Introduction

• System development typically starts with a systems request, followed by a preliminary investigation which includes a feasibility study.
Evaluation of System Requests

- Many organizations use a special form for systems requests.
- When a systems requests form is received a system analyst or IT manager examines it to determine what IT resources are required for the preliminary investigation.
System Requests Forms

Many companies use online systems requests forms that can be filled in and submitted electronically.
Evaluation of System Requests (cont’d)

- Organizations assign responsibility for evaluating systems requests to a group of key managers and users.
  - Provides a variety of experience and knowledge in evaluating systems requests.
  - Evaluate the requests and set priorities.
Overview of Feasibility

• A systems requests must meet several tests to see whether it is worthwhile to proceed further.

• A feasibility study uses four main yardsticks to measure or predict a system’s success:
  ▫ operational feasibility
  ▫ technical feasibility
  ▫ economic feasibility
  ▫ schedule feasibility
Overview of Feasibility (cont’d)
Operational Feasibility

• A system that has operational feasibility is one that would be used effectively after it has been developed.
Technical Feasibility

• A systems request has technical feasibility if the organization has the resources to develop, purchase, install or operate the system.
Economic Feasibility

- A systems request has economic feasibility if the projected benefits of the proposed system outweigh the estimated costs (usually considered the total cost of ownership, TCO) which includes ongoing support and maintenance costs, as well as acquisition costs.
Economic Feasibility (cont’d)

• In addition to costs, one needs to assess tangible and intangible benefits to the company or organization.
  ▫ **Tangible Benefits** are benefits that can be measured in monetary terms. These benefits result from a decrease in expenses, an increase in revenues or both.
  • Example: A sophisticated inventory control system that cuts excess inventory and eliminates production delays.
Economic Feasibility (cont’d)

• **Intangible Benefits** are advantages that are difficult to measure in monetary terms but are important to the company.
  
  ▫ Example: A user-friendly system that improves employee job satisfaction.
Schedule Feasibility

• A project has scheduled feasibility if it can be implemented in an acceptable time frame.
Evaluating Feasibility

• The first step in evaluating feasibility is to identify and weed out systems requests that are not feasible.

• Feasibility analysis is an ongoing task that must performed throughout the systems development process.
Setting Priorities

- After rejecting systems requests that are not feasible, the systems review committee must establish priorities for the remaining items.
- The highest priority goes to projects that provide the greatest, benefit, at the lowest cost, in the shortest period of time.
Setting Priorities (cont’d)

• Factors that Affect Priority
  ▫ Will the proposed system reduce costs? Where? When? How? How much?
  ▫ Will the system increase revenue for the company? Where? When? How? How much?
  ▫ Will the systems project result in more information or produce better results? How? Are the results measurable?
Setting Priorities (cont’d)

• Factors that Affect Priority
  ▫ Will the system serve customers better?
  ▫ Will the system serve the organization better?
  ▫ Can the project be implemented in a reasonable time period? How long will the results last?
  ▫ Are the necessary financial, human, and technical resources available?
Whenever possible, the analyst should evaluate a proposed project based on tangible costs and benefits that represent actual (or approximate) monetary values.
Setting Priorities (cont’d)

• Discretionary and Nondiscretionary Projects
  ▫ Projects where management has a choice in implementing them are called **discretionary projects**.
  ▫ Projects where no choice exists are called **nondiscretionary projects**.
Preliminary Investigation Overview

• A systems analyst conducts a **preliminary investigation** to study the systems request and recommend specific action.

• Planning the Preliminary Investigation
  ▫ During a preliminary investigation, a systems analyst typically follows a series of steps.
  ▫ The exact procedure depends on the nature of the request, the size of the project, and the degree of urgency.
Steps in Preliminary Investigation

1. Understand the problem or opportunity.
2. Define the project scope and constraints.
   - Perform fact-finding:
     - Analyze organizational charts.
     - Conduct interviews.
     - Review documentation.
     - Observe operations.
     - Conduct a user survey.
3. Analyze project usability, cost, benefit, and schedule data.
4. Evaluate feasibility:
   - Operational
   - Technical
   - Economic
   - Schedule
5. Present results and recommendations to management.
Step 1: Understand the Problem or Opportunity

- A popular technique for investigating causes and effects is called a fishbone diagram, or Ishikawa diagram.

- Pareto Chart
  - Widely used tool for visualizing and prioritizing issues that need attention.
A fishbone Diagram

The basic concept in the Cause-and-Effect diagram is that the name of a basic problem of interest is entered at the right of the diagram at the end of the main "bone". The main possible causes of the problem (the effect) are drawn as bones off of the main backbone. The "Four-M" categories are typically used as a starting point: "Materials", "Machines", "Manpower", and "Methods". Different names can be chosen to suit the problem at hand, or these general categories can be revised. The key is to have three to six main categories that encompass all possible influences.
Pareto Chart - Causes of Inventory System Errors

- Improper part number: 250
- Invalid codes: 100
- Out-of-date part number: 50
- Address correction needed: 20
- Exceeds maximum level: 10
- Inactive supplier: 5
Step 2: Define the Project Scope and Constraints

- **Project scope**
  - Defining the specific boundaries, or extent, of the project

- **Project creep**
  - Projects with very general scope definitions are at risk of expanding gradually, without authorization in a process called project creep.

- **Constraint**
  - It’s a requirement or condition that the system must satisfy or an outcome that the system must achieve.
Step 2: Define the Project Scope and Constraints (cont’d) – X’tics of Constraints

- **PRESENT VERSUS FUTURE**
  - Is the constraint something that must be met as soon as the system is developed or modified, or is the constraint necessary at some future time?

- **INTERNAL VERSUS EXTERNAL**
  - Is the constraint due to a requirement within the organization or does some external force, such as government regulation impose it?

- **MANDATORY VERSUS DESIRABLE**
  - Is the constraint mandatory? Is it absolutely essential to meet the constraint, or is it merely desirable?

- Regardless of the type, all constraints should be identified as early as possible to avoid future problems and surprises.
Examples of Constraints

Example A: New IRS data must be used in the payroll system as soon as possible.

Example B: Sometime next year, our largest customer will require a security code for all online transactions.

Example C: Management prefers that the project be completed now, rather than next quarter.

Example D: Starting next week, the marketing system must track all repeat visits to the Web site.

Example E: To reduce raw material costs, we should build supply chain management capability into the next version of our purchasing system.
Step 3: Perform Fact-Finding

- The objective of Fact-finding is to gather data about project usability, costs, benefits and schedules.
- Depending on what information is needed to investigate the systems request, fact-finding might consume several hours, days, or weeks.
Techniques used in Fact-finding

• **Analyze Organization Charts**
  - Obtain organization charts to understand how the department functions and identify individuals you might want to interview.

• **Conduct Interviews**
  1. Determine the people to interview
  2. Establish objectives for the interview
  3. Develop interview questions
  4. Prepare for the interview
  5. Conduct the interview
  6. Document the interview
  7. Evaluate the interview
Techniques used in Fact-finding (cont’d)

- Review Documentation
- Observe Operations
- Conduct a User Survey
Step 4: Analyze Project Usability, Cost, Benefit, and Schedule Data

• Data gathered during fact-finding about a project’s predicted costs, anticipated benefits and schedule issues that could affect implementation must be analyzed carefully before evaluating feasibility.
Step 5: Evaluate Feasibility

Start by reviewing the answers to the questions asked at the various levels of feasibility;

- Operational feasibility
- Technical feasibility
- Economic feasibility
- Schedule feasibility
Step 6: Present Results and Recommendations to Management

• The final task in the preliminary investigation is to prepare a report to management.

• The format of the preliminary investigation report varies from one company to another.
Summary

• Systems planning is the first phase of the systems development life cycle.

• Effective information systems help an organization support its business process, carry out its mission, and serve its stakeholders.

• Systems projects are initiated to improve performance, provide more information, reduce costs, strengthen controls, or provide better service.
Summary

• During the preliminary investigation, the analyst evaluates the systems request and determines whether the project is feasible from an operation, technical, economic, and schedule standpoint.

• Analysts evaluate systems requests on the basis of their expected costs and benefits, both tangible and intangible.
Summary

• The steps in the preliminary investigation are to understand the problem or opportunity; define the project scope and constraints; perform fact-finding; analyze project usability, cost, benefit, and schedule data; evaluate feasibility; and present results and recommendations to management.
Summary

• The last task in a preliminary investigation is to prepare a report to management.

• The report must include an estimate of time, staffing requirements, costs, benefits, and expected results for the next phase of the SDLC.