Organizational Project Management Maturity Model Program Plan

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"Business and other human endeavors are bound by invisible fabrics of interrelated actions, which often take years to fully play out their effects on each other. Since we are part of that lacework ourselves, it's doubly hard to see the whole pattern of change. Instead, we tend to focus on snapshots of isolated parts of the system, and wonder why our deepest problems never seem to get solved." - - Peter Senge, The Fifth Discipline, 1990.

PROGRAM OVERVIEW AND BACKGROUND

What do we mean by "organizational project management maturity model"? First, "organizational" increases the domain of project management beyond delivery of the single project, which is the subject of the Project Management Institute's "A Guide to the Project Management Body of Knowledge". The use of the word "maturity" implies that capabilities must be grown over time in order to produce repeatable success in project management. The Random House College Dictionary defines "maturity" as full development or perfected condition. "Maturity" also connotes understanding or visibility into why success occurs and ways to correct or prevent common problems. "Model" implies change, a progression, or steps in a process.

When we begin to view and perform the work of an organization as multiple projects, we begin to understand project management as a holistic system that spans the enterprise. Projects interact and change in a web of dynamic priorities. They deliver the work that achieves organization strategy. In this context, project management is more than implementation. It also covers a strategic domain encompassing more than the multiple project delivery systems of program management, spanning both activities that align projects to strategic priorities and infrastructure that enables the project environment. It is thought that capabilities across this spectrum of areas distinguish organizations that can translate organization strategy repeatedly and reliably into project success from those that can not. Capabilities must be developed and improved incrementally, and the steps must be planned.

Random House Dictionary defines the word *capability* as "1. The quality of being capable; capacity; ability. 2. the ability to undergo or be affected by a given treatment or action: e.g. the capability of glass in resisting heat. 3. Usually, *capabilities*, qualities, abilities, etc. that can be used or developed." There is also the term of art used in manufacturing engineering, "capability of a process, C_p," where capability describes a mathematically-calculated value that characterizes a process's ability to repeatedly meet its requirements. (Wheeler & Chambers, 1992) A maturity model can identify an ordered set of capabilities that an organization acquires as it embarks on its deliberate program of incremental improvement.

Because the number of organizations that are managing by projects (either in part or as a whole) continues to grow, there is increased interest in learning about and developing a maturity model that shows such a step-by-step method of increasing and maintaining an organization's ability to translate organizational strategy into the successful and consistent delivery of projects. Recently there have been reports exploring the relationship between the maturity of the organization and project success (Remy, 1997, Saures, 1998; and Fincher et al. 1997). Many have linked project management competence to project management effectiveness (Crawford, 1998; Jiang et al. 1996; and Lechler, 1998). Yet standards describing organizational project management capabilities and their relationship to organizational success are lacking.

Many maturity models already exist. There are maturity models for organizations that want to increase their capabilities to develop and manage software, systems engineering, integrated product teams, system security, and systems acquisition. There is also one to develop human resources. One has been developed that integrates the ones just mentioned. An early model indicated steps needed to increase the organization-wide quality of manufacturing firms. Many of these models are based on human life span models that identify, chronicle, and sequence human social and mental development. Many of the existing models mention project management and some of the existing models *are* organizational project management maturity models. Yet none shows a step-by-step method of developing and maintaining an organization's ability to translate organizational strategy into the successful and consistent delivery of projects.

In May 1998, members of the PMI Standards Committee chartered a project to create a standard that would describe how organizations that manage by projects might become increasingly more capable. Marge Combe and Paul Dinsmore were appointed co-Project Managers of the project. The project team had two initial objectives: 1) refine criteria that might serve to differentiate mature organizations from immature organizations, and 2) examine phenomenological[1] aspects of several extant models. The purpose of this work was to identify high level areas that a model should address and to learn more about the process of maturity modeling. John Schlichter was appointed as the lead for the second task.

In the interim, John Schlichter was appointed primary Project Manager to coordinate the project's activities for PMI Seminar & Symposium 1998, where the project team's preliminary work was presented in a working session. Subsequent to SS '98 and in the course of PMI's change in governance in January, the twelve person 1998 Standards Committee was restructured into the five person 1999 Standards Member Advisory Group (MAG). Marge Combe and Paul Dinsmore were appointed to the 1999 Research MAG, and John Schlichter accepted full responsibility for directing the project. It was agreed that the vision for a standard in this arena was to promote project management success in the interest of creating project successes that result in organization success, emphasizing organizational project management as a strategic tool. Schlichter re-planned the effort into a program of 5 integrated projects, recruited over 100 volunteers, and appointed a Program Manager and Project Team Leads.

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[1] We mean phenomenological in the sense of "concerning the conditions under which self-evidence arises; certain and without prejudice; purely logical; dealing with analysis of the ways things are represented or preceived by everyone; purely descriptive without presuming to assert explanations of possible causal relationships."

Today the OPM3 Program consists of members from all over the world who bring a variety of knowledge, skills, and experience to the program. The PMI Board, PMI Technical Standards Manager Steve Farenkrog, the PMI Standards Member Advisory Group, and Paul Dinsmore are the Project Sponsors. John Schlichter is the OPM3 Program Director, responsible for program strategy. Terry Cooke-Davies is Program Manager, responsible for managing the leads of the program's project teams.

The customers of this project include the project management profession, organizations, executives, senior managers, and project management professionals. The project management profession is the audience served by PMI. Organizations are the target of an organizational project management maturity model. Executives and senior managers are the persons in organizations who will sponsor the implementation of such a model by project management professionals. The goal of this program is to develop a universal standard that will benefit each of these customer groups.

SCOPE

The product of this program will be an "Organizational Project Management Maturity Model" or "OPM3," describing the capabilities likely to lead organizations managing by projects to become increasingly more capable in the translation of organizational strategy into the successful and consistent delivery of projects. The model will be developed on the premise that certain capabilities and theories of organizational development have an impact on outcomes indicative of effective performance. The OPM3 will include a step-by-step method of increasing and maintaining an organization's capability to deliver what it has promised. The maturity model will also include a method for assessing organizations.

The product will describe an incremental or step-by-step evolution, apply to organizations (not just projects), leverage and add value to existing maturity models, leverage management theory and empirical evidence, and aim for harmony with PMI's "A Guide to the Project Management Body of Knowledge".

The product of the program will contain:
a. A glossary of terms
b. Outcomes that indicate an organization managing by projects is "successful." There should be an identifiable relationship between the organizational capability and these outcomes. We shall be careful here to differentiate and indicate the interaction among project success, success at managing the organization by projects, and success of the whole organization.
c. Contingency variables. These are the factors (e.g., project size, technical complexity, public visibility) that may affect which capabilities are most likely to have the greatest influence on successful outcomes.
d. Organizational project management maturity model stage/step descriptions. These would be named capabilities or groups of capabilities (e.g., baselining, organizing to meet customer needs, etc.), along with explanatory material, such as definitions, prerequisite abilities, and perhaps illustrative practices.

The program's project teams will decide how to validate the model. Once validated, an "Organizational Project Management Maturity Model Exposure Draft" will be submitted to the PMI Standards Member Advisory Group for nomination as a PMI Standard, and subsequently submitted for ANSI accreditation. This program will follow the review and approval process described in Appendix A of the Guide to the PMBOK (tm).

All work of the program is developed entirely by (part-time) volunteers, who for the most part interact electronically (fax, e-mail, phone) but rarely face-to-face.

RELATED PROJECTS

There is a "sister" effort to define the competency of project managers, and this project will aid in the definition of such important variables as "project success." It will help the OPM3 Program to focus on the differences between the capability to be successful on individual projects and being successful at managing an organization that is comprised of projects. It will also inform our ideas about the kinds of individual skills necessary in an organization that manages by projects. If developed project managers are necessary for an organization to manage by projects effectively, then the OPM3 will want to leverage and harmonize with the Project Manager Competencies project.

STRATEGY

Our strategy is to enroll a workforce of volunteers to analyze all known maturity models, survey organizations, and develop a model that is validated via an outreach program composed of a network of organizations, whom we call our "Corporate Sponsors", who review and comment on work products. After extant maturity models and related standards are analyzed and surveys of organizations begin to produce data, a Delphi process is used to allow program team members to identify broad areas or constructs of enterprise project management.[2] Next, small 2 – 3 person Design

[2] For example, in October 1998, during the Standards Open Working Session, break-out groups identified the following constructs: Project Management Methodologies and Processes, Human Resource Factors, Organizational Support Structures for Projects, Alignment of Projects to Business Strategy, Organizational Learning. For a decomposition of each of these, see Appendix A. These serve as examples of what we mean by "construct" but are not the actual constructs that result from the referenced Delphi.

"Cells" or teams of subject matter experts are mobilized for each construct. Each single Cell defines its respective construct in its perfected condition and then describes the steps in a progression from no capability leading up to its perfect condition.

The process up to this point is "social". A social process for model development involves surveying people, noting patterns, trying to reach agreement, and publishing an agreement document. The social process approach is based on conversations, meetings, opinion surveys, and other types of social interactions. Sometimes the process is structured, such as a Delphi process, or is open-ended, more like brainstorming. This approach supports a worldview that reality is socially constructed, and that a model can influence perception but not affect outcomes causally or mechanically.

Each Cell hands a social model of an Enterprise Project Management construct (describing the steps in a progression from no capability leading up to perfected condition) over to the Engineering team and the Assessment team. Engineering principles are applied to the social model components by the Engineering team, and causal relationships are surfaced. In contrast to a social process, an engineering process builds a maturity model by utilizing reasonable formulae. One might describe this approach as attempting to discover a "physics of organizational project management." This involves identifying root causes and linking failure or success to the root causes mechanically. One would postulate how the moving parts of the model interact, and identify the rules that govern that interaction. This would call for a theory that explains empirical observations about project management, allowing one to line the observations (about organizational project management) on an array and attempt to discover underlying mechanisms that explain surface behavior. This method, which was how quarks were postulated, is sometimes called "case based," "analogical," or "context-sensitive."

The Assessment team works concurrently with the Engineering team, focusing on ways to assess maturity in the areas described by each Cell. The Assessment project's charter is to develop a measurement tool based on the maturity model that our Design Cells develop. The measurement tool is distinct from the model. By analogy, in our schooling systems from elementary to college, we teach subjects and develop competencies in a certain order. We use a grading system to measure our performance along this progression. However, the grading system is distinct from the theory dictating the sequence of subjects. The Assessment team develops a measurement tool that enables an organization to assess its current state and promotes organization development as prescribed by the maturity model. The measurement system should lead the organization to ask the right questions, while producing information that helps both executives and workers. How does performance measurement in a project organization affect organization development?

Once all Cells have modeled maturity in their respective areas, the Engineering team has postulated causal relationships among constructs, and the Assessment team has developed corresponding measurement tools, the discrete constructs are integrated into a whole that describes the relationships among all capabilities. Causal relationships are postulated where appropriate among all constructs, and a holistic measurement technique is developed. Feedback on work products is captured via our Corporate Sponsors, and this integration process is repeated. We produce an Implementation Plan that describes the change process that an organization must execute in order to implement the model. The cumulative result of this work is a clear roadmap – supported by industry – for growing and assessing organizational project management competencies.

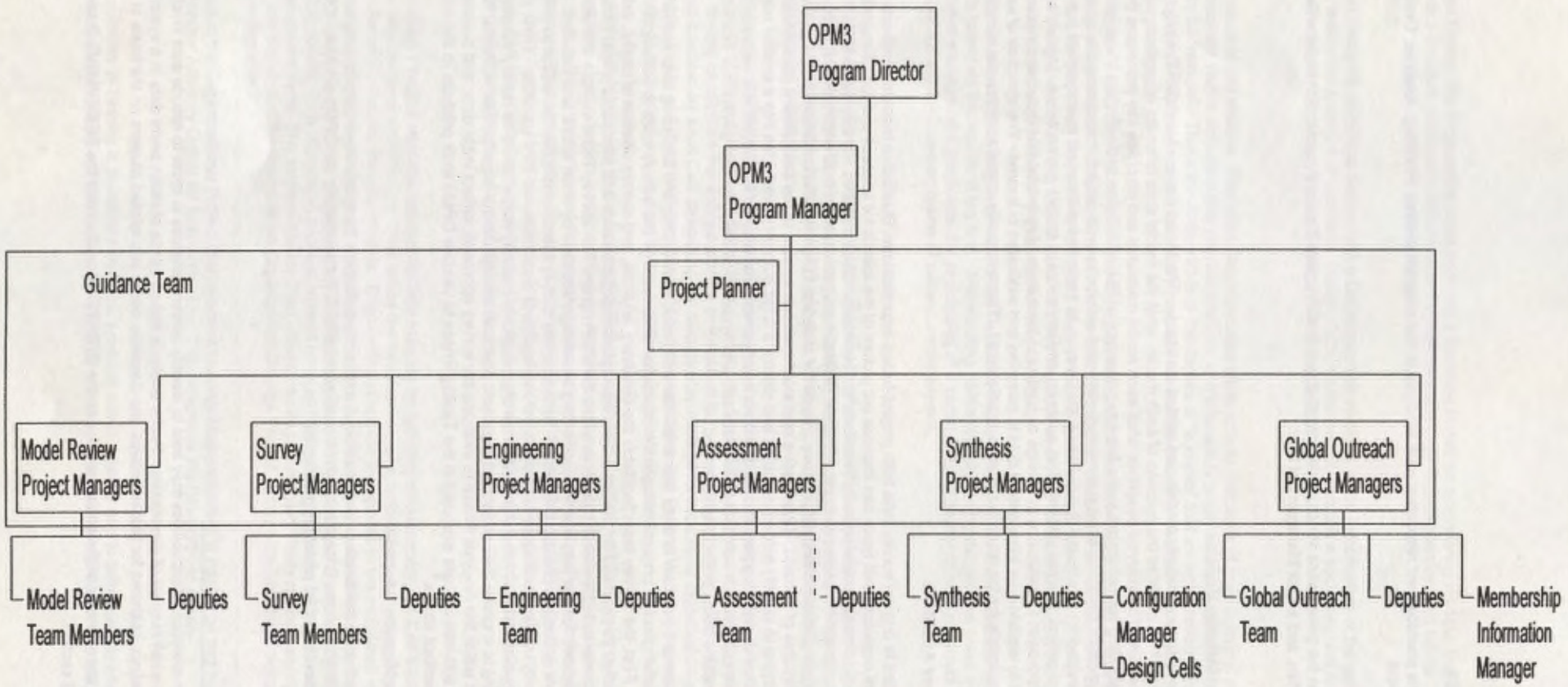
This strategy is effected through six related projects:

- Model Review Project Team: this project results in an analysis of all known maturity models. The MRT identifies various maturity models, what each is, what it intends to do, its structure, and how it defined maturity. The MRT compares and contrasts the models and suggest to the Guidance Team areas for further research and development.
- Survey Project Team: this project results in primary research about organizations as well as validation of our work products.
- Global Outreach Project Team: this project results in integrated management of our program's relationships with other organizations, i.e. our Corporate Sponsors. The GOT establishes and maintains relationships with other organizations. A "Membership Information Manager" role exists within the GOT to manage information about OPM3 volunteers and process the applications of volunteers to participate in the program. The GOT provides access to a variety of global organizations, maintains the active participation of these organizations, and provides advice to the Guidance Team. This team prevents duplication of Human Resource management among teams or of communications with other organizations.
- Engineering Project Team: this project surfaces causal relationships among capabilities that we believe are important for organizations to be able to manage by projects effectively. This team explains relationships among elements of an OPM3 so its users can forecast results. This team analyzes existing quantitative models and provides the total quantitative model or set of interrelated component sub-models for the Exposure Draft.
- Assessment Project Team: this project results in a tool for assessing an organization's project management maturity. This team produces a method for an organization to assess its maturity using the OPM3.
- Synthesis Project Team: this project results in knowledge management of the learning that is developed across all teams, requirements management, and coordination of the Design Cells. This team develops traceable requirements and ensures information is shared across teams where it is needed.

OPM3 ORGANIZATION STRUCTURE

Each project has two project managers, who each have a deputy responsible for being able to stand in for their corresponding project manager at any point. These project managers compose a Guidance Team, which is managed by a Program Manager and a Program Director, who is accountable to the PMI Standards Member Advisory Group and PMI HQ Technical Standards Manager. A project office supports the Program Director and Program Manager.

OPM3 ORGANIZATION CHART



PROGRAM PHASES

Our six project teams produce their respective work products in five program phases: Planning, Analysis, Design/Build, Testing, and Close-out.

PLANNING

This phase results in the governance structure described above, this Program Plan, a Program Schedule, a Testing Plan, a Communication Plan, and a Risk Management Plan.

ANALYSIS

Reviewing Existing Maturity Models

We are interested in all known maturity models and related standards. The Model Review team (MRT) analyzes these; see Appendix B. The MRT identifies the purpose of each model, what the model aims to create or promote, why it was developed, and for whom. The analysis describes what each model measures and identifies key processes that each model addresses, including but not limited to the five key processes of PMI's "A Guide to the Project Management Body of Knowledge". Each model's coverage of project management and enterprise-wide project management is analyzed, and explanations are provided for any model that defines a progression to organizational project management maturity. Each model's definitions of project success, organization success, and key success factors are captured. Models are also examined for their approach to resistance to change or readiness to change. Any model that includes an assessment process is analyzed to explain how assessment data is compiled and evaluated or scored. The structure of each model is described, and the rationale for the model's structure is articulated. These maturity model analyses are completed in the Analysis Phase.

Developing a Survey Approach

We are also interested in original survey data from project-based organizations. Qualitative research methods employed across a spectrum of organizational types can improve our picture of the criteria for success and the ultimate future state of organizational project management maturity in various environments. Such methods not only elaborate our idea of success, they help us to identify prerequisites for different project management outcomes in different organizational environments. Analysis of qualitative data provides a basis for understanding the different drivers and organizational enablers and impediments of success. Quantitative research[3] methods applied to the data allow a classification of success criteria by trying to identify hidden variables and reduce a large number of variables into a smaller number of dimensions. In addition to exploring perceptions of project management that may be influenced, it is necessary to link problems to root causes, postulate how these parts interact, and hypothesize the rules that govern this interaction based on empirical observations about project management.

The Survey Team serves as advisor to other teams on matters related to collecting and analyzing data relevant to the discovery of successful/effective project management practices. This requires the Survey team to accomplish three separate activities. First, the Survey team facilitates the discovery, analysis, and standardization of useful, extant project management innovation as practiced by mature project management organizations and postulates lesser known innovation in accordance with the overall objectives of the OPM3 Program. The Survey Team designs and executes primary research methods for this purpose, supplementing knowledge acquired by other teams and activities, e.g. the Model Review team's evaluation of existing models.[4] Secondly, the Survey team establishes the extent to which organizations currently make use of some form of project management maturity model as a standard. Third, the Survey team identifies the dynamics by which a standard for an organizational maturity model could be readily adopted by organizations seeking to improve their project management practices throughout the organization. An initial "Stage 1" survey is completed within the Analysis Phase to evaluate our survey approach, collect initial data, and course correct for subsequent survey activities that are executed in the Testing Phase to validate OPM3 work products in the context of the survey interests described above.[5]

Requirements Specification Template

Another analytical activity is the development of a Requirements Specification Template used subsequently in the combined DESIGN/BUILD phase to capture and maintain requirements for developing the OPM3 product. Other templates are also developed for prototyping activities.

Literature Review

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[3] Factor and cluster analyses of capabilities may help to identify hidden variables in order to reduce data involving many variables down to a small number of dimensions. Factor analysis makes sense of multivariate data in a systematic manner. Cluster analysis searches for hidden groups and classifies cases into related clusters on the basis of values of several variables.

[4] This data informs development of the social model; see the STRATEGY section and the DESIGN/BUILD section.

[5] See the TESTING section.

In the Analysis Phase, the Engineering team performs a literature review on engineering models, and the Assessment team performs a literature review on performance management and organization development topics.

DESIGN/BUILD

The combined Design/Build Phase begins with a Delphi process resulting in the identification of the general areas or constructs of enterprise project management. Design Cells model maturity through a social process for each construct. Discrete constructs are integrated, and an Exposure Draft is published.

Delphi

The Delphi occurs in two passes. The initial Delphi process elicits criteria indicative of organizational project management maturity. These are visible indicators that provide evidence of the extent to which an organization's project management can be said to be "mature". These inevitably relate to the degree of "success" that an organization accomplishes in the delivery of its projects. Delphi participants specify precisely what they mean by "success" if they use this word in any criteria that they suggest.

The initial Delphi also surfaces factors leading to organizational project management maturity. These are pre-requisite capabilities (such as processes, structures, procedures, metrics, qualified people, or tools) that must be in place before an organization can be said to be "mature" in any given area or for any given criteria. Delphi participants identify relationships among areas or among criteria, and note any instance where the result of achieving capabilities in a combination of areas is "multiplicative" or results in a new capability.

The initial Delphi is executed among members of the Guidance Team. A second Delphi is executed among a larger group of participants based on the results of the first. The resulting consensus regarding the general areas or constructs of enterprise project management predicates the prototyping of a social maturity model of each construct by respective Design Cells, which are 2 – 3 person teams of subject matter experts.

Prototyping

Each Cell describes the enterprise project management construct in its perfected condition, describing the relationship between the organization capability and the outcomes identified, including any influential contingency variables (e.g. project size, technical complexity, public visibility) that may affect which capabilities are most likely to have the greatest influence on successful outcomes.

Each Cell documents requirements for the model pertaining to their construct. They specify the design for the construct, which is the design of the social maturity model for the construct. Capabilities are named, defined, and explained, and relationships among capabilities are defined along a progression from immature to mature. Then an actual draft model of each construct is written by each Cell, describing the step-by-step method for increasing organization capability, including pre-requisite capabilities and illustrative practices. Each Cell contributes to a Testing Work Package, intended to validate the social model of each construct via peer review among our Corporate Sponsors.

Engineering principles are applied by the Engineering team to each social maturity model of each construct, surfacing causal relationships. Methods for assessing within an organization the maturity of each construct are developed by the Assessment team. The Engineering and Assessment teams update the Testing Work Package, and the Synthesis team updates the requirements specification, tracing requirements to the Testing Work Package. Testing activity occurs (see next section), and Integration Meeting 1 occurs. This is the first face-to-face meeting of all Cell Leaders with the Guidance team, PMI Standards Member Advisory Group, and representatives from our Corporate Sponsors. At this point, discrete maturity models exist for each construct.

Integration

System Integration 1 begins after the first face-to-face meeting by updating all constructs. All Cell leaders work together to update the requirements specification. This drives the development of a holistic design for a social maturity model that integrates all discrete construct maturity models. Engineering principles are applied to the integrated social model, surfacing causal relationships. Methods for assessing maturity are developed. The Synthesis team updates the requirements specification, tracing requirements to Testing activities. At completion of System Integration 1, another face-to-face meeting occurs. This Integration process repeats once as System Integration 2. An Implementation Plan is created in the second cycle. The Implementation Plan, developed as part of the maturity model, describes how an organization can implement the model as an Organization Change Project. Integration Meeting 3 occurs immediately after System Integration 2.

A draft release of the Organizational Project Management Maturity Model standard is packaged and handed off to the Standards Member Advisory Group for final evaluation. This completes the Design/Build phase.

TESTING

The primary purpose of Testing is to validate our work products within industry and to tailor them to ensure they provide value to our customers. Testing activities will help us to understand the business of our customers better and not to

design work products that are simply of personal interest to us. We must avoid building a model that gains the admiration of fellow experts but fails to achieve successful and lasting results in the organizations where it is used.

Corporate Sponsors

Corporate Sponsors are essential to Testing. Corporate Sponsors support the OPM3 Program by providing funding for Program expenses and by partnering with the OPM3 teams to validate work products. Corporate Sponsors, who are awarded an official OPM3 Sponsor seal as a sign of their good citizenship, can make use of the interim work products that are shared with them. Corporate Sponsors are surveyed at each of fours stages as the OPM3 teams develop the maturity model. At each stage they receive a preliminary report that describes where they think they stand relative to where others think they stand in the testing community in the areas of enterprise project management being modeled. Moreover, at each stage, the OPM3 teams will capture the explicit requirements of Corporate Sponsors for development of the maturity model. Any requirements that drive model design will be tested in the Exposure Draft process. Any requirements that are submitted by a Corporate Sponsor but are not incorporated into the standard will be published with the permission of the proposer for evaluation in the court of public opinion. In this way, Corporate Sponsors can be certain that their voices are heard regarding requirements for the model.

Areas of Discovery

Throughout Testing, we are interested in seven areas of discovery:

1. Investigation of factors acknowledged by practitioners and stakeholders within mature project management organizations as critical to the success of their organizations

2. Identification of specific components of the critical success factors which directly or indirectly influence the outcome of projects

3. Characterization of hard-to-measure, intangible practices/disciplines which lead to the maturation of an organization

4. Assessment of awareness within mature organizations of the link between principles, processes, practices, tools, and other factors with improved project performance.

5. Extent of application within organizations (both mature and immature) of existing project management maturity models.

6. Assessment of the forces that facilitate the adoption of corporate maturity model standards, and those that inhibit the adoption of such standards.

7. Requirements for model development from Corporate Sponsors.

Testing Objectives

Testing activities will accomplish the following:

Objective 1: Identify and evaluate factors that are determinant of organizational maturity and project success

1a. Identify factors considered by practitioners and stakeholders to be essential to the development of project organizations and to the success of individual projects

1b. Determine obstacles and challenges that limit organizational maturation and project success

1c. Create a segmentation model that attributes key success factors to well-defined segmentation variables, including position within the organization, size of organization, industry, customer touch points, and others as appropriately defined

1d. Postulate additional qualitative factors that are likely to be determinant of project outcomes

Objective 2: Map successful paths or stages of progression to organizational maturation, determining the essential organizational requirements, measurements, and competencies (note: this objective should be shared with the Model Review Team)

2a. Discover how organizations view the "life cycle" of project management development and how they formally and informally, consciously and unconsciously manage the evolution of their organization

2b. Evaluate the paths organizations have taken in gaining maturity; assess how this was done

2c. Evaluate the use made by organizations of existing maturity models, the benefits that have accrued from their use, and the difficulties encountered in applying them.

2d. Document success stories and learning obtained in each organization's development -- assess each organization's view of the most important learning and priorities

2e. Establish benchmarks for the cost of becoming mature, as well as the investment necessary to maintain this level of high performance

2f. Estimate the return on maturity -- the benefits obtained by becoming a mature organization

Objective 3: Create a change model and maturation strategy to support the identified standards of project management maturity

3a. Prioritize the change initiatives that are essential for the improvement, development, and maturation of project management organizations, including "do's and don'ts" for the adoption of the identified standards.

3b. Link key success factors to an overall strategy for change, helping organizations see how maturation occurs.

Testing Approach

Testing can begin once Corporate Sponsors are recruited. As Design Cells develop Enterprise Project Management (EPM) construct descriptions, the Global Outreach Team (GOT) will package an initial questionnaire developed by the Survey Team (SUT) for the Corporate Sponsors. The intent of the questionnaire is to capture industry input regarding each of the descriptions of the enterprise project management constructs or areas. Is the area described accurately? Are the relationships between organization capability in this area and the outcomes that result from the capability defined clearly? Are there any "contingency" variables that influence the respective areas of project management as identified by our respective Design Cells?

Importantly, we also want to capture from Corporate Sponsors any requirements for developing the model in these areas. This information should be solicited in a way that makes it easy to analyze when it is returned to us. We plan to have responses to the questionnaire as respective Design Cells are developing the Social Model for their respective EPM constructs. We need to be able to distribute the responses to our Design Cells immediately.

As soon as the respective EPM construct social models are developed, they are handed off to our Engineering (ENG) and Assessment (AST) teams, who respectively surface engineering principles and develop methods for assessing capability in the areas of enterprise project management described by respective Design Cells. The SUT and GOT work concurrently with the ENG and AST to develop Testing Work Package 1 to send to our Corporate Sponsors, incorporating feedback captured by the original questionnaire. In addition to exploring perceptions of project management that may be influenced, it is necessary to link problems to root causes, postulate how these parts interact, and hypothesize the rules that govern this interaction based on empirical observations about project management. Our intention is to validate the ENG's engineering propositions and the AST's assessment methods for each EPM construct's social model.

Each time a Testing Work Package is distributed to Corporate Sponsors, they have about a month to respond, and upon receipt of the responses by the GOT, the SUT has approximately one week to analyze the data and distribute it to OPM3 teams. After analysis of Testing Work Package 1, the first face-to-face Integration meeting is held. Immediately after this meeting, the SUT develops Testing Work Package 2 based primarily on the Requirements Specification updated by the SYT and the results of the first Integration meeting where the analysis of Testing Work Package 1 will have been discussed. The GOT distributes Testing Work Package 2 to the Corporate Sponsors as the Design Cells begin System Integration 1, following as soon as possible after the Integration meeting. Responses are due about one month later, and once they are analyzed they are handed off to the Design Cells to inform System Integration 1 during the first consolidation of the respective EPM Constructs into an integrated Social Model.

System Integration 1 is followed by another face-to-face Integration meeting. As a result of this "Integration Meeting 2", we have new questions for the Corporate Sponsors about the newly integrated maturity model. As our Design Cells begin System Integration 2, these new questions are refined by the SUT and packaged by the GOT into Testing Work Package 3. Once again, our Corporate Sponsors have about a month to respond to these new questions. We expect to have responses to Testing Work Package 3 half way through integrating the maturity model for the second time (System Integration 2), at the point when the Design Cells, ENG, and AST are all working together on the model and the maturity assessment tool. Once these responses are analyzed by the SUT (Testing Analysis 3), they are distributed immediately to the OPM3 teams.

This Testing approach engages our customers every step of the model development process, providing critical information during each major development step and prior to each face-to-face meeting.

CLOSE-OUT

Once the draft release of the Organizational Project Management Maturity Model standard is packaged and handed off to the Standards Member Advisory Group (MAG), the Standards MAG evaluates the standard over the course of a month and responds to the OPM3 Program Director. The OPM3 Program team evaluates Standards MAG feedback and makes any necessary changes. A face-to-face meeting is held to complete the program, and an Exposure Draft is published.

COMMUNICATION PLAN

OPM3 team communications occur on a monthly cycle.

Performance Reporting

Each month, on the second Friday of the month, respective project teams hold a conference call with their team members. On the third Friday of the month, the Guidance Team holds a conference call at twelve noon Eastern. Three business days prior to the end of each month, a project co-leader completes the Project Status Report template and emails it to the Program Director, who consolidates the information from respective reports into a comprehensive status report to the Standards Member Advisory Group. See Appendix D.

Internal News Reporting

Each month, project leaders submit information to the Program Manager and Program Director, who assimilate the information into an internal newsletter for all Program volunteers.

Reporting to Corporate Sponsors

Each month, an official communication is developed for Corporate Sponsors by the Program Director reporting the status of the Program, accomplishments of the past month, expectations for the next month, and other information.

CONFIGURATION MANAGEMENT

See Configuration Management Plan.

RISK MANAGEMENT

See Risk Management Plan.

APPENDIX A: 1998 PMI Seminar & Symposium Discussion of Items that Contribute to Effective Organizational Project Management

In October 1998 at the PMI conference the 1998 PMI Standards Committee conducted a focus group of individuals representing a cross section of application and geographic areas to discuss capabilities that contribute to effective organizational project management. The results of that brainstorming activity might inform the project's research effort. That group identified the following potential capability areas:

Project Management Methodologies and Processes
- defined existence of PM methodologies and processes
- recognition of best practices in the profession (e.g. PMBOK Guide)
- requirements for project status/forecast reporting
- internal project reviews
- approval/review process for major project changes
- quality control of methodologies and processes
- focal sponsorship for the organizational PM practices

Human Resource Factors
- development of potential project managers
- project management training
- cross training
- communication approaches for projects
- integrated product teams
- definition of team roles
- motivating, team building, leadership
- conflict management, issue resolution
- management of project time commitments by staff; stress management

Organizational Support Structure for Projects:
- technical, procurement, subcontractors, quality assurance, manufacturing, project accounting, contract administration
- multi-project staffing, assessment of multi-project needs, provision of the right people at the right time (until no longer needed)
- project support office
- project management and related systems/tools, including selection, implementation, upgrades, and maintenance
- centers of excellence for practices and use of tools

Alignment of Projects to Business Strategy:
- project fit to strategic plans
- PM involvement in business plans
- future value to technologies, competencies, and skills
- organizational fit, project risk, technical capability
- application of existing versus new technology
- project sponsorship by internal management
- multi-project interactions and interfaces, assessments, and related decisions
- project priorities, decisions on organization resource/funding assignments
- management of project life cycles, including canceling/closure

Organizational Learning: continuous improvement process implementation
- evaluation and feedback from project teams
- post project phase debriefs and feedback to practices
- changes to general organization systems/procedures to support improvements in PM capabilities
- periodic review of PM effectiveness
- reliability of status summaries and forecasts
- metrics for project management effectiveness
- standardization, productive and unproductive application
- lessons learned and feedback into all capability areas

APPENDIX B: List of Known Maturity Models, Related Standards, and URL's

Model	URL
A Guide to the Project Management Body of Knowledge	http://www.pmi.org/standards/pmbok.htm
AACE International's Certification Program	http://www.aacei.org/newdesign/certification/certificationprogram/welcome.shtml
ICB - IPMA Competency Baseline	
APM BoK Review	http://www.apmgroup.co.uk/certific.htm
Project Management Assessment and Certification Program Europe	
Australian Institute of Project Management (AIPM). 1996. *National Competency Standards for Project Management: Various Volumes, Competency Standards, Level 6.*	www.dab.uts.edu.au/aipm/competencystandards/index.html
Software Engineering Institute Capability Maturity Models in general	http://www.sei.cmu.edu/cmm/cmms/cmms.html
SEI SW-CMM Capability Maturity Model SM for Software	http://www.sei.cmu.edu/cmm/cmm.html
SEI SE-CMM Capability Maturity Model for Systems Engineering	http://www.sei.cmu.edu/cmm/se-cmm.html
SEI P-CMM People Capability Maturity Model	http://www.sei.cmu.edu/cmm-p/
Microframe	http://www.pm2.com
SPICE	http://www.sqi.gu.edu.au/spice/
Trillium	http://www.sqi.gu.edu.au/trillium/
US Federal Aviation Administration integrated Capability Maturity Model	http://www.faa.gov/ait/ait5/FAA-iCMM.htm
PMA 2000	http://www.leshem.co.il/products/main1.html
Balanced Scorecard	
Integrated Project Systems' model	
ESI International's ProjectFRAMEWORK.	
EFQM Excellence	http://www.efqm.org/
Malcom Baldridge Award	
Hartman's SMART model	
IBM Progress Maturity Model	
Project Management Maturity Model, by Knapp & Moore Pty Ltd.	
"Barron Maturity Model" (Ortho Clinical Diagnostics)	Nicola Barron 908-218-8620
V-Model	http://www.scope.gmd.de/vmodel/en/
Innovation Maturity Model	http://managementroundtable.com/Critical-Path-Issue-Four.html#1
PRINCE	http://www.pmforum.org/prof/standard.htm#PRINCE http://www.prince2.com/

APPENDIX C: Maturity Models Identified Early in the OPM3 Program, with short descriptions

While there are many other extant maturity models, the following few were identified early in this project.

SEI SW-CMM: Capability Maturity Model [SM] for Software

The Capability Maturity Model[SM] for Software (CMM® or SW-CMM) is a normative model for judging the maturity of the software processes of an organization and for identifying the key practices that are required to increase the maturity of these processes. The SW-CMM is developed by the software community with stewardship by the Software Engineering Institute (SEI). The Software CMM has become a de facto standard for assessing and improving software processes. Through the SW-CMM, the SEI and community have put in place a means for modeling, defining, and measuring the maturity of the organizational processes used to manage and develop software.

SEI Systems Engineering Capability Maturity Model

The SECMM addresses the systems engineering process of an organization. This process is defined as:

> a comprehensive problem-solving process that is used to: transform customer needs and requirements into a life-cycle balanced solution set of product and process designs, generate information for decision makers, and provide information for the next product development and acquisition phase[6]

The SECMM is specifically designed to evaluate the systems engineering process of the organization in order to assess and improve that process and address the business needs of the organization.

SEI People Capability Maturity Model

Designed to integrate work force improvement with "knowledge-based" process improvement as practiced in a software development or information technology organizational environment, the P-CMM is concerned with the people aspects of an organization and what is involved in attracting, maintaining, organizing, motivating and developing a "knowledge-based" work force. It covers such areas as work environment, communication within the work unit, staffing, managing performance, training, compensation, competency development, career development, team building, and work place culture development.

The P-CMM focuses directly on improving the management and development of the human assets of the knowledge-based organization's workforce. The P-CMM concept originated around the premise that while software process has shown dramatic improvement since the inception of the Software CMM, there has been no commensurate growth in the ability of a work unit to attract and retain highly qualified, knowledge-based human resources.

Other SEI Capability Maturity Models

The SEI has promulgated a number of other models, among them an integrated model, the CMM-I, which is not yet complete and released to the public.

Microframe

This model is based on a questionnaire.

Software Process Improvement and Capability dEtermination (SPICE)

Currently under development, the Software Process Improvement and Capability dEtermination is an ISO project to develop a suite of standards on organizational software process description and assessment. ISO is attempting to harmonize existing process capability measurement approaches through creation of a reference model that will allow meaningful comparison of many different kinds of maturity models, assessments, and their results. ISO submits that the reference model will provide a common context for reporting the ratings of different models and methods for (software) process assessment.

Trillium

The Trillium model, created by Bell Canada and Nortel, combines requirements from the ISO 9000 series, the CMM, and the Malcolm Baldrige National Quality Award criteria, with software quality standards from the IEEE. Although tailored to the telecommunications field, the model serves as proof that the requirements of several of the popular frameworks can be combined, and it provides a template for additional efforts in this area.

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[6] SECMM-95-01/CMU/SEI-95-MM-003 V1.1, page 2-13

Appendix D: Status Report Template

OPM3 PROGRAM STATUS REPORT		*Version:*
Program: Organizational Project Management Maturity Model Program		**Project:**
Author:		**Date:**
Reporting Period:	**From:**	**To:**

Section 1 – Executive Summary Period Ending xx/yy/zz:

Tasks/Deliverables Scheduled for Next Period Ending xx/yy/zz:

On Schedule:

Behind Schedule/Reason:

Deliverable/Milestone	Team / Owner	Plan Due Date	Actual Completion	Baselined by CM (Y/N)

Section 2 - Comments on Schedule Variations:

Section 3 - Risks & Issues:

ID	Date	Description	Impact	Probability	Trigger	Contingency	Open/ Closed	Owner

Section 4 – Other Items for Management Attention:

Section 5 – Lessons Learned: