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1 Introduction

Now more than ever, organizations are increasingly becoming acquirers[1] of needed capabilities by obtaining products and services from suppliers and developing less and less of these capabilities in-house. The intent of this widely adopted business strategy is to improve an organization's operational efficiencies by leveraging suppliers' capabilities to deliver quality solutions rapidly, at lower cost, and with the most appropriate technology.

Acquisition of needed capabilities is challenging because acquirers must take overall accountability for satisfying the user of the needed capability while allowing the supplier to perform the tasks necessary to develop and provide the solution.

According to recent studies, 20 to 25 percent of large information technology (IT) acquisition projects fail within two years and 50 percent fail within five years. Mismanagement, the inability to articulate customer needs, poor requirements definition, inadequate supplier selection and contracting processes, insufficient technology selection procedures, and uncontrolled requirements changes are factors that contribute to project failure. Responsibility is shared by both the supplier and the acquirer. The majority of project failures could be avoided if the acquirer learned how to properly prepare for, engage with, and manage suppliers.

In addition to these challenges, an overall key to a successful acquirer-supplier relationship is communication.

Unfortunately, many organizations have not invested in the capabilities necessary to effectively manage projects in an acquisition environment. Too often acquirers disengage from the project once the supplier is hired. Too late they discover that the project is not on schedule, deadlines will not be met, the technology selected is not viable, and the project has failed.

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Deleted: companies want to deliver

Deleted: better, faster,

Deleted: cheaper. At the same time, in the high-technology environment of the twenty-first century, nearly all organizations have found themselves building increasingly complex products and services. Today, a single company usually does not develop all the components that compose a product or service. More commonly, some components are built

Deleted: and some are acquired; then all the components are integrated into the final product or service. Organizations must be able to manage and control this complex development and maintenance process

Deleted: The problems these organizations address today involve enterprise-wide solutions that require an integrated approach. Effective management of organizational assets is critical to business success. In essence, these organizations are product and service developers that need a way to manage an integrated approach to their development activities as part of achieving their business objectives.¶
In the current marketplace, there are maturity models, standards, methodologies, and guidelines that can help an organization improve the way it does business. However, most available improvement approaches focus on a specific part of the business and do not take a systemic approach to the problems that most organizations are facing. By focusing on improving one area of a business, these models have unfortunately perpetuated the stovepipes and barriers that exist in organizations.¶
Capability Maturity Model® Integration (CMMI®

[1] In CMMI-ACQ, the terms *project* and *acquirer* refer to the acquisition project; the term *organization* refers to the acquisition organization.

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The acquirer has a focused set of major objectives. These objectives include the requirement to maintain a relationship with the final users of the capability to fully comprehend their needs. The acquirer owns the project, executes overall project management, and is accountable for delivering the needed capabilities to the users. Thus, these acquirer responsibilities may extend beyond ensuring the right capability is delivered by chosen suppliers to include such activities as integrating the overall product or service, transitioning it into operation, and obtaining insight into its appropriateness and adequacy to continue to meet customer needs.

CMMI® for Acquisition (CMMI-ACQ) provides an opportunity to avoid or eliminate barriers in the acquisition process through practices and terminology that transcend the interests of individual departments or groups.

Deleted: these stovepipes and barriers

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This document provides guidance to help the acquirer apply CMMI best practices.

CMMI-ACQ contains 22 process areas. Of those, 16 are CMMI Model Foundation (CMF) process areas that cover process management, project management, and support process areas. More about the CMF is discussed in Chapter 3.

Six process areas focus on practices specific to acquisition addressing agreement management, acquisition requirements development, acquisition technical management, acquisition validation, acquisition verification, and solicitation and supplier agreement development.

All CMMI-ACQ model practices focus on the activities of the acquirer. Those activities include supplier sourcing, developing and awarding supplier agreements, and managing the acquisition of capabilities, including the acquisition of both products and services. Supplier activities are not addressed in this document. Suppliers and acquirers who also develop products and services should consider using the CMMI-DEV model.

Deleted: disciplines. CMMI for Development consists of best practices that address development and maintenance activities applied to products and services. It addresses practices that cover the product's lifecycle from conception through delivery and maintenance. The emphasis is on the work necessary to build and maintain the total product

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About Capability Maturity Models

In its research to help organizations develop and maintain quality products and services, the Software Engineering Institute (SEI) has found several dimensions that an organization can focus on to improve its business. Figure 1.1 illustrates the three critical dimensions that organizations typically focus on: people, procedures and methods, and tools and equipment.

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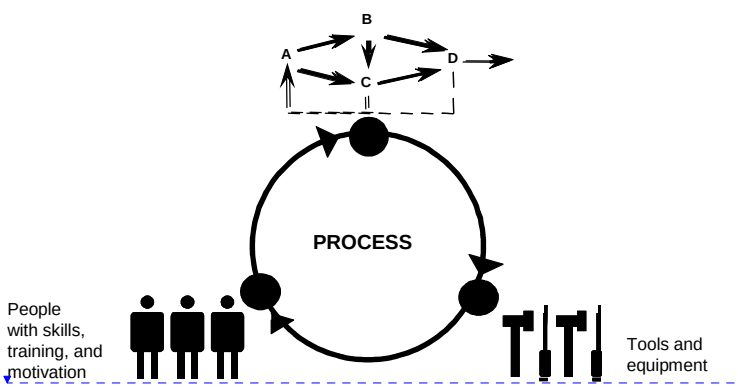

Figure 1.1: The Three Critical Dimensions

But what holds everything together? It is the processes used in your organization. Processes allow you to align the way you do business. They allow you to address scalability and provide a way to incorporate knowledge of how to do things better. Processes allow you to leverage your resources and to examine business trends.

This is not to say that people and technology are not important. We are living in a world where technology is changing by an order of magnitude every ten years. Similarly, people typically work for many companies throughout their careers. We live in a dynamic world. A focus on process provides the infrastructure and stability necessary to deal with an ever-changing world and to maximize the productivity of people and the use of technology to be more competitive.

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Manufacturing has long recognized the importance of process effectiveness and efficiency. Today, many organizations in manufacturing and service industries recognize the importance of quality processes. Process helps an organization's workforce meet business objectives by helping them work smarter, not harder, and with improved consistency. Effective processes also provide a vehicle for introducing and using new technology in a way that best meets the business objectives of the organization.

In the 1930s, Walter Shewhart began work in process improvement with his principles of statistical quality control [Shewhart 1931]. These principles were refined by W. Edwards Deming [Deming 1986], Phillip Crosby [Crosby 1979], and Joseph Juran [Juran 1988]. Watts Humphrey, Ron Radice, and others extended these principles even further and began applying them to software in their work at IBM (International Business Machines) and the SEI [Humphrey 1989]. Humphrey's book, *Managing the Software Process*, provides a description of the basic principles and concepts on which many of the Capability Maturity Models® (CMMs®) are based.

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The SEI has taken the process management premise, "the quality of a system or product is highly influenced by the quality of the process used to develop and maintain it," and defined CMMs that embody this premise. The belief in this premise is seen worldwide in quality movements, as evidenced by the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) body of standards.

CMMs focus on improving processes in an organization. They contain the essential elements of effective processes for one or more disciplines and describe an evolutionary improvement path from ad hoc, immature processes to disciplined, mature processes with improved quality and effectiveness.

The SEI created the first CMM designed for software organizations and published it in a book, *Capability Maturity Model: Guidelines for Improving the Software Process* [SEI 1995].

Today, CMMI is an application of the principles introduced almost a century ago to this never-ending cycle of process improvement. The value of this process improvement approach has been confirmed over time. Organizations have experienced increased productivity and quality, improved cycle time, and more accurate and predictable schedules and budgets [Gibson 2006].

Evolution of CMMI

Figure 1.2 illustrates the models that were integrated into CMMI-DEV and CMMI-ACQ. Developing a set of integrated models involved more than simply combining existing model materials. Using processes that promote consensus, the CMMI Product Team built a framework that accommodates multiple constellations.

[3] EIA 731 SECM is the Electronic Industries Alliance standard 731, or the Systems Engineering Capability Model. INCOSE SECAM is International Council on Systems Engineering Systems Engineering Capability Assessment Model [EIA 2002].

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Deleted: Since 1991, CMMs have been developed for myriad disciplines. Some of the most notable include models for systems engineering, software engineering, software acquisition, workforce management and development, and integrated product and process development (IPPD).¶
Although these models have proven useful to many organizations in different industries, the use of multiple models has been problematic. Many organizations would like their improvement efforts to span different groups in their organizations. However, the differences among the discipline-specific models used by each group, including their architecture, content, and approach, have limited these organizations' capabilities to broaden their improvements successfully. Further, applying multiple models that are not integrated within and across an organization is costly in terms of training, appraisals, and improvement activities.¶
The CMM Integration[SM] project was formed to sort out the problem of using multiple CMMs. The CMMI Product Team's initial mission was to combine three source models:¶
<#>The *Capability Maturity Model for Software* (SW-CMM) v2.0 draft C [SEI 1997b] ¶
<#>The *Systems Engineering Capability Model* (SECM) [EIA 1998][2]¶
<#>The *Integrated Product Development Capability Maturity Model* (IPD-CMM) v0.98 [SEI 1997a]¶
¶
The combination of these models into a single improvement framework was intended for use by organizations in their pursuit of enterprise-wide process improvement.¶
These three source models were selected because of their widespread adoption in the software and systems engineering communities and because of their different approaches to improving processes in an organization.¶
Using information from these popular and well-regarded models as source material, the CMMI Product Team created a cohesive set of integrated models that can be adopted by those currently using the source mod ... [1]

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History of CMMs

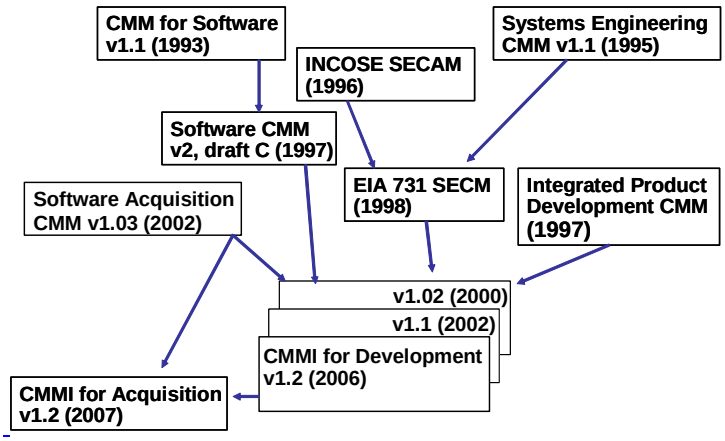

Figure 1.2: The History of CMMs[3]

CMMI Framework Architecture

The CMMI Framework Architecture provides the structure needed to produce CMMI models, training, and appraisal components. To allow the use of multiple models within the CMMI Framework, model components are classified as either common to all CMMI models or applicable to a specific model. The common material is called the *CMMI Model Foundation* or *CMF*.

The components of the CMF are required to be a part of every model generated from the framework. Those components are combined with material applicable to an area of interest to produce a model. Some of this material is shared among areas of interest and others are unique to only one area of interest.

A *constellation* is defined as a collection of components that are used to construct models, training materials, and appraisal materials in an area of interest (e.g., acquisition and development). The Acquisition constellation's model is called *CMMI for Acquisition* or *CMMI-ACQ*.

CMMI for Acquisition

The CMMI Steering Group initially approved an introductory collection of acquisition best practices called the *Acquisition Module* (*CMMI-AM*), which was based on the CMMI Framework. While it sought to capture best practices, it was not intended to become an appraisable model nor a suitable model for process improvement purposes.

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Deleted: Since the release of CMMI v1.1, we have seen that this improvement framework can be applied to other areas of interest [SEI 2002a, SEI 2002b]. To apply to multiple areas of interest, the framework groups best practices into what we call "constellations." A constellation is a collection of CMMI components that are used to build models, training materials, and appraisal documents.¶
Recently, the CMMI model architecture was improved to support multiple constellations and the sharing of best practices among constellations and their member models. Work has begun on two new constellations: one for services (CMMI for Services) and the other for

Deleted: (CMMI for Acquisition). Although CMMI for Development incorporates the

Deleted: of services, including the combination of components, consumables, and people intended to meet service requirements, it differs from the planned CMMI for Services (CMMI-SVC), which focuses on the delivery of services. The CMMI models that have been available in the community prior to 2006 are now considered part of the CMMI for Development constellation

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Deleted: The CMMI for Development constellation consists of two models: CMMI for Development +IPPD and CMMI for Development (without IPPD). Both models share much of their material and are identical in these shared areas. However, CMMI for Development +IPPD contains additional goals and practices that cover IPPD.¶
Currently, only one model is published since the CMMI for Development +IPPD model contains the full complement of practices available in this constellation, and you can derive the other model from this material. If you are not using IPPD, ignore the information that is marked "IPPD Addition," and you will be using the CMMI for Development model. If the need arises or the development constellation is expanded, the architecture will allow other models to be generated and published.¶
CMMI for Development is the ... [2]

General Motors partnered with the SEI to create the initial draft Acquisition model that was the basis for this model. This model represents the work of many organizations and individuals.

Acquirers should use professional judgment and common sense to interpret this model for their organizations. That is, although the process areas described in this model depict behaviors considered best practice for most acquirers, all process areas and practices should be interpreted using an in-depth knowledge of CMMI-ACQ, organizational constraints, and the business environment.

This document is a reference model that covers the acquisition of needed capabilities. Capabilities are acquired in many industries, including aerospace, banking, computer hardware, software, defense, automobile manufacturing, and telecommunications. All these industries can use CMMI-ACQ.

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Deleted: development and maintenance activities applied to both products and services. Organizations from

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Deleted: Models in the CMMI for Development constellation contain practices that cover project management, process management, systems engineering, hardware engineering, software engineering, and other supporting processes used in development and maintenance. The CMMI for Development +IPPD model also covers the use of integrated teams for development and maintenance activities.¶

The Group of IPPD Additions¶

In CMMI, “additions” are used to include material that may be of interest to particular users. For the CMMI for Development constellation, additional material was included to address IPPD.¶

The IPPD group of additions covers an IPPD approach that includes practices that help organizations achieve the timely collaboration of relevant stakeholders throughout the life of the product to satisfy customers’ needs, expectations, and requirements [DoD 1996]. When using processes that support an IPPD approach, you should integrate these processes with other processes in the organization. To support those using IPPD-related processes, the CMMI for Development constellation allows organizations to optionally select the IPPD group of additions.¶

When you select CMMI for Development +IPPD, you are selecting the CMMI for Development model plus all the IPPD additions. When you select CMMI for Development, you are selecting the model without the IPPD additions. In the text in Part One of this document, we may use “CMMI for Development” to refer to either of these models, for the sake of brevity.¶

Resolving Different Approaches of CMMs¶

The definition of a CMM allows the community to develop models supporting different approaches to process improvement. As long as a model contains the essential elements of effective processes for one or more disciplines and describes an evolutionary improvement path from ad hoc, immature processes to disciplined, mature processes with improved quality and effectiveness, it is considered a CMM. CMMI er … [3]

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Since 1991, CMMs have been developed for myriad disciplines. Some of the most notable include models for systems engineering, software engineering, software acquisition, workforce management and development, and integrated product and process development (IPPD).

Although these models have proven useful to many organizations in different industries, the use of multiple models has been problematic. Many organizations would like their improvement efforts to span different groups in their organizations. However, the differences among the discipline-specific models used by each group, including their architecture, content, and approach, have limited these organizations' capabilities to broaden their improvements successfully. Further, applying multiple models that are not integrated within and across an organization is costly in terms of training, appraisals, and improvement activities.

The CMM Integration[SM] project was formed to sort out the problem of using multiple CMMs. The CMMI Product Team's initial mission was to combine three source models:

The *Capability Maturity Model for Software* (SW-CMM) v2.0 draft C [SEI 1997b]

The *Systems Engineering Capability Model* (SECM) [EIA 1998][1]

The *Integrated Product Development Capability Maturity Model* (IPD-CMM) v0.98 [SEI 1997a]

The combination of these models into a single improvement framework was intended for use by organizations in their pursuit of enterprise-wide process improvement.

These three source models were selected because of their widespread adoption in the software and systems engineering communities and because of their different approaches to improving processes in an organization.

Using information from these popular and well-regarded models as source material, the CMMI Product Team created a cohesive set of integrated models that can be adopted by those currently using the source models, as well as by those new to the CMM concept. Hence, CMMI is a result of the evolution of the SW-CMM, the SECM, and the IPD-CMM.

The CMMI for Development constellation consists of two models: CMMI for Development +IPPD and CMMI for Development (without

[1] The Systems Engineering Capability Model is also known as Electronic Industries Alliance 731 (EIA 731).

IPPD). Both models share much of their material and are identical in these shared areas. However, CMMI for Development +IPPD contains additional goals and practices that cover IPPD.

Currently, only one model is published since the CMMI for Development +IPPD model contains the full complement of practices available in this constellation, and you can derive the other model from this material. If you are not using IPPD, ignore the information that is marked “IPPD Addition,” and you will be using the CMMI for Development model. If the need arises or the development constellation is expanded, the architecture will allow other models to be generated and published.

CMMI for Development is the designated successor of the three source models. The SEI has retired the Software CMM and the IPD-CMM. EIA has retired the SECM. All three of these models are succeeded by CMMI for Development.

The best practices in the CMMI models have gone through an extensive review process. CMMI version 0.2 was publicly reviewed and used in pilot activities.

The CMMI Product Team evaluated more than 3,000 change requests to create CMMI version 1.0. Shortly thereafter, version 1.02 was released, which incorporated several minor improvements.

Version 1.1 incorporated improvements guided by feedback from early use, with more than 1,500 change requests submitted as part of the public review, and hundreds of comments as part of the change control process.

CMMI version 1.2 was developed using input from nearly 2,000 change requests submitted by CMMI users. More than 750 of those requests were directed at CMMI model content. As you can see, not only is CMMI widely adopted, but it is improved based on the feedback received from the community.

The Scope of CMMI for Development

CMMI for Development

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Models in the CMMI for Development constellation contain practices that cover project management, process management, systems engineering, hardware engineering, software engineering, and other supporting processes used in development and maintenance. The CMMI for Development +IPPD model also covers the use of integrated teams for development and maintenance activities.

The Group of IPPD Additions

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The IPPD group of additions covers an IPPD approach that includes practices that help organizations achieve the timely collaboration of relevant stakeholders throughout the life of the product to satisfy customers’ needs, expectations, and requirements [DoD 1996]. When using processes that support an IPPD approach, you should integrate these processes with other processes in the organization. To support those using IPPD-related processes, the CMMI for Development constellation allows organizations to optionally select the IPPD group of additions.

When you select CMMI for Development +IPPD, you are selecting the CMMI for Development model plus all the IPPD additions. When you select CMMI for Development, you are selecting the model without the IPPD additions. In the text in Part One of this document, we may use “CMMI for Development” to refer to either of these models, for the sake of brevity.

Resolving Different Approaches of CMMs

The definition of a CMM allows the community to develop models supporting different approaches to process improvement. As long as a model contains the essential elements of effective processes for one or more disciplines and describes an evolutionary improvement path from ad hoc, immature processes to disciplined, mature processes with improved quality and effectiveness, it is considered a CMM. CMMI enables you to approach process improvement and appraisals using two different representations: continuous and staged.

The continuous representation enables an organization to select a process area (or group of process areas) and improve processes related to it. This representation uses capability levels to characterize improvement relative to an individual process area.

The staged representation uses predefined sets of process areas to define an improvement path for an organization. This improvement path is characterized by maturity levels. Each maturity level provides a set of process areas that characterize different organizational behaviors.

Choosing a Representation

If you are new to process improvement and are not familiar with either the staged or the continuous representation, you cannot go

wrong if you choose one representation or the other. There are many valid reasons to select either representation.

If you have been using a CMM and you are familiar with a particular representation, we suggest that you continue to use that representation because it will make the transition to CMMI easier. Once you have become completely comfortable with CMMI, you might then decide to use the other representation.

Because each representation has advantages over the other, some organizations use both representations to address particular needs at various times in their improvement programs. In the following sections, we provide the advantages and disadvantages of each representation to help you decide which representation is best for your organization.

Continuous Representation

The continuous representation offers maximum flexibility when using a CMMI model for process improvement. An organization may choose to improve the performance of a single process-related trouble spot, or it can work on several areas that are closely aligned to the organization's business objectives. The continuous representation also allows an organization to improve different processes at different rates. There are some limitations on an organization's choices because of the dependencies among some process areas.

If you know the processes that need to be improved in your organization and you understand the dependencies among the process areas described in CMMI, the continuous representation is a good choice for your organization.

Staged Representation

The staged representation offers a systematic, structured way to approach model-based process improvement one stage at a time. Achieving each stage ensures that an adequate process infrastructure has been laid as a foundation for the next stage.

Process areas are organized by maturity levels that take some of the guess work out of process improvement. The staged representation prescribes an order for implementing process areas according to maturity levels, which define the improvement path for an organization from the initial level to the optimizing level. Achieving each maturity level ensures that an adequate improvement foundation has been laid for the next maturity level and allows for lasting, incremental improvement.

If you do not know where to start and which processes to choose to improve, the staged representation is a good choice for you. It gives you a specific set of processes to improve at each stage that has

been determined through more than a decade of research and experience with process improvement.

Comparison of the Continuous and Staged Representations

Table 1.1 compares the advantages of each representation and may assist you with determining which representation is right for your organization.

Table 1.1 Comparative Advantages of Continuous and Staged Representations

Continuous Representation	*Staged Representation*
Grants explicit freedom to select the order of improvement that best meets the organization's business objectives and mitigates the organization's areas of risk	Enables organizations to have a predefined and proven improvement path
Enables increased visibility of the capability achieved in each individual process area	Focuses on a set of processes that provide an organization with a specific capability that is characterized by each maturity level
Allows improvements of different processes to be performed at different rates	Summarizes process improvement results in a simple form—a single maturity level number
Reflects a newer approach that does not yet have the data to demonstrate its ties to return on investment	Builds on a relatively long history of use that includes case studies and data that demonstrate return on investment

Factors in Your Decision

Three categories of factors that may influence your decision when selecting a representation are business, culture, and legacy.

Business Factors

An organization with mature knowledge of its own business objectives is likely to have a strong mapping of its processes to its business objectives. Such an organization may find the continuous representation useful to appraise its processes and in determining how well the organization's processes support and meet its business objectives.

If an organization with a product-line focus decides to improve processes across the entire organization, it might be served best by the staged representation. The staged representation will help an

organization select the critical processes to focus on for improvement.

The same organization may opt to improve processes by product line. In that case, it might select the continuous representation—and a different appraised rating of capability might be achieved for each product line. Both approaches are valid. The most important consideration is which business objectives you would like your process improvement program to support and how these business objectives align with the two representations.

Cultural Factors

Cultural factors to consider when selecting a representation have to do with an organization's capability to deploy a process improvement program. For instance, an organization might select the continuous representation if the corporate culture is process based and experienced in process improvement or has a specific process that needs to be improved quickly. An organization that has little experience in process improvement may choose the staged representation, which provides additional guidance on the order in which changes should occur.

Legacy

If an organization has experience with another model that has a staged representation, it may be wise to continue with the staged representation when using CMMI, especially if it has invested resources and deployed processes across the organization that are associated with a staged representation. The same is true for the continuous representation.

Why Not Both Representations?

Whether used for process improvement or appraisals, both representations are designed to offer essentially equivalent results. Nearly all of the CMMI model content is common to both representations. Therefore, an organization need not select one representation over another.

In fact, an organization may find utility in both representations. It is rare that an organization will implement either representation exactly as prescribed. Organizations that are successful in process improvement often define an improvement plan that focuses on the unique needs of that organization and therefore use the principles of both the staged and the continuous representations.

For example, organizations that select the staged representation and are at maturity level 1 often implement the maturity level 2 process areas but also the Organizational Process Focus process area, which is included at maturity level 3. Another example is an organization that chooses the continuous representation for guiding

its internal process improvement effort and then chooses the staged representation to conduct an appraisal.

Your Approach to Process Improvement

To demonstrate how to use this model, let us look at two different scenarios. Scenario 1 is an electronic systems developer that wants to improve its product development processes using a continuous approach. Scenario 2 is a software development company that uses IPPD, has been using the Software CMM, and now wants to use CMMI. This company most recently has been rated at maturity level 3 using the Software CMM (version 1.1).

Scenario 1

In this scenario, you are using a continuous approach and, therefore, you select the processes that are important to your business objectives. Since there are 22 process areas to choose from, this is usually too many to focus on when starting out. You may need to narrow your focus. For example, you may find that your competitor always releases its product before yours. You may choose to focus on improving your engineering and project management processes.

Building on this decision, you select all the Engineering process areas as a starting point: Product Integration, Requirements Development, Requirements Management, Technical Solution, Validation, and Verification. You also select Project Planning and Project Monitoring and Control.

You may at this point decide that eight process areas are still too many to focus on initially, and you decide that the requirements process is really where the problems are. Consequently, you select the Requirements Development and Requirements Management process areas to begin your improvement efforts.

Next you decide how much improvement is needed in the requirements area. Do you have any processes in place already? If you do not, your process improvement objective may be to get to capability level 1.

Do you have your requirements development and management processes in place for each project, but they are not managed processes? For example, policies, training, and tools are not implemented to support the processes. If your requirements processes are in place but there is no supporting infrastructure, your process improvement objective may be to get to capability level 2.

Do you have all your requirements development and management processes and their management in place, but each project performs these processes differently? For example, your

requirements elicitation process is not performed consistently across the organization. If this is the case, your process improvement objective may be to get to capability level 3.

Do you consistently manage and perform your requirements development and management processes but do not have an objective way to control and improve these processes? If this is the case, your process improvement objective may be to get to capability level 4.

Do you want to ensure that you are selecting the right subprocesses to improve based on quantitative objectives to maximize your business? If so, your process improvement objective may be to get to capability level 5 for selected processes. In the description of each process area, remember to look for amplifications introduced by the phrases “For Hardware Engineering,” “For Systems Engineering,” and “For Software Engineering.” Use all information that has no specific markings and the material in the boxes labeled “Continuous Only.”

As you can see from this scenario, you need to understand which processes need improvement and how much you want to mature each process. This way of proceeding reflects the fundamental principle behind the continuous representation.

Scenario 2

In the second scenario, you are a software development company using IPPD, using the Software CMM, and you want to use CMMI. You select the process areas at maturity levels 2 and 3 and choose the CMMI for Development +IPPD model.

This selection includes the following seven process areas at maturity level 2: Requirements Management, Project Planning, Project Monitoring and Control, Supplier Agreement Management, Measurement and Analysis, Process and Product Quality Assurance, and Configuration Management. It also includes the following 11 process areas at maturity level 3: Requirements Development, Technical Solution, Product Integration, Verification, Validation, Organizational Process Focus, Organizational Process Definition +IPPD, Organizational Training, Integrated Project Management +IPPD, Risk Management, and Decision Analysis and Resolution. You will also include the IPPD additions.

Since you have already been rated at maturity level 3 for the Software CMM, look at the CMMI process areas that were not in the Software CMM. These process areas include Measurement and Analysis, Requirements Development, Technical Solution, Product Integration, Verification, Validation, Risk Management, and Decision Analysis and Resolution. Determine if you have these processes in your organization even though they were not described in the Software CMM. If any processes in place correspond to these process areas and the other process areas that were in the

Software CMM, perform a gap analysis against the goals and practices to make sure you addressed the intent of each CMMI process area.

Remember, in each process area you select, to look for information labeled “For Software Engineering” and “IPPD Addition.” Use all information that has no specific markings, as well as the material in boxes labeled “Staged Only.”

As you can see, the information provided in this document can be used in a variety of ways, depending on your improvement needs. The overall goal of CMMI is to provide a framework that can share consistent process improvement best practices and approaches, but can be flexible enough to address the rapidly changing needs of the community.