Feasibility Studies

Developing adequate project information to support decision making

The 'life' of a project starts with an idea, need, opportunity, requirement or threat (the 'concept'). The organisation assesses and studies the 'concept', hypothesises options and solutions and then frames a proposal that becomes the foundation of a future project.

These key investigative elements of a project are part of the overall 'Management of Project Management' and occur before the project is funded and approved. The process needed to develop adequate information to allow a proper decision to be made, may be part of the overall portfolio management umbrella, or may be part of some other business development function, however, the final decisions to invest in the project/program remains the core component of Portfolio Management[1]. This 'front end' process can take many forms, some of the options include:

- In mining this can represent exploration, feasibility studies, 'bankability' studies and concept designs which between them can cost $millions, leading to project funding. Importantly, this 'Front End Loading' (FEL) is seen as the key to a successful mine in most major mining corporations.
- In major infrastructure projects, defining a solution to prison overcrowding can involve building a new major prison, building several smaller prisons, extending current prisons, changing the way criminal justice system works to reduce the need for prison places, or a combination of the foregoing options (substitute University/hospital/school, into the previous sentence to see just one dimension of the challenge).
- Business change or ICT projects frequently need the 'requirements' of either management, or the end users of the projects deliverables to be collected or defined to an appropriate level of detail to allow a preliminary scope to be established[2].

Selecting the optimum level of 'Front End Loading' depends on how much is known (or knowable) about the final project. There is no point in formulating a definitive solution to a problem where there is no real understanding of the issues[3] (typical in ICT) and then pretending the defined solution has no associated risk (because it is defined) despite the fact the full dimensions of the problem the project is supposed to solve are still unknown and are frequently changing over time – this is poor governance. Good governance requires appropriate recognition of the uncertainty and effective risk management.

The challenge, requiring informed judgement and effective governance is recognising which development processes suits what type of 'concept':

- Sometimes, the 'investigation' requires a significant amount of work (eg, a mine bankability or feasibility study); this work may be treated as a project in its own right, and is time, cost and resource constrained with a defined deliverable (the report).
- If the work is expected to flow forward and will only be stopped in exceptional circumstances, project phases work best, with some form of 'gateway' or transition review.
- In other circumstances, studies are undertaken as part of the portfolio by corporate or PMO professionals with no dedicated budgets, assessing multiple proposals as an ongoing process, but once a concept gets the go ahead a project is created and a budget and resources allocated.
- Other concepts (particularly problems) cannot be defined and an 'agile' approach is needed where elements of a partial solution are developed and put into use developing new learning that will then allow the next module to be developed in a progressive sequence. However, whilst this may be the

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[1] For more on ***Portfolio Management*** see: http://www.mosaicprojects.com.au/WhitePapers/WP1017_Portfolios.pdf

[2] For more on requirements gathering see: http://www.mosaicprojects.com.au/WhitePapers/WP1071_Requirements.pdf

[3] For more on project typology see: http://www.mosaicprojects.com.au/WhitePapers/WP1072_Project_Size.pdf

most suitable and cost effective way of developing an effective solution, budgeting in a traditional 'iron triangle' concept of fixed cost, time and scope is impossible.

The challenge is recognising which type of project is being proposed (based on Project Typology[4]), and then deciding which type of process will develop the best input to the portfolio selection process and what level of uncertainty (risk) is associated with the proposal once developed. Certainty is not important, what matters is appreciating the extent of the risks and the likely benefits, so an informed investment decision can be made. Most 'game changing' initiatives involve high risk, high reward projects that create a totally new future!

Definition of Feasibility Studies

A Feasibility Study asks the question *'can we do this?'* it should be a precursor to finalising the business case[5] which addresses the question *'should we do this?'*

The purpose of a Feasibility Study is to identify the likelihood of one or more solutions meeting the stated business requirements. During the Feasibility Study, a range of potential solutions to a particular business problem or opportunity are assessed and documented. The outcome of the Feasibility Study is either a preferred solution for implementation or a statement that the capability to resolve the problem is beyond the resources or capability of your organisation.

Undertaking a Feasibility Study

A Feasibility Study needs to be completed as early in the Project Life Cycle as possible. You need to identify a range of alternative solutions and determine which option is the most feasible to implement. The steps in a typical Feasibility Study are:

Step 1: Understand the problem
In most cases, the business driver is a problem or opportunity in the organisation. You need to have a clear understanding of what this is (otherwise you can solve the wrong problem)[6]. This is not just a technical question, time, cost, quality, service and reputational issues can be involved.

Step 2: Identify Alternative Solutions
Based on a clear understanding of the business problem, you need to determine the alternative solutions. A range of solutions will assist in optimising the outcome from the Feasibility Study.

Step 3: Determine the Feasibility of each option
To identify the feasibility of each solution assessments need to be made for a range of factors:

- Time (likely time and potential range of outcomes)
- Cost (likely cost and potential range of outcomes)
- The risk profile of the solution (opportunities and threats)
- Quality, reliability and performance issues
- Other factors relevant to the solution.

[4] For more on project typology see: http://www.mosaicprojects.com.au/WhitePapers/WP1072_Project_Size.pdf

[5] See WP1018 Developing a Business Case: http://www.mosaicprojects.com.au/WhitePapers/WP1018_Business_Case.pdf

[6] The way a problem is described will frame the solution, see: http://www.mosaicprojects.com.au/WhitePapers/WP1013_Problem_Solving.pdf

To answer these questions, you need to use a variety of methods to obtain reliable data including online research, prototyping and modelling.

Step 4: Choose a Preferred Solution
The next step is to select a preferred solution. Each parameter should have an acceptable range defined and a weighting allocated to allow effective comparison. Options that fall outside of an acceptable range are discarded. The rest are weighted and the optimum solution(s) identified[7]. The selected option is generally the solution that you have the highest confidence of delivering but cost and/or time considerations may force a higher risk option. One key question is what is the likelihood of the alternative solutions actually delivering the benefits stated in the Business Case? Based on the results of the Feasibility Study and the Benefits and Costs portrayed in the Business Case, a preferred solution is identified.

Step 5: Obtain Buy In
The preferred solution needs to be agreed by all of the key stakeholders. Once agreed the business case can be firmed up, a Sponsor appointed and the project nominated for formal initiation[8].

Step 6: Submit the proposal to the organisations Portfolio Management decision making
Once the feasibility of a concept is established, the proposal is assessed by the portfolio management team against all of the other potential and existing opportunities available to the organisation and, where appropriate, the proposal is approved, resources and funding allocated and a project created.

It is not uncommon for projects to be initiated ahead of the feasibility study. Ideally, in these circumstances a 'gateway' process should be initiated to evaluate the viability of the project once the most feasible option has been determined. Alternatively, you may be forced to undertake the study and determine the options within the established parameters of the project (not a good idea!).

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[7] For more on ranking and selections processes see WP1062 Ranking Requirements: http://www.mosaicprojects.com.au/WhitePapers/WP1062_Ranking-Requirements.pdf

[8] The initiation process and 'gateway' reviews should be under the auspices of the organisation's ***Portfolio Management*** processes, see: http://www.mosaicprojects.com.au/WhitePapers/WP1017_Portfolios.pdf