



FEASIBILITY STUDY

Lecture in the
CS6022 – Software Project Management



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FEASIBILITY STUDY

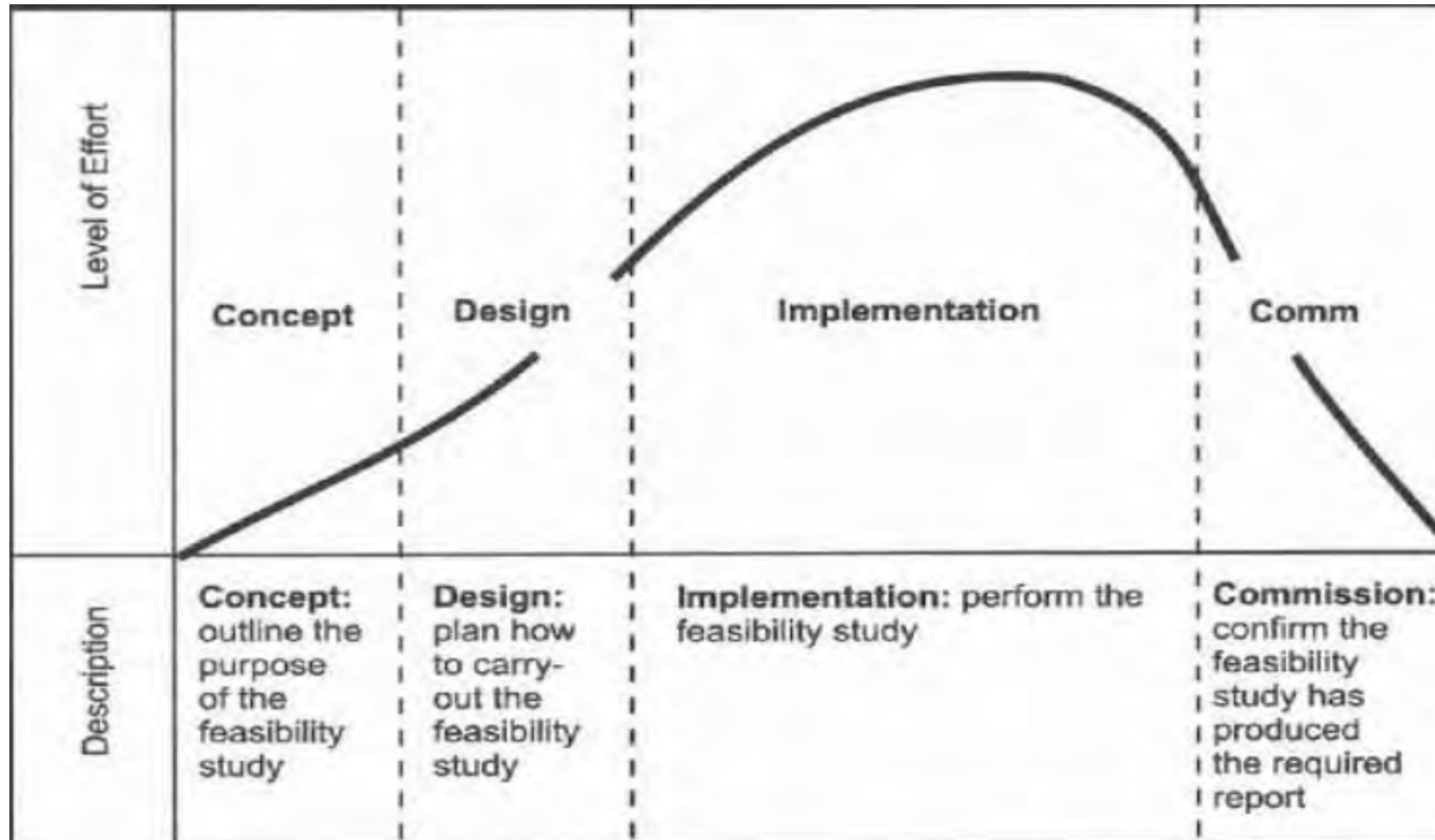


- The lead up to the feasibility study is the formalizing of the project with the project charter.
- The project charter outlines the purpose of the project and what it is meant to achieve.
- Likewise the feasibility study should be formalized with requirements, boundaries and expected outcomes:
 - who is responsible
 - project brief and proposal to be analyzed
 - who should be involved
 - level of detail
 - report back date
 - budget for the feasibility study.



- It is a senior management responsibility to select the project manager or team leader for the feasibility study.
 - technical expertise
 - basic team selection criteria
 - involve the stakeholders

PLAN THE FEASIBILITY STUDY



STAKEHOLDER ANALYSIS (INTERNAL)



- **Originator:** the person who suggested the project.
- **Owner:** the person whose strategic plan created the need for the project.
- **Sponsor:** the company or client who will authorise expenditure on the project this could be an internal client.
- **Project Champion:** the person who makes the project happen. Often a person with influence in high places.
- **Users:** the people who will operate the facility on behalf of the owner when the project is completed.
- **Customers:** the people who receive and pay for the benefit from the facility. For example we are all customers for electricity, telephones and commercial travel facilities. Customers may prefer a wide range of fashionable products this would encourage short production runs and quick turn-round times.
- **Project Team:** the team members who plan, organise, implement and control the work of the contractor to deliver the facility within the constraints of time, cost and quality (also consider the effect on their families).
- **Senior Management:** within your company who you need to support your project (mentor support).
- **Functional Managers:** within your company who will be supplying the workforce for your project (matrix structure).

STAKEHOLDER ANALYSIS (INTERNAL)



- **Boss:** your boss, the person you report to, can play an important role in establishing your working environment, the support you receive and your career prospects within the organization.
- **Colleagues:** although they may not be working on your project, indirectly they can supply useful information and offer moral peer support, or conversely peer pressure.
- **Contractors:** the external companies or people offering specialist expertise to supplement the company's resources.
- **Suppliers and Vendors:** the external companies or people who supply materials and equipment. They have a wealth of experience which should be tapped.
- **Supporters:** the parties who provide goods and services to enable the facility to be built, for example the suppliers of telephones, electricity, postal service and even the corner shop. Financial support through the banking system could also be included here.
- **Legal Requirements:** rules and regulations both nationally and internationally that must be complied with.

STAKEHOLDER ANALYSIS (EXTERNAL)



- There are other stakeholders (usually external) who may not be directly involved with the project, but can influence the outcome:
 - Regulatory authorities - health and safety
 - Trade unions
 - Special interest groups (environmentalists) who represent the society at large
 - Lobby groups
 - Government agencies and media outlet
 - Individual citizens.
- who are **positively affected** and those who are **negatively affected** by the project.

Stakeholder	Needs and Expectations	Priority

DEFINE THE CLIENT'S NEEDS



- The starting point for a project is usually to address a problem or a need, which may be internal or external to your company.
 - The product must carry out a certain function at a predefined rate.
 - The product must operate in a specific environment.
 - The product must have a working life of so many years.
 - The project's budget must not exceed \$ x.
 - The project must meet certain specifications and standards.
 - The product must achieve reliability requirements. These may be quantified as mean time between failures (MTBF).
 - The product must be energy efficient. A car would quantify this requirement as miles per gallon or kilometres per litre.
 - The product must meet statutory health and safety regulations.
 - The ergonomics must be consistent with the latest accepted practice.
 - Ease of maintenance and repair must be incorporated into the design.
 - A predetermined level of system redundancy and interchangeable parts must be achieved.
 - The operational requirements must achieve predetermined manpower levels and automation.

DEFINE THE CLIENT'S NEEDS



- The product must be manufactured with a predefined value of local content.
- The product must provide opportunities for future expansion.
- The project must be operational by a predefined date.
- The product must be manufactured by approved and accredited suppliers, if necessary pre-qualified by an audit.
- All suppliers must have implemented an approved quality management system.
- All suppliers must have a good track record, supported by references.
- All suppliers must be flexible to accommodate any reasonable changes made by the sponsor during the manufacturing phase.
- All suppliers must be financially stable, supported by a bank reference.
- The end product must be marketable and profitable.

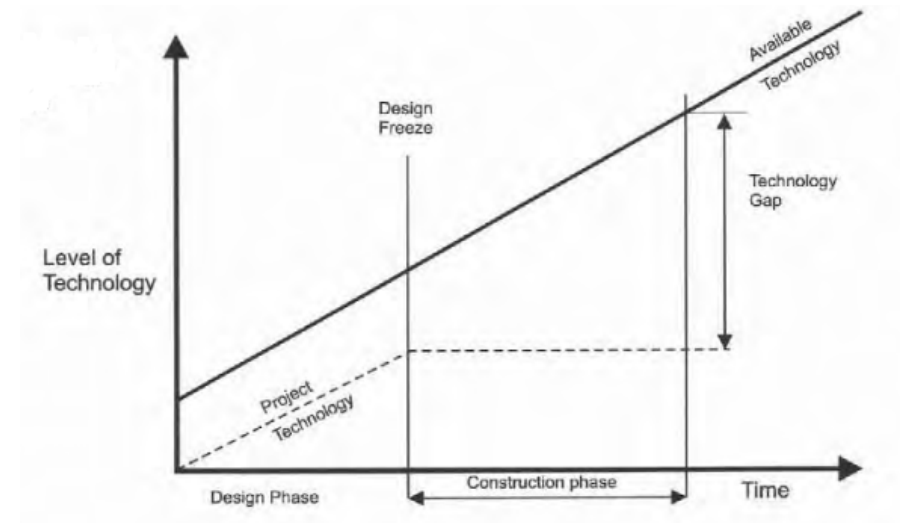
EVALUATE CONSTRAINTS



- Project constraints can be considered as internal or external restrictions which may effect the achievable scope of the project. These anticipated limitations can be quantified under three sub-headings:
 - Internal project constraints
 - Internal corporate constraints
 - External constraints

Internal Project Constraints: The internal project constraints relate directly to the scope of the project and ask basic questions about the product.

- Can the product be made?
- Does the company have the technology? - If not, can the technology be acquired through a **technology transfer, if so with whom?**
- Should we start the project now with the present technology or wait until new and better technology is available?





EVALUATE CONSTRAINTS – INTERNAL PROJECT CONSTRAINTS

- Is the new technology component greater than 10%? Practitioners recommend the scope of innovation should be kept below 10% to reduce risk and uncertainty.
- At what point in the development should a design freeze be imposed? This will affect the technology gap at the end of the project .
- Can the resources be trained up to the required level of ability, or should contractors be employed to meet the forecast skills requirement?
- The multi-project resource analysis will consider the effect other projects will have on the supply of internal resources.
- Are there any special design requirements?
- Are special machines and equipment required? If yes, can these be sub-contracted out or procured?
- Are there special transport requirements? Can the product be transported to where it is required or does it need to be made piece small and assembled on site?
- Will any new management systems introduced be compatible with existing systems they interface with?
- Can the project be completed within the budget?
- What is the quality assurance requirement? For example, is accreditation to ISO 9000 required? Is the present quality management system sufficient?
- Can the company meet the specifications?
- Are there company and project procedures in place? If not is there time to develop them?
- Is the project office set up? Has the project manager been appointed, the project team selected, the office space allocated and the equipment and information systems available?
- Can the project meet the client's completion date and any intermediate key dates?
- Can the company accept the time penalties?
- Are the project risks and uncertainties acceptable?
- Can the company accept the terms and conditions outlined in the contract document?



EVALUATE CONSTRAINTS – INTERNAL CORPORATE CONSTRAINTS

- Corporate umbrella policy and strategy usually relates to long term issues which indirectly (and unintentionally) may impose limitations on the project.
- **Financial Objectives:** The project selection criteria may be based on a financial feasibility study quantified as, **payback period**, **return on investment**, **net present value**(NPV), **internal rate of return** (TRR) and a **cost-benefit analysis**.
 - The company may wish the project to maintain a positive cash-flow.
 - The progress of the project may be encouraged or delayed to meet the company's annual budget.
 - The company's share price may have an effect on the project's ability to borrow.
- **Marketing**
- **Estimating** - The lower the bid the greater the probability of being awarded the next contract. The lowest a company can bid is to cover direct costs, with the overheads being written-off. If this is the case, will the project's budget be based on the estimated cost or the sales price?
- **Partner:** The company may wish to take on a partner who has previous experience in the field of the project and also to spread the risk.
- **Industrial Relations:** Industrial unrest is often caused by conflict over pay and working conditions. The project manager may have little power to influence these conditions.



- **Training:** Your project may become the training ground for new recruits, in which case the learning curve will be an expense to your project.
- **Exports:** The company may influence the estimate I quotation in an effort to acquire exports to enter new markets or take advantage of export incentives.



EVALUATE CONSTRAINTS - (EXTERNAL CONSTRAINTS)

- External constraints are imposed by parties outside the company and the project's sphere of influence. Many of these constraints may not be negotiable.
 - National and international laws and regulations.
 - Material and component delivery lead times.
 - Limited number of sub-contractors who can do the work.
 - Logistic constraints, availability of transportation.
 - Availability of foreign currency and currency fluctuations.
 - Market forces, supply and demand curve.
 - Environmental issues, Government legislation and pressure group activities, for example, Green Peace and CND. The nuclear, chemical, mining and transport industries have been particularly effected in the past.
 - Climatic conditions, rain, wind, heat and humidity.
 - Political unrest.
 - Construction site in a residential area, may not be allowed to work a night shift, because of the noise.

WBS	Activity	Internal Project Constraints	Internal Corporate Constraints	External Constraints



EVALUATE ALTERNATIVES AND OPTIONS

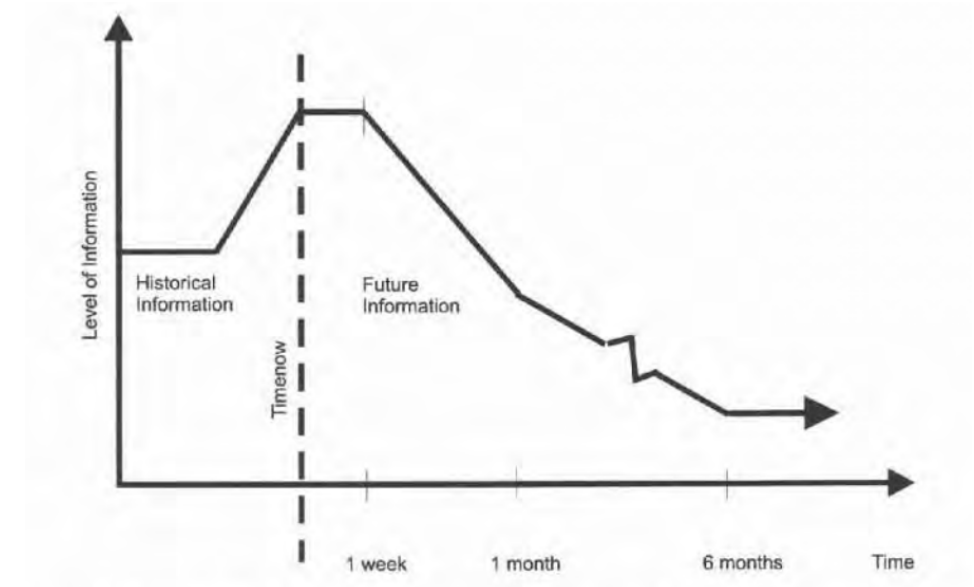
- The alternative analysis is the process of breaking down a complex product into its component parts before identifying different, and hopefully more effective methods of achieving the desired result.
- This can be achieved through; the *work breakdown structure*, *the project constraints*, or *the project objectives*.
 - **Time:** can the project be completed quicker?
 - **Cost:** can the budget be reduced?
 - **Quality:** can the project be made to a lower level of quality which would be acceptable to the client, but more cost effective and quicker to produce?
 - **Resources:** can the work be cost effectively automated to reduce the manpower requirement?
 - **Technical:** can cheaper materials be used?
 - Is there a simpler design configuration?
 - Has the latest technology been considered?
 - Has the use of different equipment and machines been considered?
 - Is there a simpler build method?
 - Has the trade-off between cost, delivery schedule and technical performance been quantified?
 - Have alternative management systems been considered?

WBS	Activity	Alternatives and Options



GATHER INFORMATION

- Information is a prerequisite for effective decision-making. Information may be found in:
 - Periodicals
 - Books
 - Technical reports
 - Bureau specifications
 - Sales and marketing brochures (product information)
 - Market research (market trends and fashions)
 - Internet (data base search)
 - Stakeholders (interviews and questionnaires)
 - Closeout reports
- **Closeout reports** from previous projects offer a valuable source of historical information. It cannot be over stressed how important it is for a company to learn from its previous experience - not only should the mistakes be noted, but also what went right, together with any recommendations for future projects.





VALUE MANAGEMENT

- Value Management is a structured, systematic and analytical process which seeks to achieve value for money by providing all the necessary functions at the lowest total cost consistent with required levels of quality and performance.
 - identify unnecessary expenditure
 - challenge assumptions
 - generate alternative ideas
 - promote innovation
 - optimize resources
 - save time, money and energy
 - simplify methods and procedures
 - eliminate redundant items
 - update standards, criteria and objectives.

Value management is about:

- clarifying and satisfying customers' needs
- creating ideas as to how a system can best do its job at appropriate levels of quality and performance
- challenging assumptions and maximising returns on investment
- participation by clients, end-users and stakeholders
- seeing the purpose of the system itself
- seeking the lowest total cost of providing the clients' needs - it is not about seeking the cheapest solution.



COST-BENEFIT ANALYSIS

- A cost-benefit analysis is generally based on the following economic principles:
 - Pareto improvement criterion
 - Hicks-Kaldor test
 - Willingness-to-pay test
- Pareto improvement criterion is expressed as: *"The project should make some people better off without making anyone worse off"*. This situation may be difficult to achieve in reality.
- Hicks-Kaldor test seems more realistic. *"The aggregate gains should exceed aggregate losses."*
- Willingness-to-pay test is simply to determine how much your clients are prepared to pay for your product - have you ever considered how airlines manage to charge a range of fares for the same seats.

The economists model this test using the following techniques:

- The supply and demand curve.
- Monopolies and Oligopolies.
- Product elasticity.

THANKS!

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