

UNIT 2

Planning

(7 Hours) — System Analysis and Design (CAC203)

1. System Development Projects: Identification and Selection

1.1 Introduction

The first phase of the SDLC is **planning**. Organizations have far more system ideas than money, staff and time, so they must decide **which projects to pursue** and in what order. Identification and selection is the process of finding potential projects, evaluating them against organizational goals and choosing the ones that deliver the greatest value.

1.2 Identifying and Selecting Systems Development Projects

Projects are identified in two broad ways. **Top-down** identification starts from senior management, steering committees or corporate strategic planning and links projects to business goals. **Bottom-up** identification starts with operational managers, users or IT staff who see problems or opportunities in their own area.

Source of request	Description	Example
Management / steering committee	Strategic initiative from top level	Launch an online sales channel
Department managers	Need to improve a functional area	Automate inventory control
Users and customers	Complaints, suggestions, new needs	Add mobile payment
IT staff	Technology upgrade or integration	Migrate to a cloud platform
Government / external factors	Legal or competitive pressure	New tax reporting rule

1.3 Selection Process and Criteria

Each proposal is evaluated by a **steering committee** (or system review board) using both **tangible** and **intangible** criteria. Common selection criteria are:

- **Value chain analysis** — does the project improve a primary or support activity of the value chain?

- **Strategic alignment** — does it support the organization's mission and goals?
- **Potential benefits** — cost savings, revenue growth, improved service, better decisions.
- **Resource availability** — people, money, technology and time.
- **Project size and duration** — smaller, shorter projects carry lower risk.
- **Technical difficulty and risk** — familiarity with the technology, complexity, dependencies.

A **weighted scoring model** converts these criteria into a numerical ranking.

Example 2.1 — Weighted project selection

Criteria weights: Strategic fit 0.4, Benefit 0.35, Risk (higher score = lower risk) 0.25. Project P scores 9, 6, 5; Project Q scores 6, 8, 9. Which project should be selected?

Solution

$$P = 9 \times 0.40 + 6 \times 0.35 + 5 \times 0.25 = 3.60 + 2.10 + 1.25 = \mathbf{6.95}$$

$$Q = 6 \times 0.40 + 8 \times 0.35 + 9 \times 0.25 = 2.40 + 2.80 + 2.25 = \mathbf{7.45}$$

Project Q has the higher score and is selected first.

1.4 Corporate and Information Systems Planning

Corporate strategic planning defines the organization's mission, objectives and competitive strategy. **Information systems planning (ISP)** is an orderly means of assessing the information needs of an organization and defining the systems, databases and technologies that will satisfy them. ISP takes its direction from the corporate plan and produces a portfolio of projects.

Corporate planning follows a chain: **Mission → Objectives → Competitive strategy** (low-cost producer, product differentiation or focus) and these drive **Information Systems Planning**. The ISP has three steps:

Step	Activity	Outcome
1. Situation analysis	Describe the current IS, people, data, processes, technology	Current IS portfolio
2. Define future needs	Identify objectives, constraints, and information requirements	Vision of required systems
3. Develop strategic IS plan	Set a schedule and portfolio of projects, resources, risk	Prioritized project list

Note: Critical Success Factors (CSFs) — the few areas where things must go right for the business to succeed — are often used to link corporate goals to information needs.

2. System Development Projects: Initiation and Planning

2.1 Introduction

Once a project has been selected, the team must decide whether it is **worth doing in detail** and prepare a plan to carry it out. This is the **project initiation and planning (PIP)** stage, which ends with the **Baseline Project Plan (BPP)** and a go/no-go decision.

2.2 Initiating and Planning Systems Development Projects

The **project manager** is appointed, and an **initiation team** studies the request. Their aim is to understand the problem, set the scope, and estimate cost, time and benefits at a high level. Planning includes defining **tasks, resources, schedule, risks and communication** for the project.

2.3 The Process of Initiating and Planning IS Development Projects

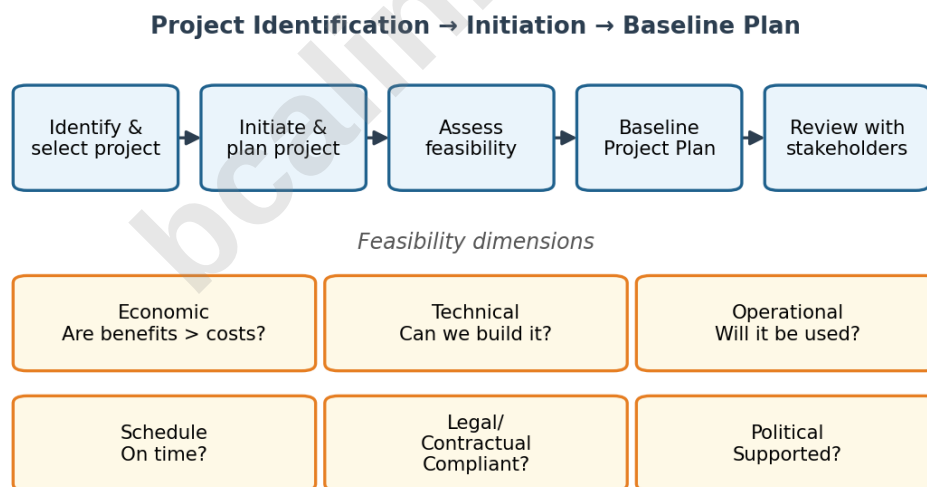


Figure 2.1 — Project initiation and planning flow, with feasibility dimensions

The process involves the following steps, performed by a project manager and team:

- **1. Establish the project initiation team** — assign a small group to prepare the project.
- **2. Establish a relationship with the customer** — set up channels of communication and expectations.
- **3. Establish the project initiation plan** — define the plan for the initiation itself.

- **4. Establish management procedures** — team roles, reporting, change control, communication.
- **5. Establish the project management environment and workbook** — a repository for all documents.
- **6. Develop the project charter** — the formal document stating objectives, scope, stakeholders, and authority.

2.4 Assessing Project Feasibility

A **feasibility study** determines whether the proposed system is practical and worthwhile. It examines several dimensions, often remembered as **TELOS** (Technical, Economic, Legal, Operational, Schedule):

Feasibility	Question asked	Typical considerations
Economic	Do benefits exceed costs?	Cost–benefit, ROI, payback period, NPV
Technical	Can it be built with available technology and skills?	Hardware, software, project size, compatibility
Operational	Will the system be accepted and used?	User attitude, training, fit with procedures
Schedule	Can it be finished on time?	Deadlines, resource availability
Legal / contractual	Does it comply with laws and contracts?	Privacy, licensing, regulations
Political	Is there management and stakeholder support?	Sponsors, resistance to change

2.5 Economic Feasibility — Cost-Benefit Analysis

Costs are either **one-time** (development, hardware, training, conversion) or **recurring** (maintenance, support, licences). **Benefits** are **tangible** (measurable in money, e.g., lower labour cost) or **intangible** (customer goodwill, better decisions). Common measures:

- **Net Present Value (NPV)** — sum of discounted benefits minus discounted costs, where $PV = \text{Cash flow} / (1 + r)^n$.
- **Return on Investment (ROI)** = (Total benefits – Total costs) / Total costs.
- **Break-even (payback) analysis** — the point in time when cumulative benefits equal cumulative costs.

Example 2.2 — NPV, ROI and payback

A system costs Rs. 300,000 to build now. Net benefits are Rs. 150,000 in Year 1, Rs. 180,000 in Year 2 and Rs. 200,000 in Year 3. The discount rate is 10%. Compute NPV, ROI (undiscounted) and the payback period.

Solution

PV Year 1 = $150,000 / 1.10 = 136,364$

PV Year 2 = $180,000 / 1.21 = 148,760$

PV Year 3 = $200,000 / 1.331 = 150,263$

Total PV of benefits = 435,387, so **NPV = 435,387 – 300,000 = Rs. 135,387** (positive → economically feasible).

ROI = $(530,000 - 300,000) / 300,000 = 76.7\%$

Payback: cumulative benefit after Year 2 = 330,000 ≥ 300,000. Remaining 300,000 – 150,000 = 150,000 at end of Year 1, so it is recovered in Year 2 after $150,000/180,000 = 0.83$ year → **about 1.83 years**.

2.6 Building and Reviewing the Baseline Project Plan

The **Baseline Project Plan (BPP)** is the major deliverable of this stage. It summarizes what is known about the project and is used by managers to decide whether to continue and by the team to guide later work. It is a living document, updated as the project proceeds.

BPP section	Contents
Introduction	Project overview, recommendation, scope of the project
System description	Alternatives considered, the proposed system, high-level requirements
Feasibility assessment	Economic, technical, operational, schedule, legal and other feasibility
Management issues	Team composition, communication plan, project standards, procedures
Work schedule	WBS, Gantt or network diagram, milestones
Risk and constraints	Identified risks and mitigation, assumptions, constraints

The BPP is reviewed in a **structured walkthrough** — a peer-review meeting in which the project team presents the plan to users, managers and IT specialists. Roles include the **coordinator**, **presenter**, **user representative**, **secretary** (records comments), **standards bearer** and **maintenance oracle**. The outcome is approval, approval with changes, or rejection; the review focuses on finding errors, not on fixing them or judging people.

Example 2.3 — Scope statement

Write the scope statement (in one sentence) for an “Online Hostel Booking System”.

Solution

The system will let students search available rooms, book and pay online, and let the hostel manager manage rooms, tenants and invoices. It will **not** include accounting for the college or mess management.

Key Takeaways

- ✓ Projects are identified top-down or bottom-up and selected using criteria and weighted scoring.
- ✓ Information systems planning aligns the IS portfolio with corporate strategy.
- ✓ Project initiation forms the team, sets the charter and prepares the Baseline Project Plan.
- ✓ Feasibility covers economic, technical, operational, schedule, legal and political aspects; NPV, ROI and payback measure economic feasibility.
- ✓ The BPP is reviewed through a structured walkthrough before the project proceeds to analysis.

— *End of Unit 2* —