

# Benchmarking Organizational Project Management Capability

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## Introducing the Project Management Maturity Model (ProMMM)

Many businesses are recognizing the power of a project-based approach, and are implementing project management as a core competence. The value of a formal and structured approach to project management is becoming increasingly recognized as the discipline develops and more organizations begin to reap the benefits of proactive project-based management. The successful business will be the one that manages its projects most effectively, maximizing competitive benefits while minimizing the inevitable uncertainty. Guidelines and standards define best practice project management (for example, PMBOK 2000, APM-BoK 2000, BS6079-1: 2000), and there are a number of sources of help available to organizations wishing to develop or improve in-house project management processes.

In order for an organization to be able to determine whether its project management processes are adequate, agreed measures are required to enable it to compare its management of projects with best practice or against its competitors. As with any change program, benchmarks and maturity models can play an important part in the process by defining a structured route to improvement.

The *Project Management Maturity Model* (ProMMM) has been developed to meet these needs, drawing on established concepts from existing models such as the Capability Maturity Model (CMM) from Carnegie-Mellon Software Engineering Institute (Paulk et al. 1993, 1995) and the EFQM Excellence Model from the European Foundation for Quality Management (EFQM, 1999). It also draws on a previously published model developed to assess organizational risk management capability (the *Risk Maturity Model*—see Hillson 1997). The basis for ProMMM is practical and pragmatic, based on the empirical experience of its developers in providing project management consultancy across a wide range of industries over many years. The lack of an academic research base is not felt to be a disadvantage, as ProMMM represents the accumulated wisdom and expertise of project management professionals who are leading practitioners in the field.

ProMMM acts as a benchmark for organizational project management capability, describing four increasing levels, with defined stages along the way against which organizations can

benchmark themselves. Since its original development, ProMMM has been used by several major organizations to benchmark their project management processes as part of an improvement initiative, and there has been considerable interest in it as a means of assisting organizations to introduce effective project management. Other practitioners are expressing interest in development of benchmarks for project management based on the principles of maturity models, and this seems likely to become an important area for future development (see for example Remy 1997; Hartman & Skulmoski 1998; Ibbs & Kwak 1998; Hartman 2000; Lubianiker 2000). A major project from Project Management Institute (PMI®) is currently developing the Organizational Project Management Maturity Model (OPM3) (Combe 1998; Schlichter 1999a, 1999b; Schlichter & Skulmoski 2000) and this is likely to offer a more comprehensive assessment and framework than ProMMM; nevertheless the practical focus of ProMMM allows it to be used to support improvement initiatives in practice.

## ProMMM Structure

The *Project Management Maturity Model* (ProMMM) describes four levels of increasing project management capability, termed *Naïve*, *Novice*, *Normalized* and *Natural*. The aim is to provide a structured route to excellence in project management, with defined stages along the way against which organizations can benchmark themselves. The various levels can be summarized as follows:

- The *Naïve* project management organization (ProMMM Level 1) is unaware of the need for management of projects, and has no structured approach to projects. Management processes are repetitive and reactive, with little or no attempt to learn from the past or to prepare for future threats or uncertainties.
- At ProMMM Level 2, the *Novice* project management organization has begun to experiment with project management, perhaps through a small number of nominated individuals, but has no formal or structured generic processes in place. Although aware of the potential benefits of managing projects, the *Novice* organization has not effectively implemented project management processes and is not gaining the full benefits.
- The level to which most organizations aspire when setting targets for management of projects is captured in ProMMM

**Exhibit 1. Attributes of ProMMM Levels**

	<b>LEVEL 1 NAIVE</b>	<b>LEVEL 2 NOVICE</b>	<b>LEVEL 3 NORMALISED</b>	<b>LEVEL 4 NATURAL</b>
<b>SUMMARY DEFINITION</b>	Unaware of the need for management of projects. No structured approach to projects. Repetitive & reactive management processes. Little or no attempt to learn from past or to prepare for future.	Experimenting with project management, through a small number of individuals. No generic structured approach in place. Aware of potential benefits of managing projects, but ineffective implementation, not gaining full benefits.	Management of projects built into routine business processes. Formalised generic project management processes implemented on most or all projects. Benefits understood at all levels of the organisation, although not always consistently achieved.	Project-aware culture, with proactive approach to project management in all aspects of the business. Active use of project information to improve business processes and gain competitive advantage.
<b>CULTURE</b>	No awareness of the benefits of project management. Resistant/reluctant to change. Tendency to continue with existing processes.	Project processes may be viewed as additional overhead with variable benefits. Project management only used on selected projects.	Accepted policy for project management. Benefits recognised & expected. Prepared to commit resources in order to reap gains.	Top-down commitment to project management, with leadership by example. Proactive project management encouraged & rewarded.
<b>PROCESS</b>	No formal processes.	No generic formal processes, although some specific formal methods may be in use. Process effectiveness depends heavily on the skills of the in-house project team and availability of external support.	Generic processes applied to most or all projects. Formal processes, incorporated into quality system. Active allocation & management of project budgets at all levels. Limited need for external support.	Project-based business processes. "Total Project Management" permeating entire business. Regular refreshing & updating of processes. Routine project metrics with constant feedback for improvement.
<b>EXPERIENCE</b>	No understanding of project principles or language.	Limited to individuals who may have had little or no formal training.	In-house core of expertise, formally trained in basic skills. Development of specific processes and tools.	All staff project-aware & using basic skills. Learning from experience as part of the process. Regular external training to enhance skills.
<b>APPLICATION</b>	No structured application. No dedicated resources. No project tools.	Inconsistent application. Variable availability of staff. Ad hoc collection of tools and methods.	Routine & consistent application to all projects. Committed resources. Integrated set of tools and methods.	Second-nature, applied to all activities. Project-based reporting & decision-making. State-of-the-art tools and methods.

Level 3, the *Normalized* project management organization. At this level, project management is implemented across all aspects of the business. Generic project management processes are formalized and widespread, and the benefits are understood at all levels of the organization, although they may not be fully achieved in all cases.

- Many organizations would probably be happy to remain at Level 3, but ProMMM defines a further level of maturity in project management processes, termed the *Natural* project management organization (Level 4). Here the organization has a fully project-based culture, with a proactive approach to project management in all aspects of the business. Project-based infor-

mation is actively used to improve business processes and gain competitive advantage.

Each ProMMM level is further defined in terms of four attributes, namely *culture*, *process*, *experience* and *application*. These allow an organization to assess its current project management processes against agreed criteria, set realistic targets for improvement, and measure progress towards enhanced project management capability. The four attributes were selected to represent the areas required for effective project management, reflecting the wide recognition that tools and training are not sufficient enablers. Many organizations make the mistake of believing that purchasing "the right software tool" and sending

## Exhibit 2. Sample ProMMM Questionnaire questions

How does the organization respond to the claim that effective project management is critical to business success?	Reactive response project management is not required for success	
	Variable response project management is tolerated but sometimes seen as an unnecessary "add-on"	
	Objective response project management is recognized and accepted as part of business	
	Proactive response project management is welcomed as an essential contributor to meeting business objectives	
To what extent is the organization committed to proactive and systematic management of projects?	No commitment	
	Partial commitment	
	Consistent policy for project management	
	Whole-hearted top-down commitment	
How formal are project management processes? Are they fully defined, with clear scope and objectives?	There are no project management processes in place	
	Processes are informal and specific to particular projects	
	Generic processes exist covering most aspects of the business	
	Formal processes are flexibly applied to match requirements	
How stable and mature are project management processes?	There are no project management processes in place	
	Project management processes are immature and still developing	
	Project management processes are stable and mature	
	Project management processes are regularly refreshed/updated	
How well do staff understand the underlying principles of project management?	No understanding	
	Basic understanding	
	Thorough understanding	
	Intuitive understanding	
What level of familiarity and expertise do staff have in using the practical skills and techniques of project management?	No knowledge or expertise of project management techniques	
	Basic grasp of standard techniques	
	Effective use of all main techniques	
	Expert use of all current techniques	
What is the scope of application of project management processes?	No application of project management processes	
	Applied to occasional projects (especially large/difficult/strategic)	
	Routinely applied to all projects & bids	
	All activities are encompassed by the project management process	

staff on training courses will result in effective project management. It is however clear that other factors are equally important, if not more so. One crucial area is organizational *culture*, covering the mindset, ethos and belief structure of the organization, which drive instinctive assumptions and reactions. A second element required for effective project management is embodied in the *process* attribute, covering methods, tools and techniques available to support project management. A third essential contributor to project management is *experience*, both individual and corporate, expressing the extent to which the principles and practice of project management are understood. Lastly, project management must be put into practice, and the effectiveness of *application* will be a key measure of project management maturity.

The ProMMM framework defines each of the four levels against the four attributes, as follows:

- For the Level 1 "Naïve" project management organization, the attributes are all at the lowest level. The *culture* is resistant to change and the need for project management is not recognized.

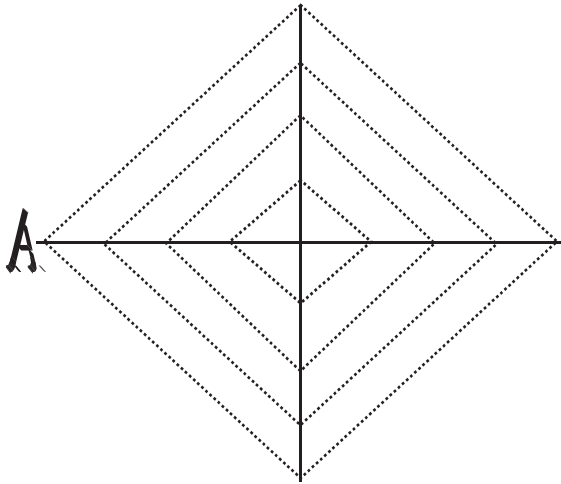
There are no project management *processes*, no *experience* of using project management and no *application* within the business.

- The *culture* of the Level 2 "Novice" project management organization is not fully convinced of the benefits of project management and tends to see it as a necessary overhead. *Processes* are rather ad hoc and their effectiveness depends on the limited *experience* of a few key individuals who may have little formal training. Project management *application* is inconsistent and patchy.

- Level 3 project management organizations have "Normalized" project management into their way of operating, with a *culture* that recognizes the value of projects and expects to reap benefits from managing them. Generic and formal *processes* are in place, with the necessary resources available, and staff has adequate *experience* and expertise to undertake effective project management. *Application* is routine and consistent across all projects.

- At Level 4 "Natural," a project-based *culture* drives the organization into proactive project management, seeking to gain the full advantages of the changing business environment. Best-

### Exhibit 3. Sample ProMMM Radar Plot



practice *processes* are implemented at all levels of the business, with regular updating and active learning from previous projects. All staff has a degree of *experience* of using project management processes to assist their tasks, and *application* is widespread and second nature across all areas.

Detailed attribute descriptions are contained in Exhibit 1.

### Using ProMMM in Practice

ProMMM can be used by organizations to benchmark their project management processes, and support introduction of effective in-house project management. With ProMMM, implementation of project management processes can be managed effectively to ensure that the expected benefits are achieved in a way that is appropriate to the needs of each particular organization. Assessment of an organization's project management capability against the ProMMM framework can be undertaken using two complementary approaches: a perception-based questionnaire, and structured interviews with key staff.

#### ProMMM Questionnaire

The *ProMMM Questionnaire* can be used to allow an organization to diagnose its current position within the ProMMM framework. By assessing performance against the four attributes, areas of strength and weakness can be identified, using the standard definitions associated with the four ProMMM levels. For each attribute, a series of questions in the *ProMMM Questionnaire* explores respondents' perception of the degree to which their organization manages projects effectively, with a range of answers provided to each question corresponding to one of the four ProMMM levels. Sample questions are detailed in Exhibit 2.

It is important to seek responses from a wide range of staff, and to guarantee that the responses of specific individuals will not be identified, in order to preserve confidentiality and encourage

frank expressions of opinion. Responses can be analyzed for the whole data set as well as by various organizational factors, such as job role, site or business area. This sub-analysis allows differences in project management maturity across the organization to be assessed, exposing areas of particular strength which might act as models for others, as well as revealing which parts of the organization might need special attention.

Questionnaire responses are entered into a database, allowing attribute scores to be calculated and analyzed. Each ProMMM attribute (Culture, Process, Experience, Application) is assessed using a number of targeted questions. Answers to each question are scored 1–4, indicating the corresponding ProMMM level. The mean score is calculated for each question, and for the set of questions for each attribute, with standard deviations showing the degree of agreement between respondents. ProMMM levels for each attribute are determined by rounding the mean score to the nearest decimal place, and the overall ProMMM level is calculated as the average of all four attributes. Results are presented as a radar plot of the four attributes, as well as numerical values of attribute scores and overall ProMMM level, as shown in Exhibit 3.

#### Interpretation of ProMMM Questionnaire results

The structure of the ProMMM framework facilitates analysis of the resulting data and allows detailed interpretation to expose strengths and weaknesses in current project management capability. The assessment is undertaken bottom-up, with scores for individual questions being averaged to give attribute scores, which are in turn averaged to give an overall ProMMM level. All scores are calculated to one decimal place, recognizing that organizations undertaking improvement initiatives are likely to lie between levels in the ProMMM framework.

Having performed a bottom-up calculation, interpretation is done top-down in three stages:

1. ProMMM Level
2. Attribute scores
3. Individual questions

The overall ProMMM Level defines the position of the organization within the ProMMM framework, as a *Naïve*, *Novice*, *Normalized* or *Natural* project management organization. The summary descriptions of these types of organization can be used as headlines to present the results of the analysis, although these are necessarily generalizations. Further detail on the particular position of an organization is gained by a more in-depth analysis of the results at lower levels, namely attributes and individual questions.

Attribute scores expose areas of particular strength and weakness within the overall assessment of an organization at a particular ProMMM level. Intermediate positions can also be recognized, such as "Improving Novice," or "Enhanced Normalized," and these are particularly useful where there is a discrepancy between attribute scores, which reveal strengths and weaknesses in the project management approach. One common combination of attribute scores is high C/P with low E/A,

indicating organizations which believe in project management and have implemented project processes, but whose staff lack the necessary skills and experience leading to limited application effectiveness—good theory but poor practice. Another frequent result is high P/E and low C/A, representing an organization with the necessary infrastructure in terms of processes and skills, but whose culture does not recognize the value of project management, again leading to a failure to apply a project management approach—able but not willing.

The final level of analysis addresses results for individual questions, which allows a detailed consideration of particular aspects of project management, giving the degree of granularity necessary for understanding project management maturity in depth, and allowing development of an effective improvement program.

At each level of interpretation, calculation of standard deviation is used to indicate the extent of agreement between respondents, with standard deviations of up to 0.6 being considered normal for a questionnaire-based approach.

### **ProMMM Structured Interviews**

Interviews can be used to supplement, enhance or reinforce the results obtained from the *ProMMM Questionnaire*, since it is recognized that the questionnaire only assesses the perceptions of respondents and therefore represents a subjective opinion. A questionnaire-based approach is also limited in scope since it can only address those issues listed in the questions. Finally, there is room for significant differences in interpretation of the meaning of questions between respondents, especially where unfamiliar concepts are used, or where there are native language differences.

In order to verify the data obtained from *ProMMM Questionnaire* returns, a set of structured interviews is therefore often conducted, with key staff selected to represent a wide cross-section of the organization. Each ProMMM interview lasts about one hour, and is based around a structured interview framework that covers all four ProMMM attributes. Interviewers are permitted to adopt a range of different interviewing styles in order to maximize interview effectiveness, and are not restricted to following the interview framework rigidly. Where an interview exposes issues of interest relevant to the assessment of project management capability, the interviewer should be free to pursue such lines, and as a result not all questions in the ProMMM interview framework are necessarily covered in all interviews.

### **Case Study using ProMMM**

The author has considerable experience in using maturity model approaches to benchmark capability as part of developing an improvement program. A recent study (December 2000—January 2001) was undertaken for a multinational organization wishing to enhance project management capability, who requested a ProMMM assessment in order to define the starting point for their improvement initiative. The organization had recently

been through a merger process, and their operations were conducted on seven major sites across two continents.

*ProMMM Questionnaires* were distributed by email to 750 staff involved in projects, ranging from senior management to project team members. Responses identified site, job role, and technical area, allowing a detailed analysis of any variance in project management capability across different parts of the organization. In addition to the questionnaire, a set of structured interviews were held with 30 senior staff, including project directors and project managers across all sites and technical areas within the company.

On analysis of *ProMMM Questionnaire* returns, the organization was rated at ProMMM Level 2.6, representing an “Improving Novice” project management organization. Attribute scores were: Culture 2.6, Process 2.7, Experience 2.4, Application 2.6. Higher scores for culture, process and application combined with a lower score for experience indicated that the principles and framework for effective project management were in place, and that these were being used in practice. It was however necessary to ensure that staff had the skills and knowledge required to apply project management effectively. The company was advised to build on the foundation of its project-aware culture and good project processes, but concentrating on developing the competence levels of staff.

Specific strengths and weaknesses within each attribute were indicated by answers to individual questions in the *ProMMM Questionnaire*, which indicated that though the organization was aware of the benefits of project management, it was reluctant to change, perhaps as a result of “change fatigue” following the recent merger. Processes were found to be formally established, but were not perceived as stable or effective. Project management techniques were consistently applied, but there was a lack of supporting tools. The greatest area of concern was in experience levels, where individuals had limited practical skills, and there was no formal organizational learning from experience.

Conclusions from the structured interviews broadly confirmed the findings of the questionnaire analysis. Key issues arising from interviews included confirmation of the presence of “change fatigue,” and highlighted the need to pay attention to operating as a single global organization post-merger without losing the distinctive strengths and legacy of each location. The roles and expectations for Project Managers required clear definition, and it was also important to develop and support project management skills and team working. Process improvement needed to be focused on simplification of existing processes to remove nonvalue-added activities, with particular attention to decision-making, prioritization, and resource management.

As a result of the ProMMM analysis, the organization defined the scope and content of a project management improvement initiative, setting a target of reaching ProMMM Level 3 within two years, with further ProMMM audits during the initiative to measure progress toward this goal. The detailed implementation plan took full cognizance of the findings of the ProMMM assessment, focusing on areas revealed as weaknesses by the analysis.

## Conclusion and Summary

The *Project Management Maturity Model* (ProMMM) presented here represents a practical and empirical approach to assessing current project management capability, based on a simple pragmatic foundation. Organizations wishing to improve effectiveness of their project management need to be able to measure current capability and define improvement targets. The ProMMM framework allows diagnosis of the current position as well as presenting a well-defined target in the next ProMMM level, allowing improvement to be planned and providing a foundation for measurement of progress. Current indications are that organizations find this pragmatic approach both valuable and cost-effective, since ProMMM allows them to assess their project management against agreed criteria, set realistic targets for improvement, and measure progress towards enhanced capability.

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