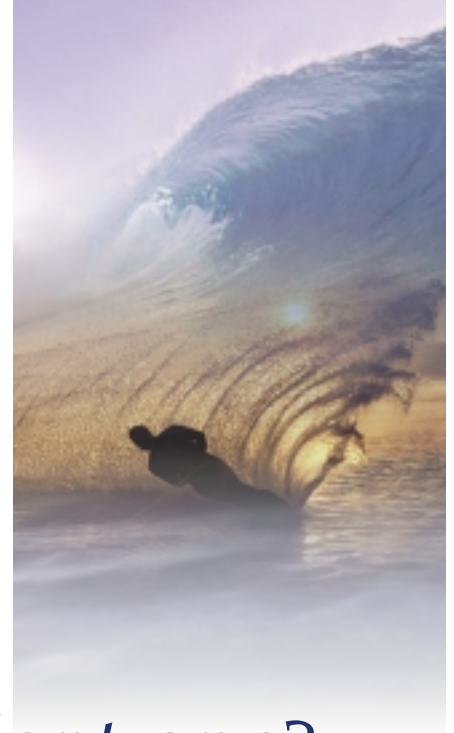# Project management maturity models

does it make sense to adopt one?

There is an increased interest in project management maturity in the marketplace today. Several trends point to this:

● a growing number of organizations are adopting Software Engineering Institute's (SEI's) latest addition to the Capability–Maturity Model family of models – the CMM-I (for Integration);

● extensive support is being shown for the development of PMI's OPM3 (Organizational Project Management Maturity Model);

● an editorial comment in Project Manager Today's February issue suggested that project management maturity models are being hailed as the latest new 'silver bullet' that some project managers have sought for so long.

In support of this trend, there are at least 30 models on the market that are currently being used by organizations to assess the maturity of their project management processes. Unfortunately, adopting such a 'maturity model' throughout an enterprise involves an enormous pan-organizational effort, with no guarantee that the results will live up to expectations.

So what is to be done? No head of project management can ignore the subject completely; indeed she or he may be forced to demonstrate process maturity against one or the other of these by circumstances such as the demands of customers. How can an organization determine whether the benefits of improving its project-related management processes will exceed the costs of implementation?

Once more, there is no substitute for doing our homework. Since every organization is unique, and since every organization undertakes unique projects,

there is no 'one-size fits all' answer. We just have to be prepared to work our way through five important but difficult questions:

● What is the relationship in our organization between projects and processes?

● What groups of project-related management processes are important to our organization?

● How does process maturity relate to individual expertise?

● What kinds of maturity model should we consider?

● What kind of benefits can we expect, and will it be worth the effort?

In this article, I propose to offer some suggestions as to how to set about answering each of these in turn.

1. What is the relationship in our organization between projects and processes?

I am starting with the subject of processes and projects because the concept of 'maturity' is one that applies to processes, and projects are a rather different kind of thing.

Yet how the two relate is still a topic on which the community of project management practitioners does not speak with a single voice. There is general agreement that projects are different from processes. Projects are unique 'chunky' things that have a clear start and finish, that are defined by a unique scope of work and so on. Processes, on the other hand, are usually considered as repetitive sets of activities, carried out again and again with little variation.

So far so good – it is when we probe a little more deeply that the difficulties start to emerge. For example project management, defined as the set of activities that is carried

In this, the final article in the present series, Terry Cooke-Davies draws upon many of the themes that he has explored in the six earlier articles to suggest how organizations can decide whether or not it is worth taking the plunge and adopting one of the many available project management maturity models.

out to manage any given project, is increasingly described as a set of interdependent processes. That is how both the world's leading project management standard (PMI's PMBOK Guide) and the world's most widely adopted project management methodology (PRINCE2) describe project management. From the opposite end, a recent book on process improvement[i] defines a process as 'a series of steps and activities that take inputs, add value, and produce an output.' Isn't that what a project is?

How repetitive these management processes are in any organization is likely to depend on two other considerations: what type of projects are typically undertaken, and what 'perspective' the organization typically adopts.

In the first case, to borrow terminology from Eddie Obeng, processes are much more likely to be repetitive and routine in the case of 'painting by numbers' or 'making movie' projects than they are for 'quests' or 'foggy' projects (See Figure 1).

In the second, the management processes are likely to play a different role if you are a 'supplier' or undertaking 'in-house' projects, than they are if you are mainly relying on

others to provide and manage the resources used on projects – either as a 'procurer' or as a 'prime contractor' (See Figure 2).

The final point to consider is the extent to which the project management processes are driven by a highly structured technical–product-delivery process, as they tend to be in industries such as pharmaceutical R&D or telecommunications equipment supply. In industries such as these, there is often confusion as to what is the technical delivery process (the process for converting requirements and raw materials into a completed product) and what is the project management process (the process for converting a bunch of people and inanimate resources into an efficient system for planning and managing a specific unique project).

So the first consideration is, 'Are the processes of project management sufficiently important to our organization's strategic goals for us to want to improve their maturity?' And this, naturally, begs a second question, 'What ARE the important groups of project–related management processes?'

2. What are the important groups of project-related management processes?

By introducing a term such as 'project–related management processes', I am not seeking to add yet another concept to the field of project management. What I am trying to do, however, is to make clear that when we are reviewing the maturity of processes there are many different candidates. I am aware of at least six different sets of processes that combine to deliver successful projects, and immaturity in any of them can inhibit the rewards reaped from investment in any others.

The six sets are the two that we have already reviewed, plus four others:

a. Project management processes – and as we have already seen both the PMI's PMBOK Guide and PRINCE2 define somewhat different processes in a somewhat different manner.

b. Technical delivery processes – software design, systems engineering, engineering design, drug development.

c. Programme management processes – for example as defined in the Office of Government Commerce's (OGC's) Managing Successful Programmes (MSP), which seeks to be to programmes more or less what PRINCE2 is to projects.

d. Multi-project management – some combination of project portfolio management and programme management to manage the dynamic interactions between projects that compete for the same resources or share the same deliverables.

e. Support processes related to developing the capability, motivation and effectiveness of the people who manage projects, or who work on projects.

f. Organizational readiness – those processes, along with the culture that surrounds them, that govern the extent to which an organization is capable of making root and branch changes to its business processes.

The role of each of these and their relative importance should be considered so as to define the possible scope of any attempt to improve maturity. The question of scope is important, since many organizations have found, for example, that the relatively simple challenge of improving only a sub-set of (a), such as the planning and estimating process, consumes an enormous amount of effort and cost, because of entrenched cultural practices such as those surrounding time recording.

Having reviewed these process groups, however, there is a third question to consider before evaluating alternative maturity models. That is the question of how the expertise of individual project managers relates to the degree of flexibility or inflexibility allowed in the project-related management processes.

3. How does process maturity relate to individual expertise?

As I argued in an earlier article ('It's People Who Get Things Done') every aspect of project management has two dimensions – a technical dimension and a human dimension. In this case, the technical dimension encompasses those process groups that have been defined above, while the human dimension includes not only the people who are operating the processes, but their expertise.

The concept of process maturity was born in the total quality management movement, where the application of statistical process control (SPC) techniques showed that improving the maturity of any technical process leads to two things: a reduction in the variability inherent in the process, and an improvement in the mean performance of the process. This is illustrated in Figure 3, which is taken from W. Edwards Deming's 'Out of the Crisis', and which shows the effect of golf lessons on both accuracy (X = the mean distance from the target) and variability (UCL/LCL = Upper and Lower Confidence Limits of the result).
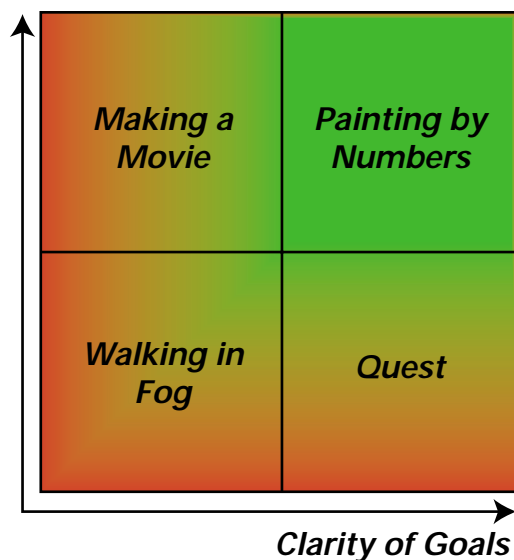
Clarity of Methods

Making a Movie	Painting by Numbers
Walking in Fog	Quest

Clarity of Goals

Figure 1: Different types of project

Customer

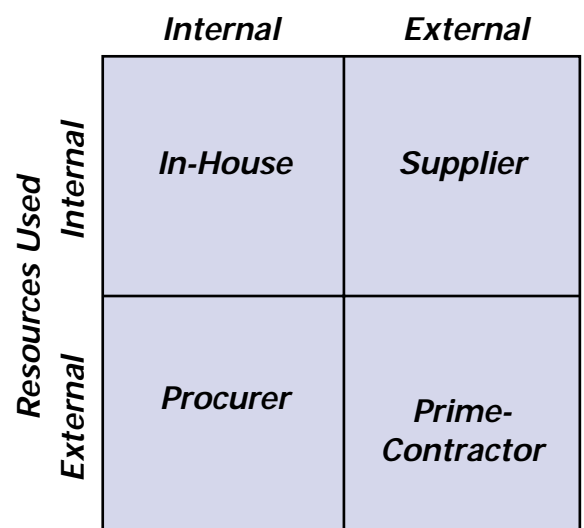|	Internal	External
Resources Used — Internal	In-House	Supplier
Resources Used — External	Procurer	Prime-Contractor

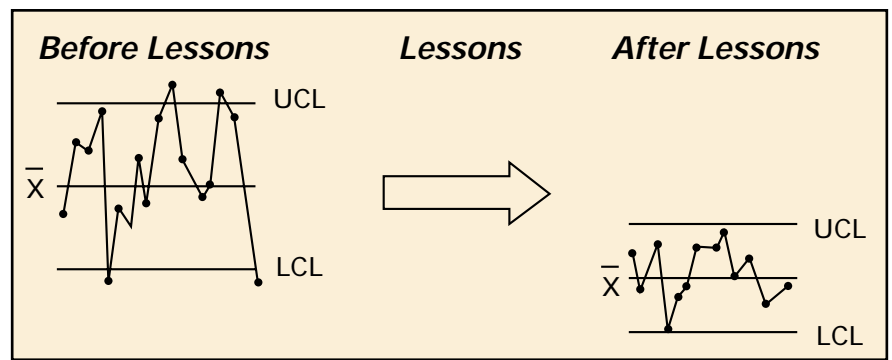*Figure 2: Alternative 'perspectives'*

Figure 3: The effect of golf lessons on accuracy

This has been further refined and has led, for example, to techniques such as 'Six Sigma', which use 'fact-based data-driven process improvement' as the basis of improved corporate performance.

The process of planning a large project, on the other hand, is very different in nature, as well as in scope, from processes such as issuing customer invoices. One of the differences is the extent to which individual expertise, knowledge and judgment are brought into play. As I argued in an earlier article, where projects are concerned it is people who get things done.

The continuous gradual performance improvement as processes mature is in sharp contrast with the way individuals acquire skill. In one of the most authoritative accounts[ii] of this process, Hubert and Stuart Dreyfus identify five stages in skill acquisition: novice, advanced beginner, competence, proficiency and expert. What distinguishes the final two stages is that although experts and proficient performers are familiar with the rules of good practice, they no longer select and follow rules. Rather they perform smoothly, effortlessly and subconsciously. If you think about the stages by which people acquire the skills of driving a car, this will all make sense.

What this means in terms of project-related management processes, of course, is that there is a tension between the degree of 'mechanistic' prescription that needs to be built into a mature process to minimize its variability, and the degree of flexibility that an expert project manager will bring to bear on any given project, to optimize the project performance.

So the question to consider is the extent to which your organization depends on the skills of expert project managers, and the extent to which the improvements will come from the application of a tightly defined process. Are your project managers more like airline pilots or brain surgeons (on the one hand) or like newly qualified drivers (on the other)? How much can they manage the project through individual

expertise, and how much are they dependent on the collective capability of the whole organization to deliver a consistent process?

Having reviewed these three questions, if we still believe that a maturity model is worth investigating, then we are now faced with the choice of which maturity model(s) to evaluate. And that it the question we turn to next.

4. What kinds of maturity model should we consider?

The maturity models that are available today and that cover project-related management processes can be divided into three approximate types relating primarily to the maturity of: project management processes, technical delivery processes, and the total organization. They differ from one another in terms of both the scope of what is covered, and their central focus.

Project management maturity models are often based on the processes grouped by knowledge area as described in the PMI PMBOK Guide, but with the adoption of some variant of the CMM maturity scale (see below). Commercial versions are available from leading US project management consultancies and their UK agents, including IPS, ESI and IIL. The philosophy behind the IIL model is described in a book by Harold Kerzner[iii]. Some commercial suppliers such as IBM have their own models.

The second group of models is based around the technical delivery process and the most widely used part of the group is the family of models from the Software Engineering Institute of Carnegie Mellon University – the Capability Maturity Models. Developed between 1986 and 1993, the first member of the family was the software development model. Inherent in this, and applied to all subsequent models, has been the concept that processes mature through a series of five discrete stages. In their latest incarnations, they are described as follows:

1. Performed – Process unpredictable, poorly controlled and reactive.
2. Managed – Process characterized for projects and is often reactive.
3. Defined – Process characterized for the organization and is proactive.
4. Quantitatively managed – Process measured and controlled.
5. Optimizing – Focus on process improvement.

In the newest addition to the family - CMMI - a series of processes is described, and to obtain a given level of maturity, rather like with ISO 9000, the process documentation must be available and understood across the organization. The model also includes a description of those critical processes that define what is necessary to progress from one level to another.

In the final category, organizational maturity, there are currently such general models as the 'Business Excellence' model from the European Forum for Quality Management (EFQM) and its North American counterpart, the Baldridge Award. These include the whole organization in their scope, but are not specifically concerned with projects. They apply equally well to functionally organized transaction-based businesses. Incidentally, the German Project Management Association has developed a tool that integrates the Business Excellence model with the International Competency Baseline of the International Project Management Association (IPMA) and allows individual organizations to assess the maturity of processes on an individual project.

The one eagerly awaited newcomer to these ranks is PMI's OPM3. This totally new standard from PMI, which is now nearing its testing phase in the market, will contain three different 'views' of the whole range of project-related management processes described in the answer to question 2 above: a 'capability' view, a 'process group' view and a 'navigation' view. It will be the broadest in scope of the project-

specific maturity models, and will point organizations not only to their current maturity level, but also to what they need to do to advance towards their chosen target level.

These, then, are the options from which a desirable maturity model can be selected. After considering these options, there remains only one final question: 'What kind of benefits can we expect, and is the effort worth it?'

5. What kind of benefits can we expect, and is the effort worth it?

Let me say straight away that for some organizations, such as defence suppliers to the US Government, there is no question about whether or not to implement a maturity model. The US DoD has announced that only organizations demonstrating that they operate at CMMI level 3 or above will be considered for major contracts. Thus if you are a 'supplier' organization, the benefits might be better (or even 'continuing') business.

Similarly, if you are a 'procurer' then it is conceivable that specifying a particular maturity level using a specified maturity model as a part of the solicitation process might allow you better control over the time, cost and quality of your procured assets.

The real challenge, it seems to me, faces those who undertake 'business change' projects either in house or as prime contractors. And the answer to this brings us full circle in this series of articles. In the first of this series, 'Thriving during tough times', I argued strongly in favour of developing a solidly based business case, and described how this should be done.

Your answers to the first four questions in this article will allow you to prepare such a business case, and to answer for yourself my opening question: 'Does it make sense to adopt a maturity model?'

Regardless of how you answer this right now, however, as project management matures as a business discipline, we will inevitably face a greater demand to demonstrate the maturity of the processes that we advocate. In some form or other, I predict that maturity models are here to stay.

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i George Eckes, (2001), 'The Six Sigma Revolution: How General Electric and others turned process into profits', New York NY, Wiley
ii Hubert and Stuart Dreyfus, (1986), 'Mind over Machine', New York NY, Macmillan, The Free Press
iii Harold Kerzner, (2001), 'Strategic Planning for Project Management Using a Project Management Maturity Model', New York NY, Wiley.