

CSE331: Software Engineering

Lecture 3

Feasibility Studies



Feasibility Study

A **feasibility study** is a study made before committing to a project.

A feasibility study leads to a **decision**:

- go ahead
- do not go ahead
- think again

In production projects, the feasibility study often leads to a **budget request**.

In research, a feasibility study is often in the form of a **proposal**.

Why are Feasibility Studies Difficult?

Benefits are usually very hard to quantify.

Approach is usually ill-defined. Estimates of resources needed and timetable are very rough.

Organizational changes may be needed.

Therefore, feasibility studies rely heavily on the judgment of experienced people. Who are often over-enthusiastic.

Mistakes made at the beginning are the most difficult to correct.



The Decision Maker's Viewpoint

A senior member of an organization must **decide** whether to begin a major software project. What information is needed?

Client: Who is this project for?

Scope: What are the boundaries of the project?

Benefits: What are the benefits? Can they be quantified?

Technical: Is there at least one technical way to carry out the project?

Resources: What are the estimates of staff, time, equipment, etc?

Alternatives: What are the options if the project is not begun?

The Decision Maker's Viewpoint

Where are risks? Can they be minimized?

Technical

- There must be an outline plan with a rough timetable and staff allocation.
- The plan must have a very large margin for contingencies. (Projects typically require twice the staff and/or time envisaged in the feasibility plan.)

External

- Every system interacts with others. Are the others committed to the necessary efforts?
- Where are the external pressures and obstacles?

Feasibility Study: Scope

Scope expresses **the boundaries of the system**:

- It will include <list of included functions>
- It will exclude <list of excluded functions>
- It depends on <list of dependencies>
- It replaces <list of functions to be replaced>

Confusion over scope is a common reason for clients to be dissatisfied with a system.

"Is that all you planned to do?" "But I assumed that you were going to do xyz." "I can't use the system without abc."

Feasibility Study: Technical

A feasibility study needs to demonstrate that the proposed system is **technically feasible**. This requires:

- a rough outline of the requirements
- a possible system design (e.g., database, distributed, etc.)
- estimates of numbers of users, data, transactions, etc.
- possible choices of software to be acquired or developed

These very rough numbers are fed into the provisional plan that is used to estimate the staffing, timetable, equipment needs, etc.

The technical approach actually followed may be very different.

Feasibility Study: Planning and Resources

The feasibility study should include an **outline plan**:

- Estimate the staffing and equipment needs, and the preliminary timetable
- Identify major decision points
- Identify interactions with and dependences on external systems
- Provide a preliminary list of deliverables and delivery dates



Feasibility Study: Alternatives and Risks

A feasibility study should identify **alternatives and risks**.

Alternatives

- Continue with current system, enhance it, or create new one?
- Develop in-house, or contract out? (How will a contract be managed?)

Risks

- What can go wrong?
- How will problems be identified (visibility)?
- Are there fall-back options?



Techniques for Feasibility Studies

Give client appreciation of system:

demonstration

mock-up

walk through

Outline budget:

n people for m months at \$ x per month
equipment, buildings, etc.

Phases/milestones:

deliverables at approximate date

Feasibility Report

A written document

- For a general audience: client, financial management, technical management, etc.
- Short enough that everybody reads it.
- Long enough that no important topics are skipped.
- Details are often included in supporting documents.

It should be a well written, well presented document.

