

Building enterprise project management capability 2

Project management competence and maturity of organisations

by Professor J. Rodney Turner

Last month I introduced a model for enterprise project management capability (Figure 1). Over the next few months I will be describing individual elements of the model, starting with organisational project management competence and maturity. Next month I will be considering how organisations innovate and learn to improve competence.

Who or what is competent?

We talk about project management competence. But who or what is competent? Competence needs to exist on several levels:

1. Individuals need to be competent. Work done by a former doctoral student of mine, Prof. Lynn Crawford of the University of Technology in Sydney, looked at the competence of individuals, and how it is defined by standards, including the bodies of knowledge developed by the Project Management Institute (PMI), and the International Project Management Association (IPMA), and national competency standards developed in the UK, Australia and elsewhere. I will be returning to the competence of individuals in a future article.
2. Teams need to be competent. There is little work on what the competence of project teams means. Most of the work focuses on how to build a team of individuals committed to the task in hand (see for instance Reid, 2000).
3. Organisations need to be competent, to support effective project management. That is the focus of this article.
4. And even the society needs to be competent, to support project-based organisations. Work done at the University of Economics and Business Administration in Vienna has looked at what the competence of the society means and how professional associations can help build societal competence in project management.

What are organisations competent in?

Organisational competence exists at several levels.

The organisational level:

The organisation needs to know how to manage projects in general. It needs to have a defined methodology of managing projects and to be able to train its project managers in the use of that methodology. (An organisation may, in fact, have several methodologies, for different types of projects.) The organisation's methodology needs to define several things:

1. *The project life cycle:* The organisation needs to have an understanding of the stages its project go through from conception to completion. A standard life cycle is feasibility, design, execution and close-out, but the organisation should develop a definition of the life cycle appropriate to its types of projects

2. *The project management life cycle:* The organisation needs to understand the management processes applied at each stage of the project life cycle to deliver those stages. A typical project management life cycle is:

- plan the work
- organise the resources required to undertake the work
- implement by assigning work to people
- control the progress of the work

3. *The project management functions:* The organisation needs to know how to manage scope, quality, cost, time, risk and so on. The project management functions may be the 11 body of knowledge areas defined by PMI in its body of knowledge, or the 40 areas defined by IPMA in its baseline of competence. The 44 chapters of my book (Turner and Simister, 2000) each define important project management functions which organisations need to know how to manage.

In the first edition of my book (Turner, 1993), the difference between the project life cycle and the project management life cycle was very important to me. I devoted a chapter to each, discussing the difference. By the time I came to write the second edition (Turner, 1999), I couldn't remember what the difference was! Now I think there is a difference, and it is important to understand, but the two concepts are related. The project life cycle is strategic, by which the project is linked to the needs of the organisation. The project management life cycle is tactical, defining the process of how the project is managed. PMI defines the difference in its body of knowledge. I show it



Figure 1: Organizational project management competence and maturity

by nesting one inside the other (Figure 2).

The project level:

The second level at which organisations need to be competent is at the project level. They need to be able to establish and manage individual projects to successfully deliver the objectives for that project, to achieve the business needs of the organisation.

The technological level:

The third level is the technological level. The organisation needs to be able to use its technology to do the work of the project in the most efficient way possible.

Building and maintaining organisational competence

So how do organisations build and maintain organisational competence? I have identified four themes:

- the use of procedures
- project reviews
- benchmarking

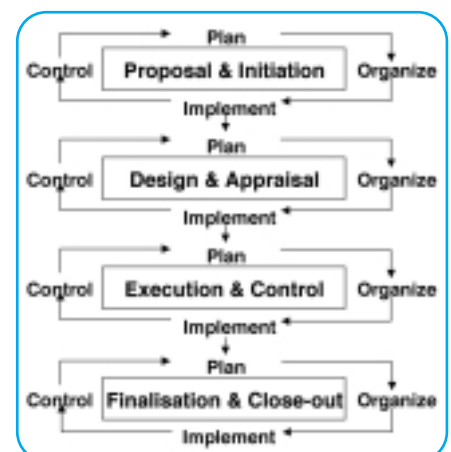
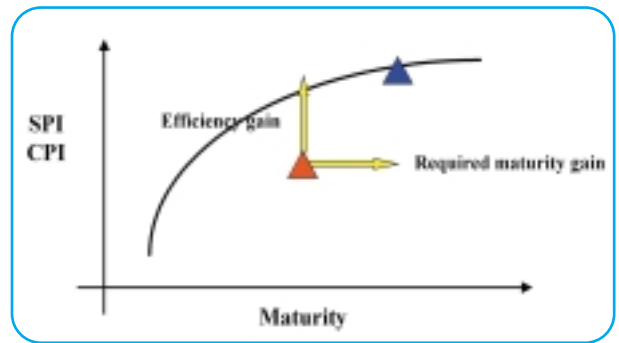


Figure 2: The project management life-cycle inside the project life-cycle

Figure 3: Improving cost and schedule performance with maturity



- the development of a project management community

Procedures: These are the explicit statement of how the organisation manages projects; they are the explicit statement of its knowledge and competence. Through its procedures the organisation defines how it manages projects. An organisation may, in fact, need several sets of procedures for different types of projects.

Also, the procedures should be treated like flexible guidelines, not rigid rules. Every project is unique, every project is different. So an organisation should have its project management procedures, which are a statement of good practice in the organisation. However, at the start of every project, the manager should develop the project-specific version to say how this project will be managed, and that will become part of the quality plan for the project.

I worked as a consultant in one engineering construction company that makes its apprentice project managers follow the procedures to the letter, but will not let someone manage a project on their own until they know how to adapt the procedures appropriately to meet the needs of individual projects.

Project reviews: It is through project reviews that an organisation learns how it is doing on individual projects, and also learns how to improve its project management procedures and processes. There are several types of reviews:

- **Audits:** these are reviews conducted by people external to the project team. They may be consultants from outside the organisation, or they may be people from elsewhere in the organisation who have knowledge of project management. Audits may be conducted at any time. However, they are often conducted at stage completion to check that the project is being managed appropriately and that decisions have been based on sound data before proceeding to the next stage. They may also be conducted at project completion to learn lessons from the success or failure of the current project.

- **Health-checks:** these are reviews conducted by the project team which pretty well fulfil the same purpose as audits. However, they tend to be more informal and may be conducted on an ad-hoc basis just to check how the project is doing.

- **Project control reviews:** these are reviews conducted as part of the normal control cycle of the project.

Benchmarking: It is important for the organisation to know how it is performing compared to other people undertaking similar projects. This is the purpose of benchmarking. The organisation gathers data about its project performance and compares that to organisations doing similar projects. It is relatively easy to compare project data with

other people in the same parent company. It is more difficult to compare data with other companies, especially competitors. In the Europe and United States, the Engineering Construction Institute and Construction Industry Institute respectively maintain a database of benchmarking data in which companies from the engineering construction industry can compare their project performance, even with their competitors. An organisation cannot compare its performance specifically with another company, just with respect to averages for the industry. In the United Kingdom, Australia and Hong Kong, Prof. Lynn Crawford and her colleague, Dr Terry Cooke-Davies (Human Systems Ltd), maintain benchmarking networks where organisations from different industries can compare their project performance on similar types of projects.

Project management community: Through the project management community the organisation develops its implicit or tacit knowledge. The project management community is an important part of the organisation's learning processes, where apprentice project managers are trained and mentored. An effective community will also arrange events where project managers can meet and share experiences. Typically a meeting is arranged once every three months. There may be one or two lectures lasting 90 minutes, followed by socialising. This means that project managers develop a network through which they can share or solve common problems.

Organisational project management maturity

An organisation's ability to deliver its projects successfully to achieve business benefit is often defined as its project management maturity. Many models of organisational project management maturity have been developed, culminating in the publication of PMI's model. (See for instance Gareis and Huemann, 2000). Many models are based on the Capability Maturity Model developed by the Carnegie-Mellon Institute in the United States for information systems development. That defines five levels of maturity.

Level 1 – Initial: The organisation has no defined process for project management. It uses ad-hoc processes with no consistency.

Level 2 – Repeatable: The organisation starts to develop individual process for how it manages the project management functions. It may define how it manages scope, quality, cost, time, or risk for instance. It begins to develop the project management community and give project managers guidance on how

to apply the embryonic processes.

Level 3 – Defined: The individual processes become combined into a set of procedures for project management, defining holistically how the organisation manages projects. The project management community is developed to provide project managers with group support.

Level 4 – Managed: Through the review process, lessons are learnt and metrics gathered. These are fed back into the procedures to continuously improve them. As further metrics are gathered, project performance can be benchmarked against other organisations.

Level 5 – Optimised: The procedures are continuously improved and defects patched. Nirvana is achieved.

You will notice the four themes defined above are at play here, with procedures and the project management community dominating at levels 2 and 3, and reviews and benchmarking dominating at levels 4 and 5.

The value of increasing maturity

It costs money to achieve increasing organisational project management maturity. Is it worthwhile? Work done by Professor Bill Ibbs at the University of California in Berkley and published by PMI has shown that increasing project management maturity can lead to substantial improvement in project performance (Figure 3). It shows that both cost and schedule performance can improve with maturity. At the end of the project, SPI and CPI can be defined as:

$$SPI = \text{Schedule performance index} = \frac{\text{Planned duration}}{\text{Out-turn duration}}$$

$$CPI = \text{Cost performance index} = \frac{\text{Planned cost}}{\text{Out-turn cost}}$$

(I realise that SPI as defined here is not strictly in accordance with earned value analysis, but it will do for the argument here.) A value of SPI or CPI of one means that the project delivered its plan. A value of less than one means that the project was late or over-spent. What Figure 3 shows is that more mature organisations are better on average at achieving their plans. That means, on average, projects cost less, and deliver their expected benefits earlier, leading to performance improvement. Performance improvement of

30% or more can be achieved from increasing maturity but, as I said, it comes at a cost. You can define a project management return on investment, PM ROI, where:

$$\text{PM ROI} = \frac{\text{Annual spend on projects} * \text{Efficiency gain from increasing maturity}}{\text{Cost of achieving that gain}}$$

A problem is that increasing maturity is a learning curve as shown. The efficiency gain of going from maturity level N to N+1 is half that of going from N-1 to N, while the cost of achieving the increased maturity is double. So the PM ROI of going from level N to N+1 is one quarter that of going from N-1 to N. For many organisations with moderate annual spend on projects it is just not worthwhile going beyond maturity level 3. It is only large project-based organisations with substantial project spend for whom it is worthwhile achieving maturity levels 4 and 5.

Another thing, discovered by Prof. Bill Ibbs, is that with increasing maturity the cost of project management first rises and then falls.

- For organisations with maturity level 1 the cost of project management was between 2% and 4% of the cost of the project. They are not doing very much of it and they are not doing it very well.

- For organisations with maturity level 3 the cost of project management was between 2%

and 10% of the cost of the project. They are doing much more project management. They are doing it well and it is delivering benefit, but it is taking a lot of effort to get it right.

- For organisations with maturity level 5 the cost of project management was back to between 2% and 4% of the cost of the project. They are still doing it well, but are becoming very clever at it.

This is an apparent competency trap, as organisations on low maturity find that increasing maturity requires more project management effort, and they think that the cost is not worthwhile. However, it is worthwhile, as that increased project management effort repays dividends in the form of increased PM ROI. Further, having achieved a maturity level 3, an organisation can work on trying to reduce its cost of project management, to become more slick at project management, trying to ensure the cost of

project management is closer to the 2% than the 10%. If increasing maturity is not worthwhile, reducing the cost of project management becomes the focus of improved project performance.

Next month I will describe innovation and learning practices adopted by organisations to improve their project management processes.

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