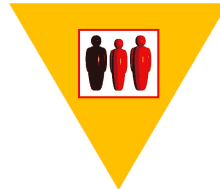


Project Management Maturity Models

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Human Systems Limited

4 West Cliff Gardens, Folkestone, Kent, CT20 1SP
Tel: +44 (0) 1303 226071 Fax: +44 (0) 1303 226072



Project Management Maturity Models

The Growing Interest in Project Management Maturity Models.

A glance through the contents of this book provides ample evidence that project management is no longer seen as simply being concerned with the skilful and competent management of a single project. There is much more involved in it than that. Organizations undertake many projects, and so require a set of processes and capabilities, of systems and structures, to allow the right projects to be undertaken and supported and to achieve consistent project success. As this recognition has evolved, so has the desire on the part of organizations to assess these systems, structures, processes and capabilities, and many have turned for help to so-called “project management maturity models”.

There is no shortage of them; more than 30 were considered as a part of the research leading up to the Project Management Institute's own draft standard OPM3™ (Cooke-Davies et al., 2001) and they are supported by claims that an increase in maturity brings organizational benefits (e.g. Kwak and Ibbes, 2000; Pennypacker and Grant, 2003).

The reason for this upsurge in interest is not difficult to understand. As project management has expanded from its origins in the engineering, construction and defense industries, IS/IT has played an increasingly prominent role in shaping the debate about project management. Well-publicized failures (e.g. Standish Group, 1994) have been accompanied by an increasing focus on developing robust software development and systems engineering processes, as well as improving the management of both software development and business change projects. A significant factor in this development has been the family of Capability Maturity Models (CMM) developed under the leadership of Watts Humphrey by the Software Engineering Institute of Carnegie-Mellon University (Paulk et al., 1996).

The principle behind the original CMM is simple: if organizations wish to develop predictability and repeatability in their IS/IT production processes, then they need to develop a number of capability areas, each of which consists of families of related processes. In turn, each of these processes needs to develop through a series of stages of maturity from informal at the lower end of the scale to highly routinized and with continuous improvement embedded at the higher end. To prevent the model from becoming excessively complex to understand, the capability areas and process maturity measures are combined into a series of five levels of organizational maturity, into one of which any organization can be categorized.

More and more organizations, in more and more countries, are using the software CMM and procurers of software are increasingly specifying the level of maturity that must be achieved by would-be suppliers. As a consequence, the general level of maturity of software development organizations has shown significant improvements since the early 1990s (Software Engineering Institute, 2003). The model itself, originally for software development, has since spawned a number of other versions covering such fields as systems engineering, human resources, and, most recently,



systems engineering, software development, integrated product and process development and supplier sourcing in a model known as CMM-I where the “I” stands for integration.

Since software is developed through projects, it is natural that the concept of organizational maturity would migrate from software development processes to project management, and this has been reflected in an interest in applying the concept of “maturity” to software project management (Morris, 2000; Cooke-Davies et al., 2001). Possibly as a result of this, a number of project management maturity models appeared during the mid-90s that were more heavily influenced by the thinking of project management consultants and practitioners.

Against this background and recognizing the growing interest in the field, the Project Management Institute in May 1998 initiated a programme known as the Organizational Project Management Maturity Model (Schlichter, 2001; Friedrich et al., 2003) to develop a standard for organizational project management processes that would complement the ubiquitous PMBOK® Guide, its widely applied standard for the management of individual projects. The first draft of this standard is expected to see the light of day in the fall of 2003.

As often happens in the early days of the development of new concepts, however, the field of maturity models is characterized by a tangle of confused concepts and unclear vocabulary. Several factors contribute to this confusion. In particular:

- There is no universal agreement as to the extent of the practices and processes that are necessary for the successful management of projects;
- Practices and processes are interwoven at many levels simultaneously within the field of “project management”, and so it is by no means clear how and to what extent the concepts of “process control”, “process maturity”, and “capability” can be applied to the whole field;
- “Capability” and “Maturity” are words that carry a multiplicity of meanings, some of them technically precise and others more broadly based in common usage. There is no general agreement on how such words, and the concepts that they signify, apply to the general field of project management.

But does this outpouring of creative activity add value to the field of project management, or simply confuse it by offering yet more silver bullets which will ultimately turn out to be illusory? That is the question with which this chapter will engage.

Before we can hazard an answer to this question, however, it will be necessary to shed light on confused concepts, and clarify ambiguous vocabulary. But first of all it is appropriate to review briefly the literature on project management maturity (such as it is), and to describe in a little more detail the most recently developed maturity models that seek to offer themselves as serious candidates to become widely accepted standards.



A Brief Survey of the Literature on Project Management Maturity

This section will inevitably live up to its billing as brief, since there has been comparatively little written about such a new topic.

The roots of the concept of process maturity seem to lie deep within the Quality movement, and can be clearly traced in the copious writings of its gurus such as Walter Shewhart and W. Edwards Deming. The principle is simple: “a stable process . . . is said to be in statistical control . . . A system that is *in statistical control* has a definable identity and a definable capability.” (Deming, 1986, p321 italics in original text.) Thus the efforts of quality improvement are first of all to make the process stable and thus bring it under statistical control, and then to work on improving the capability of the process. A process can thus be said to mature as it passes through the stages from unstable, to stable, and then to enjoying improved capability. The effects can be clearly seen in charts such as that in Figure 1.

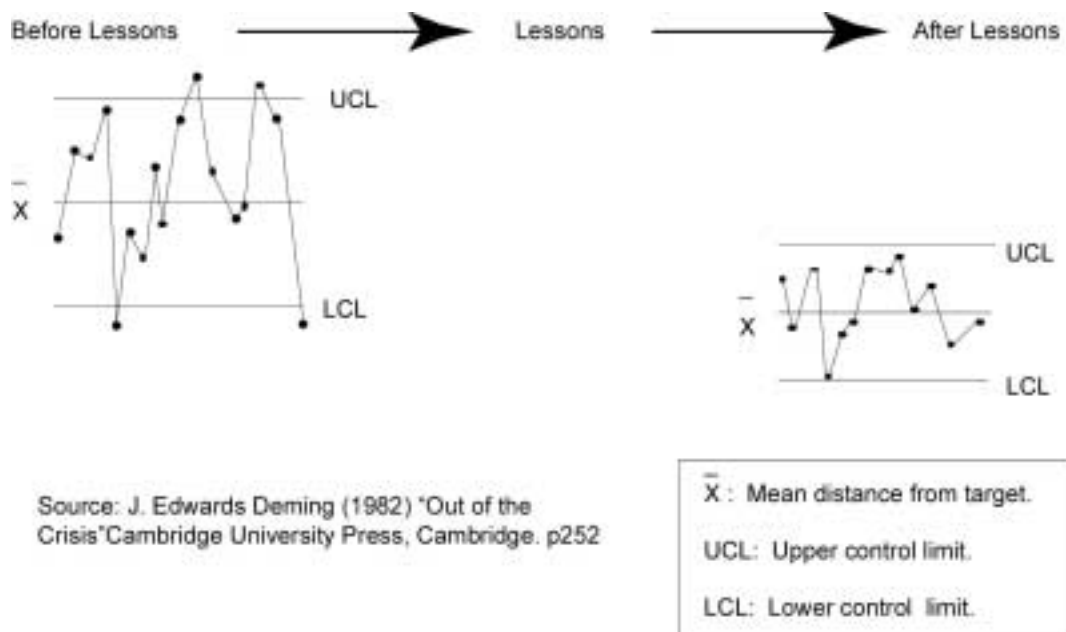


Figure 1: How the process of hitting a golf ball improves with lessons.

These principles have been clearly embodied in the Capability Maturity Model for software that was developed by the Software Engineering Institute of Carnegie-Mellon University between 1986 and 1993. Integral to the model is the concept that organizations advance through a series of five stages to maturity: initial level, repeatable level, defined level, managed level and optimizing level. “These five maturity levels define an ordinal scale for measuring the maturity of an organization's software process and for evaluating its software process capability. The levels also help an organization prioritize its improvement efforts.” (Paulk et al., 1996, p.7). The prize for advancing through these stages is an increasing “software process capability”, which results in improved software productivity.

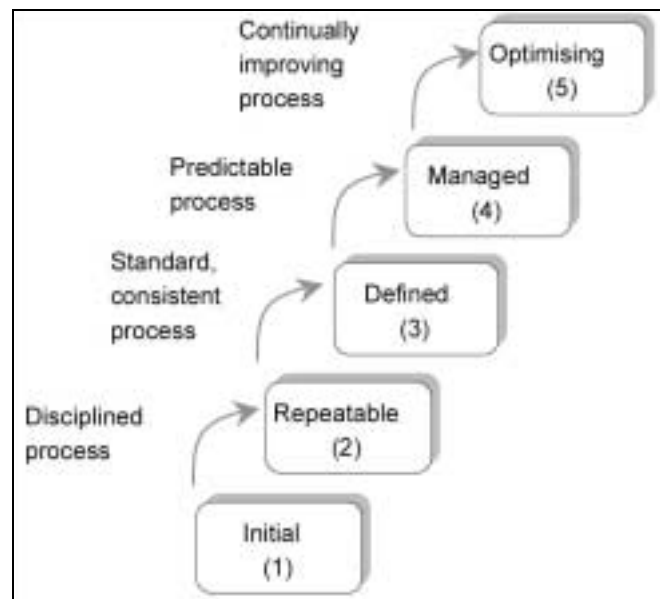


Figure 2: Five “stages” of maturity of the software development process.

As might be expected in a field that is so heavily dominated by practitioners, the literature on project management maturity models is concerned primarily with their practical application rather than with an exploration of the theoretical validity of the concept, or with empirical research to demonstrate their value.

Of the maturity models that have been described in the project management literature, a significant number (e.g. Couture and Russett, 1998; Ibbs and Kwak, 1997; Pennypacker, 2002) show their dependence on marrying two concepts together: “project management” as described in PMBOK® Guide and “maturity level” as described in CMM (see figure 2). Others, on the other hand, show signs of re-thinking the concept of how an organization matures in its ability to manage projects (e.g. Gareis, 2001; Hillson, 2001; Kerzner, 2001). Not surprisingly, each of these develops its own unique description of the path to maturity, and its own scope of the practices and processes that are to be assessed.

The Project Management Institute’s forthcoming OPM3 (Fahrenkrog et al., 2003) has involved at one time or another more than 800 volunteers (Friedrich et al., 2003) drawn from the world’s community of project managers, so it is perhaps not surprising that it has begun to influence the development of other custom in-house maturity models, such as that developed for BNY Clearing Services Inc. (Rosenstock et al., 2000).

In addition to descriptions of maturity models, conferences have heard tales of the improvements that can be obtained by individual corporations through their application (e.g. Soares, 1998; Peterson, 2000; Rosenstock et al., 2000). The models have been used in attempts both to assess the state of the art in project management (e.g. Pennypacker and Grant, 2003; Mullaly, 1998), and also (less successfully) to demonstrate the organizational benefits of project management (Ibbs and Kwak, 1997; Ibbs and Reginato, 2002).



Other models however are being used within organizations to assess project management maturity as a part of an overall assessment of the quality of business practices (Rosenstock et al., 2000; Cooke-Davies et al., 2001), using models such as the Baldrige National Quality Award (www.quality.nist.gov) or the European Forum for Quality Management's "Business Excellence" model (www.wfqm.org/imodel/model1.htm).

The award-winning article by Jugdev and Thomas (2002) is a refreshing exception to the complaint that little attention has been paid to questioning the fundamental relevance of maturity models to the total scope of managing projects in organizations. The paper examines maturity models (MMs, in the language of the article) from the viewpoint of four different resource-based models in order to assess whether or not the possession of a higher maturity level in project management confers competitive advantage on an organization. The article concludes that MMs possess some but not all of the characteristics of a strategic asset and thus cannot, in and of themselves confer competitive advantage. It also asserts that although "MMs are a component of project management [they are] not a holistic representation of the discipline." (p11)

This assertion implies an answer to this chapter's own question about the value of maturity models, about which more will be said later.

Before that, however, it is appropriate to examine two of the most recent additions to the field, each of which could conceivably become, for different reasons, a broadly used model and a widely accepted standard.

OGC's PMMM and PMI's OPM3

Each of these two models has some attributes in common with other models mentioned earlier in this chapter, but it is not the purpose of this chapter to conduct a detailed comparison between individual maturity models. The two models have been selected for special mention for two reasons: firstly they are entering the field after sufficient time has elapsed to allow experiences with other models to have been taken into account, and secondly, each of them is backed by an organization that has demonstrated its ability to establish widely-adopted standards: the Office of Government Commerce in the UK which has produced both PRINCE2 and "Managing Successful Programmes" and the Project Management Institute in USA, publisher of the PMBOK® Guide.

At the time of writing, neither has yet been formally issued, so the possibility exists of significant change, but the general lines of development of each of them is sufficiently far advanced that their potential contribution to the field can be assessed. The information on PMMM has been based on Version 5.0 of the model, which is available on the OGC's web site. The information on OPM3 has been taken from papers presented at the PMI Global Assembly 2003 - Europe (Fahrenkrog et al., 2003; Friedrich et al., 2003).



PMMM

In the introduction to the Project Management Maturity Model (PMMM) the OGC observes that it has been developed because SEI's experience in the arena of software development between 1986 and 1991 indicated that maturity questionnaires provide a simple tool for identifying areas where an organizations' processes may need improvement. The model is descriptive, with the express intention of providing organizations with guidance to support their process improvement initiatives, and the document describing the model is at pains to point out that the model itself is not to be confused with any questionnaire which may be used to establish an organization's current maturity level.

Each stage is characterized by a discrete set of processes that are definitive of the stage of maturity (see Figure 3).

Level 1: Initial Process	Level 2: Repeatable Process	Level 3: Defined Process	Level 4: Managed Process	Level 5: Optimised Process
1.1 Project Definition	2.1 Project Establishment 2.2 Requirements Management 2.3 Risk Management 2.4 Project Planning 2.5 Project Monitoring and Control 2.6 Management of Suppliers and External Parties 2.7 Project Quality Control 2.8 Configuration Definition and Control	3.1 Organizational Focus 3.2 Project Management Success 3.3 Project Training 3.4 Integrated Management 3.5 Life-cycle control 3.6 Inter-team Co-ordination 3.7 Quality Assurance	4.1 Project Metrics 4.2 Organizational Quality Management	5.1 Proactive Problem Management 5.2 Technology Management 5.3 Continuous Process Improvement

Figure 3: Processes included in each stage of maturity.

The description of each process includes the process goals and functional achievement, the approach laid down, the deployment that is to be expected, the method of review that is recommended, the way the organization should perceive the process, and the performance measures that should be used. Inherent in the idea of a mature organization is the existence of an organization-wide capability to manage projects based on a set of clearly defined common processes that can be tailored to meet the needs of individual projects. The introduction to the model includes a description of the two extreme states of maturity: immature and mature.



The model can be used for either or both of two purposes:

- To understand the key practices that are part of an effective organizational process to manage projects; and
- To understand the key practices that need to be embedded within the organization to achieve the next level of maturity.

It could be used by any organization wanting to improve its capability to manage projects effectively, by governance bodies and consultancies for the purpose of developing maturity questionnaires, or by accredited service providers in assisting teams to perform project management process assessments or capability evaluations.

OPM3

The Project Management Institute has announced its firm intention to launch OPM3 as a draft standard before the end of 2003. It differs from many of the other models mentioned in this chapter in that it introduces a structure that owes little to the structure of CMM, but rather one that relates explicitly to the PMBOK® Guide (although it is dramatically different in scope), that covers the three domains of portfolio management, program management and project management, and that explicitly relates the management of projects to organizational strategy.

The basic “building blocks” at the heart of OPM3 are five different kinds of entity:

1. “Best practices” that are associated with organizational project management;
2. “Capabilities” that are prerequisite or that aggregate to each “best practice”;
3. The observable “outcomes” that attest to the existence of a given “capability” in the organization;
4. Key Performance Indicators (KPIs) and metrics that provide the means of measuring the “outcome”;
5. Pathways that identify the capabilities aggregating to the “best practices” being reviewed.

The relationships between these are shown in a simplified manner in Figure 4.

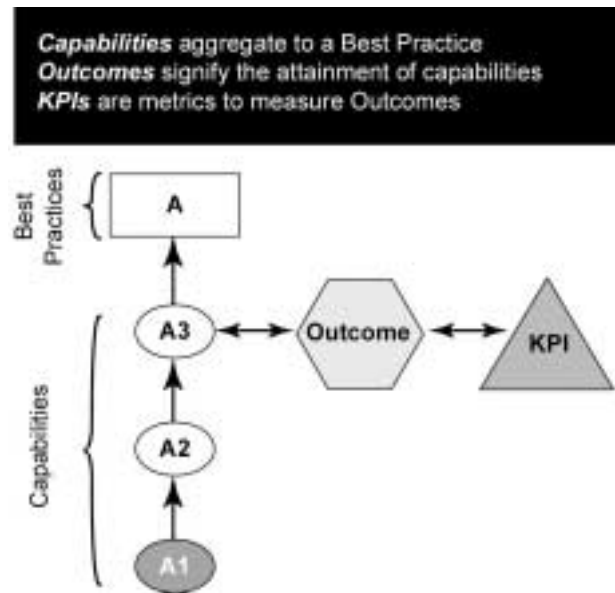


Figure 4: The relationship between fundamental elements in OPM3.

Additional dependencies have been identified between specific “best practices” when dependencies exist between one or more capabilities that aggregate to different “best practices”.

These basic building blocks are used within a framework of organizational project management processes that identifies five “process groups” (initiating, planning, executing, controlling and closing processes) in each of three “domains” (portfolio management, program management and project management).

Each process group in each domain is seen to progress through four stages of “process improvement” (standardized, measured, controlled and continuously improved) to give an overall framework for the model. (See Figure 5). Each of the “best practices” is mapped onto at least one location within this three-dimensional model, so that OPM3 will tell the user where a “best practice” falls within a “process group”, “domain” and stage of “process improvement”.

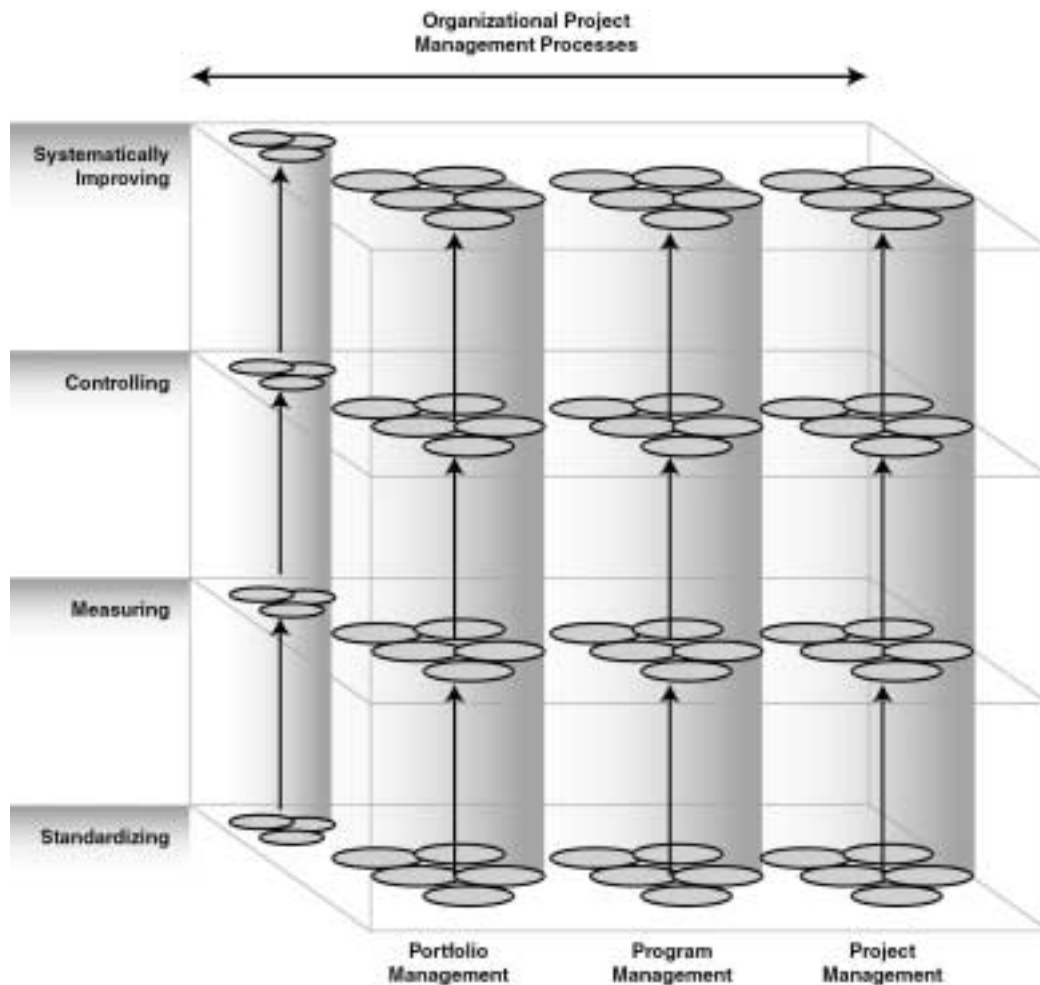


Figure 5: The process construct of OPM3

The scope of the model is vast: there are more than 600 “best practices”, more than 3,000 “capabilities” and more than 4,000 relationships between capabilities. The finished product is likely to take the form of both a book and a CD-ROM, and to contain both means of self-assessment and assessment by external consultants.

The model is designed to be used by an organization for any or all of four purposes:

- To understand what practices and processes have been consistently found to be useful by organizations seeking to undertake “organizational project management”, which is defined as “the application of knowledge, skills, tools, and techniques to organisational and project activities to achieve the aims of an organisation through projects.” (Fahrenkrog et al., 2003, p 2.)
- To assess its ability to implement its high-level strategic planning at the tactical level of managing individual projects and groups of projects.
- To drive business improvement.
- To integrate organizational practices and processes in the domains of portfolio management, program management and project management.



Untangling the vocabulary and distinguishing relevant concepts.

Earlier in this chapter, three areas of confusion and ambiguity were identified, each of which adds somewhat to the entangled nature of conversations about project management maturity models. In this section, we will attempt to reach towards answers to three fundamental questions; “What is the extent of practices and processes that are necessary to the effective and efficient management of projects?” “What is meant by the words ‘practice’ and ‘process’ as they apply to the management of projects?” and “What is meant by the words ‘maturity’ and ‘capability’ as they apply to the management of projects?”

What topics are covered by the “management of projects”?

Unless the scope of the topic can be agreed, it is unlikely that it will be possible to agree on what the “management of projects” might look like in its “perfected end-state”, so this first conversation is fundamental to the topic of organizational project management maturity. (Similar discussions occur and points are made in the chapters by Crawford on project management standards and by Morris on the validity of project management knowledge.)

Perhaps the place to start in considering this question is with a review of the “bodies of knowledge” that are produced by several of the world’s project management professional associations. Both the longest established and the most widely distributed is undoubtedly the PMBOK® Guide produced by the Project Management Institute. First produced in 1976, and most recently updated in 2000, this document, which had over 270,000 copies in circulation in September 2001 (Crawford, 2002), seeks “to identify and describe the knowledge and practices that are applicable to most projects most of the time”. (Duncan, 1996, p3). It recognizes that the management of projects also requires general management and specific application area (i.e. industry, market or technology) knowledge and practice, but restricts itself to the knowledge and practices that are generally applicable to the management of individual projects.

The Association for Project Management in 1986 developed the framework for what was to become the APM Body of Knowledge, which is now in its fourth edition, having been updated in 2000 (Dixon, 2000) on the basis of research carried out by the Centre for Research in the Management of Projects (Morris, 2001). A much broader range of topics is covered by the APM, in line with the findings of research into project success, which suggests that a much broader range of factors is critical to project success than the knowledge and practices contained within PMBOK® Guide. (Baker, Murphy, and Fisher, 1974; Morris and Hough, 1987; Lechler, 1998; Pinto and Slevin, 1998; Crawford, 2000; Crawford, 2001; Cooke-Davies, 2001; Cooke-Davies, 2002) (See also the chapter by Cooke-Davies on project success.)

Following the development of “bodies of knowledge” by various European professional associations, the International Project Management Association in 1998 published in French, German and English the “International Competency Baseline” (Caupin et al., 1999), offering a coordinated set of definitions to the terms used in the Swiss, German, French and UK documents. Other professional



associations (e.g. AIPM, PMISA) have their own “bodies of knowledge” and/or competency standards, usually resembling some combination of those that have already been discussed.

Most recently, a three-year joint academic/government/industry study in Japan has resulted in the production of an innovative standard for project management known as P2M (Project Management Professionals Certification Center {PMCC}, 2002). This is remarkable for the thoroughness with which it re-examines and re-defines the practices, processes and competencies that are necessary to deliver innovation through strategies, programs and projects.

It has been argued forcefully and cogently (Morris, 2001; Morris, 2003; Crawford, 1998; Crawford, 2001; Crawford, 2002) that the absence of global standards works to the detriment of the practice of managing projects in multi-national or global organizations. Precisely the same argument can be used with regard to maturity models - to the extent that enterprises are seeking to assess their organizational capability for managing projects, the absence of a generally accepted definition of what is involved inevitably inhibits the value of any maturity model to the whole of an organization.

What do “practices” and “processes” mean in connection with project management?

The second fundamental area that causes some confusion is precisely what is meant by the terms “process” and “practice”.

The 1980s and 1990s saw an emerging fashionable focus on adopting a “process” view of organizations - defining a process as “a specific ordering of work activities across time and place, with a beginning, an end, and clearly identified inputs and outputs: a structure for action.” (Davenport, 1993, p 6.). The term is used in much the same way in the PMBOK® Guide, where the process groups and the “knowledge areas” are defined in terms of individual processes, described in terms of their inputs, outputs and mechanisms.

The practice of identifying, describing and then improving business processes lies at the heart of the quality movement, as has been seen earlier in this chapter. It accounts for the emphasis given to processes in models such as the EFQM “Business Excellence” model and the Baldrige award, to which reference has already been made.

In parallel with the quality movement, the fashion for viewing organizations as collections of interlocking processes gave rise to disciplines such as business process reengineering (e.g. Hammer and Champy, 1993) and benchmarking (e.g. Camp, 1989). But these movements didn't simply focus on making processes repeatable and predictable, but rather they sought to identify the specific workflows and working practices that lead to improved process performance. Camp's working definition of benchmarking (1989, p12.) as “the search for industry best practices that lead to superior performance” makes this clear. And process performance is measured by physical characteristics such as throughput time, efficiency measured by unit of output produced for unit of input, or cost per unit of throughput.



Thus, in terms of a “process view” of work, a process describes how the organization’s inputs are converted into outputs, and practices describe how the processes are carried out.

However, the process view is not the only way of describing work. It could be argued that projects, for example, are a specialized subset of processes - those that are carried out only once so as to produce a unique product, service or beneficial change. Most of the definitions of a project make reference to the unique nature of each of them, whereas the essence of the process view is the repetitive nature of the work carried out.

Clearly the management of projects involves a large number of processes, as described in each of the bodies of knowledge, but equally clearly, different organizations employ their own practices to undertake these processes. And as research shows, different organizations in different industries recognise very different areas of practice as being appropriate to managing projects. (Toney and Powers, 1997; Turner and Keegan, 1999; Turner and Keegan, 2000; Cooke-Davies and Arzymanow, 2002; Morris, 2003).

Outside of the process view of an organization considerable fluidity characterizes the way literature on the management of projects uses the words “process”, “practice”, and even “discipline”. For example in a discussion of the “topic” of project management the APM Body of Knowledge states that “Project Management is the discipline of managing projects successfully”, and then on the following page includes a diagram with the caption “this diagram illustrates *the project management process*” (2000, pp 14,15 italics mine).

In contrast to the use of the term “practice” by proponents of benchmarking and other approaches to process management to denote how “processes” are carried out, PMBOK® Guide states that “Part II, the Project Management Knowledge Areas, describes project management *and practice* in terms of its component processes.” (2000b, p 7). Thus in some usage by project management practitioners, practice is a characteristic of processes, and elsewhere processes are components of practice.

Once more, as in the prior discussion about what is involved in the management of projects, the absence of generally accepted definitions for these two key terms creates confusion for the application of maturity models.

What do “maturity” and “capability” mean in connection with maturity models?

In Collins Dictionary, the adjective “mature” from which the noun “maturity” is derived has a number of different meanings in common usage. It can, for example, mean (1) fully-developed or grown up; (2) of plans or theories it can mean that they are fully considered, perfected; (3) of insurance policies or bills it can mean due or payable; and (4) of fruit, wine or cheese it can mean ripe or fully aged. The last two of these do not offer any obvious link to the world of project management (unless through projects that are described as “pear-shaped” when they are in serious trouble), so it is in either meaning (1) or (2) that the word is used in the term “maturity models”.



According to SEI's CMM "a software process can be defined as a set of activities, methods, practices, and transformations that people use to develop and maintain software and the associated products (e.g., project plans, design documents, code, test cases, and user manuals). As an organization matures, the software process becomes better defined and more consistently implemented throughout the organization." (Paulk et al., 1996, p.3.) In other words, maturity is used in meaning (2) as a technical description of the state of definition and consistency of implementation of an end-to-end process.

There is a clear implication that this can be accomplished only through the willful application of process improvement effort over time, and this would seem to link the use of the term to its more general meaning - (1). However, a working definition of a mature organization or a mature process would seem to be one that has reached what is, to all intent and purposes, a perfected state - one that is capable of delivering the requisite outcomes consistently, efficiently and effectively.

This working definition also builds a link to the second word being considered here - "capability". Once more, there are two rather different meanings in the dictionary: (1) the quality of being capable, ability; and (2) potential aptitude.

Once more CMM states that "software process capability describes the range of expected results that can be achieved by following a software process. The software process capability of an organization provides one means of predicting the most likely outcomes to be expected from the next software project the organization undertakes." (Paulk et al., 1996, p 3.) Which sounds more like meaning (2) - dealing with potential rather than an actual quality possessed.

This is made more explicit when the explanation of important concepts goes on to define "software process performance" as being the actual results accomplished by following a software process.

All this looks logical and clear, but all is not as it seems. Having spoken about what happens to "the" software process as an organization matures, the CMM introduces as a fundamental concept "software process maturity"; the development through five stages from definition, through management, measurement and control to effectiveness. The term "maturity" and the five stages of development are thus applied BOTH to the software process and to the organization that is undertaking it.

Within CMM, where each term is tightly defined, this does not appear to cause difficulties. Indeed, the descriptions in the model, and the assessment methods are sufficiently tight, that little room is left for ambiguity.

As the terms and concepts are translated into the world of project management, with all of its inherent uncertainties, ambiguities and disagreements, the distinction between the maturity of a process and the "maturing" of an organization becomes more problematical.

It seems reasonably intuitive and logical to describe the "maturity", the "capability" and the "performance" of a single process within the field of project management, such as "activity duration estimating", using precisely the same definitions as are used in CMM.



It becomes less so, when considering the “maturity”, the “capability” or the “performance” of an organization that undertakes many projects and programs of different categories (such as engineering, marketing or business development) in many different business units, for many different purposes, using many different criteria for success. And it is this consideration that gives rise to the fundamental tacit assumption behind project management maturity models - that there is an underlying development path or trajectory which must be followed by organizations as they seek to improve their ability to manage projects successfully.

But is there?

This question will be examined in more detail below, when the potential contribution of maturity models is considered in relation to the field of project management. Before that, though, it is appropriate to review the “state of play” on the field of maturity models in the light of these three fundamental questions.

Maturity models; the “state of play” reviewed.

Starting with the most recent two models first, it would appear that both PMM and OPM3 avoid some of the inherent difficulties that have been sketched above - but not all of them. Of course, by the time they are launched as potential standards, they will certainly undergo changes, which may alter the conclusions about them.

OPM3 is by far the largest and most complex of the project management maturity models, and might well turn out to be the most comprehensive. It recognizes the heritage of maturity models in the quality movement, and acknowledges that “practices” are components of processes or process groups. It is also clear in its recognition that a process can be described as “mature” when it has achieved its “perfected end-state”, has a measured and defined “capability” and is subject to process improvement initiatives. The identification of both outcomes and KPIs for each “capability” represents a substantial achievement.

In itself, however, OPM3 is far from “mature” in its own terms. The choice of the terms “best practice” and “capability” for two of the five elemental components of the model is not the happiest, in view of the semantic confusion that already exists. In spite of extensive market research (mainly conducted within the community of practitioners that are familiar with PMBOK® Guide), neither the 600 or so “best practices” nor the 4,000 or more dependency paths that the model contains can be demonstrated empirically to describe the essential trajectory (or trajectories - the model incorporates great flexibility) to organizational maturity, as measured by the successful implementation of strategy through projects, which is the stated goal of the model.

PMMM is very different in terms of its detail (67 pages compared with what might turn out to be more than 800 for OPM3) its focus (on government departments undertaking projects with a high IT content, or other organizations embracing PRINCE2, rather than any organization undertaking projects) and its derivation directly from CMM. The 21 processes described in the five stages incorporate many of the broader areas of the field of project management that are included in the



APM Body of Knowledge, and also the principles of quality management. The terminology of “maturity”, “capability” and “process” is very close to that contained in CMM.

On the other hand, there are at present some surprising omissions. For example, neither program management nor portfolio management is included in the model. There is also, more than in OPM3, an implicit single “development path” or “trajectory” towards the state of “maturity” to which, by implication, most organizations should aspire.

To turn back to models that were considered in the literature review, it is clear that different categories of model have different strengths and weaknesses that can be reviewed briefly.

The earliest maturity models that combine the concept of CMM's five stages of maturity with the PMBOK® Guide's project management processes (e.g. Couture and Russett, 1998; Ibbs and Kwak, 1997; Pennypacker, 2002) fail to distinguish between organizational maturity and process maturity (the organization is mature when every process is mature) and also omit from their consideration the extensive areas of practice that contribute to the successful management of projects that are not covered by PMBOK® Guide.

The CMM family of models itself and its derivatives, of course, is useful in terms of organizations to whom the software process is an important component of what APM's Body of Knowledge refers to as “technology management”.

Those organizations that are seeking to improve their overall excellence, using the Baldrige or EFQM models certainly cover the whole field of practices necessary for the management of not only projects, but of everything else as well. They contain neither implicit nor explicit process or capability elements to assist organizations that are seeking explicitly to improve the maturity of their project management.

Each of the remaining models that has been considered contains its own assumptions about the processes that need to be added at each stage of maturity, and thus implies its own hypothesis about the appropriate “development path” that leads to maturity.

Until empirical project management research is in a position to demonstrate the validity of one or more of these development paths to project management maturity, or the correlation of project management maturity to consistent project success, then the adoption of a particular model remains largely an act of faith.

But is such an act of faith reasonable? Do maturity models, in their present form add value to the field of project management, or simply add to the confusion? That is the question that we are now in a position to hazard an answer to.



Maturity models; are they silver bullets or unhelpful distractions?

The purposes for which an organization might seek to use a maturity model have been variously described as:

1. To understand what practices and processes have been consistently found to be useful by organizations seeking to undertake organizational project management.
2. To drive business improvement, for example by understanding the key practices that need to be embedded within the organization to achieve the next level of maturity.
3. To assess its ability to implement its high-level strategic planning at the tactical level of managing individual projects and groups of projects.
4. To integrate organizational practices and processes in the domains of portfolio management, program management and project management.

Several limitations to the various different types of maturity model have already been described, but these do not necessarily prevent the models from providing value, or from helping organizations to accomplish any or all of the objectives described above.

As demand has grown for the effective management of an increasing number projects, it has been helpful to the advancement of project management to identify those processes that are “applicable to most projects, most of the time”, and to help a growing number of practitioners to learn what those are. Maturity models, in a sense, seek to do for organizations seeking to implement strategy through projects what “bodies of knowledge” have done for individual practitioners seeking to improve their ability to manage projects.

But three factors make the practice of “organizational project management” considerably more problematical than the management of individual projects.

Firstly, it has long been recognized that the related product-oriented processes “are typically defined by the project life cycle, and vary by application area” (Project Management Institute, 2000a, p30.). For example, the product-oriented processes involved in the development of new pharmaceutical products with their inherent technical risk and consequent uncertainties of scope will inevitably differ in many important respects from those involved in the construction of a new building or the development of software. Thus different organizations will have a bias towards projects with a certain set of characteristics, and the strategies that lead to business success in different “application areas”, industry or markets may differ radically from each other. Morris’ review (2003) of the differences between project management as practiced in four different industries (construction, information technology, defense/aerospace and pharmaceuticals) describes these differences very clearly. These differences may be so great as to raise doubts about the concept of a single “development path” towards a “perfected end state”.

Secondly, regardless of the type of “application area”, organizations themselves operate in many different industry and market environments. Banks, for example, operating in the financial services market, undertake construction projects, information technology projects, business development projects, process re-engineering projects and so on. The environmental differences can be



characterized on a grid as shown in Figure 6. Project management clearly has a different “voice” in the traditional project-based engineering environment displayed on the right-hand side of the diagram, than it does in those nearer to the left. The vertical axis also plays a part - the more the revenue of an organization depends on the efficient and effective use of their own resources on projects (i.e. the nearer to the bottom of the diagram), the greater the commercial pressures on that organization to develop a world-class corporate capability in project management. This perhaps accounts for the evidence that engineering suppliers to the process industries have the highest project management “maturity” of any industry (Cooke-Davies and Arzymanow, 2002). It also suggests that there may be no common path to “project management maturity” in different industries and for different types of projects.

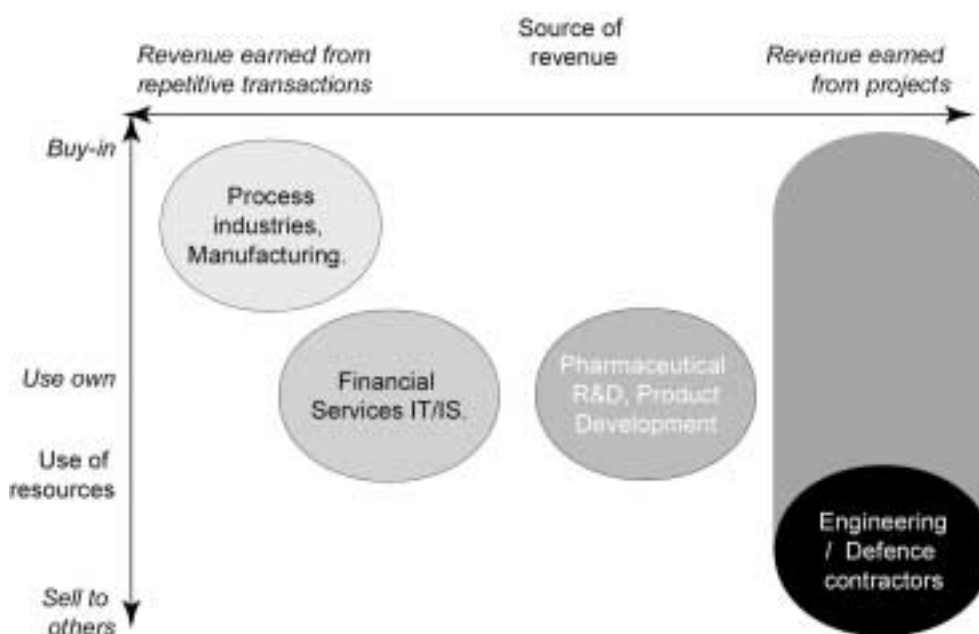


Figure 6: Different “environments” for projects.

The third factor that complicates the question of “organizational project management maturity” is that in order to compete strategically in their markets, organizations have to pay attention to two very different aspects of business: “business as usual”, in terms of extracting value from their current products and markets, and “business change” in terms of preparing the organization to compete in the future in new markets or with new products. Projects can play their part in either of these aspects, as is illustrated in Figure 7. For example, one of the “gurus” of the quality movement, J. M. Juran, has maintained that quality of products or services can be improved only through projects (Anbari, 2003), and it is accepted wisdom among project management practitioners that project management is essentially the management of business change.

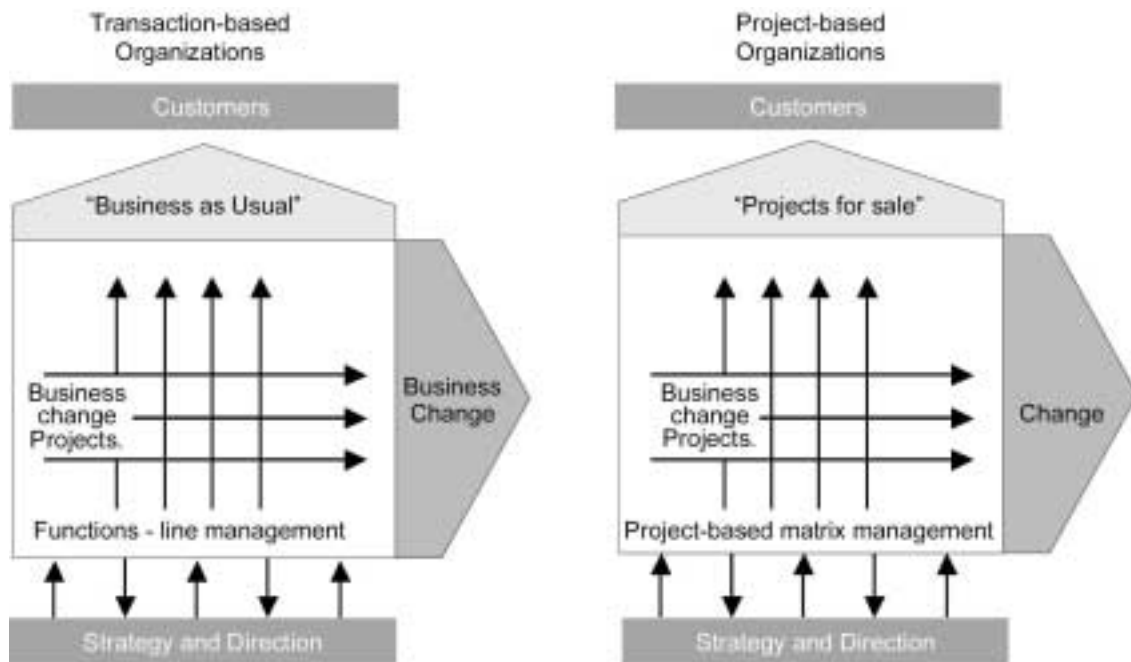


Figure 7: The relationship between "business as usual" and "business change".

The reason that this complicates the question of project management maturity is that, as Mintzberg (1989) has argued, business strategy is "crafted" by managers in a way that is analogous to how a potter crafts a pot from the clay with which s/he is working. The strategy is a function of the present situation with its inherent possibilities, and the skills of the organization. But the present situation that organizations find themselves in varies widely depending on the nature of the organization's structure and culture, and the relative pressure felt to emanate from each of the two strategic aspects.

It is these three factors that establish the unique environment of each organization as it seeks to do accomplish any of the four purposes of a maturity model: to know what "good practice" looks like, to identify sensible improvement initiatives, to implement strategy more effectively, or to integrate the management of all the projects in the organization.

By definition, any model is a simplification of reality. If that were not the case, the model would serve no purpose, since it would be as complex and as opaque as reality itself. Where project management maturity models are concerned, however, there remains a question mark as to whether it is possible to strike a balance between a model that is an essentially accurate representation of the complex reality that covers the management of all projects by all organizations, and one that is simple enough to offer practical help to most organizations, most of the time.

Until that question is answered, each organization that is considering adopting a maturity model should ask itself a number of questions.

- Does the scope of the model cover all those areas of the management of projects that we believe to be strategically important in our current competitive environment?



- Does the definition of maturity - the perfected end-state described by the model - look like a state to which it is strategically important that our organization should aspire?
- Does the cost of assessing our current state of maturity, and identifying our desirable path of development towards maturity look as if it is justified in the light of the benefits we could expect?
- Is the use of a maturity model the most cost-effective way that we can assess our current status, and identify our future development needs?

The answers are likely to vary considerably from model to model, and from organization to organization.

Conclusions

There are three general conclusions that can be drawn from this discussion.

Firstly, Thomas and Jugdev's assertion (2002) that maturity models are not a holistic view of the field of project management appears to be justified. The field is broader than can be embraced simply within the process view that the models embody, and projects possess distinctive features that distinguish them from processes.

Secondly, maturity models make a positive contribution to the field because they:

- At best broaden the discussion away from a narrow definition of project management towards the broader discussion of the management of projects;
- Recognise that developing a mature capability to manage projects requires an organizational commitment to the development of incremental capabilities along some kind of a development path, and the continual improvement of associated processes;
- Bring into the field of managing projects core values that have proven themselves to be valuable in the field of quality management.

Thirdly, maturity models are unlikely to be the silver bullet that some hope for because they:

- Lack an important pre-condition in terms of a well-researched and theoretically-grounded understanding of just what is involved in the management of projects;
- Are built, in many cases, on an unproven assumption that there is an ideal development path towards maturity that most organizations must follow most of the time, regardless of application area, project and market environment or competitive strategy;
- Must steer a perilous path between the "Scylla" of over-simplification and the "Charybdis" of excessive complexity.



Regardless of these conclusions, project management maturity models are a visible feature of the current landscape of project management. Their use as a means of comparing capability across organizations and industries seems likely to ensure their longevity.

The real question that project management practitioners, consultants and academics should be asking is, "Will they simply remain an interesting phenomenon of limited relevance and application, or will they provide the means of transforming the success rate of projects for which organizations are searching?"

Any answer to this question remains largely a matter of conjecture at this time. In the long run, it will depend on whether or not the considerable investment of effort involved in assessing, adopting, adapting and implementing a project management maturity model in an organization translates into sufficient value from improved results to justify its continued place in the armory of project management practices. The increase in the adoption of the software CMM suggests that IS/IT organizations are finding the investment worthwhile, but it does not follow that this will also hold true for the much more complex and diffuse world of organizational project management. Watch this space!!



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