Software Projects Overview

Reasons for Information System Project

- Improved Service
  - Improving service to customers or users within the company
- Better Performance
  - Current system might not meet performance requirements.
- More Information
  - Current system might produce information that is insufficient, incomplete, or unable to support the company's changing information needs.

Reasons for Information System Project

- Stronger Controls
  - A system must have effective controls to ensure that data is accurate and secure.
- Reduced Cost
  - Current system could be expensive to operate or maintain due to technical problems, design weaknesses, or the changing demands of the business.

Factors Affecting Systems Projects

- User Requests
  - Users rely more heavily on information systems to perform their jobs, they request more IT services and support.
- Top Management Directives
  - Directives from top managers are a prime source of major systems projects.
- Existing Systems
  - Errors or problems in existing systems can trigger requests for systems projects.

Factors Affecting Systems Projects

- Information Technology Department
  - Many systems project requests come from the IT department.
- The Economy
  - Economic activity has a powerful influence on corporate information management.
- Technology
  - Changing technology is a basic force in business and society in general.

Factors Affecting Systems Projects

- Government
  - Federal, state, and local government regulations affect the design of corporate information systems.
- Software and Hardware Vendors
  - Most companies have a mix of software and hardware that must work together to support information systems requirements.
- Competitors
  - Competition drives many information systems decisions.

Factors Affecting Systems Projects

- Customers
  - Customer service is vitally important, and information systems that interact with customers receive top priority in most firms.
- Suppliers
  - With the growth of Electronic Data Interchange (EDI), relationships with suppliers are critically important.

System Failure

- System failure refers to an Information System that either does not perform as expected, is not operational at a specified time, or cannot be used in the way it was intended.

Software Development Failure

- Cost overrun
- Time overrun
- Quality problems
  - Unreliable
  - Difficult to use
  - No longer relevant
  - Hard to modify

System Failure – Cancel/Postpone

- As many as 75% of all large system may be considered to be operating failures.
- Although these systems are in production, they take so much extra time and money to implement or are functionally deficient that businesses can't recap the expected benefits.
- A research found that 28% of all corporate software development projects are cancelled before completion and 46% are behind schedule and over budget.

System Failure – Untouched/Unused

- In some systems, nearly all reports are never read. They are considered as worthless and full of figures of no consequence for decision making or analysis.
- Other systems go untouched because they are too difficult to use or because their data cannot be trusted. Users continue to maintain their records manually.
- Still other systems full of processing delays, excessive operational costs or never-ending production problems. And the Information System staff had no time to work out long-term solutions for them.

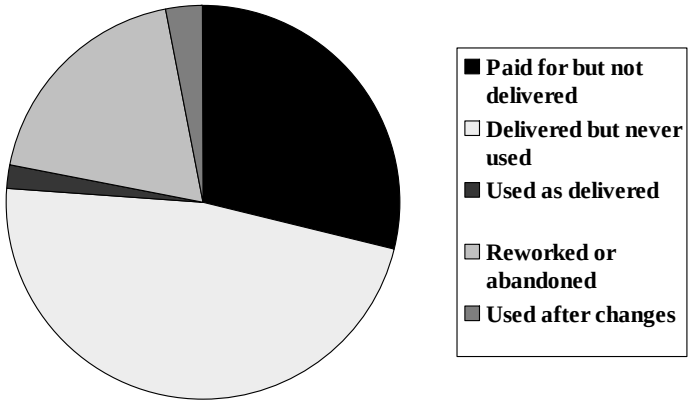
Past Experiences

- 1995 study in USA
  - 31% project cancelled before completion
  - Over 50% with average cost 189% of budget
- A Survey Findings in 1997
  - 87% overrun schedule
  - 56% overrun budget
  - 45% failed to produce expected benefit

What do we mean by Problem?

- An Information System project may fail before delivery
- An Information System may fail after delivery
- The project was cancelled
- The system was withdrawn after implementation
- An Information System may be continue to be used, despite causing problems to its users, its owners or its developers

Quality Example – US Federal Software Projects ($6.2M)



Reasons of Project Failure

- Poor project planning & management
- Risk not addressed
- Lack of project definition
- Lack of top management involvement and support
- Lack of client involvement
- Use of new or unproven technology
- Poor estimates or weak definitions of requirements at the project planning stage
- Poor quality control
- An unrealistic deadline is established
- Changing customer requirements
- An honest underestimate of effort
- Miscommunication among project staff

Why Things Go Wrong?

- Whether a system is delivered or not, many things can go wrong
- Flynn (1998) categorizes the main causes as:
  - Quality Problems
  - Productivity Problems

Quality Problems

- The wrong problem is addressed
  - Failure to align the project with business strategy
- Wider influences are neglected
  - Project team or business managers don't take account of the system environment
- Incorrect analysis of requirements
  - Poor skills or not enough time allowed
- Project undertaken for wrong reason
  - Technology pull or political push

Productivity Problems

- Users change their minds
- External events
  - E.g. introduction of the Euro, change of law
- Implementation not feasible
  - May not be known at start of the project
- Poor project control
  - Inexperienced management or political difficulties

Analytical Framework for Failures

Type of failure	Reason for failure	Comment
Quality problems	The wrong problem is addressed	System conflicts with business strategy
	Wider influences are neglected	Organization culture may be ignored
	Analysis[3] is carried out incorrectly	Team is poorly skilled, or inadequately resourced
	Project undertaken for wrong reason	Technology pull or political push
Productivity problems	Users change their minds	
	External events change the environment	New legislation
	Implementation is not feasible	May not be known until the project has started
	Poor project control	Inexperienced project manager

Ethics Issues & Stakeholder Problems

- Some Information System may affect people far beyond obvious users and owners of the system
  - Mobile companies collect data about subscribers' calls and physical movements
  - This data can be passed to police and many other government agencies
  - Do you know what data is stored about you? Who by? And what it is used for?

Problems in Software Development

- Size and Complexity
- Poor Communications
- Nature of Products
  - Flexible, Intangible & Abstract
- Software Engineering not mature (when compare with other engineering)

Size and Complexity

- The size and complexity of the project are ignored due to
  - Unprecedented size or new technology
    - Increasing uncertainty beyond previous experience
    - Or the previous experience on which the estimate is based on not relevant
    - And the project management team is not up to the task

Poor Communications

- The assumptions behind the estimate
  - Have not been adequately communicated
    - In the conversion-to-project-budget process
    - Or to those working on the project
  - Or actual work packages bear little relationship to estimator-planned work packages
  - Or activities start out-of-sequence
- Management report policies
  - Are inadequate for control
    - Until it is too late
  - Or the project cost reporting system is unresponsive
    - Or non-existent

Nature of Products

- The underlying estimate focuses on the wrong items
  - Easy-to-estimate items get close attention
  - Hard-to-estimate items get glossed over
    - Leading to a “fatal flaw”!
    - With the highest uncertainty risk
  - The estimate is not aligned with the project objectives
    - And realistic conversion to a viable budget is not possible