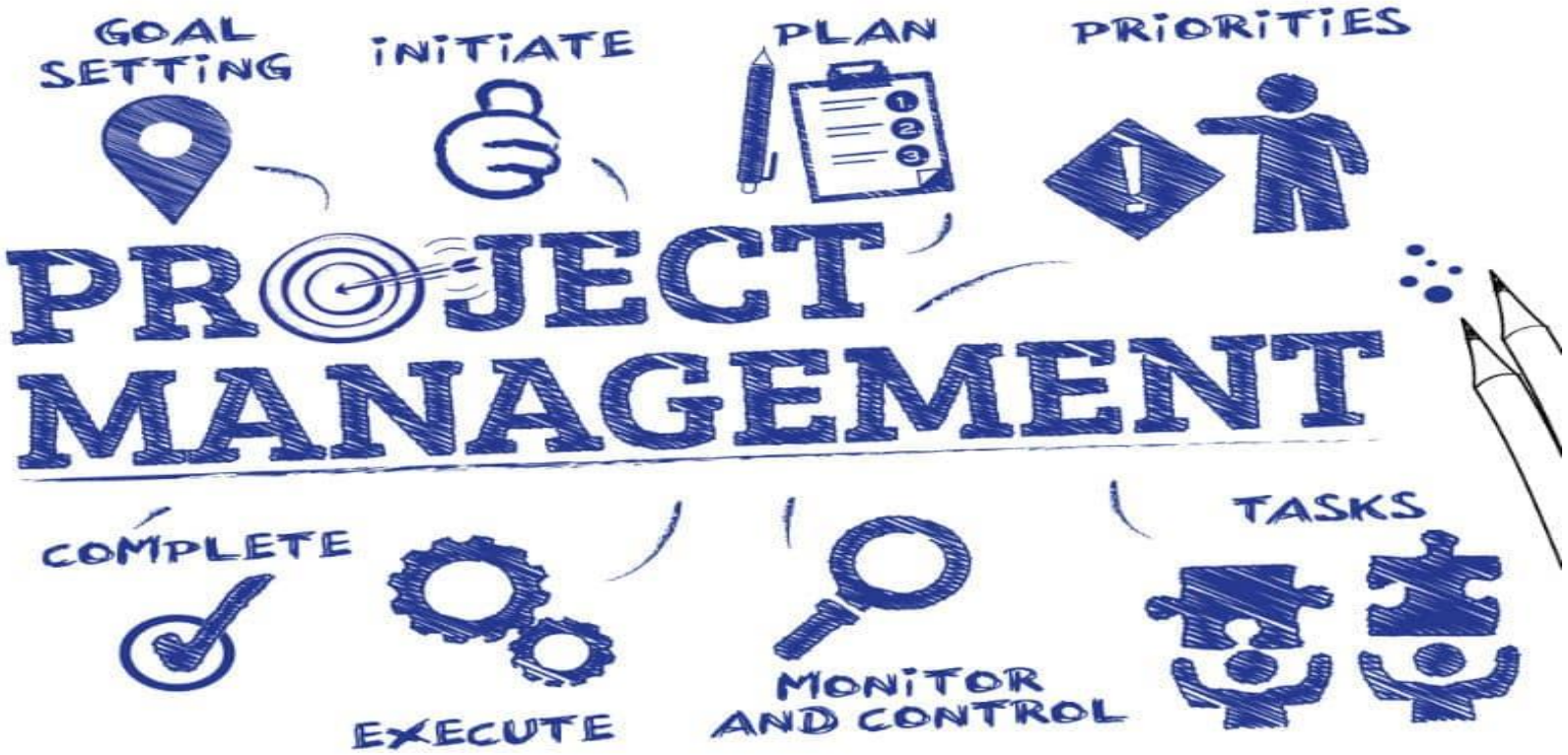
- Describe the project identification and selection process.
- Understand the corporate strategic planning and information systems planning process.
- Explain the three classes of Internet electronic commerce applications: business to-consumer, business-to-employee, and business-to-business.

Overview

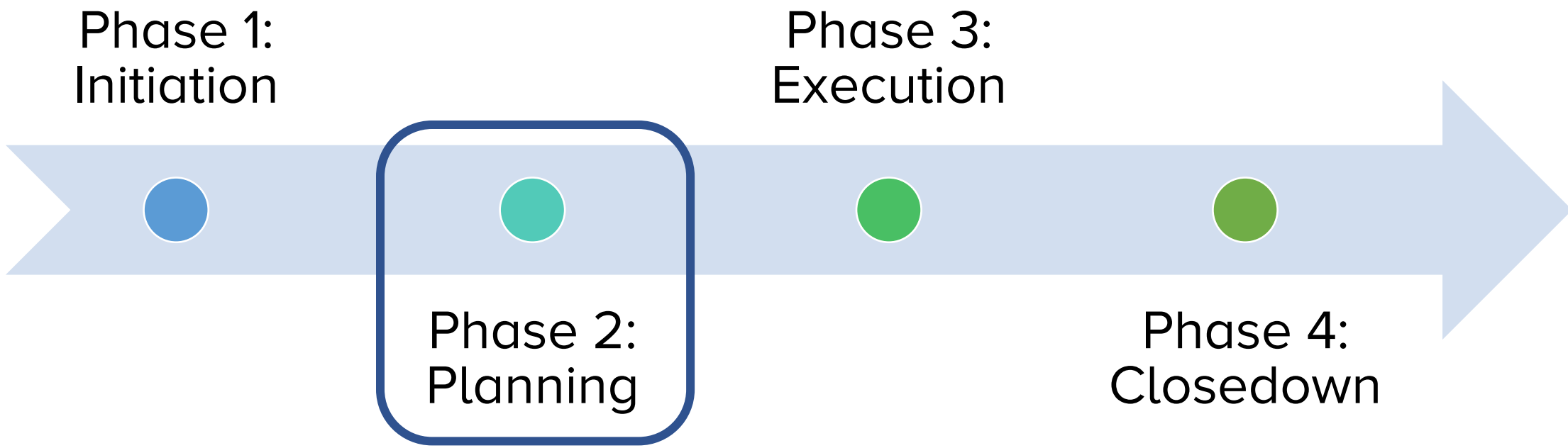
1. Project Management
2. Project Planning
3. Project Identification and Selection
4. Corporate Strategic Planning
5. Information System Planning
6. Electronic Commerce Applications

Project Management

- Project management (PM) may be the most important aspect of systems development.



Phases of PM Process



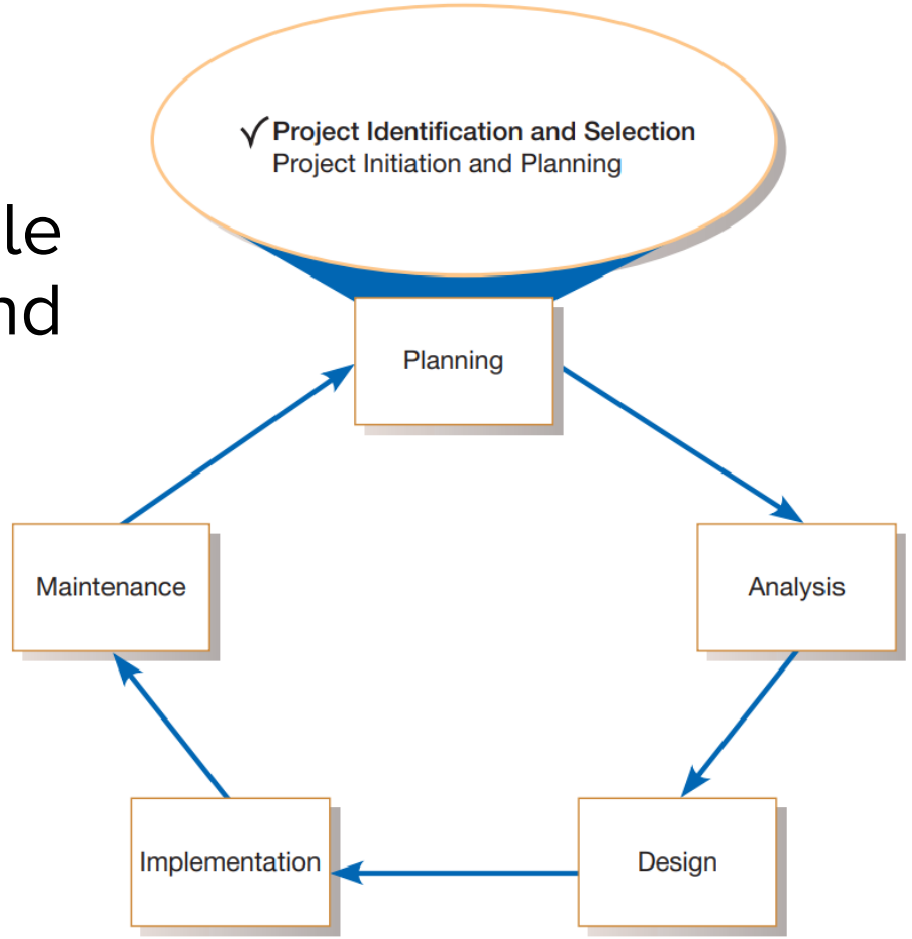
PM Phase 2: Project Planning

- Describe Project Scope, Alternatives, and Feasibility
- Determine Project Standards and Procedures
- Divide the Project into Manageable Tasks
- Identify and Assessing Risk
- Estimate Resources and Create Resource Plan
- Create a Preliminary Budget
- Develop a Preliminary Schedule
- Develop a Project Scope Statement
- Develop a Communication Plan
- Set a Baseline Project Plan

Project Identification and Selection

Project Identification and Selection

- Systems development life cycle with project identification and selection highlighted



Process of Identifying and Selecting IS Development Projects

- Project identification and selection consists of three primary activities:
  1. Identifying potential development projects
  2. Classifying and ranking IS development projects
  3. Selecting IS development projects

Identifying potential development projects

- a key member of top management
- a steering committee, composed of a cross section of managers with an interest in systems;
- user departments
- the development group or a senior IS manager.

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

Classifying and ranking IS development projects

Possible evaluation Criteria When Classifying and Ranking Projects.

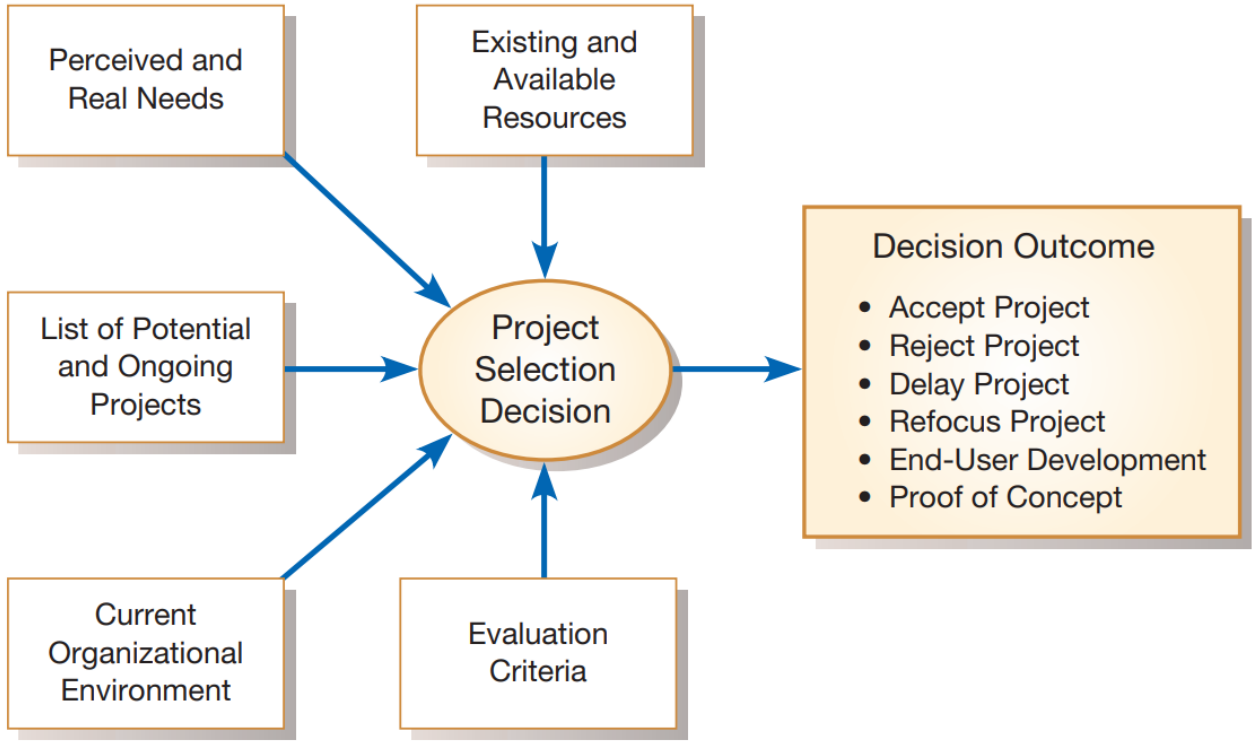
Evaluation Criteria	Description
Value Chain Analysis	Extent to which activities add value and costs when developing products and/or services
Strategic Alignment	Extent to which the project is viewed as helping the organization achieve its strategic objectives and long-term goals
Potential Benefits	Extent 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

- Classifying and ranking projects can be performed by top managers, a steering committee, business units, or the IS development group

Selecting IS development projects

- Project selection is a process of considering both short- and long-term projects and selecting those most likely to achieve business objectives.

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



Selecting IS development projects

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

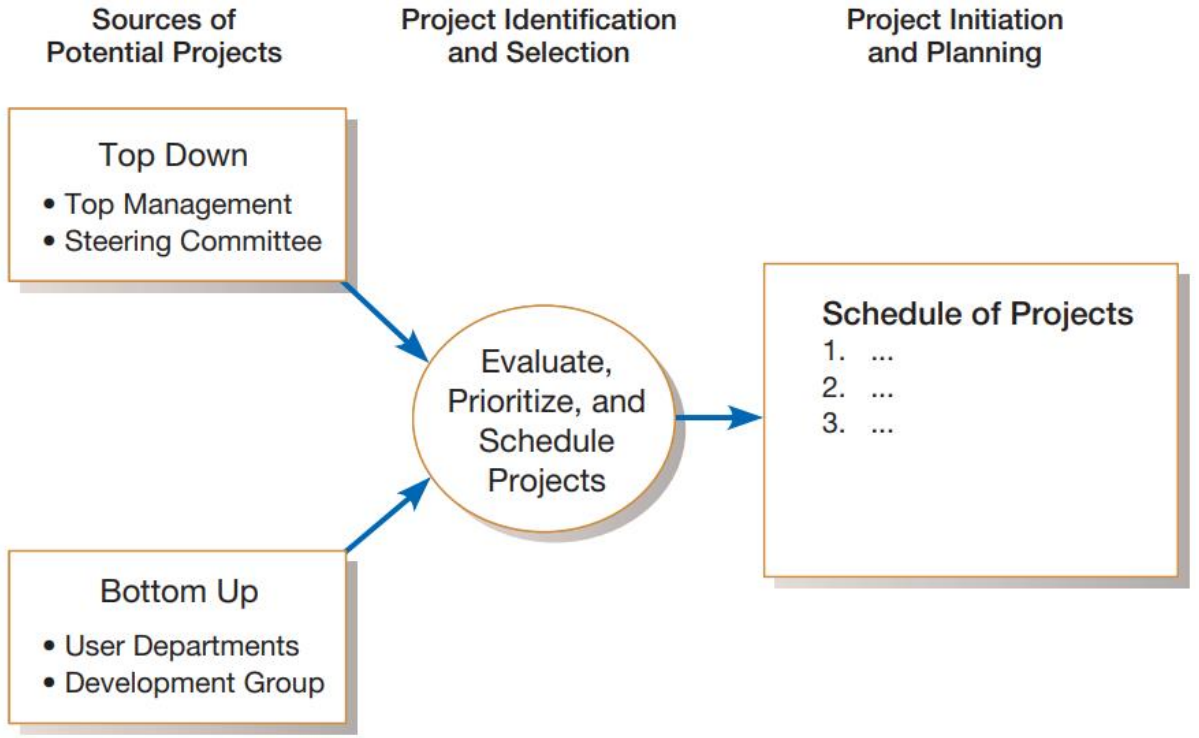
Criteria	Weight	Alternative A		Alternative B		Alternative C	
		Rating	Score	Rating	Score	Rating	Score
Requirements							
Real-time data entry	18	5	90	5	90	5	90
Automatic reorder	18	1	18	5	90	5	90
Real-time data query	14	1	14	5	70	5	70
	50		122		250		250
Constraints							
Developer costs	15	4	60	5	75	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

- One method for deciding among different projects, or when considering alternative designs for a given system.

Deliverables and Outcomes

- The primary deliverable from the first part of the planning phase is a schedule of specific IS development projects.
- An outcome of this phase is the assurance that careful consideration was given to project selection

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



Corporate and Information Systems Planning

Corporate and Information Systems Planning

- What procedure (application program) is required to solve this particular problem as it exists today?
- What information (or data) requirements will satisfy the decision-making needs or business processes of the enterprise today and well into the future?
- To benefit from a planning-based approach for identifying and selecting projects, an organization must:
  - Analyze its information needs
  - Plan its projects carefully

Factors for Improved Systems Project Identification & Selection

1. Increased cost of I S (40% of organizational expense)
2. Lack of cross-organizational applications and systems
3. Systems don’t address critical strategic problems
4. Data redundancy out of control, lack of data quality
5. High systems maintenance cost
6. Application backlogs extend three years or more

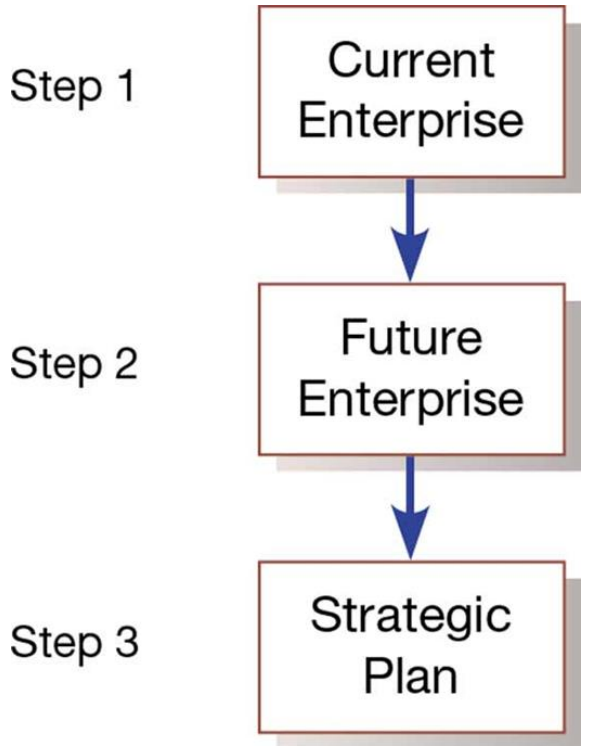
A disciplined approach is a prerequisite for more effectively applying IS in order to reach organizational goals

Corporate Strategic Planning

Corporate Strategic Planning

- Corporate strategic planning
  - ongoing process that defines the mission, objectives, and strategies of an organization.
- Mission statement
  - statement that makes it clear what business a company is in.
- Objective statement
  - series of statements that express an organization's qualitative and quantitative goals for reaching a desired future position.

Corporate strategic planning is a three-step process



Mission Statement

- Mission Statement (Pine Valley Furniture)

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 Statement

- Statement of Corporate Objectives (Pine Valley Furniture)

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.

Corporate Strategic Planning

- 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.

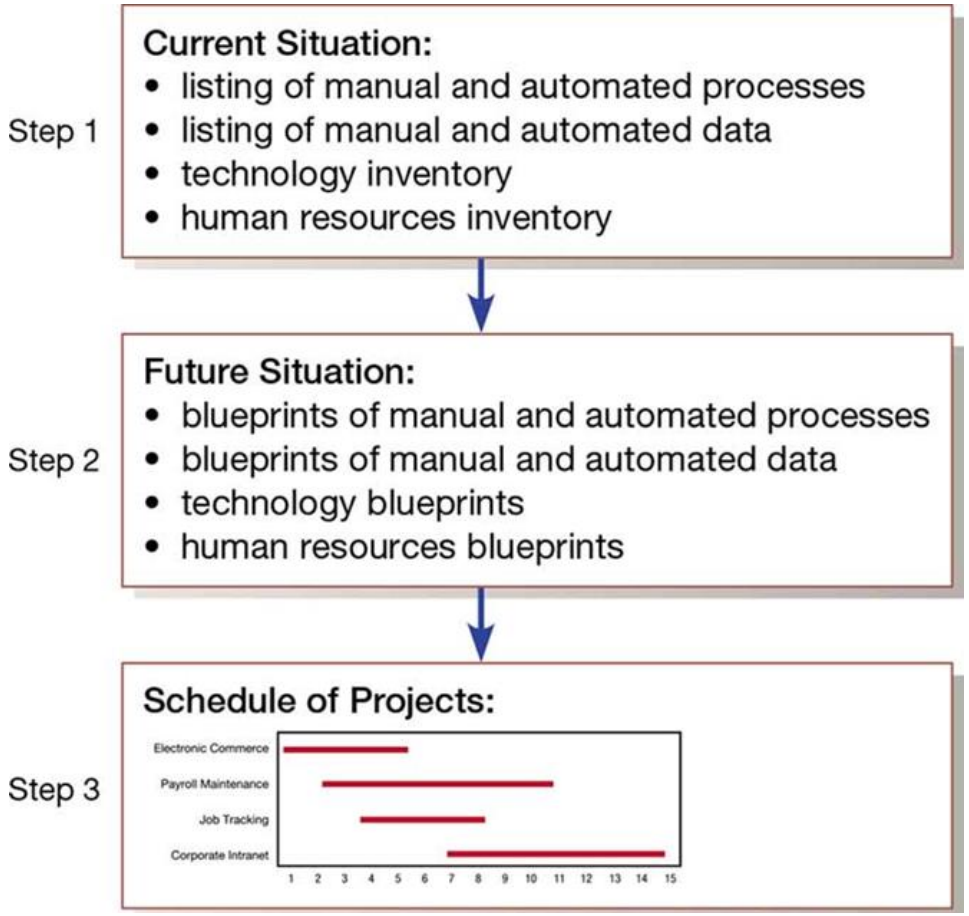
Competitive Strategy

- Competitive strategy
  - method by which an organization attempts to achieve its mission and objectives
- Three strategies
  - Low-cost producer
  - Product differentiation
  - Product focus or niche

Information System Planning

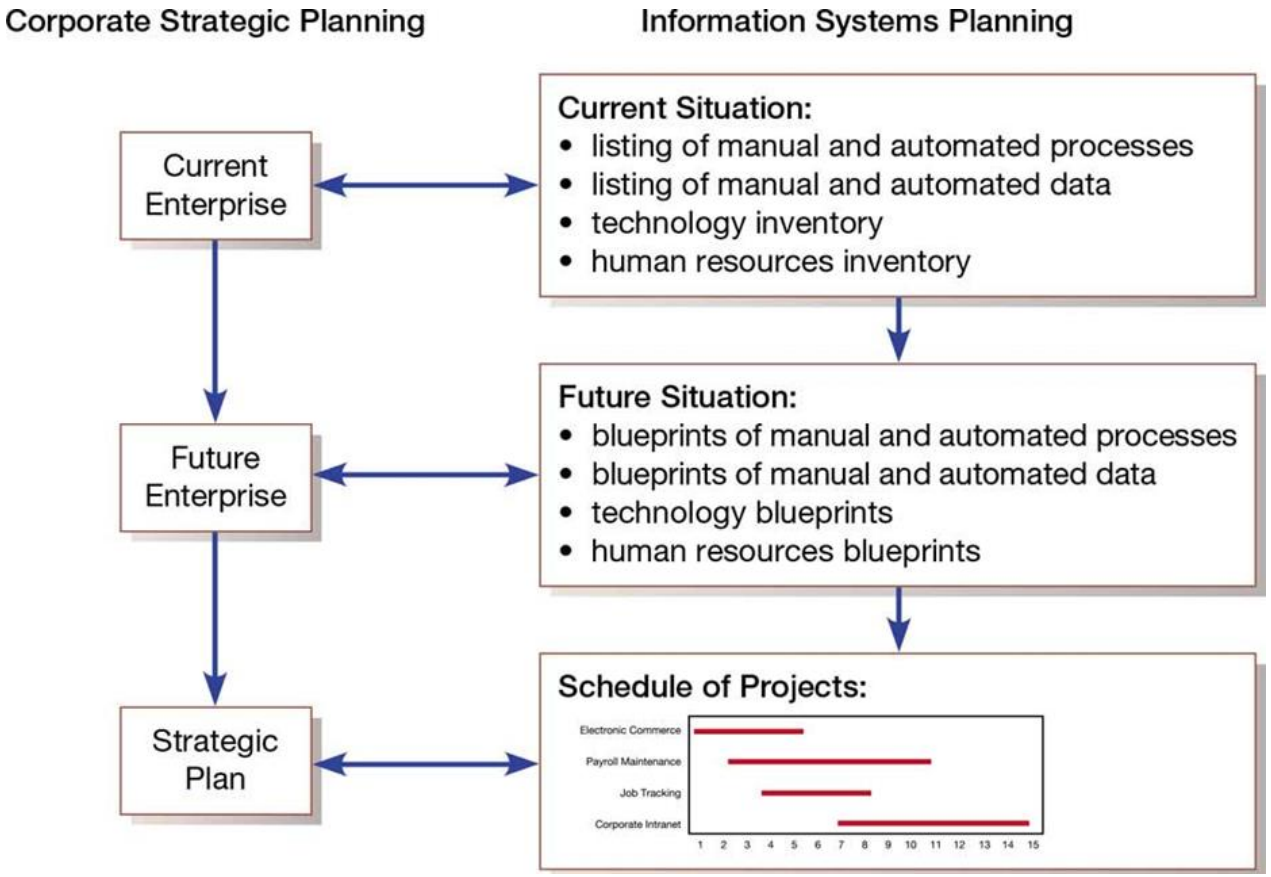
Information System Planning

- orderly means of assessing the information needs of an organization and defining new systems, databases, and technologies that will best satisfy those needs



Information System Planning Process

- Parallel activities of corporate strategic planning and information systems planning.



Describe the current situation

- Top-down planning
  - generic methodology that attempts to gain a broad understanding of the information systems needs of the entire organization
- Advantages:
  - Broader perspective
  - Improved integration
  - Improved management support
  - Better understanding

Describe the current situation

- ISP has several advantages over other planning approaches.

Advantage	Description
Broader Perspective	If not viewed from the top, information systems may be implemented without first understanding the business from general management's viewpoint.
Improved Integration	If not viewed from the top, totally new management information systems may be implemented rather than planning how to evolve existing systems.
Improved Management Support	If not viewed from the top, planners may lack sufficient management acceptance of the role of information systems in helping them achieve business objectives.
Better Understanding	If not viewed from the top, planners may lack the understanding necessary to implement information systems across the entire business rather than simply to individual operating units.

(*Source:* Based on IBM, 1982; Slater, 2002; Overby, 2008).

Describe the current situation

- Bottom-up planning
  - generic information systems planning methodology that identifies and defines IS development projects based upon solving operational business problems or taking advantage of some business opportunities

Describe the current situation

- Bottom-up planning

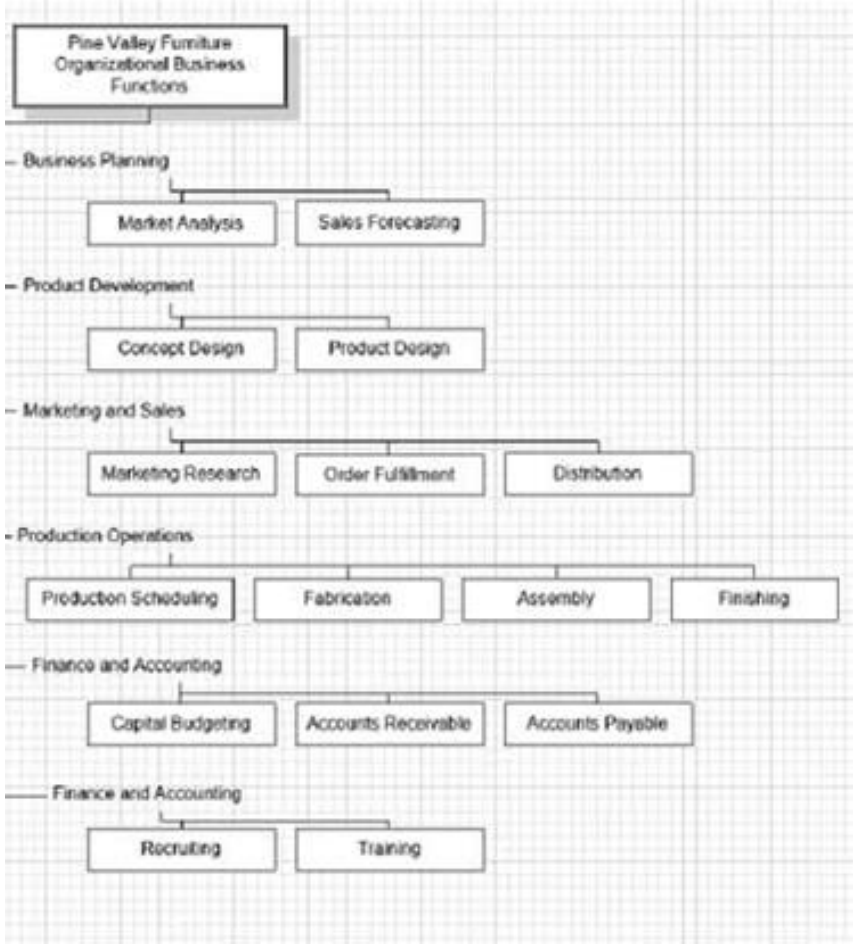
Information Systems Planning Information (Pine Valley Furniture)

FUNCTIONS:	DATA ENTITIES:	INFORMATION SYSTEMS:
▪ business planning	▪ customer	▪ payroll processing
▪ product development	▪ product	▪ accounts payable
▪ marketing and sales	▪ vendor	▪ accounts receivable
▪ production operations	▪ raw material	▪ time card processing
▪ finance and accounting	▪ order	▪ inventory management
▪ human resources	▪ invoice	…
…	▪ equipment	
	…	

Describe the current situation

- Bottom-up planning

Functional Decomposition of Information Systems Planning Information



Describe the current situation

- Type 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 systems	Data entity-to-Information system	Information system-to-objective

Describe the current situation

- Type of Planning Matrices

Data Entity to-Function matrix for PVF

	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											
...											

Describe the current situation

- Affinity clustering
  - process of 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
  - extent to which information holds things in common
- Example: Function-to-data entity matrix
  - Functions with similar data entities placed in adjacent rows
  - Data entities used in common by processes in adjacent columns

Making Sense Out of Planning Matrices

During the information systems planning process, before individual projects are identified and selected, a great deal of "behind the scenes" analysis takes place. During this planning period, which can span from six months to a year, IS planning team members develop and analyze numerous matrices like those described in the associated text. Matrices are developed to represent the current and the future views of the organization. Matrices of the "current" situation are called "as is" matrices. In other words, they describe the world "as" it currently "is." Matrices of the target or "future" situation are called "to be" matrices. Contrasting the current and future views provides insights into the relationships existing in important business information, and most important, forms the basis for the identification and selection of specific development projects. Many CASE tools provide features that will help you make sense out of these matrices in at least three ways:

1. **Management of Information.** A big part of working with complex matrices is managing the information. Using the dictionary features of the CASE tool repository, terms (such as *business functions and process* and *data entities*) can be defined or modified in a single location. All planners will therefore have the most recent information.
2. **Matrix Construction.** The reporting system within the CASE repository allows matrix reports to be easily produced. Because planning information can be changed at any time by many team members, an easy method to record changes and produce the most up-to-date reports is invaluable to the planning process.
3. **Matrix Analysis.** Possibly the most important feature CASE tools provide to planners is the ability to perform complex analyses within and across matrices. This analysis is often referred to as **affinity clustering**. Affinity refers to the extent to which information holds things in common. Thus, affinity clustering is the process of arranging matrix information so that clusters of information with some predetermined level or type of affinity are placed next to each other on a matrix report. For example, an affinity clustering of a Process-to-Data Entity matrix would create roughly a block diagonal matrix with processes that use similar data entities appearing in adjacent rows and data entities used in common by the same processes grouped into adjacent columns. This general form of analysis can be used by planners to identify items that often appear together (or should!). Such information can be used by planners to most effectively group and relate information (e.g., data to processes, functions to locations, and so on). For example, those data entities used by a common set of processes are candidates for a specific database. And those business processes that relate to a strategically important objective will likely receive more attention when managers from those areas request system changes.

Describing the target situation, trends, and constraints

- Define the target situation that reflects the desired future state of the organization
- The target situation must be developed in light of technology and business trends, in addition to organizational constraints.
- Matrices are updated to relate information in a manner consistent with the desired future state.

Describing the target situation, trends, and constraints

- A detailed transition strategy and plan are developed after the creation of the current and target situations is complete.

I. **Organizational Mission, Objectives, and Strategy**
Briefly describes the mission, objectives, and strategy of the organization. The current and future views of the company are also briefly presented (i.e., where we are, where we want to be).

II. **Informational Inventory**
This section provides a summary of the various business processes, functions, data entities, and information needs of the enterprise. This inventory will view both current and future needs.

III. **Mission and Objectives of IS**
Description of the primary role IS will play in the organization to transform the enterprise from its current to future state. While it may later be revised, it represents the current best estimate of the overall role for IS within the organization. This role may be as a necessary cost, an investment, or a strategic advantage, for example.

IV. **Constraints on IS Development**
Briefly describes limitations imposed by technology and current level of resources within the company—financial, technological, and personnel.

V. **Overall Systems Needs and Long-Range IS Strategies**
Presents a summary of the overall systems needed within the company and the set of long-range (2–5 years) strategies chosen by the IS department to fill the needs.

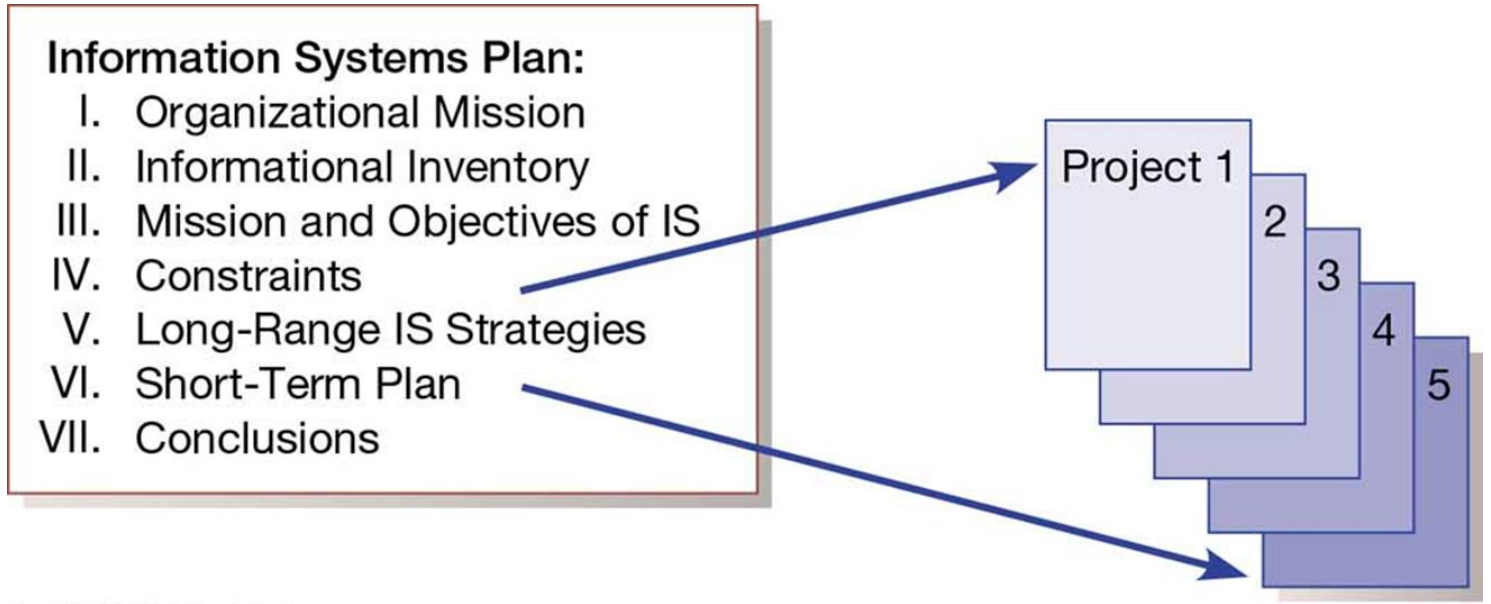
VI. **The Short-Term Plan**
Shows a detailed inventory of present projects and systems and a detailed plan of projects to be developed or advanced during the current year. These projects may be the result of the long-range IS strategies or of requests from managers that have already been approved and are in some stage of the life cycle.

VII. **Conclusions**
Contains likely but not-yet-certain events that may affect the plan, an inventory of business change elements as presently known, and a description of their estimated impact on the plan.

Describing the target situation, trends, and constraints

- The short- and long-term developmental needs identified in the plan are typically expressed as a series of projects.

Systems Development Projects Flow from the Information Systems Plan



Electronic Commerce Applications

Internet Basics

- Internet
  - large, worldwide network of networks that use a common protocol to communicate with each other.
- Internet of Things (IoT)
  - broad class of physical objects that feature an Internet address and connectivity that communicate between these objects and other Internet enabled devices and systems.
- Electronic commerce (EC)
  - Internet-based communication to support day-to-day government, business, and consumer activities.

E-commerce Business Models

- A broad range of business models include:
  - Business-to-Business (B2B)
  - Business-to-Consumer (B2C)
  - Business-to-Employee (B2E)
  - Consumer-to-Consumer (C2C)
  - Consumer-to-Business (C2B)
  - Business-to-Government (B2G)
  - Government-to-Business (G2B)
  - Government-to-Citizen (G2C)

E-commerce Business Models

- Sample of the numerous unknowns to be dealt with when designing and building an Ecommerce application.

User	• 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	• 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


Q&A

Lab Exercise 3

Write your answers on A4 paper (doc/docx format), with a font size of 12 pts and any serif fonts (i.e. Times New Roman). There is a 1inch margin on all sides.

- Description
  - Timberline Technology manufactures membrane circuits in its Northern California plant. In addition, all circuit design and research and development work occur at this site. All finance, accounting, and human resource functions are headquartered at the parent company in the upper Midwest. Sales take place through six sales representatives located in various cities across the country. Information systems for payroll processing, accounts payable, and accounts receivable are located at the parent office while systems for inventory management and computer-integrated manufacturing are at the California plant.

Lab Exercise 3

Write your answers on A4 paper (doc/docx format), with a font size of 12 pts and any serif fonts (i.e. Times New Roman). There is a 1inch margin on all sides.

- Task
  - As best you can, list the locations, units, functions, processes, data entities, and information systems for this company.
  - For each of the following categories, create the most plausible planning matrices for Timberline Technology, function-to-data entity, process-to-data entity, process-to-information system data entity-to-information system.
  - What other information systems not listed is Timberline likely to need?

Deadline: **October 16, 2021**

</End>

COLLEGE OF
INFORMATION
TECHNOLOGY
AND COMPUTING