

*People
Capability Maturity Model*

Part One — The People Capability Maturity Model: Background, Concepts, Structure, and Usage

This overview presents an introduction to the People Capability Maturity Model (People CMM) and the background for developing such a model. It describes the concepts of a maturity framework and how this framework can be applied to developing the workforce capability of an organization. The structure of the P-CMM is described. In addition, advice for interpreting and using the P-CMM and its practices is provided to help an organization apply the P-CMM in its setting.

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1 The Process Maturity Framework

“When human capital owners [employees] have the upper hand in the market, they do not behave at all like assets. They behave like owners of a valuable commodity...They are investors in a business, paying in human capital and expecting a return on their investment.”

[Davenport 99]

“As other sources of competitive success have become less important, what remains as a crucial differentiating factor is the organization, its employees, and how it works.”

[Pfeffer 94]

“Successful firms will be those most adept at attracting, developing, and retaining individuals with the skills, perspectives, and experience necessary to drive a global business.”

[Ulrich 97a]

“Personnel attributes and human resource activities provide by far the largest source of opportunity for improving software development productivity.”

[Boehm 81]

“After product size, people factors have the strongest influence in determining the amount of effort required to develop a software product.”

[Boehm 00]

1.1 What Is the People CMM?

The People Capability Maturity Model[®] (People CMM[®]) is a roadmap for implementing workforce practices that continuously improve the capability of an organization’s workforce. Since an organization cannot implement all of the best workforce practices in an afternoon, the People CMM introduces them in stages. Each progressive level of the People CMM produces a

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unique transformation in the organization's culture by equipping it with more powerful practices for attracting, developing, organizing, motivating, and retaining its workforce. Thus, the People CMM establishes an integrated system of workforce practices that matures through increasing alignment with the organization's business objectives, performance, and changing needs.

The People CMM was first published in 1995 [Curtis 95], and has successfully guided workforce improvement programs in companies such as Boeing, Ericsson, Lockheed Martin, Novo Nordisk IT A/S, and Tata Consultancy Services [Vu 01, Martín-Vivaldi 99, Miller 00, Curtis 00, Keeni 00]. Although the People CMM has been designed primarily for application in knowledge-intensive organizations, with appropriate tailoring it can be applied in almost any organizational setting.

The People CMM's primary objective is to improve the capability of the workforce. Workforce capability can be defined as the level of knowledge, skills, and process abilities available for performing an organization's business activities. Workforce capability indicates an organization's:

- ❑ readiness for performing its critical business activities,
- ❑ likely results from performing these business activities, and
- ❑ potential for benefiting from investments in process improvement or advanced technology.

In order to measure and improve capability, the workforce in most organizations must be divided into its constituent workforce competencies. Each workforce competency represents a unique integration of knowledge, skills, and process abilities acquired through specialized education or work experience. Strategically, an organization wants to design its workforce to include the various workforce competencies required to perform the business activities underlying its core competency [Pralhad 90]. Each of these workforce competencies can be characterized by its capability—the profile of knowledge, skills, and process abilities available to the organization in that domain.

The People CMM describes an evolutionary improvement path from ad hoc, inconsistently performed workforce practices, to a mature infrastructure of practices for continuously elevating workforce capability. The philosophy implicit the People CMM can be summarized in ten principles.

1. In mature organizations, workforce capability is directly related to business performance.
2. Workforce capability is a competitive issue and a source of strategic advantage.
3. Workforce capability must be defined in relation to the organization's strategic business objectives.
4. Knowledge-intensive work shifts the focus from job elements to workforce competencies.

5. Capability can be measured and improved at multiple levels, including individuals, workgroups, workforce competencies, and the organization.
6. An organization should invest in improving the capability of those workforce competencies that are critical to its core competency as a business.
7. Operational management is responsible for the capability of the workforce.
8. The improvement of workforce capability can be pursued as a process composed from proven practices and procedures.
9. The organization is responsible for providing improvement opportunities, while individuals are responsible for taking advantage of them.
10. Since technologies and organizational forms evolve rapidly, organizations must continually evolve their workforce practices and develop new workforce competencies.

Since the People CMM is an evolutionary framework, it guides organizations in selecting high-priority improvement actions based on the current maturity of their workforce practices. The benefit of the People CMM is in narrowing the scope of improvement activities to those vital few practices that provide the next foundational layer for developing an organization's workforce. By concentrating on a focused set of practices and working aggressively to install them, organizations can steadily improve their workforce and make lasting gains in their performance and competitiveness.

The People CMM has proven popular because it allows organizations to characterize the maturity of their workforce practices against a benchmark being used by other organizations. Many workforce benchmarks focus on employee attitudes and satisfaction rather than workforce practices. Although attitudes and satisfaction are important predictors of outcomes such as turnover, they do not always provide the guidance necessary for identifying which practices should be improved next. In contrast, the staged framework of the People CMM helps organizations prioritize for their improvement actions. In addition, since the People CMM treats workforce development as an organizational process, improved workforce practices are easier to integrate with other process improvement activities.

1.2 Why Do We Need a People CMM?

Forty years ago people feared that technology would reduce the need for educated workers, leaving large segments of the population unemployed. The opposite occurred. In fact, the demand for educated workers exceeds the supply. In the knowledge economy, companies are competing in two markets, one for its products and services and one for the talent required to develop and deliver them. With current low unemployment, the talent market is all the more competitive.

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Recruiting and retention are now as important as production and distribution in the corporate business strategies of knowledge-intense companies. Although most companies understand the importance of attracting and retaining talent, many lack a coherent approach to achieving their talent goals. Further, most lack a vision of how to integrate a system of practices to achieve their workforce objectives.

The practices required to attract, develop, and retain outstanding talent have been understood for decades. In his acclaimed book, *The Human Equation*, Jeffrey Pfeffer of the Stanford Graduate School of Business identified seven principles of workforce management that distinguished companies exhibiting the largest percentage stock market returns over the past quarter century [Pfeffer 98]. These principles included:

1. employment security,
2. selective hiring of new personnel,
3. self-managed teams and decentralization of decision making,
4. comparatively high compensation contingent on organizational performance,
5. extensive training,
6. reduced status distinctions and barriers, and
7. extensive sharing of financial and performance information.

These principles characterize organizations that no longer expect employees to merely execute orders, but rather to act as independent centers of intelligent action coordinated toward a common purpose. Deep technical and business knowledge is required to make rapid decisions that are not only correct, but are also consistent with decisions made by colleagues. Recruiting for outstanding technical talent is critical, but it is not enough since business knowledge can only be developed within an organization. Thus, the development and coordination of a modern workforce requires an integrated set of practices that address attracting, developing, organizing, motivating, and retaining outstanding individuals.

The benefit of better workforce practices has been demonstrated empirically in numerous studies [Becker 98, Huselid 95, Mavrinac 95, Labor 93, Kling 95, Appleby 00, Delaney 96]. Those organizations employing an integrated human resources strategy represent a significantly higher proportion of world-class companies [Ableby 00]. In some cases, even mere reputation signals regarding an organization's human resources practices have been positively associated with increases in share prices [Hannon 96].

Welbourne and Andrews examined 136 non-financial organizations that first offered their stock (i.e., made their initial public offerings) on the U.S. stock market in 1988 [Welbourne 96]. They looked at the value that these firms placed on their employees, and determined that human resource value is indeed positively and significantly related to firm survival. The average survival probability for all organizations in the study was 0.70. Those organizations that placed a

high level of value on their employees had a 0.79 probability of survival compared to a survival probability of only 0.60 of those firms who placed less value on their employees. When considering employee compensation and rewards, an organization that had high levels of employee value and employee compensation and rewards increased its survival probability to 0.92, while firms that scored low on both measures lowered their chance of organizational survival to 0.34. Thus, workforce practices were shown to have a significant effect on the survival of these firms.

Analysis of several different samples throughout the 1990s show strong support for a very positive relationship between high performance workforce practices and organization's financial performance [Becker 98]. This research shows that a one standard deviation improvement of a firm's workforce practices resulted in approximately a 20 percent increase in shareholder value and a significant reduction in voluntary departure rates. A study of workforce practices in almost 1000 firms across all major industries showed that "a one standard deviation increase in use of such practices is associated with ... a 7.05 percent decrease in turnover [i.e., employee departure rate] and, on a per employee basis, \$27,044 more in sales and \$18,641 and \$3,814 more in market value and profitability, respectively" [Huselid 95, US dollars]. Companies with the best workforce practices have been shown to outperform other firms in growth of profits, sales, earnings, and dividends [Hansen 89, Kravetz 88].

These practices are usually considered integral to a total quality management (TQM) program, and are included as criteria in quality models such as the Malcolm Baldrige National Quality Award (MBNQA) [Baldrige 01] or the European Foundation for Quality Management (EFQM[®]) Excellence Model [EFQM 99]. Research into the MBNQA has indicated that the inclusion of human resource management is critical in the cause-and-effect chain starting with strategic planning [Wilson 00]. This research has shown that the strategic planning factor in the MBNQA influences human resource management, which in turn influences process management, which directly influences both financial results and customer satisfaction. Thus, human resource management is an indirect link to these key external performance measures.

Over the last several decades, business books and the trade press have flooded managers with workforce practices each demonstrated to produce benefits in at least some applications. These practices include competency-modeling, 360° performance reviews, Web-enabled learning, knowledge management, team-building, cool space, participatory decision making, incentive-based pay, mentoring, meeting management, and empowered work. Many of these practices have been actively applied for over a decade. Nevertheless, many organizations have moved slowly on improving their workforce practices.

If these practices have been well known for a decade or more, why have so many organizations failed to implement them? The fundamental impediments have been a lack of management commitment, and a piecemeal, unintegrated approach to adoption. Consequently, the People CMM was designed to integrate workforce practices into a system and involve management

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early in their deployment. The People CMM presents the development of a capable workforce as a process with well-understood practices that can be implemented in stages as the organization matures.

1.3 What Is the Process Maturity Framework?

The original concept for a process maturity framework was developed by Watts Humphrey and his colleagues at IBM® in the early 1980s. In his 27 years at IBM, Humphrey noticed that the quality of a software product was directly related to the quality of the process used to develop it. Having observed the success of total quality management in other parts of industry, Humphrey wanted to install a Shewart-Deming improvement cycle (Plan-Do-Check-Act) into a software organization as a way to continually improve its development processes.

However, organizations had been installing advanced software technologies for a decade using methods akin to the Shewart-Deming cycle without much success. Humphrey realized that the Shewart-Deming cycle must be installed in stages to systematically remove impediments to continuous improvement. Humphrey's unique insight was that organizations had to eliminate implementation problems in a specific order if they were to create an environment that supported continuous improvement guided by Deming's principles.

The staged structure that underlies the maturity framework was first elaborated by Crosby in *Quality is Free* [Crosby 79]. Crosby's quality management maturity grid describes five evolutionary stages in adopting quality practices in an organization. This framework was adapted to the software process by Ron Radice and his colleagues working under the direction of Humphrey at IBM [Radice 85]. Crosby's original formulation was that the adoption of any new practice by an organization would occur in five stages: the organization would become aware of the new practice, learn more about it, try it in a pilot implementation, deploy it across the organization, and achieve mastery in its use.

The original formulation of the maturity framework in IBM [Radice 85] adopted Crosby's approach of evolving each process through these five stages. However, Humphrey realized organizations were not succeeding in long-term adoption of improved software development practices when they applied this maturity framework to individual practices or technologies. Humphrey identified serious impediments to long-term adoption that had to be eliminated if improved practices were to thrive in an organization. Since many of these problems were deeply ingrained in an organization's culture, Humphrey realized that he had to formulate an approach that addressed the organization, not just its individual processes.

Humphrey wanted software organizations to continually improve their software development processes and he wanted these improvements to be based on statistical information about how

each critical process was performing. However, he had observed that improved software development practices did not survive unless an organization's behavior changed to support them. Consequently, he designed the process maturity framework to enable an organization to achieve a state of continuous process improvement in five stages. Because of this staging, the process maturity framework is more than a process standard comprising a list of best practices. Rather, it integrates improved practices into a staged model that guides an organization through a series of cultural transformations, each of which supports the deployment of more sophisticated and mature development processes.

At the first level of maturity, the Initial Level, an organization has no consistent way of performing its work. Since most work processes are ad hoc, they are constantly reinvented on each project, and frequently appear chaotic. Without well-understood ways of conducting their work, managers have no reliable basis for estimating the effort required to complete a project. In a rush to overly aggressive deadlines, the project staff begin cutting corners on sound engineering practices and making mistakes that are not detected until it is much more time consuming and costly to remove them. As a result, projects lose control of their schedule, costs, and product quality. Since work is chronically over-committed in low maturity organizations, their results depend largely on the skills of exceptional individuals and on excessive overtime. Executives in these organizations often hail their people as their most important asset, belying the fact that immature organizations have few assets or processes that add value to the efforts of their people.

A fundamental premise underlying the process maturity framework is that a practice cannot be improved if it cannot be repeated. In an organization's least mature state, proven practices are repeated only sporadically. The most common impediment to repeatability is a committed delivery date that the software staff can not meet regardless of how sophisticated their skills or technology. Other particularly wicked impediments are uncontrolled requirements changes that devastate the original planning. The first step in helping an organization improve its maturity is focused on helping organizations remove the impediments that keep them from repeating successful software development practices.

At the second level of maturity, organizations must establish a foundation on which they can deploy common processes across the organization. Before being able to successfully implement many advanced practices, management must first establish a stable environment in which to perform professional work. They must ensure that people are not constantly rushing about pell-mell, cutting corners, making mistakes from hasty work, and fighting the fires that characterize over-committed organizations. Until basic management control is established over daily work, no organization-wide practices have any chance of being deployed successfully since no one has the time to master them. The primary objective of a level 2 environment is to enable people to repeat practices they have used successfully in the past. To enable this repeatability, managers must get control of commitments and baselines. The effort to establish a repeatable capability is the effort to establish basic management practices locally within each unit or project. Only when

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this management discipline is established will the organization have a foundation on which it can deploy common processes.

At the third level of maturity, the organization identifies its best practices and integrates them into a common process. Once people are able to perform their work at the Repeatable Level using practices they have found to work, the organization has the ability to identify which practices work best in its unique environment. These practices are documented and integrated into a common process that is then trained to the entire organization. Measures of the critical practices in this process are defined and collected into repository for analysis. When the organization defines a standard process for performing its business activities, it has laid the foundation for a professional culture. Most organizations report the emergence of a common culture as they achieve Level 3. This culture is based on common professional practices and common beliefs about the effectiveness of these practices.

At the fourth level of maturity, the organization begins managing its processes through the data that describes its performance. The performance of the organization's critical processes is characterized statistically so that the historical performance of the process can be used to predict and manage its future performance. The premise underlying this quantitative management is that if a well-understood process is repeated you should get essentially the same result. If the result obtained deviates significantly from the organization's experience, the cause needs to be determined and corrective action taken if necessary. Since business processes are now managed by numbers rather than just by milestones, the organization can take corrective action much earlier. When the organization's processes are managed quantitatively, its performance becomes much more predictable. When the organization can characterize the performance of its processes quantitatively, it has profound knowledge that can be used to improve them.

At the fifth and highest level of maturity, the organization uses its profound, quantitative knowledge to make continuous improvements in its processes. Based on its data, the organization can identify which processes can most benefit from improvement actions. These improvements can involve actions ranging from adjustments to processes to the deployment of new technologies. In addition, the organization uses its data to identify its most persistent defects. The root causes of these defects are analyzed and actions are taken to eliminate their occurrence in the future. Change management becomes a standard organizational process and process improvement becomes perpetual throughout the organization. Since the organization has competent people performing trusted processes, it empowers people throughout the organization to attempt continuous improvements to their work processes and to propose organizational changes for those improvements that would appear to have the broadest benefits.

In the abstract, the maturity framework builds an environment in which:

- practices can be repeated,
- best practices can be rapidly transferred across groups,

- ❑ variations in performing best practices are reduced, and
- ❑ practices are continuously improved to enhance their capability.

The process maturity framework assumes that each practice has a risk to its successful adoption that is directly related to the maturity of the organization's existing base of practices. One important premise of the model is that sophisticated practices should not be attempted until the foundation of practices required to support them has been implemented. Thus, the practices at each level of maturity prepare the organization for adopting practices at the next level. This staging of process maturity levels is unique in the organizational change literature and provides much of the framework's power for improving organizations.

1.4 How Did the Process Maturity Framework Spread?

The U.S. Department of Defense (DoD) is the world's largest software customer, spending over \$30 billion per year on software during the 1980s. At that time, software projects constantly seemed to be in crisis mode and were frequently responsible for large delays and overruns in defense systems. To address this software crisis on a national scale, the DoD funded the development of the Software Engineering Institute (SEI), a federally-funded research and development center (FFRDC), at Carnegie Mellon University in Pittsburgh, PA. Humphrey brought his process maturity concepts to the SEI in 1986, where he founded its Software Process Program. Shortly after arriving, he received a request from the U.S. Air Force to develop a method for assessing the capability of its software contractors. With assistance from Mitre, the SEI elaborated the process maturity framework [Humphrey 88] and developed a questionnaire [Humphrey 87] to aid in appraising the maturity of a software organization's development practices. The first complete formulation of the process maturity framework underlying the CMM was presented in *Managing the Software Process* [Humphrey 89].

Through software process assessments, workshops, and extensive review, the SEI evolved Humphrey's process maturity framework into the *Capability Maturity Model[®] for Software* (SW-CMM[®]) [Paulk 95]. Version 1 of the *Capability Maturity Model for Software* was released after extensive national review in August 1991, and Version 1.1 [Paulk 93a, 93b] was released in January 1993. A more recent version that integrates CMM-based approaches for improving both software and systems engineering processes, CMM Integration (CMMISM) [CMMI 00] was released in late 2000.

In the early 1990s, the DoD began using the maturity framework for evaluating the capability of software contractors. By 1994, the U.S. Air Force had determined that mature organizations met their contractual commitments more reliably [Flowe 94]. Although aerospace contractors were adopting the CMM out of competitive necessity, commercial industry also began adopting the CMM in the early 1990s. Numerous case studies have been reported by companies such as Boeing, Ericsson, Lockheed Martin, Motorola, Tata Consultancy Services, Telcordia

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Technologies, and Texas Instruments, demonstrating that improvements guided by the CMM improved productivity and quality results [Vu 01, Mobrin 97, Major 98, Pitterman 00, Keeni 00, Herbsleb 94]. Research studies have also consistently shown similar results regarding improved productivity, increased quality, and reductions in cycle time [Herbsleb 94, Flowe 94, Krishnan 00, Harter 00].

This history of productivity and quality improvement in software has been riddled with silver bullets. Complex, advanced technologies were usually implemented in a big bang that often proved too large for the organization to absorb. The SW-CMM achieved widespread adoption because it broke the cycle of silver bullets and big bangs. At each stage of its evolutionary improvement path, the SW-CMM implemented an integrated collection of management and development practices that the organization was prepared to adopt. Each level of maturity established a new foundation of practices on which more sophisticated practices could be implemented in later stages. More importantly, each level shifted the organization's culture one step further away from its initial frenzied state toward an environment of professionalism and continuous improvement.

Today, the SW-CMM is widely used for guiding software process improvement programs both in the U.S. and abroad. Although originally adopted by aerospace firms, the SW-CMM is now used in commercial software and information systems organizations. After reviewing improvement results from 14 companies, the SEI found that software process improvement programs guided by the CMM achieved an average return on investment of \$5.70 saved for every \$1 invested on SW-CMM-based improvement [Herbsleb 94].

The success of the SW-CMM generated an interest in applying maturity principles to other activities within an organization. The SEI has coordinated the development of a CMMI framework for guiding the joint improvement of both software and systems engineering processes [CMMI 00]. The process maturity framework has also been applied successfully for maturing the practices used by those who acquire software systems. As use of the SW-CMM began to spread in the early 1990s, software organizations began requesting similar guidance for improving their workforce practices.

1.5 Why Did the People CMM Emerge in the Software Industry?

The process maturity framework was designed for application to practices that contribute directly to the business performance of an organization, that is, to the organization's capability for providing high-quality products and services. Since the capability of an organization's workforce is critical to its performance, the practices for managing and developing them are excellent candidates for improvement using the maturity framework. Thus, the People CMM has been designed to increase the capability of the workforce, just as the SW-CMM increased the capability of the organization's software development processes.

Knowledge is the raw material of software development. Although software tools can help record and manage knowledge, they do not create and apply it. Perhaps no industry in history has been as knowledge intense as software development, an industry whose only product is proceduralized knowledge. Not surprisingly, the level of talent on a software project is often the strongest predictor of its results [Boehm 81], and personnel shortfalls are one of the most severe project risks [Boehm 87]. Performance ranges among professional software engineers routinely exceed 20 to 1 [Curtis 81, Sackman 68, Valett 89]. Although the presence of an extraordinary individual on a project can have dramatic impact, there are not enough “wizards” to staff more than a handful of the projects in most organizations [Curtis 88].

Much of a professional software developer’s time is spent learning through such activities as reading manuals, discussing design issues with colleagues, building prototypes to test ideas, and attending organized learning experiences such as seminars and conferences. The pace of technical change and the depth of knowledge required to implement complex systems require extensive investment in personal learning. Increasing the capability of software developers is necessary to:

- meet growing demand for software while faced with a talent shortage,
- master the accelerating pace of change in technology, programming languages, and business applications, and
- increase the reliability of software systems, especially in life-critical and business-critical applications.

A serious shortage of software professionals, which grew dramatically during the 1990s, seriously exacerbates these problems. Initially, the availability of offshore software talent to support outsourcing of software development or to apply themselves as visiting workers quelled the perceived talent crisis. However, by the late 1990s, turnover rates among software companies in countries such as India had risen to as much as 30% annually as these companies began competing for increasingly scarce talent within their borders [Ember 01]. The shortage became even more pronounced when considering the needs for available talent with skills in the latest technologies. The shortage of software talent has created a constellation of problems, including:

- high turnover,
- loss of critical system knowledge,
- escalating salaries and benefits,
- staffing shortfalls,
- increased workloads, overtime, and stress,
- increasing product and service costs, and
- unfinished work.

Until the talent shortage of the 1990s, the software industry largely ignored workforce issues. Rather, continual cost and schedule overruns on projects and critical system failures dominated

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the attention of software executives. Attempts to fix the “software crisis” with better technology yielded disappointing results through the 1970s and 1980s. By the mid-1980s, the software industry realized that its primary problem was a lack of discipline, both in project management and in software development practices. Since the beginning of the 1990s, the SW-CMM has guided many software organizations in improving their management and development processes. Even during the early stages of adopting the SW-CMM, the software community realized the process maturity framework constituted a unique approach to organizational development that could be applied in areas other than software development.

From the very beginning, many organizations found, while assessing their software development practices, that they also suffered serious shortcomings in workforce management. These workforce-related problems included inadequate training, inaccurate performance feedback, crowding, lack of career opportunities, and noncompetitive compensation. Many software organizations discovered that improvements to their development practices required significant changes in the way they managed people, changes that were not fully accounted for in the SW-CMM. Most improvement programs were focused on process or technology, not people. In response to requests from many software organizations, the SEI initiated a project to produce a model for improving workforce practices guided by the principles underlying the CMM.

2 Overview of the People CMM

2.1 Organizational Maturity

The People CMM is an organizational change model. It is designed on the premise that improved workforce practices will not survive unless an organization's behavior changes to support them. The People CMM provides a roadmap for transforming an organization by steadily improving its workforce practices. As do all Capability Maturity Models, the People CMM consists of five maturity levels, or evolutionary stages, through which an organization's workforce practices and processes evolve. At each maturity level, a new system of practices is overlaid on those implemented at earlier levels. Each overlay of practices raises the level of sophistication through which the organization develops its workforce. Within this environment individuals experience greater opportunity to develop their career potential and are more motivated to align their performance with the objectives of the organization.

From the perspective of the People CMM, an organization's maturity is derived from the workforce practices routinely performed inside it, and the extent to which these practices have been integrated into an institutionalized process for improving workforce capability. In a mature organization, responsible individuals perform repeatable workforce practices as ordinary and expected requirements of their positions. The more mature an organization, the greater its capability for attracting, developing, and retaining the talent it needs to execute its business.

The People CMM is a process-based model which assumes that workforce practices are standard organizational processes that can be continuously improved through the same methods that have been used to improve other business processes. The People CMM is constructed from workforce practices and process improvement techniques that have proven effective through application in many organizations. The only unique characteristic of the People CMM is its staged framework for introducing and steadily improving successful workforce practices.

Any Capability Maturity Model[®] derived from Humphrey's original maturity framework integrates principles from three domains: the targeted domain of processes, total quality management practices, and organizational change. First, the CMM was designed to help an

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organization adopt best practices in a targeted domain. The CMM for Software targeted software engineering processes, while the People CMM targets workforce management processes. Second, processes in the targeted domain are continuously improved to become more effective and predictable using Total Quality Management concepts pioneered by Deming, Juran, Crosby, and others. Third, the CMM constitutes a unique approach to organizational development that introduces these practices in stages (maturity levels) to create a succession of changes in the organization's culture.

Changing an organization's culture through staged improvements to its operating processes is a unique approach to organizational development. These cultural changes provide much of the CMM's power for implementing lasting improvements and distinguish it from other quality and process improvement standards. Although many process standards can transform an organization's culture, few include a roadmap for implementation. Consequently, organizations often fail to implement the standard effectively because they attempt to implement too much too soon and do not lay the right initial foundation of practices.

The culture of an organization is reflected in the shared values and resulting patterns of behavior that characterize interactions among its members. Successful improvement programs guided by the People CMM change the fundamental attributes of its culture—its practices and behaviors. As an organization adopts the practices that satisfy the goals of the People CMM's process areas, it establishes the shared patterns of behavior that underlie a culture of professionalism dedicated to continuous improvement. Not surprisingly, most organizations report dramatic cultural changes as they progress through the People CMM's maturity levels.

2.2 Maturity Levels in the People CMM

A capability maturity model (CMM[®]) is constructed from the essential practices of one or more domains of organizational process. The People CMM concerns the domain of workforce management and development. A CMM describes an evolutionary improvement path from an ad hoc, immature process to a disciplined, mature process with improved quality and effectiveness.

Capability Maturity Model (CMM)	A Capability Maturity Model (CMM) is an evolutionary roadmap for implementing the vital practices from one or more domains of organizational process.
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All CMMs are constructed with five levels of maturity. A maturity level is an evolutionary plateau at which one or more domains of the organization's processes have been transformed to achieve a new level of organizational capability. Thus, an organization achieves a new level of maturity when a system of practices has been established or transformed to provide capabilities and results the organization did not have at the previous level. The method of transformation is different at each level, and requires capabilities established at earlier levels. Consequently, each maturity level provides a foundation of practices on which practices at subsequent maturity levels can be built. In order to be a true CMM, the maturity framework underlying a model must use the principles established in Humphrey's maturity framework for transforming the organization at each level.

Maturity Level	A maturity level represents a new level of organizational capability created by the transformation of one or more domains of an organization's processes.
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The People CMM applies the principles underlying Humphrey's maturity framework to the domain of workforce practices. Each of the People CMM's five maturity levels represents a different level of organizational capability for managing and developing the workforce. Each maturity level provides a layer in the foundation for continuous improvement and equips the organization with increasingly powerful tools for developing the capability of its workforce. The nature of the transformation imposed on the organization's workforce practices to achieve each level of maturity is depicted in Figure 2.1.

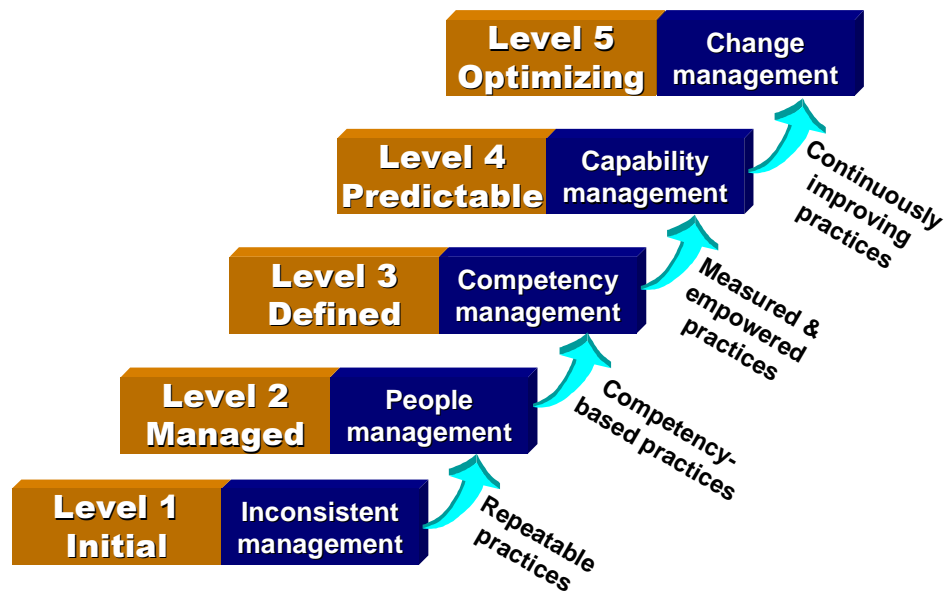


Figure 2.1 — The five maturity levels of the People CMM

2.3 Behavioral Characteristics of Maturity Levels

The People CMM stages the implementation of increasingly sophisticated workforce practices across these maturity levels. With the exception of the Initial Level, each maturity level is characterized by a set of interrelated practices in critical areas of workforce management. When institutionalized and performed with appropriate regularity, these workforce practices create new capabilities within the organization for managing and developing its workforce.

2.3.1 The Initial Level—Maturity Level 1

Organizations at the Initial Level of maturity usually have difficulty retaining talented individuals. Even though many low maturity organizations complain about a talent shortage, the inconsistency of their actions belies whether they actually believe it [Rothman 01]. Low maturity organizations are poorly equipped to respond to talent shortages with anything other than slogans and exhortations. Despite the importance of talent, workforce practices in low maturity organizations are often ad hoc and inconsistent. In some areas, the organization has not defined workforce practices, and, in other areas, it has not trained responsible individuals to perform the practices that exist. Organizations at the Initial Level typically exhibit four characteristics:

1. Inconsistency in performing practices,
2. Displacement of responsibility,
3. Ritualistic practices, and
4. An emotionally detached workforce.

Generally managers and supervisors in low maturity organizations are ill prepared to perform their workforce responsibilities. Their management training is sparse and, when provided, tends to cover only those workforce practices with the greatest legal sensitivity. The organization may typically provide forms for guiding workforce activities such as performance appraisals or position requisitions. However, too often little guidance or training is offered for conducting the activities supported by these forms. Consequently, managers are left to their own devices in most areas of workforce management.

Low maturity organizations implicitly assume that management skill is either innate or is acquired by observing other managers. However, if managers are inconsistent in managing their people, nascent managers will be learning from inconsistent role models. Management capability should ultimately be defined as a competency just as other critical skill sets are required by the organization. However, in launching People CMM-based improvements, managers must be held accountable for performing basic workforce practices even though their personal methods for performing them may differ.

Since low maturity organizations rarely clarify the responsibilities of managers, inconsistencies are to be expected. Consequently, how people are treated depends largely on personal orientation, previous experience, and the individual “people skills” of their manager, supervisor, or team leader. While some managers perform their workforce responsibilities diligently, others perform some workforce activities with little forethought and ignore other responsibilities altogether. Studies have consistently shown that one of the major causes for voluntary turnover is related to individual’s relationships with their manager or supervisor.

Managers in low maturity organizations rarely share a common vision about the fundamental responsibilities of management. They perceive management to be about producing results, not about producing people who produce results. Although managers in low maturity organizations accept responsibility for the performance of their unit, many do so without understanding how to manage the collective performance of those in the unit. In particular, they often lack skill and place little emphasis in evaluating and improving the capability and performance of those who report to them.

Many managers in low maturity organizations consider workforce activities to be administrivia—something less than the real work of managers. As a consequence of this attitude, workforce activities such as performance appraisals and job candidate interviews are often performed hastily without adequate preparation. Responsibility for other workforce practices

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such as recruiting for open positions and identifying training needs are displaced to Human Resources or other staff groups. This displacement reflects a refusal to accept personal responsibility for the capability of the unit or the people in it. These actions are characteristic of managers who have not been properly prepared for their responsibilities in managing people.

If an organization does not establish clear policies for managing its workforce, it should not be surprised when some managers hold attitudes more characteristic of an era when unskilled workers were considered interchangeable. Although these attitudes are counterproductive in knowledge intense organizations, many managers have come from educational environments where they focused intently on developing their own skills and were not rewarded for developing the skills of others. From the perspective of the People CMM, individuals own responsibility for developing their knowledge and skills. However, management owns responsibility for ensuring that the people in a unit have the skills required to perform their work and for providing opportunities to develop these skills.

In immature organizations, many workforce practices are performed with little or no analysis of their impact. Recruiting campaigns, classroom training, and bonuses are among the many practices that are performed more as a ritual of organizational life than as processes that have been designed to achieve specific and measurable results. In the worst case, the failure to evaluate workforce practices ensures the failure to detect occasions when their impact is counterproductive to their intended effect. Consequently, ritualism can be as damaging to organizational effectiveness as inconsistency.

When an organization fails to proactively develop its workforce, career-oriented people pursue their own agendas. Mediocre performance and high turnover are typical when organizations provide few financial or career incentives for individuals to align themselves with the organization's business objectives. Loyalty declines when individuals do not perceive the organization to be a vehicle by which they will achieve their career aspirations. In these circumstances individuals perceive the organization as an opportunity for developing specific skills that, once developed, will be used to pursue career opportunities elsewhere.

Constant churn in the workforce diminishes its capability. Although some turnover, or voluntary attrition, may be necessary or even beneficial, high turnover limits the level of skill available in the workforce, limiting an organization's ability to improve its performance. Improvement programs guided by the People CMM are most often initiated when an organization faces a talent shortage exacerbated by an inability to attract or retain talented individuals. The first step in changing this state of affairs is to get managers to take responsibility for the capability and development of those who report to them.

2.3.2 The Managed Level—Maturity Level 2

The workforce practices implemented at the Managed Level focus on activities at the unit level. The first step toward improving the capability of the workforce is to get managers to take workforce activities as high priority responsibilities of their job. They must accept personal responsibility for the performance and development of those who perform the unit's work. The practices implemented at Maturity Level 2 focus a manager's attention on unit-level issues such as staffing, coordinating commitments, providing resources, managing performance, developing skills, and making compensation decisions. Building a solid foundation of workforce practices within each unit provides the bedrock on which more sophisticated workforce practices can be implemented at higher levels of maturity.

An important reason for initially concentrating on practices at the unit level is founded on the frequent failure of organization-wide improvement programs. These programs often fail because they were thrust on an unprepared management team. That is, managers were struggling with problems that were not addressed by organizational changes. They often lacked the experience and skill needed to implement sophisticated practices. Consequently, Maturity Level 2 focuses on establishing basic practices within units that address immediate problems and prepare managers for implementing more sophisticated practices at higher levels. It is difficult to implement organization-wide practices if managers are not performing the basic workforce practices required to manage their units.

Focusing at the unit level first also establishes a foundation in managing performance that can be enhanced with more sophisticated practices at higher levels. If people are unable to perform their assigned work, sophisticated workforce practices will be of little benefit to individuals or the organization. In a Maturity Level 2 organization, managers are vigilant for any problems that hinder performance in their units. Frequent problems that keep people from performing effectively in low-maturity organizations include:

- Work overload
- Environmental distractions
- Unclear performance objectives or feedback
- Lack of relevant knowledge, or skill
- Poor communication
- Low morale

The effort to ensure that workforce practices are performed in each unit begins when executive management commits the organization to continuously improve the knowledge, skills, motivation, and performance of its workforce. Executive management manifests these commitments in policies and provides the resources needed to support unit-level implementation of basic workforce practices. Executive management reinforces this commitment by performing

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basic workforce practices with their immediate reports and by subsequently holding all managers accountable for the performance of workforce practices within their respective units.

Through policies and accountability, executive management communicates that managers are to accept personal responsibility for ensuring that workforce practices are implemented effectively within their units. Individuals responsible for performing workforce practices are expected to develop repeatable methods for activities such as interviewing job candidates or providing performance feedback. Although managers or groups may differ in how they perform workforce activities, those working within a unit are able to develop consistent expectations about how they will be treated. In addition, the regularity with which practices are performed in each unit, regardless of the method or style, is the first step in creating greater consistency across the organization.

In applying the People CMM it is important to distinguish between management and managers. There are responsibilities that need to be managed and there are people called managers, but there is no required one-to-one mapping between them. Although we will often refer to “managers” in describing responsibilities for workforce practices at Maturity Level 2, these practices could be performed by team leaders, human resources specialists, trainers, peers, or others depending on how responsibilities are allocated within the organization. At any level of maturity, some, perhaps many, workforce practices may be performed by individuals or groups who are not “managers”. As the organization matures beyond Maturity Level 2, an increasing number of workforce practices will be performed by someone other than a manager.

As an organization achieves Maturity Level 2, units become stable environments for performing work. Units are able to balance their commitments with available resources. They can manage their skill needs, both through acquiring people with needed skills and through developing the skills of those already in the unit. Managers are focused on managing individual performance and coordinating individual contributions into effective unit performance. At Maturity Level 2, an organization’s capability for performing work is best characterized by the capability of units to meet commitments. This capability is achieved by ensuring that people have the skills needed to perform their assigned work and that performance is regularly discussed to identify actions that can improve it.

One of the first benefits organizations experience when they implement improvements guided by the People CMM is a reduction in voluntary turnover. At Maturity Level 2, the People CMM addresses one of the most frequent causes of turnover—poor relations with their boss. When people begin to see a more rational work environment emerge in their unit, their motivation to stay with the organization is enhanced. As their development needs are addressed, they begin to see the organization as a vehicle through which they can achieve their career objectives.

2.3.3 The Defined Level—Maturity Level 3

Organizations at the Repeatable Level find that, although they are performing basic workforce practices, there is inconsistency in how these practices are performed across units and little synergy across the organization. The organization misses opportunities to standardize workforce practices because the common knowledge and skills needed for conducting its business activities have not been identified. At Maturity Level 2, units are identifying critical skills to determine qualifications for open positions, evaluate training needs, and provide performance feedback. However, there is no requirement at Maturity Level 2 for identifying common attributes among these skills across units or for determining the practices that are most effective in developing them.

Once a foundation of basic workforce practices has been established in the units, the next step is for the organization to develop an organization-wide infrastructure atop these practices that ties the capability of the workforce to strategic business objectives. The primary objective of the Defined Level is to help an organization gain a competitive advantage from developing the various competencies that must be combined in its workforce to accomplish its business activities. These workforce competencies represent critical pillars supporting the strategic business plan, since their absence poses a severe risk to strategic business objectives. In tying workforce competencies to current and future business objectives, the improved workforce practices implemented at Maturity Level 3 become critical enablers of business strategy.

The concept of workforce competencies implemented in the People CMM differs from the concept of “core competency” popularized by Prahalad and Hamel [Prahalad 90]. Core competency refers to an organization’s combination of technology and production skills that create its products and services and provide its competitive advantage in the marketplace. In the People CMM, workforce competencies reside one level of abstraction below an organization’s core competency, as shown in Figure 2.2. Each workforce competency represents a distinct integration of the knowledge, skills, and process abilities required to perform some of the business activities contributing to an organization’s core competency. The range of workforce competencies an organization must integrate depends on the breadth and type of business activities composing its core competency. Therefore, these workforce competencies are a strategic underpinning of the organization’s core competency.

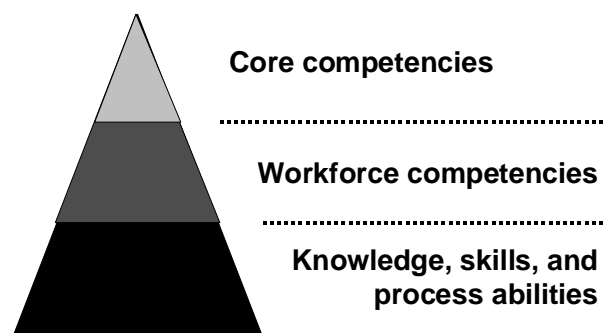


Figure 2.2. — Hierarchy of Competency Abstractions

By defining process abilities as a component of a workforce competency, the People CMM becomes linked with the process frameworks established in other CMMs and with other process-based methods, such as business process reengineering. A process ability is demonstrated by performing the competency-based processes appropriate for someone at an individual's level of development in the workforce competency. To define the process abilities incorporated in each workforce competency, the organization defines the competency-based processes that an individual in each workforce competency would be expected to perform in accomplishing their committed work. Within a workforce competency, a competency-based process defines how individuals apply their knowledge, perform their skills, and apply their process abilities within the context of the organization's defined work processes.

At Maturity Level 3, the organization builds an organization-wide framework of workforce competencies that establishes the architecture of the organization's workforce. Each workforce competency is an element of the workforce architecture, and dependencies among competency-based processes describe how these architectural elements interact. Thus, the architecture of the workforce must become an element of the strategic business plan. Workforce practices become mechanisms through which this architecture is continually realigned with changes in business objectives. The architecture of the organization's workforce must evolve as business conditions and technologies change.

Since workforce competencies are strategic, the organization must develop strategic workforce plans for ensuring the required capability in each of its current or anticipated workforce competencies. These plans identify the actions to be taken in acquiring and developing the level of talent needed in each workforce competency. The People CMM makes no assumption about whether the organization sustains these workforce competencies internally or acquires them through partnerships, alliances, independent contracting, or outsourcing.

The aggregated level of knowledge, skills, and process abilities available within a competency community determines an organization's capability in that workforce competency. The members of the organization's workforce who share common knowledge, skills, and process abilities of a particular workforce competency constitute a competency community. The capability of an organization's business processes is, in part, determined by the extent to which competency communities can translate their collective knowledge, skills, and process abilities into work performance. Maturity Level 3 establishes the infrastructure for defining measures of capability, in preparation for capability being quantitatively managed at Maturity Level 4.

At the Defined Level, the organization adapts its workforce practices to its business needs by focusing them on motivating and enabling development in its workforce competencies. Once workforce competencies are defined, training and development practices can be more systematically focused on developing the knowledge, skills, and process abilities that compose

them. Further, the existing experience in the workforce can be organized to accelerate the development of workforce competencies in those with less skill and experience. Graduated career opportunities are defined around increasing levels of capability in workforce competencies. The graduated career opportunities motivate and guide individual development. The organization's staffing, performance management, compensation, and other workforce practices are adapted to motivate and support development in workforce competencies.

When the processes to be performed by each workforce competency are defined, the organization has a new foundation for developing workgroups. Competency-based processes form a basis for defining workgroup roles and operating processes. Rather than just relying on the interpersonal coordination skills developed at Maturity Level 2, workgroups can now organize themselves by tailoring and applying standard competency-based processes. The ability to use defined processes simplifies coordination within the workgroup, since it no longer rests solely on the interpersonal skills of group members to figure out how to manage their mutual dependencies.

Competent professionals demand a level of autonomy in performing their work. To best utilize competent professionals, the organization must create an environment that involves people in decisions about their business activities. Decision-making processes are adjusted to maximize the level of competency applied to decisions, while shortening the time required to make them. Individuals and workgroups should be provided with the business and performance information needed to make competent decisions. A participatory culture enables an organization to gain maximum benefit from the capability of its workforce competencies while establishing the environment necessary for empowering workgroups.

A common organizational culture typically develops as the organization achieves the Defined Level. This culture is best described as one of professionalism, since it is built from common understanding of the knowledge and skills that need to be developed to achieve superior levels of performance and a definition of the competency-based processes that such individuals perform. Since these workforce competencies are strategic to the business, the organization reinforces their importance by developing and rewarding them. As a result, the entire workforce begins sharing responsibility for developing increasing levels of capability in the organization's workforce competencies. The workforce practices implemented at Maturity Level 2 are now standardized and adapted to encourage and reward growth in the organization's workforce competencies.

2.3.4 The Predictable Level—Maturity Level 4

An organization at the Defined Level has established an organizational framework for developing its workforce. At the Predictable Level, the organization manages and exploits the capability created by its framework of workforce competencies. The organization is now able to

Overview of the People CMM

manage its capability and performance quantitatively. The organization is able to predict its capability for performing work because it can quantify the capability of its workforce and of the competency-based processes they use in performing their assignments.

The framework of workforce competencies enables the organization to better exploit the capabilities of its workforce. There are at least three ways in which this framework can be exploited. First, when competent people perform their assignments using proven competency-based processes, management trusts the results they produce. This trust enables the organization to preserve the results of performing competency-based processes and develop them as organizational assets to be reused by others. In essence, people trust the asset because they trust the methods through which it was produced. When these assets are created and used effectively, learning spreads more rapidly through the organization and productivity rises when reuse replaces redevelopment.

Second, this trust also gives managers the confidence they need to empower workgroups. Managers will transfer responsibility and authority for committed work into workgroups only if they believe the members of the workgroup are competent to perform the work and use processes that have been proven effective. When the organization achieves Maturity Level 3, the conditions required for empowerment—competent people, effective processes, and a participatory environment—are established. In achieving Maturity Level 4, management senses less risk in empowering workgroups and is willing to delegate increasingly greater levels of authority for managing day-to-day operations and for performing some of their own workforce practices. Increasingly free of managing operational details, managers at Maturity Level 4 are able to turn their attention to more strategic issues.

Third, when members of each workforce competency community have mastered their competency-based processes, the organization is able to integrate different competency-based processes into a single multidisciplinary process. At Maturity Level 3, individuals performing different competency based processes manage their mutual dependencies by defining points of coordination. However, their competency-based work is performed largely in isolation of each other's competency-based processes. However, when competency-based processes have been institutionalized, the organization can begin integrating different competency-based processes into a multidisciplinary process that better integrates the work of several workforce competencies. An example would be the integration of software and hardware design processes into a single product design process where the different competency-based processes are interwoven at every point where they share a potential dependency. Such multidisciplinary processes have proven to accelerate business results.

In addition to exploiting the possibilities enabled by the competency framework, the organization begins to manage its capability quantitatively. Within each unit or workgroup, the performance of competency-based processes most critical for accomplishing business objectives is measured. These measures are used to establish process performance baselines that can be used for

managing competency-based processes and assessing the need for corrective action. The creation and use of these baselines and associated measures is similar to methods underlying Six Sigma programs. Although Six Sigma techniques can be used at any level of maturity, the full sophistication of a Six Sigma approach is best enabled at Maturity Level 4. Members of a competency community have immediate data for evaluating their performance and deciding on the need for corrective actions. The immediate availability of process performance data also contributes to the rationale for empowering workgroups to manage their business activities.

The organization uses the data generated by competency-based processes to establish process capability baselines for its critical competency-based processes. These baselines can be used for planning, for targeting improvements, and for predicting the organization's capacity for work. The organization evaluates the impact of workforce practices and activities on the capability of competency-based processes and takes corrective action when necessary. process capability baselines and associated analyses are used as inputs for workforce planning.

The combined availability of workforce capability baselines and process capability baselines for competency-based processes enables both unit and organizational performance to become more predictable. These data allow management to make more accurate predictions about future performance and better decisions about tradeoffs involving workforce capability or process performance issues. The quantitative management capabilities implemented at Maturity Level 4 provide management with better input for strategic decisions, while encouraging delegation of operational details to those at lower organizational levels.

2.3.5 The Optimizing Level—Maturity Level 5

At the Optimizing Level, the entire organization is focused on continual improvement. These improvements are made to the capability of individuals and workgroups, to the performance of competency-based processes, and to workforce practices and activities. The organization uses the results of the quantitative management activities established at Maturity Level 4 to guide improvements at Maturity Level 5. Maturity Level 5 organizations treat change management as an ordinary business process to be performed in an orderly way on a regular basis.

Although several individuals may be performing identical competency-based processes, they frequently exhibit individual differences in the methods and work styles they use to perform their assignments. At Maturity Level 5, individuals are encouraged to make continuous improvements to their personal work processes by analyzing their work and making needed process enhancements. Similarly, workgroups are composed of individuals who each have personalized work processes. To improve the capability of the workgroup, these personal work processes must be integrated into an effective operating procedure for the workgroup. Improvements at the individual level should be integrated into improvements in the workgroup's operating process. Mentors and coaches can be provided to guide improvements at both the individual and

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workgroup levels. Simultaneously, the organization continually seeks methods for improving the capability of its competency-based processes.

Although individuals and workgroups continually improve their performance, the organization must be vigilant to ensure that performance at all levels remains aligned with organizational objectives. Thus, individual performance needs to be aligned with the performance objectives of the workgroup and unit. Units need to ensure their performance is aligned with the objectives of the organization. At Maturity Level 5, the process performance data collected across the organization is evaluated to detect instances of misalignment. Further, the impact of workforce practices and activities is evaluated to ensure they are encouraging rather than discouraging alignment. Corrective action is taken to realign performance objectives and results when necessary.

Inputs for potential improvements to workforce practices come from many sources. They can come from lessons learned in making improvements to the workforce activities within a unit, from suggestions by the workforce, or from the results of quantitative management activities. The organization continually evaluates the latest developments in workforce practices and technologies to identify those with the potential to contribute to the organization's improvement objectives. Data on the effectiveness of workforce practices that emerged from quantitative management activities are used to analyze potential performance improvements from innovative workforce practices or proposed changes to existing practices. Innovative practices that demonstrate the greatest potential for improvement are identified and evaluated in trial applications. If they prove effective, they are deployed throughout the organization.

The workforce capability of Maturity Level 5 organizations is continually improving. This improvement occurs through both incremental advances in existing workforce practices and adoption of innovative practices and technologies that may have a dramatic impact. The culture created in an organization routinely working at the Optimizing Level is one in which everyone strives to improve their own capability, and contributes to improvements in the performance of their workgroup, unit, and the organization. Workforce practices are honed to support a culture of performance excellence.

3 People CMM Process Areas

3.1 Process Area

Each maturity level of the People CMM, with the exception of the Initial Level, consists of three to seven process areas. Each process area (PA) identifies a cluster of related practices that, when performed collectively, achieve a set of goals considered important for enhancing workforce capability. Each process area organizes a set of interrelated practices in a critical area of workforce management, such as staffing, compensation, or workgroup development. Each of these areas constitutes an important organizational process. The process areas at each level of maturity create an inter-linked system of processes that transform the organization's capability for managing its workforce.

Process Area	A cluster of related practices that, when performed collectively, satisfy a set of goals that contribute to the capability gained by achieving a maturity level.
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Process areas identify the capabilities that must be institutionalized to achieve a maturity level. They describe the practices that an organization should implement to improve its workforce capability. The process areas within each of the five maturity levels of the P-CMM are displayed in Figure 3.1.

People CMM Process Areas

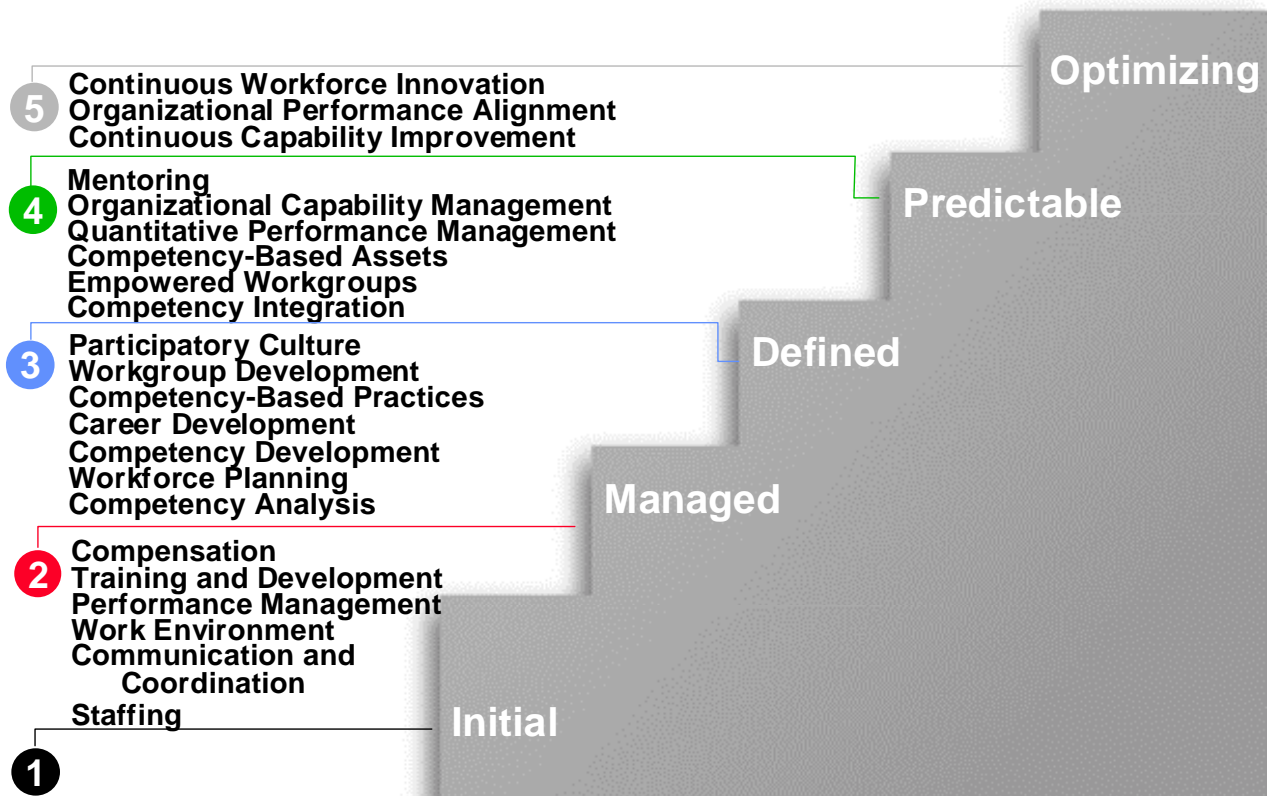


Figure 3.1 — Process areas of the People CMM

3.2 The Process Areas of the People CMM

3.2.1 The Initial Level—Maturity Level 1

There are no process areas at the Initial Level of maturity. Although workforce practices performed in Maturity Level 1 organizations tend to be inconsistent or ritualistic, virtually all of these organizations perform processes that are described in the Maturity Level 2 process areas. Some of these processes are legally mandated. Organizations that do not achieve the goals of each of the Maturity Level 2 process areas are performing as Maturity Level 1 organizations.

3.2.2 The Managed Level—Maturity Level 2

To achieve the Managed Level, Maturity Level 2, managers begin performing basic people management practices—such as staffing, managing performance, and making adjustments to compensation—as a repeatable management discipline. The organization establishes a culture focused at the unit level for ensuring that people are able to meet their work commitments. In achieving Maturity Level 2, the organization develops the capability to manage skills and performance at the unit level.

The process areas at Maturity Level 2 are Staffing, Communication and Coordination, Work Environment, Performance Management, Training and Development, and Compensation. These six process areas are briefly described in the following paragraphs. High-level relationships among these process areas are depicted in Figure 3.2.

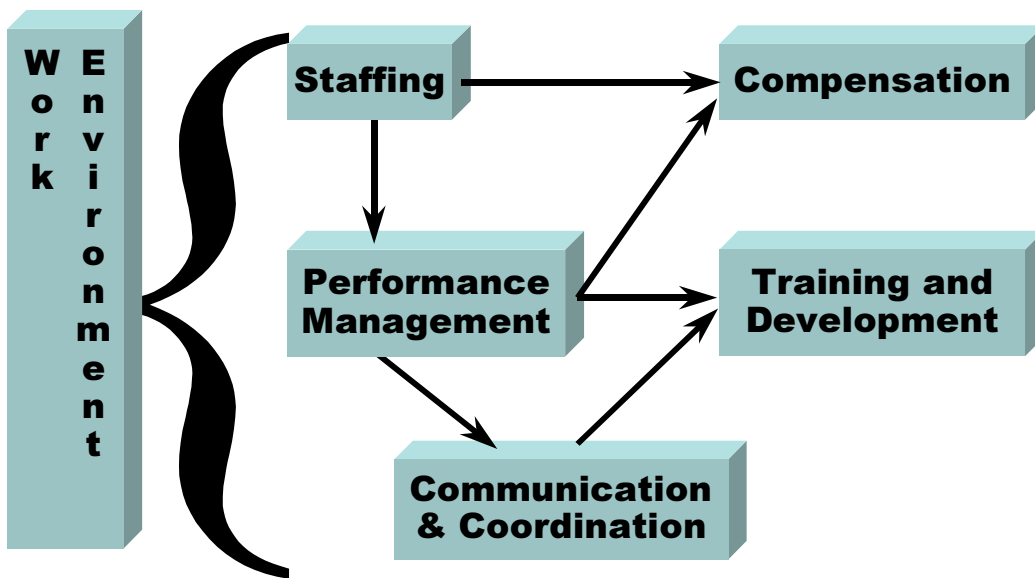


Figure 3.2 — Relationships among Maturity Level 2 process areas

Staffing

The purpose of Staffing is to establish a formal process by which committed work is matched to unit resources and qualified individuals are recruited, selected, and transitioned into assignments. Staffing is positioned as the primary process area at Maturity Level 2 since staffing decisions provide an organization’s greatest opportunities to influence performance. All other

People CMM Process Areas

practices designed to improve the capability of the workforce must start from the baseline of talent brought into positions within the organization. Managers balance the unit's work commitments with its available staff, since few organizational processes are able to demonstrate their potential benefits in organizations that are chronically overworked. Managers take responsibility for recruiting talent for open positions and they coordinate with organizational recruiting activities, both internally- and externally-focused. A formal selection process is developed to ensure thorough and fair evaluation of the skills and other qualifications of each candidate. Mechanisms are established for transitioning people into new positions, among assignments, or if necessary, out of the organization.

Communication and Coordination

The purpose of Communication and Coordination is to establish timely communication across the organization and to ensure that the workforce has the skills to share information and coordinate their activities efficiently. Communication and Coordination establishes the initial basis for developing and empowering workgroups. This process area establishes a culture for openly sharing information and concerns across organizational levels and among dependent units. Prior to having the defined processes that aid the development of workgroups at Maturity Level 3, workgroup performance depends on people having the skills required to coordinate their activities and manage shared dependencies. Prior to the availability of defined processes, the interpersonal communication and coordination skills need to be developed to provide a foundation for the structured development of workgroups at higher levels.

Work Environment

The purpose of Work Environment is to establish and maintain physical working conditions and to provide resources that allow individuals and workgroups to perform their tasks efficiently without unnecessary distractions. The work environment must be managed to ensure it supports the committed work of those in the organization. This process area focuses on both the resources provided for performing work, and the physical conditions under which the work is performed. Management must balance expenditures on resources and environment with justifications based on the work being performed. Managers monitor resource needs and environmental conditions that affect their unit and mitigate those problems judged to present serious risks to health, safety, or efficiency.

Performance Management

The purpose of Performance Management is to establish objectives related to committed work against which unit and individual performance can be measured, to discuss performance against these objectives, and to continuously enhance performance. The primary focus of performance management is on the continual discussion about the performance of work to identify ways to improve it. Discussions of performance focus not only on the individual, but also on work processes, resources, and any other issues that can be addressed to improve performance. The discussion of performance occurs in the context of measurable objectives those individuals or workgroups are trying to achieve in their work. These objectives are linked to committed work. The role of performance appraisal is primarily to record the results of performance for use as input to decisions about adjustments to compensation, personal development planning, staffing, promotion, and other workforce activities. Performance problems are managed and outstanding performance is recognized.

Training and Development

The purpose of Training and Development is to ensure that all individuals have the skills required to perform their assignments and are provided relevant development opportunities. The primary focus of Training and Development is on removing the gap between the current skills of each individual and the skills required to perform their assignments. Each unit develops a training plan to ensure that all individuals have the skills required by their assignment. Once individuals have the necessary skills to perform current assignments, they may focus their development activities on other objectives.

Compensation

The purpose of Compensation is to provide all individuals with remuneration and benefits based on their contribution and value to the organization. The organization must formulate a compensation strategy that motivates and rewards the skills and behaviors the organization considers vital to its success. Compensation represents the only process area at the Managed Level whose execution is coordinated by actions at the organizational level. Compensation must be coordinated primarily through centralized activity in order to establish a sense of equity in the system. Once the workforce perceives the system to be equitable, it can be adjusted to motivate the development of needed skills and better alignment of individual performance with that of the workgroup, unit, or organization. Periodic adjustments to compensation are reviewed to ensure they are equitable and consistent with the organization's strategy and plan.

3.2.3 The Defined Level—Maturity Level 3

To achieve the Defined Level, Maturity Level 3, the organization identifies and develops the knowledge, skills, and process abilities that constitute the workforce competencies required to perform its business activities. The organization develops a culture of professionalism based on well-understood workforce competencies. In achieving Maturity Level 3, the organization develops the capability to manage its workforce as a strategic asset.

The process areas at Maturity Level 3 are Competency Analysis, Workforce Planning, Competency Development, Career Development, Competency-Based Practices, Workgroup Development, and Participatory Culture. These seven process areas are briefly described in the following paragraphs. High-level relationships among these process areas are depicted in Figure 3.3.

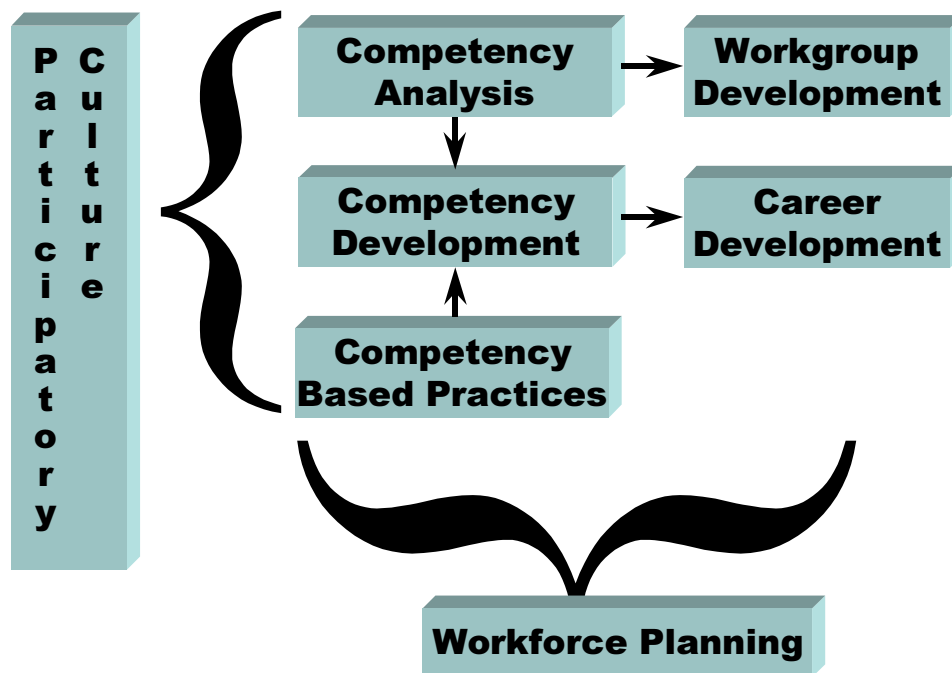


Figure 3.3 — Relationships among Maturity Level 3 process areas

Competency Analysis

The purpose of Competency Analysis is to identify the knowledge, skills, and process abilities required to perform the organization's business activities so that they may be developed and used as a basis for workforce practices. The organization maintains descriptions of knowledge, skills, and process abilities composing each workforce competency in a repository. These descriptions are periodically reassessed to ensure they remain current with the organization's technologies and business activities. The work processes used by capable individuals in each workforce competency are defined and updated as necessary. Competency information regarding an individual's capability in the workforce competencies relevant to their work or career is collected and maintained. From this competency information, resource profiles of the organization's level of capability in each of its workforce competencies can be determined.

Workforce Planning

The purpose of Workforce Planning is to coordinate workforce activities with current and future business needs at both the organizational and unit levels. Workforce Planning ties the organization's workforce activities directly to its business strategy and objectives. Through workforce planning, the organization identifies the workforce it needs for its current and future business activities and plans the actions to be taken to ensure the required workforce is available when needed. Strategic workforce plans provide those responsible for workforce activities in units with a reference for ensuring that they perform their responsibilities with an understanding of how the unit's workforce activities contribute to the business.

Competency Development

The purpose of Competency Development is to constantly enhance the capability of the workforce to perform their assigned tasks and responsibilities. The workforce competencies identified in Competency Analysis and the needs identified in Workforce Planning provide the foundations for the organization's competency development program. Graduated training and development opportunities are designed to support development in each of the organization's workforce competencies. Individuals actively pursue competency development opportunities that support their individual development objectives. The organization uses the existing experience in its workforce as an asset for developing additional capability in each of its workforce competencies through practices such as mentoring. Mechanisms are established to support communication among the members of a competency community.

People CMM Process Areas

Career Development

The purpose of Career Development is to ensure that individuals are provided opportunities to develop workforce competencies that enable them to achieve career objectives. A personal development plan is created and periodically updated for each individual. Opportunities for training and other career-enhancing activities are made available. Progress against individual development plans is tracked. Graduated career opportunities and promotion criteria are defined to motivate growth in the organization's workforce competencies. Promotion activities are performed on a periodic and event-driven basis. Individuals are periodically counseled about career options, and opportunities for advancement are communicated to them.

Competency-Based Practices

The purpose of Competency-Based Practices is to ensure that all workforce practices are based in part on developing the competencies of the workforce. The staffing, performance management, compensation, and related workforce practices established through performing the activities of process areas at the Managed Level need to be adjusted to support the organization's focus on developing workforce competencies. Workforce activities that had focused primarily on unit concerns at the Managed Level are re-oriented by adjusting them to include concerns that are strategic to shaping the organization's workforce and the workforce competencies needed in the workforce. As a result of incorporating an organizational orientation in the performance of workforce activities, the performance of activities should become more consistent across units.

Workgroup Development

*The purpose of Workgroup Development is to organize work around competency-based process abilities. As used in the People CMM, a *workgroup* is a collection of people who work closely together on tasks that are highly interdependent to achieve shared objectives. Work and workgroups are designed to maximize the interdependency of tasks within the workgroup and to minimize dependencies with other workgroups. Workgroups tailor competency-based processes for use in planning and performing their business activities. Workgroups tailor the defined roles incorporated in the processes and assign them to workgroup members. Responsible individuals manage workgroup performance and track the status of work. When a workgroup's business activities are complete, it is disbanded using an orderly process that preserves its assets, completes required workforce activities, and ensures appropriate work assignments for each of its departing members.*

Participatory Culture

The purpose of a Participatory Culture is to ensure a flow of information within the organization, to incorporate the knowledge of individuals into decision-making processes, and to gain their support for commitments. Establishing a participatory culture lays the foundation for building high-performance workgroups. Establishing a participatory culture begins with providing individuals and workgroups with information about organizational and unit performance and how their performance contributes, in addition to information needed to perform their committed work. Individuals and workgroups use defined processes for making decisions and for resolving conflicts and disputes.

3.2.4 The Predictable Level—Maturity Level 4

To achieve the Predictable Level, Maturity Level 4, the organization quantifies and manages the capability of its workforce and their competency-based processes, in addition to exploiting the opportunities afforded by defined workforce competencies. The organization creates a culture of measurement and exploits shared experience. At Maturity Level 4, the organization has the capability to predict its performance and capacity for work.

The process areas at Maturity Level 4 are Competency Integration, Empowered Workgroups, Competency-Based Assets, Quantitative Performance Management, Organizational Capability Management, and Mentoring. These six process areas are briefly described in the following paragraphs. High-level relationships among these process areas are depicted in Figure 3.4.

Competency Integration

The purpose of Competency Integration is to improve the efficiency and agility of interdependent work by integrating the process abilities of different workforce competencies. Competency Integration interweaves different competency-based processes to achieve a seamless process-based interaction among individuals from different competency communities. These integrated competency-based processes provide more tightly interlaced interactions to allow problems among product, service, or work dependencies to be identified and corrected much earlier. Competency Integration involves analyzing work to identify opportunities to integrate the processes used by different workforce competencies. These integrated competency-based processes are defined and work situations are tailored for their use. Workforce practices and activities such as staffing, performance management, compensation, and the work environment are adjusted to support multi-disciplinary work using integrated competency-based processes.

People CMM Process Areas

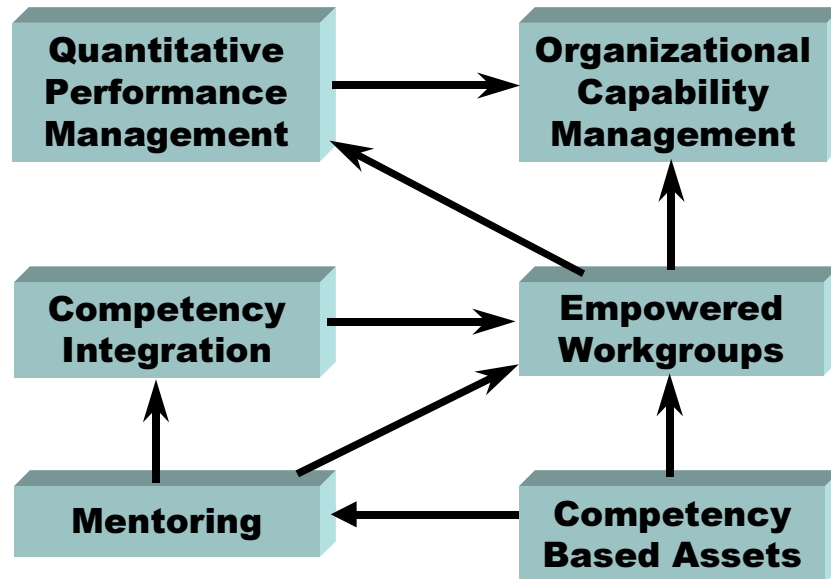


Figure 3.4 — Relationships among Maturity Level 4 process areas

Empowered Workgroups

The purpose of Empowered Workgroups is to invest workgroups with the responsibility and authority for determining how to conduct their business activities most effectively. Empowerment involves delegating responsibility and authority for work results to a workgroup and training its members in the skills and processes required for working in an empowered environment. Empowered workgroups are managed as an entity, rather than as individuals. The work environment is adjusted to support empowered performance by workgroups. Empowered workgroup members accept increasing responsibility for the performance of workforce practices such as recruiting, selection, performance management, reward, training, development, and compensation activities that are appropriate to the structure and function of the empowered workgroup. Workgroup performance and contributions to it are considered in making individual compensation decisions, as well as in recognizing and rewarding outstanding performance.

Competency-Based Assets

The purpose of Competency-Based Assets is to capture the knowledge, experience, and artifacts developed in performing competency-based processes for use in enhancing capability and performance. A competency-based asset captures knowledge, experience, or artifacts developed

in performing competency-based processes within an organization. A competency-based asset is a bundle of information or an artifact that has been prepared in standard format and made available for widespread use. As an organizational asset, it becomes a component of one or more workforce competencies. Competency-Based Assets involves encouraging individuals and workgroups to capture and share the information and artifacts developed from performing competency-based processes. Selected bundles of information or artifacts are organized into competency-based assets that can be reused in performing business activities. Workforce practices and activities are adjusted to encourage the development and use of competency-based assets.

Quantitative Performance Management

The purpose of Quantitative Performance Management is to predict and manage the capability of competency-based processes for achieving measurable performance objectives. Individuals and workgroups determine which competency-based processes contribute most to achieving unit objectives and set measurable objectives for the performance of these processes. Committed work is estimated and planned using process performance baselines developed from past performance of the relevant competency-based processes. A quantitative performance management strategy is developed for identifying, measuring, and analyzing the performance of the competency-based processes that most contribute to achieving unit objectives. Performance data are collected and analyzed according to the strategy. The performance of competency-based processes are brought under quantitative control. Corrective actions are taken when the performance of competency-based processes deviates significantly from performance objectives.

Organizational Capability Management

The purpose of Organizational Capability Management is to quantify and manage the capability of the workforce and of the critical competency-based processes they perform. The organization's capability in a specific workforce competency is assessed from the number of individuals in a competency community and the aggregated level of knowledge, skill, and process ability that they possess. Data regarding competency development trends are defined and collected, and trends are compared to objectives in the strategic workforce plan. The organization evaluates the impact of its workforce practices on capability in each of its workforce competencies. Organizational Capability Management also involves characterizing the process capability of critical competency-based processes through process performance baselines and quantitative performance models. These capability results are used in planning and managing the performance of competency-based processes. The impact of workforce practices on the capability and performance of competency-based processes is quantified and managed and the results of these analyses are used in organizational decisions. The results of these analyses are used in adjusting workforce practices to improve their impact on performance and results.

People CMM Process Areas

Mentoring

The purpose of Mentoring is to transfer the lessons of greater experience in a workforce competency to improve the capability of other individuals or workgroups. Mentoring relationships are designed for accomplishing specific objectives. At the Defined Level, mentoring and coaching is informal, and the knowledge and skills imparted by the mentor are defined more by their experience and judgement than by a documented combination of knowledge, skills, and process abilities to be imparted. At Maturity Level 4, mentoring activities are organized around the knowledge, skills, and process abilities to be imparted. Mentoring activities are also used to deploy competency-based assets. Criteria are developed for selecting mentors and those chosen are trained for their assignments.

3.2.5 The Optimizing Level—Maturity Level 5

To achieve the Optimizing Level, Maturity Level 5, everyone in the organization is focused on continuously improving their capability and the organization’s workforce practices. The organization creates a culture of product and service excellence. At Maturity Level 5, the organization continuously improves its capability and deploys rapid changes for managing its workforce.

The process areas at Maturity Level 5 are Continuous Capability Improvement, Organizational Performance Alignment, and Continuous Workforce Innovation. These three process areas are briefly described in the following paragraphs. High-level relationships among these process areas are depicted in Figure 3.5.

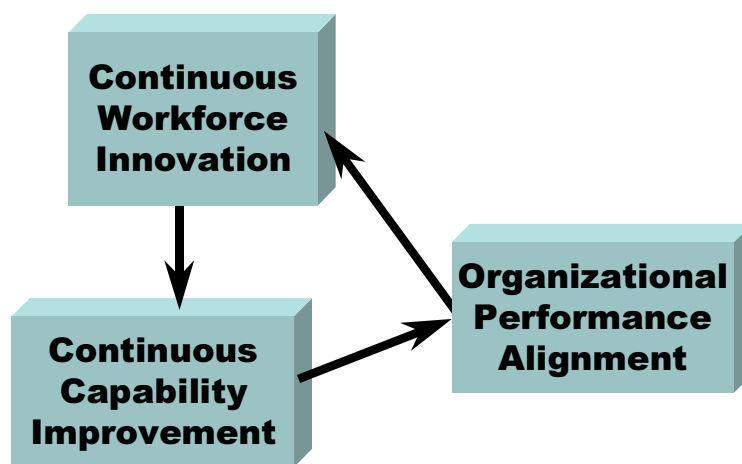


Figure 3.5 — Relations among Maturity Level 5 process areas

Continuous Capability Improvement

The purpose of Continuous Capability Improvement is to provide a foundation for individuals and workgroups to continuously improve their capability for performing competency-based processes. Continuous Capability Improvement involves enterprise-wide support for individuals and workgroups as they focus on improving their capability in the performance of competency-based processes. Individuals focus on the capability of their personal methods for performing competency-based processes. They engage in learning activities to improve their personal work processes. Workgroups focus on improving the capability and performance of their operating processes by continuously improving the integration of the personal work processes performed by workgroup members.

Organizational Performance Alignment

The purpose of Organizational Performance Alignment is to enhance the alignment of performance results across individuals, workgroups, and units with organizational performance and business objectives. Organizational Performance Alignment builds on the analyses of competency-based processes initiated in the Quantitative Performance Management and Organizational Capability Management process areas. Where those analyses focused narrowly on process performance, analyses of performance alignment expand this focus to evaluate how the various components of performance fit together across workgroups, units, and the entire organization. Practices within this process area knit together a complete picture of performance within the organization and how the integration of its various business activities are affected by workforce practices and activities. These analyses allow management to align performance across the entire enterprise and to use workforce activities strategically to achieve organizational business objectives.

Continuous Workforce Innovation

The purpose of Continuous Workforce Innovation is to identify and evaluate improved or innovative workforce practices and technologies, and implement the most promising ones throughout the organization. Responsible individuals are continually encouraged to make improvements to their performance of workforce activities. A group is assigned responsibility for coordinating continuous improvements to the organization's workforce practices. Recommendations for adopting innovative or improved workforce practices can come as lessons learned while improving the performance of workforce activities, suggestions from the workforce, or as analyses of best practices at other organizations. The most promising innovations are evaluated in trial use and, if successful, are implemented across the organization. The effectiveness of these improved practices is evaluated quantitatively and the results are communicated to the workforce.

3.3 Process Area Threads in the People CMM

Process areas in the People CMM reside at a single maturity level. However, some process areas are linked across maturity levels by common areas of concern that the People CMM was designed to address. These links cause workforce practices established at a maturity level to be transformed by one or more process areas at higher maturity levels. For instance, the Training and Development practices that were established at Maturity Level 2 are transformed into Competency Development practices at Maturity Level 3. There are four areas of concern that are addressed by process areas linked across maturity levels in the People CMM.

1. Developing individual capability
2. Building workgroups and culture
3. Motivating and managing performance
4. Shaping the workforce

The conceptual structure of the People CMM is a matrix that crosses the primary areas of concern in managing the workforce with the organizational transformations associated with the maturity levels. The areas of concern constitute objectives that the People CMM was designed to address. These objectives are addressed in a different way at each maturity level. The maturity levels represent substantive changes in how the organization addresses these areas of concern. The cultural shift achieved at each maturity level is attained by transforming the organization's workforce practices to support the objectives of the new level. The four areas of concern, and the process areas linked across maturity levels to address them, are displayed in Figure 3.6.

3.3.1 Developing Individual Capabilities

The effort to develop individual capabilities begins at the Managed Level by identifying the immediate training needs of people in each unit (Training and Development). If individuals have the knowledge and skill required to perform their committed work, then they can use training opportunities for developing skills needed for possible future assignments. The focus at Maturity Level 2 is on ensuring that individuals have the skills needed to accomplish their committed work.

At the Defined Level, the focus shifts from the skills needed in individual units to concern for the workforce competencies the organization needs to accomplish its current and strategic business objectives. The organization identifies the knowledge, skills, and process abilities that constitute its workforce competencies (Competency Analysis). It then establishes an organization-wide development program to help individuals gain capability in the workforce competencies most relevant to their assignment and career (Competency Development).

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At the Predictable Level, the organization establishes mechanisms for exploiting the opportunities created by the formation and organization of its workforce competencies. For instance, the results of performing competency-based processes are preserved as assets that can be used to transfer knowledge and capability to others who share the workforce competency (Competency-Based Assets). Mentors use competency-based assets and other competency development materials to achieve defined objectives in assisting those with less experience in developing their capability (Mentoring).

At the Optimizing Level, the focus shifts to continuous improvement of an individual's capability. People can initiate an individual program to continuously improve the personal work processes through which they perform competency-based processes (Continuous Capability Improvement). People are empowered to make changes in their personal work processes that they believe will improve their performance. The lessons they learn can be recommended to the organization for incorporation into defined competency-based processes.

Maturity levels	Process Area Threads			
	Developing individual capability	Building workgroups & culture	Motivating & managing performance	Shaping the workforce
5 Optimizing	Continuous Capability Improvement		Organizational Performance Alignment	Continuous Workforce Innovation
4 Predictable	Competency Based Assets Mentoring	Competency Integration Empowered Workgroups	Quantitative Performance Management	Organizational Capability Management
3 Defined	Competency Development Competency Analysis	Workgroup Development Participatory Culture	Competency Based Practices Career Development	Workforce Planning
2 Managed	Training and Development	Communication & Coordination	Compensation Performance Management Work Environment	Staffing

Figure 3.6 — Process Threads in the People CMM

3.3.2 Building Workgroups and Culture

The effort to improve coordination and interaction among people begins at the Managed Level with a focus on improving interpersonal communication skill (Communication and Coordination). People develop more effective methods for coordinating dependencies in their work and for conducting meetings. These are the initial skills required for developing effective workgroups. In the absence of defined processes, the organization's ability to manage dependencies in its business activities depends on the interpersonal skills of its employees. The focus at Maturity Level 2 is on coordination among individuals within units to establish a local capability to manage dependencies in committed work.

Practices at the Defined Level establish an organizational capability for coordinating work dependencies that is built on the foundation afforded by the coordination skills of individuals. At Maturity Level 3, the organization seeks to reduce the coordination burden on its workforce by defining the work processes used in each workforce competency. A competency-based process defines how individuals within a specific workforce competency apply their knowledge, perform their skills, and apply their process abilities within the context of an organization's defined business processes. These competency-based processes also provide the next foundation for developing workgroups. That is, a workgroup's operating processes are composed in part from competency-based processes and the roles defined for performing them (Workgroup Development). In addition, the organization develops a participatory culture by increasing the availability of information for making decisions and involving the workforce in decisions that affect their work (Participatory Culture). A participatory culture allows the organization to gain its fullest benefit from the capability of its workforce and establishes the foundation for empowerment.

At the Predictable Level, the organization begins to exploit the capabilities offered by its foundation of competency-based processes. When each competency community has defined and mastered its work processes, the organization can move beyond coordinating work dependencies through the formally defined interfaces among competency communities that were established at Maturity Level 3. At Maturity Level 4, the organization integrates and interweaves the competency-based processes of different workforce competencies into a multidisciplinary process to increase the efficiency with which they manage work dependencies (Competency Integration). When managers trust the capability of both the people and the competency-based processes they are using, they are ready to empower workgroups. The organization empowers workgroups with the autonomy to manage their work processes and perform some of their workforce activities (Empowered Workgroups).

At the Optimizing Level, workgroups continually improve their operating processes by improving the integration of the personal work processes used by their workgroup members (Continuous Capability Improvement). Lessons learned in improving a workgroup's operating processes are reviewed to determine if they constitute improvements to be adopted in the competency-based processes of one or more workforce competencies. Thus, practices at

Maturity Level 5 seek to continually improve the integration and performance of work among individuals and workgroups.

3.3.3 Motivating and Managing Performance

At the Managed Level, the practices for motivating and managing performance are focused on individual performance within the context of the unit's committed work. Each unit establishes an environment that has adequate work resources and does not impede or distract from job performance (Work Environment). Performance objectives are established at both the unit and individual levels (Performance Management). Periodic discussions are held about the performance of work to identify opportunities to improve it. Unacceptable performance is managed and recognition is provided for outstanding performance. A compensation strategy is defined that includes performance in making adjustments in compensation (Compensation). The compensation must be evaluated and adjusted for equity to ensure it provides a credible foundation for motivating performance and growth.

At the Defined Level, performance is managed in part as a level of capability in a workforce competency. The capability of a workforce competency community is defined in relation to levels of knowledge, skill, and process ability. The workforce practices established at the Managed Level are adapted to motivate the development of additional capability in one or more workforce competencies (Competency-Based Practices). In particular, the compensation system is adjusted to include growth in workforce competencies as a consideration in making adjustments to compensation. In addition, the organization establishes a set of graduated career opportunities designed to motivate and reward people for developing additional capability in their chosen workforce competencies (Career Development).

At the Predictable Level, the organization understands and controls performance quantitatively. Since the members of each competency community are performing similar competency-based processes, the organization can quantify the capability of these processes and compare current performance to past results (Quantitative Performance Management). This ability to quantify performance allows individuals and workgroups to develop quantitative expectations about their future performance that can be used both for planning and managing work. Individuals and workgroups use the measures emerging from the performance of their competency-based processes to evaluate their performance against expected results at the process event level. Analyzing these measures against past process performance affords greater prediction of future results and tighter control on when corrective action needs to be taken.

At the Optimizing Level, the organization uses its quantitative process performance results to ensure that performance at all levels of the organization is aligned with organizational business objectives (Organizational Performance Alignment). Performance data is used to evaluate whether performance is aligned across individuals, workgroups, and units. The effect of

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workforce practices on performance is evaluated quantitatively to ensure these practices are motivating aligned performance. When necessary, corrective action is taken to bring performance objectives, quantitative process results, and the impact of workforce practices into alignment with organizational objectives.

3.3.4 Shaping the Workforce

The effort to shape the workforce to meet business needs begins at the Managed Level by establishing basic practices for recruiting, selecting among job candidates, and orienting people into new assignments (Staffing). The practices implemented at Maturity Level 2 help shape the workforce at the unit level by ensuring that people have the skills to perform the unit's committed work.

At the Defined Level, the organization begins shaping the workforce by identifying the workforce competencies required to achieve its strategic business objectives. The organization develops a strategic workforce plan by identifying the level of capability it needs in each workforce competency (Workforce Planning). Within each workforce competency, the organization plans for the workforce activities required to meet its capability objectives. Units are expected to contribute to accomplishing these strategic plans as they conduct their workforce activities. Thus, at Maturity Level 3, workforce activities established in the units at Maturity Level 2 are performed with an understanding of how they contribute to strategic objectives at Level 3.

At the Predictable Level, the organization quantifies the capability of its workforce and uses these data to manage its development (Organizational Capability Management). The organization tracks progress in reaching targeted capability levels in each of its workforce competencies and takes corrective action where necessary. The organization quantitatively evaluates the impact of its workforce practices on achieving the strategic workforce objectives established in its workforce plans.

At the Optimizing Level, the organization continually searches for innovative practices or technologies to help improve the capability and motivation of its workforce (Continuous Workforce Innovation). Innovative practices or technologies are selected and evaluated in trial applications to determine if they can make measurable improvements. The organization has developed standard mechanisms for deploying changes and improvements across the organization. Thus, the continuous improvement of workforce capability is institutionalized at Maturity Level 5.

4 The Architecture of the People CMM

4.1 Structural Components of the People CMM

This chapter describes the structure of the People CMM. It describes the model's structure, the maturity levels, the process areas that correspond to each maturity level of the People CMM, and the goals and practices in each process area. The glossary in Appendix C contains definitions of terms, including those described in this section and others.

The relationships among the structural components of the People CMM are illustrated in Figure 4.1. Organizational capability describes the level of knowledge, skills, and process abilities in the organization's workforce and the ability of the workforce to apply these to improving business performance. Organizational capability contributes to an organization's performance and its ability to achieve business objectives. It is an important predictor of business performance. While not a structural component found in the People CMM, an organization's workforce capability is indicated by its maturity level.

The components of the structure of the People CMM include the following:

- Maturity levels
- Process areas
- Goals
- Practices

The architectural structure of the People CMM is depicted in Figure 4.1. Practices represent guidelines for satisfying process area goals, which in turn provide the objectives and scope of a process area. Process areas contribute the means by which the organization is transformed at each maturity level to produce a new organizational capability. Each of these components is described in the following sections. Chapter 5 addresses the interpretation of these components.

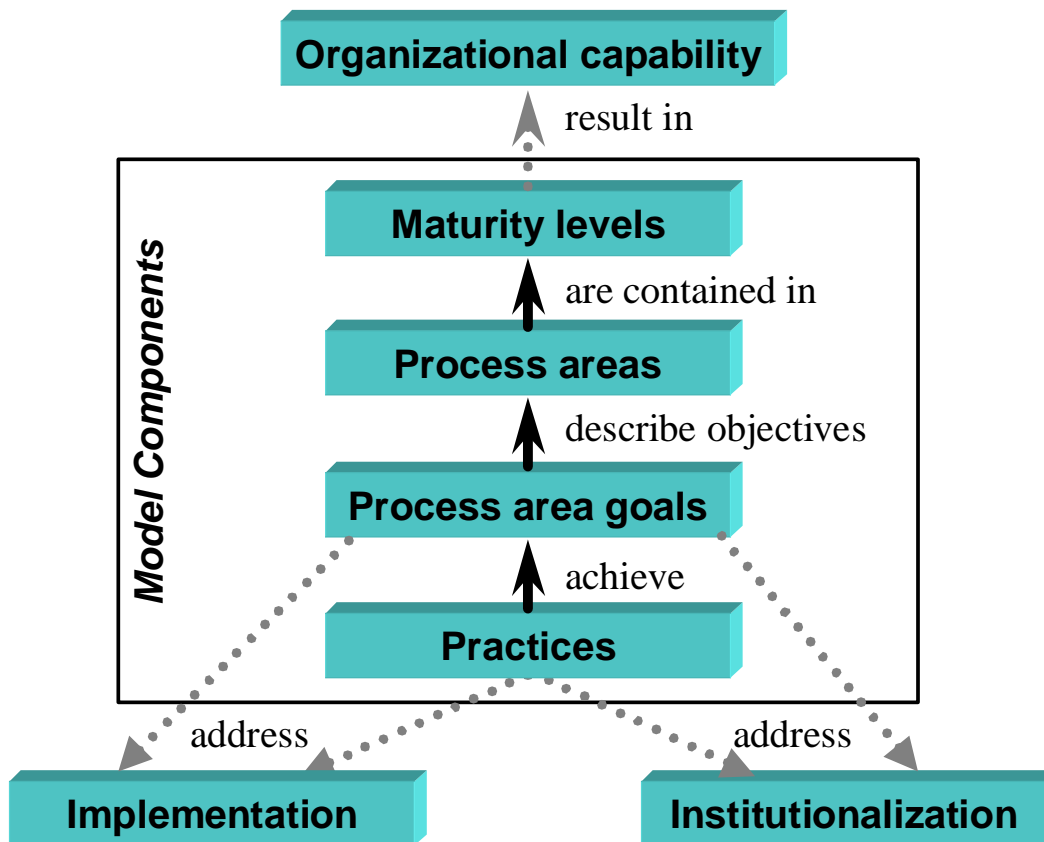


Figure 4.1 — Structure of the People CMM

4.2 Maturity Levels

The People CMM consists of five maturity levels that lay successive foundations for continuously improving talent, developing an effective workforce, and successfully managing the human capital of an organization. Each *maturity level* is a well-defined evolutionary plateau that establishes and institutionalizes a level of capability for improving the workforce within the organization. The five maturity levels provide the top-level structure of the People CMM.

Each maturity level is composed of several process areas (PAs). Each *process area* contains a set of goals that, when satisfied, establish that process area's ability to affect workforce capability. Process areas and their goals are described in the following sections.

4.3 Process Areas

Each process area organizes a set of interrelated practices in a critical area of workforce management, such as staffing, compensation, or workgroup development. Each of these areas constitutes an important organizational process. The process areas at each level of maturity create an inter-linked system of processes that transform the organization's capability for managing its workforce.

Process Area (PA)	A cluster of related practices that, when performed collectively, satisfy a set of goals that contribute to the capability gained by achieving a maturity level.
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Each process area contains a set of goals that, when satisfied, establish that process area's ability to affect workforce capability. Process areas identify both the capabilities that must be institutionalized to achieve a maturity level, and the practices that an organization should implement to improve its workforce capability.

As introduced in Chapter 3, there are 22 process areas in the 5 maturity levels in the People CMM. With the exception of the Initial level (Level 1), each maturity level is composed of several process areas. Process areas have been defined to reside at a single maturity level. Figure 4.2 shows each of these 22 process areas and their respective maturity levels. For example, one of the process areas for Maturity Level 2 is Performance Management.

Each process area contains:

- a brief description of the process area
- the goals for the process area
- the practices of the process area

The Architecture of the People CMM

Maturity Level	Focus	Process areas
5 Optimizing	Continuously improve and align personal, workgroup, and organizational capability	Continuous Workforce Innovation Organizational Performance Alignment Continuous Capability Improvement
4 Predictable	Empower and integrate workforce competencies and manage performance quantitatively	Mentoring Organizational Capability Management Quantitative Performance Management Competency-Based Assets Empowered Workgroups Competency Integration
3 Defined	Develop workforce competencies and workgroups, and align with business strategy and objectives	Participatory Culture Workgroup Development Competency-Based Practices Career Development Competency Development Workforce Planning Competency Analysis
2 Managed	Managers take responsibility for managing and developing their people	Compensation Training and Development Performance Management Work Environment Communication and Coordination Staffing
1 Initial	Workforce practices applied inconsistently	

Figure 4.2 — Process Areas of the People CMM

4.4 Goals

Each process area contains three to five goals stating the objectives it was designed to accomplish. These goals constitute the requirements an organization should satisfy in implementing the workforce practices in a process area. Collectively they indicate the scope, boundaries, and intent of the process area. Goals apply to only one process area and address the

unique characteristics that describe what must be implemented to satisfy the purpose of the process area.

Process Area Goal	An organizational state to be achieved by implementing the practices of a process area.
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Goals apply to only one process area and address the unique characteristics that describe what must be implemented to satisfy the purpose of the process area. The goals of a process area summarize the states that must exist for that process area to have been implemented and institutionalized. "Implemented and institutionalized" implies that these states have been implemented in an effective and lasting way. The extent to which the goals have been accomplished is an indicator of how much capability the organization has established and institutionalized at that maturity level—its workforce capability.

When the goals of all process areas included at a maturity level have been satisfied, the organization will have achieved the maturity level and established a new level of capability in managing its workforce. The path to achieving this new level of workforce management capabilities is indicated by the set of goals associated with each process area. The goals of a process area summarize a state that exists when an organization has implemented the practices of that area. Goal achievement can be used to determine whether an organization has effectively implemented a process area. A process area has not been satisfactorily implemented until all its goals accurately describe the organization's behavior or state of affairs.

Goals are required model components that are to be achieved by an organization's planned and implemented processes. The statement of each goal is a required model component. Required components are considered essential to achieving process improvement in a given process area. They are used in assessments to determine process area satisfaction and organizational process maturity. As required model components, goals are used in assessments to determine whether a process area is satisfied.

In adapting the practices of a process area to a specific unit, success in satisfying the goals can be used to determine whether the adaptation is a reasonable rendering of the practices. Similarly, when assessing or evaluating alternative ways to implement a process area, the goals can be used to determine if the alternative practices satisfy the intent of the process area.

The Architecture of the People CMM

Each process area contains a number of implementation goals and a single institutionalization goal. An example of an implementation goal from the Performance Management process area is “The performance of committed work is regularly discussed to identify actions that can improve it.”

4.5 Practices

Each process area is described in terms of the *practices* that contribute to satisfying its goals. The practices, when collectively addressed, accomplish the goals of the process area. The workforce practices in each process area provide guidance for improving an organization’s capability to manage and develop its workforce. These practices have been selected for inclusion because they contribute to satisfying process area goals. However, they are neither an exclusive or exhaustive list of the practices an organization might implement in pursuing the goals of a process area. Nevertheless, when the recommended workforce practices are performed collectively, the organization should achieve the collective states described by the goals of the process area.

Practice	A subprocess within a process area that contributes to achieving a process area goal.
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Treating workforce practices as subprocesses highlights the importance of integrating them into an effective process, rather than mandating their performance as mindless bureaucracy. When workforce practices are treated as processes, the entire paraphernalia of process analysis and improvement becomes available for implementing and improving workforce practices. The People CMM is a process-based approach to staging the implementation and improvement of workforce practices.

Practices are expected model components. Expected components describe what practices an organization that is achieving a set of goals will typically implement. The practices are meant to guide individuals and groups implementing improvements or performing assessments. Either the practices as described, or acceptable alternatives to them, must be present in the planned and implemented processes of the organization before goals can be considered satisfied.

“Practice” is used throughout the People CMM to refer to standard, defined workforce management processes. These processes may be defined at various organizational levels and

varying degrees of formality, depending on the practice and its associated maturity level. “Activities” refer to actions taken by individuals, in workgroups or units, or by the organization to implement these practices.

A practice describes an activity that is considered important in achieving the specific goal to which it is mapped. The practices describe the activities expected to result in achievement of the goal of a process area. The practices describe the elements of infrastructure and workforce practice that contribute most to the effective implementation and institutionalization of their process area. For example, a practice from the Performance Management process area is “Performance objectives based on committed work are documented for each individual on a periodic or event-driven basis.”

Within each process area, the practices describe the activities and infrastructure that contribute most to the effective implementation and institutionalization of the process area. Figure 4.3 depicts the mapping of practices to goals. Some of these practices in each process area implement workforce practices, and are mapped to implementation goals. Other practices establish the support needed to institutionalize their performance, and are mapped to a single institutionalization goal in each process area. Thus, the practices in each process area are organized to address implementation and institutionalization of the expected state described by the goals. This organization of implementation and institutionalization practices group and order the practices in a sequence helpful for organizations using them. A focus on both implementation and institutionalization of a process area ensures that the effect of the process area on organizational capability is effective, repeatable, and lasting.

Appendix D provides a detailed mapping of the practices of the People CMM to the goals of each process area. These practice-to-goal mappings can be used for comprehending the structure of the model, for guiding the implementation of improvement activities, and for evaluating the satisfaction of goals during an assessment. These mappings are suggestive of the strongest relationships between practices and goals.

4.5.1 Implementation Practices

Within each process area, the implementation practices are grouped into the *Practices Performed* category. The Practices Performed in each process area describes those practices that should typically be implemented to achieve the goals of the process area. Practices Performed is the largest category of practices because they describe the actual implementation of the process areas.

4.5.2 Institutionalization Practices

Institutionalization practices are practices that help to institutionalize the implementation practices in the organization's culture so that they are effective, repeatable, and lasting. These institutionalization practices, taken as a whole, form the basis by which an organization can institutionalize the implementation practices (described in the Practices Performed section of the process area). Institutionalization practices are equally important, however, for they address what must be done to support and institutionalize the process areas.

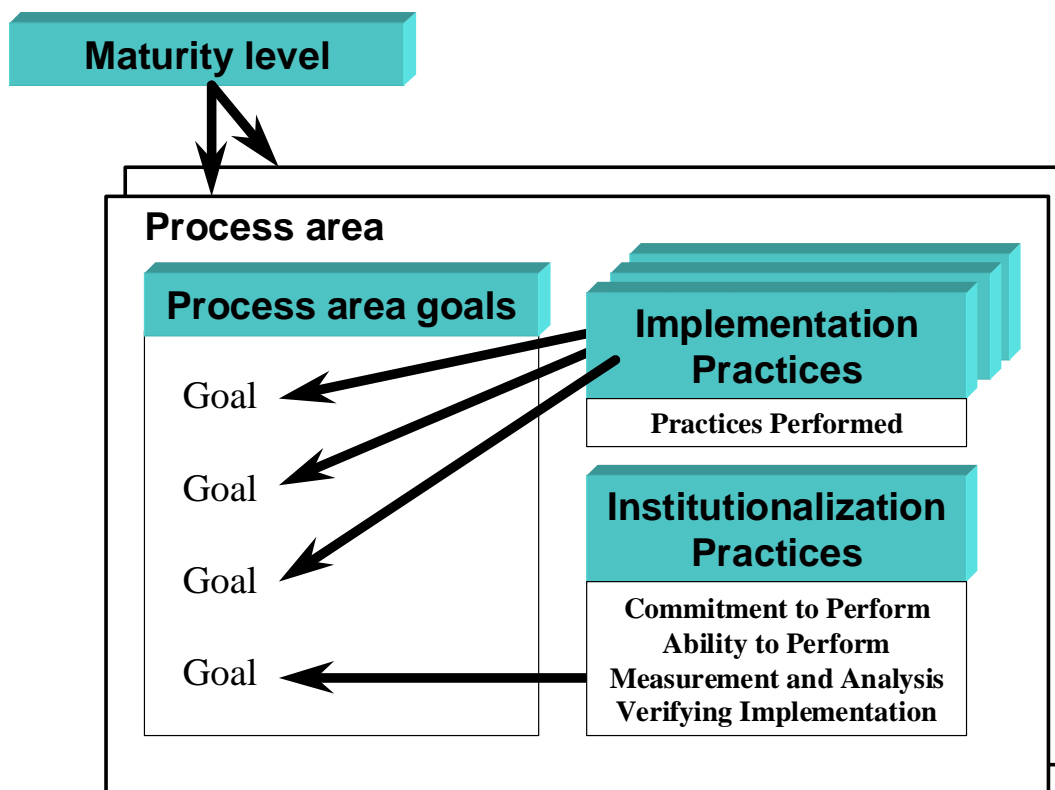


Figure 4.3 — Implementation and Institutionalization Practices Mapped to Process Area Goals

The institutionalization practices are organized into four categories. The *Commitment to Perform* and *Ability to Perform* practices describe prerequisites for implementing each process area. *Measurement and Analysis* and *Verifying Implementation* practices determine if prerequisites have been met and processes have been institutionalized. The categories of institutionalization practices contained in each process area are:

Commitment to Perform

Commitment to Perform describes the actions the organization must take to ensure that the activities constituting a process area are established and will endure. Commitment to Perform typically involves establishing organizational policies, executive management sponsorship, and organization-wide roles to support practices to develop workforce capability.

Ability to Perform

Ability to Perform describes the preconditions that must exist in the unit or organization to implement practices competently. Ability to Perform typically involves resources, organizational structures, and preparation to perform the practices of the process area.

Measurement and Analysis

Measurement and Analysis describes measures of the practices and analysis of these measurements. Measurement and Analysis typically includes examples of measurements that could be taken to determine the status and effectiveness with which the Practices Performed have been implemented.

Verifying Implementation

Verifying Implementation describes the steps to ensure that the activities are performed in compliance with the policies and procedures that have been established. Verification typically encompasses objective reviews and audits by executive management and other responsible individuals.

4.5.3 Practice Statements

Each practice consists of a single sentence, often followed by a more detailed description. These practices state the fundamental policies, procedures, and activities to be established for the process area. The practices describe “what” is to be done, but they should not be interpreted as mandating “how” the goals should be achieved. Alternative practices may accomplish the goals of a process area. The practices should be interpreted rationally to judge whether the goals of the process area are effectively, although perhaps differently, achieved.

Practices are presented in a hierarchical format, as shown in Figure 4.4, which depicts an example page of practices from a process area.

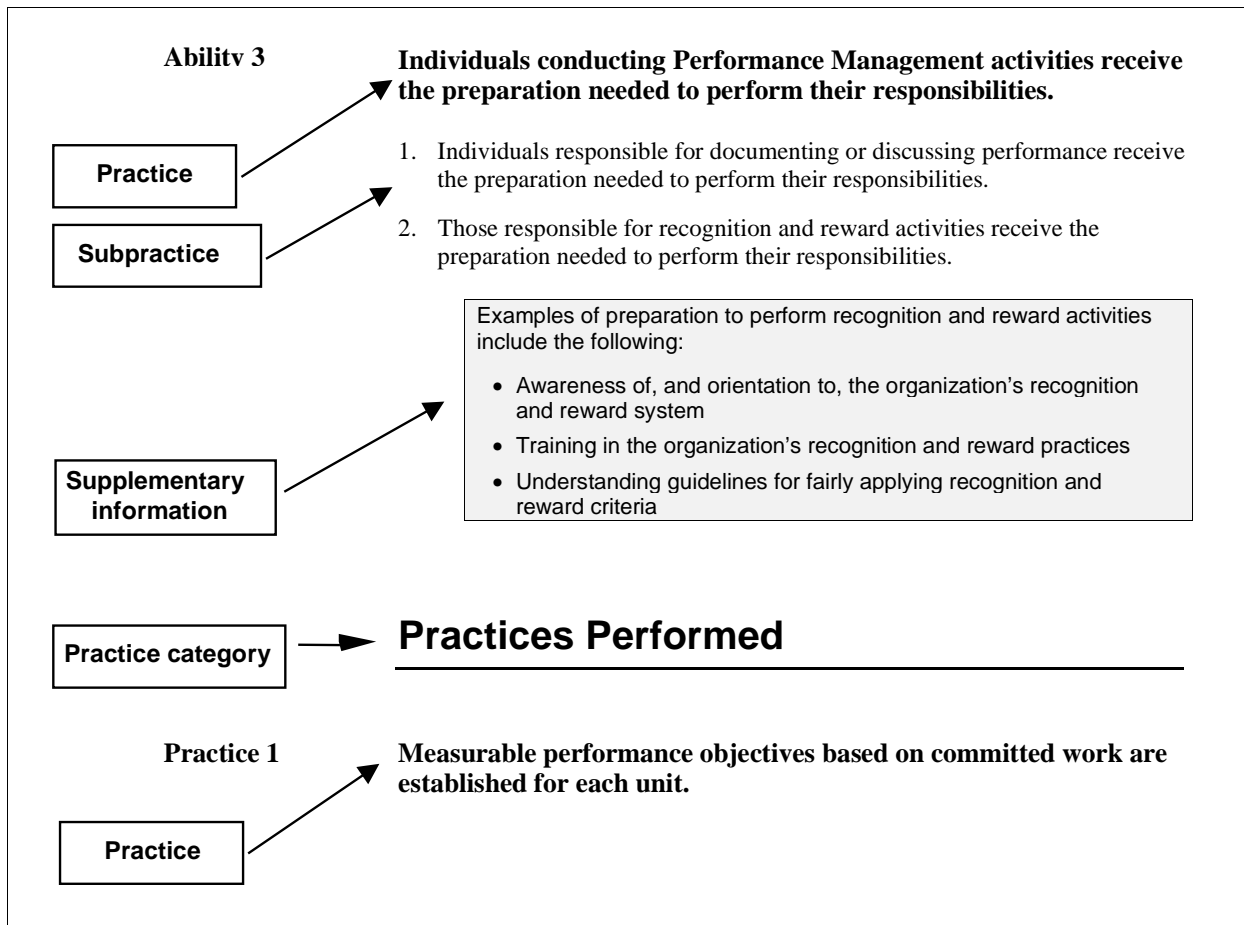


Figure 4.4 – Examples of Practice Statements

The practices include:

Practice Statement

The practices state the fundamental policies, procedures, and activities for the process area. They are identified in bold and are numbered within each category of practices. For example, the first practice in Practices Performed is identified as Practice 1, while the first practice in the Ability to Perform category is identified as Ability 1.

Subpractices

Subpractices, also known as subordinate practices, are listed beneath the practices. Subpractices describe activities one would expect to find implemented for the practice. Subpractices are detailed descriptions that provide guidance for interpreting the practices. The subpractices can be used to help determine whether or not the practices are implemented satisfactorily.

Subpractices are informative model components that help model users understand the goals and practices and how they can be achieved. Subpractices may be worded as if prescriptive, but are actually an informative component in the model that provides details that help model users get started in thinking about how to approach practices and goals. Subpractices are detailed descriptions that provide guidance for interpreting practices. For example, a subpractice from the Performance Management process area is “Performance objectives for each individual are drawn from and are consistent with their work commitments.”

Supplementary information

Supplementary information includes notes (or elaborations), examples, and references to other process areas. Supplementary information appears in shaded boxes following the practices or subpractices. The following is an example of a note, or an elaboration, which also contains a reference. In this example, Practice-to-Goal Mappings are defined as illustrating the relationships between the practices of each of the 22 process areas in the People CMM and the relevant process area goals.

Refer to Appendix D for the *Practice-to-Goal Mappings*, which illustrates the relationships between the practices of each of the 22 process areas in the People CMM to the relevant process area goals. As described above, the goals of a process area summarize the states that must exist for that process area to have been implemented in an effective and lasting way. The specific practice-to-goal mappings can be used for comprehending the structure of the model, for guiding the implementation of improvement activities, and for evaluating the satisfaction of goals during an assessment.

*Supplementary
information
(continued)*

Other forms of supplementary information include the following:

- ❑ Definitions of terms - Terms that are italicized within a note indicate that this is the first use of the term. Definitions are provided within the note, and can also be found in the Appendix C containing the Glossary.
- ❑ Examples – Examples provide informative assistance in interpreting a practice. For example, the Measurement and Analysis practices contain examples of measurements that could be taken to determine the status and effectiveness with which the Practices Performed have been implemented. These examples are not intended to be prescriptive or exhaustive. The organization's workforce activities or other reference sources [Becker 01, Cascio 00, Ulrich 97b, Fitz-Eng 95, Yeung 97] can provide sources of applicable measures.
- ❑ References - References are informative model components that direct the user to additional or more detailed information in this or another related process area.

4.6 Required, Expected, and Informative Components

The components of the People CMM can be grouped into three categories:

- ❑ required components
- ❑ expected components
- ❑ informative components

Goals are *required model components* that are to be achieved by implementing improved workforce processes. Required components are considered essential contributors to the organizational capability achieved at the maturity level where its process area is located. Goals are used in assessments to determine process area achievement and organizational maturity.

Practices are *expected model components*. Expected components describe the practices an organization will typically implement to achieve the process area goals. They are meant to guide individuals and groups in implementing improvements or performing assessments. Either the

practices, as described, or acceptable alternatives to them must be present with a frequency appropriate to a reasonable implementation of the practice before goals can be considered achieved. Only the statement of the practice is an expected model component. Any supplementary information associated with the practice is considered to be *informative model components*.

Supplementary information, such as subpractices, notes, and references, are *informative model components* that help those using the People CMM understand the goals and practices and how they can be achieved. Informative components provide details that help explain or elaborate approaches to implementing and institutionalizing the practices and goals.

This chapter has presented the structure of the People CMM. The following chapter provides guidance on interpreting the model.

The Architecture of the People CMM

5 Interpreting the People CMM

5.1 Applying Professional Judgement

Professional judgment is critical in making informed use of the People CMM. A model is a simplified representation of the world. Capability Maturity Models (CMMs) contain the essential elements of effective processes for one or more disciplines. Like other CMMs, the People CMM provides high-level guidance for developing the organization's process (i.e., "what" should be implemented), but it does not provide a detailed description of the practices the organization will implement (i.e., "how" it should be implemented in any given organizational setting). A CMM specifies the practices that could be implemented to achieve its goals, but it does not specify details about how these practices should be implemented within the organization.

5.1.1 Organizational Factors

Organizational factors, such as size, regional and organizational culture, and business objectives, must be considered when implementing and institutionalizing the practices of the People CMM. When applying the People CMM in a particular context, a reasonable interpretation must be made of how these practices might be implemented. The People CMM must be interpreted flexibly when applying it to smaller organizations or unusual business circumstances, so that unreasonable or needlessly bureaucratic activities are not implemented. For instance, small organizations may implement the practices without the infrastructure needed by large organizations. A small organization may have one individual filling the multiple roles of president, regional sales manager, human resources manager, product evangelist, and janitor; while, in a larger organization, one or more specialists may fill each of these roles.

Another organizational factor that should be considered when using the People CMM as guidance or in an assessment setting is the composition of the workforce. Individuals have many different relationships with an organization. Some are full-time employees, others may be part-time or casual employees, and other individuals may be contractors or other forms of affiliates,

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while other individuals may be on loan or visiting from another organization. In applying the practices to these various categories of individuals, decisions must be made about how to appropriately apply these practices to all individuals in each of these categories. For some individuals, such as certain contract employees, selected practices relating to their training and development, as well as practices relating to their compensation, may not be the responsibility of the organization that they are currently supporting, but rather are the responsibility of their originating organization.

Professional judgment must be used when interpreting the practices and how they contribute to the goals of a process area. In particular, the process areas may map in complex ways to the practices and associated activities used in an organization. The process areas describe a set of interrelated objectives that all organizations should achieve, regardless of their size, locations, or products. The practices contained in process areas constitute recommendations for achieving the objectives that have proven effective in many types of organizations, and therefore are expected to work in most organizations implementing the People CMM. Although process areas depict behavior that should characterize any organization, the practices of the People CMM must be interpreted in light of an organization's structure, the nature of its workforce, the organization's business environment, and other circumstances.

5.1.2 Goodness of Workforce Practices

Since there are several ways to implement most workforce practices, should the “goodness” of a workforce practice be evaluated during an assessment of an organization's workforce practices? The People CMM does not place “goodness” requirements on workforce practices, although it does establish minimal criteria for a “reasonable” practice in some situations. The objective of the People CMM is to implement practices that provide a foundation for systematic improvement of organizational capability and performance over time, based on the organization's business needs. Once such practices are in place, the organization will adjust them to improve their effectiveness. These adjustments must be performed with an understanding of how the practices work in a particular business context, rather than by an externally imposed notion of “goodness”.

“Goodness” is both a matter of interpretation and degree. Complying with a reasonable practice does not necessarily imply that the practice is efficient in achieving its purpose or that the unit or organization is guaranteed good performance. There may be many factors influencing both organization and unit success whose impact masks the benefit of a workforce practice. For example, a successful unit that builds a product no one buys is a business failure, regardless of how well the workforce is trained. Accordingly, we discourage evaluation of a workforce practice for “goodness”, since it is beyond the scope of most assessment teams to make that judgment.

What then are the criteria for a *reasonable* workforce practice? A reasonable practice is one that should contribute to building workforce capability under most circumstances. For example, if a manager took a unit out for a beer after work on Fridays to implement a practice for seeking their opinions on working conditions (which is a practice that might support the goals of the Communication and Coordination process area), would that constitute a reasonable practice? It could certainly be documented and consistently followed. Some might argue that it is effective for loosening people up to talk about things that concern them. However, “taking the unit out for a beer” would typically not be judged to be a reasonable practice for seeking input on working conditions, because in many locations it leaves the organization legally liable if a participating member of the unit were to have an automobile accident on the way home. Since many people like to go straight home after work or do not drink, going for a beer after work may not guarantee that everyone has had an opportunity to express opinions on working conditions. Professional judgment is necessary to make such distinctions about the reasonableness of a practice.

Nothing in the People CMM is intended to restrict or override sound executive judgement in designing and managing an organization. The People CMM is designed as a tool that guides the implementation of practices to assist the organization in achieving its business goals. Organizations will always live in the midst of a tension between implementing the full set of practices described in the People CMM, and tailoring what they feel to be a minimally adequate set of practices for their organization. The resolution of this tension lies in the goals of each process area. Goals are the requirements, and organizations should insist on implementing an adequate set of practices for achieving the goals. The practices included in the People CMM provide them with a description of the practices they would expect to find in an adequate set.

5.2 Interpreting the Practices

Each process area in the People CMM describes a set of practices that when implemented accomplish the goals outlined for that process area. The intention in defining these practices is not to require or espouse a specific method of performing workforce practices, organizational structure, separation of responsibilities, or management approach. Rather, the intention is to describe the essential elements of an effective program for developing and motivating the workforce. The practices are intended to communicate principles that apply to a variety of organizations, are valid across a range of typical business activities, and will remain valid over time. Therefore, the approach is to describe the principles and leave implementation decisions up to each organization, according to its culture and its staff.

In describing practices, the People CMM seeks to delineate the “what” and not the “how”. These practices describe the “whats” in broad terms so that organizations are left great leeway in creatively implementing the “hows”. For example, the People CMM might indicate that individual performance should be reviewed on a periodic basis. However, it would not specify how often, what dimensions should be reviewed, who provides input, or how a performance

Interpreting the People CMM

discussion should be performed. Decisions about how practices should be implemented are left up to the organization.

Although the practices described in the People CMM are meant to be independent of any particular implementation, examples of specific practices are consistently used in elaborating the practices to improve clarity. These examples typically list numerous methods for implementing a practice or numerous issues an organization may have to address in implementing a practice. However, these examples are not intended to be prescriptive or exhaustive. They are merely included to provide informative assistance in interpreting a practice.

To provide workforce practices that apply to a wide a range of situations, some of the practices are intentionally stated without many implementation details to allow flexibility. Throughout the practices, nonspecific phrases like “affected individuals”, “adequate”, “as appropriate”, and “as needed” are used. The use of such nonspecific terms allows for the widest possible interpretation and application of the practices. In many cases, examples are provided for nonspecific terms, at least for the first use of the term. These phrases may have different meanings for two different organizations, for two units in a single organization, or for one unit at different points in its life cycle. Each unit or organization must interpret these nonspecific phrases for its own situation. These nonspecific phrases are used so that goals and practices can be interpreted in light of an organization’s business objectives.

Certain phrases and conventions were used to provide continuity and consistency among the process areas. The major phrases and conventions are described below, arranged by category of practice.

5.2.1 Commitment to Perform

Policy

Policy statements generally refer to establishing, maintaining, and following a written, organizational policy for the practices of that process area. This emphasizes the connection between organizational commitment and the practices performed in workgroups and units. Policies typically do not provide implementation details, but merely commit the organization to comply with a set of guiding practices and behaviors in the area covered by the policy.

Organizational coordination

An organizational role(s) is assigned responsibility for coordinating activities at the organizational level. This coordination role may involve defining common procedures; assisting units in defining their own procedures; reviewing unit-level activities for compliance with laws, regulations, policies, and the like; collecting and sharing experience across the organization; or providing advice, when asked. In some cases, these responsibilities for organizational coordination may be divided across multiple groups, such as competency ownership teams with responsibilities for organization-wide coordination within each workforce competency community.

5.2.2 Ability to Perform

Resources and Funding

An Ability to Perform practice reflects the need for adequate *resources* and *funding* for the activities covered by the process area. These resources and funding generally fall into five categories: adequate personnel, adequate funding, adequate time, access to special skills, and access to tools. Tools that may be of use in performing the activities of the process area are listed as examples. The term “funding” is used, rather than “budgets”, to emphasize that having a budget is not sufficient, but whether the funding resources have been appropriately expended on their intended purposes.

Interpreting the People CMM

*Preparation
needed to perform
responsibilities*

The People CMM addresses an individual's preparation to perform the practices relevant to their responsibilities. This context is somewhat broader than might normally be considered when using the term *training*. Training is provided to make an individual or workgroup proficient through specialized instruction and practice. Training may include informal, as well as formal, vehicles for transferring knowledge and skills to the staff. While classroom training is commonly used by many organizations to build the knowledge, skills, and process abilities of their employees, the People CMM also accommodates other techniques, such as facilitated video, computer-aided instruction, mentoring and apprenticeship programs, guided self-study, and knowledge gained from previous experience. Preparation to perform one's responsibilities can be gained through training, mentoring, prior experience, or other forms of learning, but the individuals must possess the knowledge skills, and process abilities necessary to perform their responsibilities.

Orientation

In some process areas, the workforce needs to understand the practices that will affect them, such as in Compensation and Performance Management. *Orientation* is used broadly to indicate the level of knowledge or skills being transferred is less than would be expected to be transferred to someone who was being prepared to perform the practices. Orientation is an overview or introduction to a topic for those overseeing, working with, or being affected by the individuals responsible for performing in the topic area.

*Defined and
documented*

At maturity levels 3, 4, and 5, the workforce practices to be implemented need to be *defined and documented* so that greater consistency can be achieved across the organization in implementing workforce practices. Thus, at Maturity Level 3 workforce practices begin being treated as standard organizational processes.

Prerequisite items

Some process areas require documents or materials to exist as inputs for the practices to be performed. For example, workforce competency descriptions and competency-based processes are a prerequisite for Competency Development. In keeping with the People CMM philosophy of highlighting the vital few practices, not all prerequisite items are listed for each process area. The People CMM incorporates practices only for those prerequisites that have been found to be particularly critical for implementing the process area.

5.2.3 Practices Performed

In contrast to the institutionalization practices, Practices Performed shows great structural variability, because the implementation activities for the process area vary in level of detail, organizational focus (e.g., unit or organization), and need for planning and documentation. Some generalizations are highlighted below.

Plans

Plans require management commitment, both from the standpoint of creating them and ensuring that they are followed. The practice for a plan requires that it be developed or revised and that the activities of the process area be based on it.

Certain practices call for establishing and maintaining a strategy. For example, at Maturity Level 4, process areas that implement quantitative management activities only on selected practices require a quantitative management strategy. The practice for such a strategy also requires that it be developed or revised and that the activities of the process area be based on it.

According to a documented procedure

A documented procedure is usually needed so that the individuals responsible for a task or activity are able to perform it in a repeatable way. Documented procedures are critical for learning from experience. Unless the procedures used are documented, it is difficult for someone to determine exactly how the results were achieved and what might bring better results. When used as a component of preparing responsible individuals, documented procedures contribute to greater consistency in learning and performing a workforce practice.

The formality and level of detail of a documented procedure can vary significantly, from a hand-written desk procedure for a responsible individual, to a formal standard operating procedure used throughout the organization. The formality and level of detail depends on who will perform the task or activity (e.g., individual or workgroup), how often it is performed, the importance and intended use of the results, the maturity level of the organization, and the intended recipients of the results.

Establish and Maintain

The People CMM includes practices and goals that *establish and maintain* specified artifact(s). This phrase connotes a meaning beyond its component terms; it includes its use and documentation as well as periodic updating. For example, “The organization establishes and maintains a documented policy for conducting its Performance Management activities” means that not only must a policy be formulated and documented, but also it must be used throughout the organization, and periodically reviewed and updated to remain current with the organization’s changing conditions.

5.2.4 Measurement and Analysis

The Measurement and Analysis practices describe basic measurement activities that are necessary to determine status related to the Practices Performed. Measurements that are inherently part of the activities of the process area are described in the informative material included in the Practices Performed.

Status

Some measures need to be taken to indicate the implementation status of the practices the organization has chosen to implement to comply with its policy in a particular area. These measures typically concern such issues as the level or frequency of performance, the effort or cost of performance, or the breadth of the organization through which the practices have been implemented. They are measures that support management tracking of compliance and performance.

Effectiveness

Some measures are collected to evaluate the effectiveness of the practices in use. In many cases, effectiveness measures are not collected for Maturity Level 2 process areas since differences in how practices are implemented among units will make it difficult to perform effectiveness analyses. However, the greater organization-wide consistency in implementing practices at Maturity Levels 3 through 5 provide a more effective foundation for evaluating the efficiency of the practices implemented. These measures allow an organization to determine whether corrective actions or improvements need to be made to practices to achieve fuller benefit from their implementation.

Aggregation of unit measures to the organizational level

Some information needs to be aggregated and analyzed at the organizational level in order to support the goals of a process area. For instance, compensation information needs to be aggregated and analyzed at the organizational level to support the organization's efforts in establishing and maintaining equity in its compensation system.

5.2.5 Verifying Implementation

The Verifying Implementation practices generally relate to verifying compliance with organizational policies and oversight by executive management.

Verifying compliance

A responsible individual should verify that responsible individuals are performing appropriate practices in compliance with the organization's policies and stated values, and that these activities comply with relevant laws and regulations. This responsibility is a process assurance function that reports compliance to executive management and can identify needs for corrective action.

Executive management review on a periodic basis

The primary purpose of periodic reviews by executive management is to provide awareness of, and insight into, workforce activities at an appropriate level of abstraction and in a timely manner. The time between reviews should meet the needs of the organization and may be lengthy, as long as adequate mechanisms for reporting exceptions are available.

The scope and content of executive management reviews will depend on which executive is involved in the review. Reviews by the executive responsible for all human resource activities of an organization are expected to occur on a different schedule, and address different topics, than a review by the chief executive of the organization. Executive management reviews would also be expected to cover different topics, or similar topics, at a higher level of abstraction than unit-level reviews.

5.3 Organizational Roles and Structure

Although the People CMM recommends practices that are independent of specific organizational structures and models, its practices consistently use terminology related to organizational structure and roles that may differ from those implemented in any specific organization. The following sections describe the various concepts related to organizational roles and structures that are necessary for interpreting the practices of the People CMM.

5.3.1 Organizational Roles

A *role* is a cluster of defined responsibilities that may be assumed by one or more individuals. There does not need to be a one-to-one correspondence between roles and individuals. One person could perform multiple roles, or separate individuals could perform each role. Various individuals are responsible for the workforce activities within an organization. These individuals include executive managers; managers at all levels, including workgroup leaders, line managers, and matrix managers; the individuals within the organization themselves; and the human resources function.

The following descriptions of roles are frequently used in the practices:

*Executive
manager*

An executive manager fulfills a management role at a high enough level in an organization that the primary focus is the long-term vitality of the organization, rather than operational issues related to specific products and services. An executive manager provides and protects resources for long-term improvement of the workforce processes.

Executive management, as used in the People CMM, can denote any manager who satisfies the above description, up to and including the head of the whole organization. As used in the practices, the term “executive management” should be interpreted in the context of the process area and the units and organization under consideration. The intent is to include specifically those executive managers who are needed to fulfill the leadership and oversight roles essential to achieving the goals of the process area.

Manager

A manager fulfills a role that encompasses providing technical and administrative direction and control to individuals performing tasks or activities within the manager’s area of responsibility. The traditional functions of a manager include planning, resourcing, organizing, directing, and controlling work within an area of responsibility.

Individuals, workforce

Several terms are used in the People CMM to denote the individuals who perform the various roles required to execute the business of the organization. “Individuals” are those who are focus or recipients of workforce practices and activities. Thus, while the people who report to a manager are the “individuals” affected by the workforce activities the manager performs, the manager is an “individual” affected by the workforce activities performed by the manager’s supervisor.

The workforce refers to the collection of individuals that comprise the organization. Since most managers are themselves “individuals” affected by the workforce activities of their managers, managers are included when “workforce” is used.

In some practices, the term “individuals” is meant to identify specific people within the organization when used in qualified and bounded expressions such as “responsible individuals”, or “individuals responsible for improving”).

Organizational role(s) assigned responsibility for processes

At the Managed Level, organizational role(s) are assigned responsibility for assisting and advising units in performing the practices of each process area. At the Defined Level and beyond, organizational role(s) are assigned responsibility for coordinating activities within a process area or a workforce competency across the organization.

These responsible individuals, whether they are process owners or competency managers, may be members of the human resources function or they may reside within the organization itself. Regardless of their placement in the organizational structure, these individuals exercise organization-wide responsibilities for their assigned processes or workforce competencies.

*Organizational
role(s) assigned
responsibility for
processes
(continued)*

Examples of individuals who might be assigned responsibility for process- or competency-related activities could include the following:

- members of the human resources function
- members of the training or development functions
- organizational competency management group

*Human resources
function, member
of the human
resources function*

The human resources function is the collection of responsibilities within an organization that coordinates workforce practices and activities at the organizational level. They typically focus on devising practical, effective ways to manage employer-employee relations. Their responsibility is directed toward, but not limited to, the recruiting, selection, hiring, and training of employees and the formulation of policies, procedures, and relations with employees or their representatives.

Generally, the concerns of the human resources function encompass recruiting and hiring practices, benefits, classification and compensation, employment, performance management, labor relations, staff services, and training and development, as well as facilitating the development of improved workforce practices. The scope of the responsibilities of the human resources group depends largely on the size and type of business of the organization. The use of the term “human resources” is intended to imply any staff function responsible for the implementation of workforce practices in a particular area of concern, even if the responsible individual(s) does not reside in a human resources department.

Human resources function, member of the human resources function (continued)

The human resources function also shares the responsibility for verification and measurement of the organization's workforce activities with management and serves in a quality assurance role for the organization's workforce processes.

Throughout an organization's process improvement efforts, the human resources function maintains these common administrative roles. However, some aspects of the role of the human resources function change as the organization and its staff change due to improvements in workforce capabilities. For example, as the organization's workforce capability increases, the human resources function shares responsibility for process and individual improvement with management and individuals.

5.3.2 Organizational Structure

The People CMM does not specify any organizational structure. It uses an organization's existing structure and provides a framework for the organization to improve its capability to make use of and develop its workforce; thus, improving its workforce capability.

The fundamental concepts of organization, unit, and workgroup must be understood to properly interpret the practices of the People CMM. The following paragraphs define the use of these concepts in the People CMM.

Organization

An *organization* is an entity within a company or other collective structure (e.g., major sector of a corporation, government agency, branch of service, or nonprofit entity). It has an identifiable executive manager(s) who has the responsibility for the operations, practices, and performance of the organization. Most frequently, an organization is contained within a single site and has a local human resources function, but this is not always true. An organization is the entity in which an improvement program is applied.

Unit A *unit* is a single, well-defined organizational component (e.g., a department, a section, a project, etc.) within an organization that typically has an individual who assigned management or supervisory responsibility for its activities.

The term “unit” is used to refer to any organizational entity that is accountable to a specified individual (usually a manager) responsible for accomplishing a set of performance objectives that can only be met through collective action. A workgroup may constitute the lowest level unit, but the lowest level units often consist of several workgroups. “Unit” is a recursive concept, since units may be composed from other units cascading down the organization. For instance, a division may be a unit consisting of departments, each of which may be a unit consisting of programs, each of which may be a unit consisting of projects, and so on.

Workgroup A *workgroup* is a collection of people who work closely together on tasks that are highly interdependent to achieve shared objectives. A workgroup reports to a responsible individual who may be involved in managing its day to day activities. In the People CMM, an “*empowered workgroup*” refers to a workgroup that is granted a level of autonomy in managing and performing its work and may perform some of its own workforce practices. Not all workgroups develop into empowered workgroups.

Empowered workgroup An *empowered workgroup* is a workgroup that works closely together on tasks that are highly interdependent to achieve shared objectives, and exercises considerable autonomy in managing and conducting their business activities. They may also be granted a level of responsibility for performing some of the workforce activities internal to the workgroup.

Interpreting the People CMM

Another group commonly referred to in the People CMM is described below:

*Human resources
function*

The People CMM does not dictate an organizational structure or placement for the human resources function. See Section 5.3.1 for a discussion of the roles that may influence the organizational structure of the human resources function. Other organizational factors, such as those discussed in Section 5.1.1, affect the size and structure of the human resources function.

5.4 Institutionalization Issues

CMMs are unique among process standards in providing guidance for institutionalizing the practices recommended in the model. The history of improvement programs is replete with failures that were caused when the performance of improved practices decayed over time. This decay often occurred because the organization had not provided the support necessary to sustain the use of the practices over time or through changes in executives, in managers and or in business conditions. The People CMM provides four categories of practices to establish the different conditions required to institutionalize practices: Commitment to Perform, Ability to Perform, Measurement and Analysis, Verifying Implementation. Some of these practices exhibit different attributes at different maturity levels.

5.4.1 Maturity Level 2 Procedures versus Maturity Level 3 Defined Practices

At Maturity Level 2, the practice in Commitment to Perform (typically Commitment 1) that concerns establishing an organizational policy describes high level guidance for conducting the practices performed in the process area. The policy often mandates that procedures be developed for implementing the practices of a process area, and it may indicate some of the functions or activities to be covered in the procedures. However, it does not specify the details of the procedures to be developed for implementing the practices in the process area. Different managers or units may implement the practices in different ways using different procedures, provided that the procedures they use comply with the guidance provided in the policy.

At Maturity Levels 3, 4, and 5, the final practice included in Ability to Perform category indicates that the practices and procedures to be implemented should be defined and documented. The objective is to specify these practices as standard organizational processes that can be learned and applied consistently by any responsible individual in the organization. The transition from Maturity Level 2 to high levels of maturity involves evolving from local procedures within units to standard organizational processes, practices, and procedures.

Procedures mandated by policies at Maturity Level 3 (Commitment to Perform) would typically be implemented at the organizational level and would become part of the defined and documented practices provided to responsible individuals as guidance for performing their workforce activities.

5.4.2 Defined, But Not Quantified or Optimized

The People CMM describes a system of practices that are required by the institutionalization goal to be defined and documented. The institutionalization goal included in each process area at Maturity Levels 4 and 5 requires that the practices implemented in achieving the goals of the process area be “performed as defined organizational processes” (a Maturity Level 3 attribute), but not quantified for predictability or optimized through continual improvement.

At Maturity Level 4, the organization is able to predict its capability for performing work because it can quantify the capability of its workforce and of the competency-based processes they use in performing their assignments. The practices that are quantified at Maturity Level 4 are most frequently competency-based processes. Some workforce practices may be quantified in order to determine their effect on the capability of the workforce or of the competency-based processes being performed. However, this quantification is not required of all workforce practices, only those most likely to impact capability results. The selection of these workforce practices is best handled through selection procedures in the relevant Practices Performed, rather than as a requirement in the institutionalization goal.

At Maturity Level 5, some workforce practices may be selected for improvement. However, not all workforce practices are required to undergo continual improvement. Therefore, the goals of the process areas at Maturity Levels 3, 4, and 5 require that practices be defined. However, further improvement of these practices through quantification or optimization is the province of actions taken in the Practices Performed at Maturity Levels 4 and 5 to achieve the implementation goals of the process areas.

5.5 Maturity Level Concerns

5.5.1 Maturity Level Three is Enough!

Section 3.2 described how the organization’s capability to achieve four critical objectives evolves as it matures. Some organizations have chosen to end their maturity growth at the Defined Level. That is, they believe they have achieved a stable operating state after having defined their workforce competencies.

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However, Maturity Level 3 is not a stable state. Without constant updating and renewal, the definition of the organization's workforce competencies will become obsolete, and responsible individuals will stop using them when performing workforce activities. This degrades the organization's capability back to the Managed Level, and eventually it may devolve back to the Initial Level. The organization and its business environment constantly change. The maturity level most capable of helping the organization manage change is the Optimizing Level, where change management is treated as a standard business process. The decision about which maturity level to attain is an executive management decision, but management should not be deceived that they have achieved a steady operating state at any level.

Continuing to pursue higher levels of maturity can be a natural outcome of achieving a level and wondering how to exploit the opportunities for improved results. Once an organization achieves Maturity Level 2, managers will start requesting standard descriptions of skills for position descriptions, for assessing training needs, for evaluating performance, and for similar responsibilities. These standard descriptions are exactly what Competency Analysis provides and it saves managers' time in performing their workforce activities, while providing excellent reference material on career and promotional opportunities to the workforce. Similarly, once the workforce is using competency-based processes, the next logical steps are to measure and ultimately improve them. When the organization is focused on business benefit, they typically find that higher levels of maturity allow them to better exploit the opportunities afforded by accomplishments at lower maturity levels.

5.5.2 Level Fever

One of the great dangers in using Capability Maturity Models as guides for improvement is "level fever". When an organization succumbs to level fever, attaining the maturity level becomes more important than achieving the business benefits attained through improved practices. Consequently, preparing for a formal assessment becomes more important than ensuring that the practices implemented actually provide useful results.

Striving for a level has both benefits and risks. Since the attainment of a maturity level represents a significant achievement for the organization, everyone is motivated to implement the full set of improved practices. The exhilaration of achieving a level motivates the organization to pursue the next level. However, the organization must ensure that the practices implemented in pursuit of higher maturity levels are creating beneficial changes. Otherwise, the organization is adding bureaucracy that eventually will have to be dismantled.

Level fever is most often created when maturity level designations become part of business or contract award evaluations. The use of maturity ratings has mostly been confined to the use of the CMM for Software (SW-CMM[®]) or CMM Integration (CMMISM) to evaluate the capability of software or system development contractors. However, the People CMM may become part of

a competitive evaluation process when the capability and longevity of a workforce is critical to contract success, such as in outsourcing.

When maturity ratings are part of the candidate evaluation process, tremendous pressure is placed on an assessment team. Weaknesses or opportunities for improvement that should have been raised in the assessment may get suppressed because of the substantial revenues at stake. Weak practices can be evaluated as strengths so as not to affect the eventual maturity rating. Under these circumstances, maturity ratings can lose their credibility, and concerns over weak assessments incorrectly get translated into concerns regarding the validity of the People CMM as a guide for improvement.

A better use of maturity models for evaluating suppliers treats the model as a method for risk analysis. That is, the contracting organization will evaluate candidate suppliers against the process areas at a targeted maturity level and compare their profiles of strengths and weaknesses against the goals of each process area. The contracting organization then determines which supplier's profile of practices presents the fewest risks, and incorporates these results as input into the contract award decision. Thus, the maturity profile, not the maturity level, is included with cost and other important decision criteria. In fact, the winning supplier can be given an incentive in the contract to make improvements to the weaknesses identified in an assessment.

5.5.3 Skipping Maturity Levels

Some organizations try to skip to higher maturity levels by implementing measurement, empowerment, or continuous improvement practices without building the infrastructure of practices provided by lower maturity levels of the model. Although skipping levels is tempting, experience indicates that it normally leads to a failed improvement program. In fact, it can actually damage the organization if the workforce builds expectations for changes that are not fully deployed when the program unravels.

Consider a situation where an organization is trying to implement a sophisticated compensation scheme tying bonuses to business results at the team, unit, and organizational levels. If the organization has not established a foundation of equitable compensation, measurable performance objectives, timely performance feedback, and open communication of business results, the scheme risks failure.

Similarly, consider an organization that declares its intention to empower teams. If managers have not developed trust in the capability of the people and the processes they are using, managers will continue to exert control over matters that workgroups believe are under their authority. These situations create frustration and cynicism in the workforce. These problems could have been avoided by first developing the foundation of lower maturity practices required to make the higher maturity practices credible and effective.

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Skipping levels is counterproductive because each maturity level forms a necessary foundation upon which the next level can be built. The People CMM was designed to develop the supporting foundation needed to ensure that higher level practices could achieve their full impact on improving workforce capability. Processes without the proper foundation fail at the very point they are needed most – when under stress – and they provide no basis for future improvement.

5.5.4 Ignoring Process Areas

Some organizations may want to declare a process area to be non-applicable in their environments. Process areas should not be dropped from concern hastily. In the extreme, this practice can result in dropping process areas that the organization finds difficult to implement, regardless of the implications for other process areas or for the organization's benefits from their ongoing improvement program. Because these process areas form systems of mutually supporting practices, it is difficult to identify which process area is an obvious candidate for being ignored.

As an example, consider the Competency Integration process area at the Predictable Level. The Competency Integration process area is focused on improving the efficiency and agility of interdependent work by integrating the process abilities of different workforce competencies. An organization might argue that it has only one area of workforce competency and, therefore, Competency Integration is irrelevant to its business practices. However, such organizations often integrate people from their support staffs into workgroups dominated by a single workforce competency. For instance, a marketing person may be integrated with a service delivery group. If these situations are frequent, the collective implementation of practices in Competency Integration may offer substantial improvements in operational costs, productivity, or cycle time.

In general, all process areas should be treated as being relevant to an improvement program unless no appropriate application can be found for the practices of the process area. Such an analysis should consider not only the process area as a stand-alone entity, but should also consider it in terms of other related process areas. The threads that link process areas across maturity levels were presented in Figure 3.6. Ignoring a process area may put the effectiveness of other higher-maturity process areas in its thread at risk by removing critical foundational practices. Similarly, the effectiveness of other process areas at the same maturity level may be affected because a critical component of the system of practices typically installed at that maturity level is missing when a process area is ignored. For example, Competency Analysis is not only essential for supporting the implementation of other Defined Level process areas, such as Workforce Planning, Competency Development, Career Development, and Competency-Based Practices, but it also provides a foundation for practices at higher maturity levels, including Competency-Based Assets and Continuous Capability Improvement. The People CMM is designed as a system of practices, and the integrity of the system is critical to its successful implementation.

5.5.5 Implementing Practices Out of Maturity Level Sequence

Although skipping entire maturity levels will eventually hamper an improvement program, the model does not restrict an organization from implementing a workforce practice at a high maturity level than the level currently being pursued. If the organization believes that it can derive substantial benefit from a practice several levels higher because it addresses immediate needs or problems, then the organization might elect to proceed with implementation. However, the organization must be cautious of the risks introduced by the absence of any foundational practices at lower levels on which the higher maturity practice might have ordinarily been built.

The maturity levels in the People CMM describe characteristic patterns of practices and behaviors. Each level forms a foundation on which an organization can build workforce practices effectively and efficiently at succeeding maturity levels. However, an organization can occasionally benefit from implementing processes described at a higher maturity level even though it has not satisfied all the process areas at a lower maturity level. That is, if practices critical to the performance of the higher maturity practice have not been implemented, then its effectiveness may be at risk. Once the foundation of supporting practices has been laid, a high maturity practice has a much higher likelihood of successful deployment, even if other lower maturity practices are still being implemented.

Even if the foundational practices are in place, a high maturity practice may be at risk if the culture has not evolved sufficiently to provide enduring support for the practice. For instance, practices involving the type of empowerment instituted at Maturity Level 4 may be at risk if the prevailing culture is shaped by trying to implement basic management responsibility and control at Maturity Level 2. For this reason, organizations should be conservative in the number of high maturity practices it introduces out of order. Failed practices cast doubt over the effectiveness of the entire improvement program.

The People CMM should not be interpreted as prohibiting practices or activities from higher maturity levels that the organization finds beneficial. For example, workgroup empowerment practices are not discussed in the People CMM until the Predictable Level, yet organizations at the Initial Level may have implemented self-managed teams for some activities. Similarly, a less mature organization may be able to train its workforce in areas that would correspond to workforce competencies (Defined Level), provide team-based incentives (Predictable Level), or use mentors (Predictable Level). The organization should evaluate the effectiveness of these practices in light of the risks created by and cracks in the foundation of practices that should be implemented to support them.

If the organization sees the opportunity to benefit from a higher maturity practice and can support its performance, then the organization should implement it. However, the ability to implement practices from higher maturity levels does not imply that maturity levels can be skipped without risk. There is risk in implementing practices without the proper foundation being

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developed at lower maturity levels. For example, the team-building literature contains many examples of programs to empower teams that failed [Mohrman 95]. These failures often occurred because the foundation in communication skills, participatory culture, and adjustments to compensation practices had not been properly developed. Similarly, many innovative motivational practices fail to work effectively in an environment where there are no objective performance criteria or where basic performance management practices are performed inconsistently. Similarly, rushing to implement skills-based management systems that constitute an implementation of the organization's workforce competencies at the Defined Level, can prove ineffective when the organization has no history of identifying skill needs for training or selection at the Managed Level.

The maturity framework as represented in the People CMM is a resilient and proven guide for improving an organization's capability. It must be implemented with common sense and good management judgement. It is intended to be neither exclusive nor exhaustive in guiding improvements to workforce practices. Its guidance needs to be adapted to each organization, but its principles have proven effective over a large range of organizational types and sizes.

6 Using the People CMM

6.1 Uses of the People CMM

The People CMM helps organizations to:

- characterize the maturity of their workforce practices
- guide a program of continuous workforce development
- set priorities for immediate actions
- integrate workforce development with process improvement
- establish a culture of professional excellence

The value of the People CMM is in the way that organizations use it. The People CMM can be applied by an organization in two primary ways:

- as a guide in planning and implementing improvement activities, and
- as a standard for assessing workforce practices.

Since most of the experience gained to date in applying the People CMM has been in the software and information technologies industries, this chapter will present numerous examples from those industries. However, the lessons learned in these industries should be relevant to most other segments of industry and government as well. Since its release in 1995, the People CMM has been used throughout the United States, Canada, Europe, Australia, and India to guide and conduct organizational improvement activities. It has been used world-wide by both small and large commercial organizations, and by government organizations. As of 2001, adoption rates for the People CMM appear to be highest in India, where high turnover and increasing salary pressures are forcing software organizations to address workforce issues. In India, the People

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CMM has been referred to as the “weapon of choice against the brain drain.” [Crane 01]. Organizations reported to be using the People CMM in India include American Express, Atos Origin India, CG Smith, Cognizant Technology Solutions, Datamatics, Hughes Software Systems Ltd., i-Flex, IBM Global Services India, Intelligroup, KPMG India, Mastek Limited (IT), Oracle, QAI (India) Ltd., Philips Software Center Ltd., RS Software (India) Ltd., Samsung, Siemens Information Systems Limited, Tata Consultancy Services, Tata Elxsi Ltd. (TEL) and Wipro.

Organizations in North America, Europe, and Australia that have used the People CMM include Lockheed Martin [Miller 00], Boeing [Vu 01, Porter 01], BAE Systems [Chaffee 96], Ericsson [Martín-Vivaldi 99], IBM Global Services [Paulk 01a, Paulk 01b], Novo Nordisk IT A/S (NNIT) [Curtis 00], Citibank, the U.S. Army, and Advanced Information Services Inc. (AIS), the winner of the 1999 IEEE Computer Society Software Process Achievement Award [Paulk 01a, Paulk 01b, Vu 01, Ferguson 99, Seshagiri 00]. According to a recent survey of high-maturity software organizations, more than 40% of the Level 4 and Level 5 organizations, as measured by the Software CMM, are also using the People CMM to support their ongoing efforts in organizational improvement [Paulk 01b].

Humphrey [97a] describes the use of the People CMM in an organizational improvement program. The following section shows how the People CMM can be used to support such an improvement program. It introduces the People CMM as a source of guidelines for improving the capability and readiness of an organization's workforce in the context of the Initiating, Diagnosing, Establishing, Acting, and Learning (IDEALSM) model for process improvement. It is called the IDEAL Model after the first letters in each of its five phases: Initiating, Diagnosing, Establishing, Acting, and Learning. This chapter presents the IDEAL approach [Gremba 97], provides an introduction to the two ways that organizations can use the People CMM, and discusses issues in implementing a People CMM-based improvement program.

6.2 The IDEAL Life Cycle Model for Improvement

The IDEAL model is an organizational improvement model that serves as a roadmap for initiating, planning, and guiding improvement actions. This model for improvement programs is grounded in several years of experience with and lessons learned from software process improvement programs. This model is a life cycle for organizing the phases of an improvement program. The IDEAL model defines a systematic, five-phase, continuous process improvement

approach, with a concurrent sixth element addressing the project management tasks that span the five phases. Figure 6.1 depicts five phases of the IDEAL life cycle for an improvement program:

- ❑ Initiating - establish support and responsibilities for improvement
- ❑ Diagnosing - identify the problems to be solved
- ❑ Establishing - select and plan specific improvement activities
- ❑ Acting - design, pilot, implement, and institutionalize improvements
- ❑ Learning - identify improvements in IDEAL-based activities

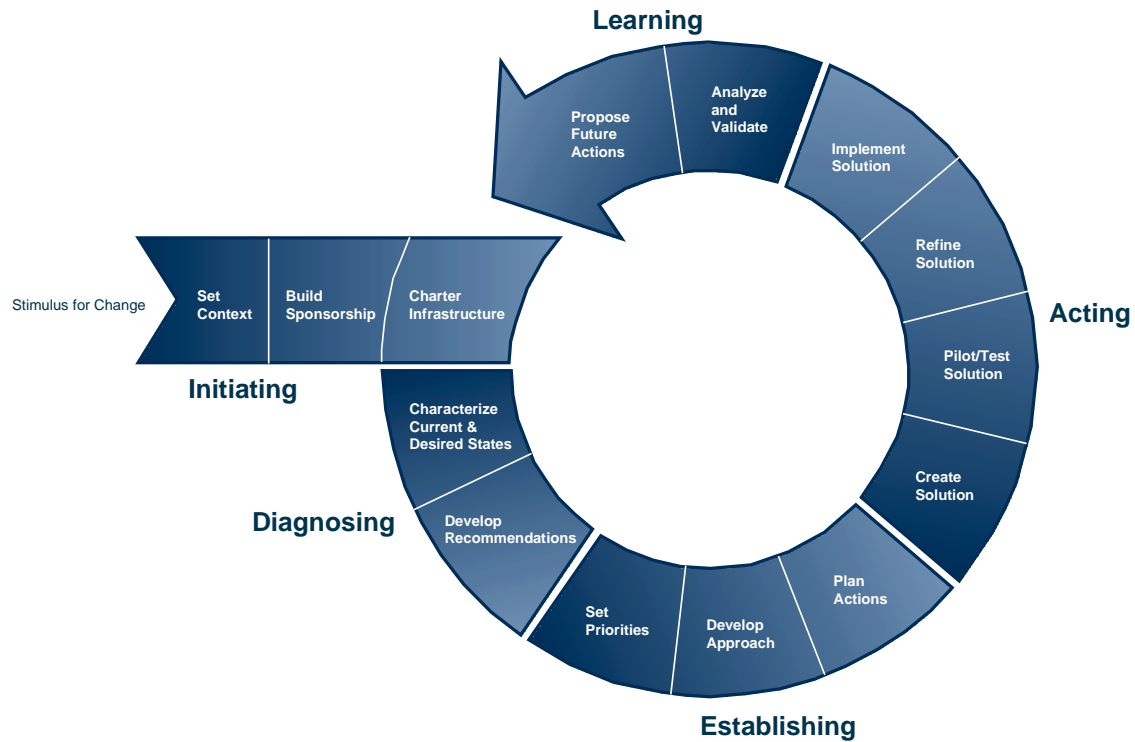


Figure 6.1 – The IDEALSM Model

6.3 People CMM as a Guide for Improvement

The People CMM provides guidance for implementing practices in an organization. Two levels of guidance are provided by the People CMM:

1. Maturity levels and process areas within each maturity level provide guidance on a strategy for developing the organization over time.
2. Practices within the process areas provide guidance on practices that the organization can employ to solve explicit problems or shortcomings in its workforce practices.

In providing guidance, the People CMM does not specify the explicit workforce practices to be implemented. Rather, it sets a framework for selecting and tailoring practices to the organization's history, culture, and environment. There are many professional sources that describe specific methods for workforce practices such as performance management, team building, and training. When implementing workforce practices and activities within an organization, the practices and activities adopted should be tailored to fit the needs and the culture of the organization. As described in Section 4.6, practices in the People CMM are expected model components. While the People CMM describes the practices that an organization that is achieving a set of goals will typically implement, it does not prescribe how they must be implemented in an organization. The culture of the organization, as well as the regional or national culture where the organization is located, should be considered when implementing workforce practices. Studies have shown that performance is higher when practices are congruent with the national culture [Newman 96].

Deploying improved workforce practices can best be accomplished as a component of a change management, or organizational improvement, program. The People CMM does not provide guidance on how to implement the improvement program itself. The People CMM is a roadmap for organizational growth and can be implemented with a model of how to conduct an improvement program. A model for conducting improvement programs, the IDEALSM model, was presented in Section 6.2.

Besides providing guidance, the People CMM can also be used as a tool to support checking or validating improvement efforts. One way that this can be done is to apply the People CMM as a benchmark to compare against planned workforce practices and activities. AT&T's prior experiences with the People CMM provide an example of such use. Within AT&T, an internal team was chartered to develop and propose a human resources plan that would address the competency needs of their business. This team was focused on developing an "integrated

approach to recruiting, developing, and motivating” AT&T staff [Yochum 96]. The People CMM was used as a means of validating their planned efforts.

Another way that the People CMM can be used to guide and check progress of improvements is as a measurement of progress. The People CMM has been used as a key measure of progress in organizations. One example is in the Balanced Scorecard framework [Kaplan 92]. The Balanced Scorecard framework is being applied by AIS to “communicate, implement, and manage the AIS business strategy” [Seshagiri 00]. AIS established five categories of strategic objectives in their Balanced Scorecard framework, including financial or how should the organization appear to its shareholders, customer or how must the organization appear to its customers, employee or how must the organization develop and manage its workforce, internal business process or which business processes must the organization excel at, and learning and growth or how must the organization sustain its ability to change and improve. Aligning each of these five strategic objectives should lead to increased organizational performance, not only against each objective, but also overall. Figure 6.2 shows the strategic alignment of these objectives.

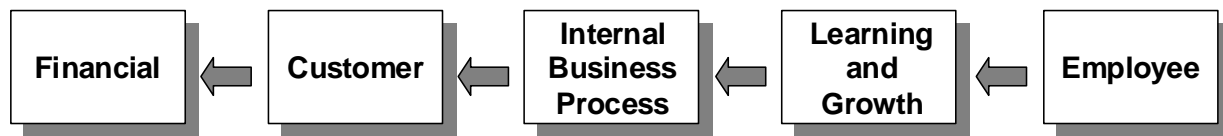


Figure 6. 2 – Alignment of Strategic Objectives using the Balanced Scorecard

The AIS Balanced Scorecard is shown in Figure 6. 3. Of the five categories of strategic objectives in the AIS Balanced Scorecard, the People CMM has direct impact on three of the five categories: employee, internal business process, and learning and growth. Highlighted portions of this scorecard show impacts of the People CMM in two ways. The first, which is shown circled in this figure, shows the use of results of a comparison or benchmark of organizational practices against the People CMM as a specific measurement of outcomes. The second, shown in italics, shows those components, outcomes and drivers, within the scorecard affected by

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Strategic Objectives	Strategic Measurements Core Outcomes	Strategic Measurements Performance Drivers
Financial Consistently meet or exceed shareholder expectations for - revenue growth - profitability - return on investment	Employee target ratio of gross revenue to base salary Projects' profitability target Increase in shareholder equity	Designated expenses' target reduction in expense to revenue ratio
Customer Consistently meet or exceed customer expectations for - defect free and on-time delivery - value for products and services - achieving time-to-market goals	Customer responses indicating value "achieved" Statements of Work lost due to not meeting customer time to market goals	Defect-free deliveries On-time or ahead of schedule deliveries
Employee <i>Consistently meet or exceed employee expectations for</i> - training - compensation - communication - work environment - performance management - career development	Employee responses and assessment indicating P-CMM Repeatable Level Key Process Areas fully satisfied	<i>Disciplined, repeatable, and stable work force practices documented</i>
Internal Business Process Projects achieve predictable results for effort, schedule, and defects <i>within known range of AIS organization defined process capability</i> Engineers achieve the highest possible quality in the design, code phases of a component, module or program <i>AIS organization defined process is continuously improved</i>	Projects with actual effort and schedule less than committed effort and schedule Components, modules, programs with zero integration test defects New products or product enhancements with documented quality better than its predecessor	Projects planned and managed <i>according to their defined process which is an approved tailoring of the AIS organization defined process</i> Components with target percent of defects removed before compile and test Process Improvement Proposals submitted and implemented
Learning and Growth <i>Investment in people, process and technology enables achievement of customer, employee, and shareholder satisfaction goals</i>	<i>Engineers achieving training goals</i> <i>Engineers align their career goals with company goals</i> <i>Engineers improve productivity continuously</i>	<i>Engineers acquire new skills</i> <i>Engineers achieving career plans</i> <i>Engineers use the Personal Software Process</i>

Figure 6. 3 – AIS Balanced Scorecard

(Adapted from [Seshagiri 00] with permission)

practices from the People CMM. Resulting outcomes would be employee satisfaction, continual process improvement, and competency growth and alignment between individuals and the organization.

Not only can these impacts be seen in the organizational balanced scorecard framework, but also it can be traced into actions at the individual level to bring about performance to achieve the objectives of the Balanced Scorecard framework. At AIS, the Balanced Scorecard strategic objectives feed into the objectives for each individual in their assigned position. This objective setting begins a performance management cycle by establishing individual accountability in their positions. The performance management cycle is closed when performance is examined and improvement goals and individual performance ratings are identified. When individual development plans are deployed across the organization, these improvement goals will feed into each individual's development plan. Thus, individual's actions are aligned with the organization's goals to achieve the objectives set in the Balanced Scorecard framework.

The core outcomes in the Employee portion of the AIS Balanced Scorecard shows the use of the People CMM in an assessment setting. The following paragraphs describe the use of the People CMM as the basis for performing organizational assessments.

6.4 People CMM as a Basis for Assessments

The People CMM provides a standard against which the workforce practices of an organization can be assessed. People CMM-based assessments typically fit within the first two phases of the IDEAL life cycle, as follows:

1. Initiating phase
 - Set improvement context within the organization
 - Establish sponsorship for a People CMM-based improvement program
 - Establish People CMM-based improvement infrastructure with responsibility for acting on assessment results
2. Diagnosing phase
 - Appraise the strengths and weaknesses of the organization's current workforce practices
 - Develop improvement program recommendations and document assessment results

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The People CMM-based Assessment Method [Hefley 98] supports organizations in using the People CMM to guide improvements in their workforce practices. A People CMM-based assessment is only one component of a successful improvement program. It supports organizations in assessing their current people management practices. It is a diagnostic tool designed to achieve the following objectives:

- ❑ Identify strengths and weaknesses in workforce practices against a community standard
- ❑ Build consensus around the fundamental workforce problems facing the organization
- ❑ Prioritize improvement needs so that the organization can concentrate its attention and resources on a vital few improvement actions
- ❑ Galvanize the organization to take action on needed improvements immediately following the assessment

Formal organizational assessments using the People CMM as a benchmark have been conducted in India, the United States, Europe, and Australia. Organizations that have used the People CMM to implement improvement typically point to one or more of three major reasons to initiate these efforts:

- ❑ The organization wanted to establish a baseline understanding of their workforce practices to enable appropriate improvement or to meet specified organizational goals, such as becoming an “Employer of Choice”.
- ❑ The organization needed to cope with the results of an organizational merger, transition, or change in ownership by providing insights into issues such as blended cultures and merged policies, procedures, and processes.
- ❑ The organization was working to sustain or accelerate attainment of higher maturity levels (as measured using a CMM focusing on the software or systems domains) via solid workforce practices. This include organizations using the CMM for Software (SW-CMM) [Paulk 95], the Systems Engineering CMM (SE-CMM) [Bate 95], and the CMMI [CMMI 00]. According to a recent survey of high-maturity software organizations, more than 40% of these Level 4 and Level 5 organizations, as measured by the Software CMM, are also using the People CMM [Paulk 01b], although not all of these organizations have yet chosen to engage in a formal People CMM-assessment.

A People CMM-based assessment may be conducted by itself, or jointly with some other assessment of the organization, such as an employee opinion assessment or software process assessment, such as a CMM-Based Appraisal for Internal Process Improvement (CBA IPI) [Dunaway 96]. The assessment team for a People CMM-based assessment typically would include, at a minimum, one SEI-authorized People CMM Lead Assessor, someone who would be

involved in making People CMM-related improvements, and someone from the human resources function. A single person may fill more than one of these roles.

A People CMM-based assessment looks at the workforce practices as actually performed across the organization. The People CMM assessment team determines whether a practice is implemented broadly across the organization and is institutionalized. The assessment team determines whether the goals and intent of each process area have been implemented. However, they need not assess process areas for maturity levels that are clearly beyond the current maturity of the organization.

The results of a People CMM-based assessment are presented as a profile of the organization's strengths and weaknesses against the process areas of the People CMM. The maturity level of an organization is the lowest maturity level for which all of the process areas have been successfully implemented. When combined with the practices of the People CMM as guidance, the results of the assessment indicate the practices or process areas that the organization should consider when initiating an improvement program.

In the future, the People CMM will help an organization compare the maturity of its workforce practices with the state of the practice across industry. The People CMM will be used as a benchmark through industry-wide data from People CMM-based assessments that are submitted to a common repository, the People CMM Assessment Repository (PCAR). These data will provide an indication of trends in the industry, in addition to providing a benchmark.

Several classes of People CMM-based assessments can be performed. Each class of assessment method is most appropriate for distinct usage scenarios, as shown in Figure 6.4. Key differentiating attributes for assessment classes include:

- Scope of the assessment
- The degree of confidence in the assessment outcomes
- The generation of ratings
- Assessment cost and duration

Organizations select the class and type of assessment appropriate to their needs. An organization that is committed to improvement, but that needs help in identifying improvement actions, may choose to perform a gap analysis, rather than a formal assessment. A People CMM assessment may also be appropriate for such an organization, as it provides the most rigorous examination of an organization's workforce practices and activities and it serves both to diagnose and to build

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broad buy-in for continual improvement. Questionnaire-based assessments are most appropriate for organizations seeking to identify problem areas to gain support for improvement or for those organizations performing an interim assessment to measure improvement progress. The following paragraphs describe each of these assessment types.

6.4.1 People CMM-Based Assessment Method

In order to measure the capability and maturity of an organization's workforce practices, an appraisal method has been developed for the People CMM. The People CMM-Based assessment method [Hefley 98] was released in 1998, after having been piloted for three years. This method describes the requirements and techniques for performing a People CMM-based assessment. This method is a diagnostic tool that supports, enables, and encourages an organization's commitment to improving its ability to attract, develop, motivate, organize, and retain the talent needed to steadily improve its organizational capability. The method helps an organization gain insight into its workforce capability by identifying the strengths and weaknesses of its current practices related to the People CMM. The method focuses on identifying improvements that are most beneficial, given an organization's business goals and current maturity level.

The People CMM Assessment Method was designed to observe seven principles. These principles include:

1. Use of a process reference model, specifically the People CMM
2. Application of a documented assessment method that is compliant with the CMM Appraisal Framework [Masters 95]
3. Establishment of executive management sponsorship for improvement activities, including the assessment
4. Focus the assessment on the organization's business goals
5. Strict confidentiality and non-attribution for assessment participants
6. Collaborative team approach to the assessment and subsequent improvement actions
7. Focus on follow-up actions for continual improvement

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Characteristic				
Assessment Type	People CMM-Based Assessment Method	Joint Assessment	Questionnaire-Based Assessment	Gap Analysis
Assessment Class	Class A	Class A	Class B	Class C
Usage Mode	1. Rigorous and in-depth investigation of workforce practices 2. Basis for improvement activities	1. Rigorous and in-depth investigation of practices, both for workforce practices and the process in the joint domain 2. Basis for improvement activities	1. Initial (first-time) 2. Incremental (partial) 3. Self-assessment	1. Initial (first-time) 2. Self-assessment
Advantages	Thorough coverage; strengths and weaknesses for each PA investigated; robustness of method with consistent, repeatable results; provides objective view	Thorough coverage; strengths and weaknesses for each PA investigated across multiple domains; robustness of method with consistent, repeatable results; provides objective view	Organization gains insight into own capability; focuses on areas that need most attention; promotes awareness and buy-in	Organization gains insight into own capability; provides a starting point to focus on areas that need most attention; promotes buy-in and ownership of results through participation in analysis and planning; typically inexpensive; short duration; rapid feedback
Disadvantages	Demands significant resources	Demands significant resources	Does not emphasize depth of coverage and rigor and cannot be used for maturity level rating	Risk of participant biases influencing results; not enough depth to ensure completeness; does not emphasize rigor and cannot be used for maturity level rating
Sponsor	Executive management of the organization	Executive management of the organization	Any internal manager	Any internal manager sponsoring an improvement effort

Figure 6.4 – Characteristics of People CMM Assessment Classes

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Characteristic				
Assessment Type	People CMM-Based Assessment Method	Joint Assessment	Questionnaire-Based Assessment	Gap Analysis
Team Size	4-10 persons + assessment team leader	4-10 persons per domain + assessment team leader(s)	1-6 persons + assessment team leader	3-12 (recommended) + facilitator
Team Qualifications	Experienced	Experienced	Moderately experienced	Limited experience, except for the facilitator
Assessment Team Leader Requirements	Lead assessor	Lead Assessors	Lead assessor	Person trained in People CMM and method

Figure 6.4 – Characteristics of People CMM Assessment Classes (continued)

A formal People CMM assessment is divided into four phases:

1. Preparing phase – preparing for the assessment
2. Surveying phase – conducting the workforce practices survey
3. Assessing phase – conducting the onsite assessment
4. Reporting phase – reporting the assessment results

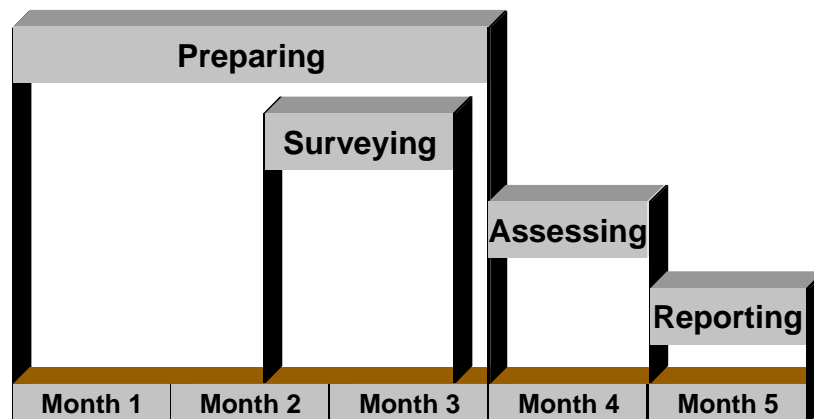


Figure 6.5 – People CMM Assessment Phases

Each phase of a People CMM assessment includes multiple tasks, which are detailed in the Method Description [Hefley 98]. Although these phases are sequential, tasks included in some phases may overlap with tasks in subsequent phases. A typical schedule of these phases is presented in Figure 6.5. The length of the boxes does not indicate the total time required by the phase, but the calendar time during which the phase will typically occur. For instance, the onsite assessment is designed to take one to two weeks, or longer depending on the scope of the assessment, and these weeks will typically occur beginning in the fourth month after the organization has initiated its assessment preparations.

Only an authorized People CMM lead assessor may lead a formal People CMM assessment. The assessment team is comprised of a SEI-authorized People CMM Lead Assessor and a number of trained assessment team members. A People CMM assessment team should consist of at least four team members (including the lead assessor), and should generally not include more than eight team members. A People CMM assessment is a highly collaborative process among all members of the assessment team. Only team members are involved in evaluating questionnaire responses, reviewing documentation, conducting assessment interviews, consolidating assessment data, developing findings, and rating maturity. The Lead Assessor is responsible for coordinating the process and involving team members in all the assessment activities required for them to fully contribute to the findings and ratings.

A People CMM assessment team must meet specified qualification criteria, which include at least one member must be an SEI-authorized People CMM Lead Assessor, at least one member must be from the organization being assessed, and at least one team member should have substantial experience in human resources management, staffing, or implementing workforce training, policies, and practices. Team members must each have the knowledge, skills, and ability to contribute effectively to assessment activities, including training in the People CMM and the assessment method. Team members are selected so that their combined experience and skills match what is required for the planned assessment.

As each improvement cycle completes, it is important to begin the next cycle with a diagnosis of the organization at that point in time. The IDEAL model recognizes this as the learning phase leads directly into the next diagnosing phase. These recurring diagnoses can serve to measure the progress and organizational learning that has been accomplished, determine the effectiveness of institutionalization of workforce practices, and to identify future improvement needs. The organization's workforce practices should be reassessed periodically and action plans developed to address the assessment findings. These periodic reassessments should be scheduled to meet organizational business needs, the schedules of its improvement cycle(s), or as needed to ensure ongoing commitment and involvement in continual improvement. An organization should

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examine their rationale for performing these reassessments and determine if a formal, rigorous assessment following the People CMM Assessment Method or lighter-weight assessments based on sampling process areas and selected areas of the organization will provide the best insight to support their needs.

6.4.2 Joint Assessments

A People CMM-based assessment can be conducted as a stand-alone assessment, as described in the previous section, or as a joint assessment using other CMMs (SW-CMM [Paulk 95], SE-CMM [Bate 95], or CMM for Software Acquisition (SA-CMM[®]) [Ferguson 96]).

When a People CMM-based assessment is conducted jointly with another CMM-based assessment, data for the People CMM-based assessment should be gathered separately, since the unit of study is not a project, as it typically is during a process-focused assessment. Because of its content, the People CMM focuses on organizational units such as business units, sections, and departments, and how workforce practices are conducted within these units. Even so, a People CMM-based assessment uses many of the same conventions as a CBA IPI [Dunaway 96]. For example, both assessments are performed by a trained assessment team, both collect initial data using questionnaires, both observe confidentiality regarding non-attribution of the information obtained, and both interview people at different levels of the organization. The results of a People CMM-based assessment might be presented at the same time as those of a process assessment, but they should be presented as a separate analysis of the organization and a separate maturity level rating must be given for the workforce capability of the organization.

6.4.3 Questionnaire-Based Assessments

A questionnaire-based assessment is an alternative assessment method for organizations seeking to gain insight into their capability. A questionnaire-based assessment is less rigorous than a full assessment, as it is based solely on the questionnaire data and does not collect the corroboration of practices from extensive interviews, as is done in a formal assessment. It is best applied as an initial, first time, or incremental (i.e., partial) self-assessment, which allows the organization to focus on areas that need the most attention. Awareness of, and buy-in to, the improvement activities is promoted through participation in the questionnaire process.

Typically, questionnaire or survey participants attend a survey administration session where they receive an explanation of the People CMM and its assessment process. A SEI-authorized Lead Assessor, together with an assessment team member from the organization, conducts the session. The lead assessor or designee delivers a short presentation describing the People CMM, the purpose of the survey, and its role in the assessment process. During this session, questionnaires are administered to participants. Although several options may be offered for completing the survey (such as in a group session, individually outside of a group session, or online), participants typically complete their questionnaires in a group session where assessment team members are available to help them understand the intent of the questions and to provide directions for responding. When they are completed, questionnaires are collected and sent for scoring. Questionnaires and scoring services are available as part of the SEI-authorized assessment kits.

Responses to the People CMM Survey are scored and prepared into summary reports that describe the results for both the individual and the manager questionnaires. These reports provide assessment team members with information about the consistency with which workforce practices are performed and about the major issues related to them. For each question, the report provides both summary statistical data and any written comments related to that question. No rating decisions are made based solely on survey responses.

Responses are analyzed and a summary presentation is delivered to the organization. If the organization is conducting a survey-only assessment, this task will complete its process. The data from the surveys can be used to estimate the results of a full assessment, but they do not constitute a basis for assigning the organization a maturity rating. Those responsible for making improvements will use the results of the surveys to prioritize improvement activities and move into the Establishing phase of the IDEAL model.

6.4.4 Gap Analyses

A gap analysis is an organizational analysis that examines the organization's workforce activities against a benchmark standard (in this case, the People CMM), and identifies the gaps or shortcomings. This analysis is conducted as a guided workshop, led by a qualified facilitator. A People CMM Lead Assessor or another individual with People CMM knowledge and group facilitation skills would lead participants through this workshop format. The format is a combination of training and organizational self-assessment. It includes both training in the People CMM model and a guided self-evaluation of the organization.

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STAFFING		Current State	Proposed Improvements
P1	Responsible individuals plan and coordinate the staffing activities of their units in accordance with documented policies and procedures.		
P2	Each unit analyzes its proposed work to determine the effort and skills required.		
P3	Individuals and workgroups participate in making commitments for work they will be accountable for performing.		
P4	Each unit documents work commitments that balance its workload with available staff and other required resources.		
P6	Position openings within a unit are analyzed, documented, and approved.		
P7	Position openings within the organization are widely communicated.		
P8	Units with open positions recruit for qualified individuals.		
P9	External recruiting activities by the organization are planned and coordinated with unit requirements.		

Figure 6.6 – Example of a People CMM Gap Analysis Worksheet

The self-assessment component uses the practices of the People CMM as a benchmark to compare against organizational norms. Current practices are identified and proposed improvements are developed by the team. One example of a template to support this analysis is shown in Figure 6.6. Proposed improvements are reviewed, agreed to, and prioritized by the assessment team. The results of the workshop can be used by an organization as a base line for a People CMM-based improvement program.

Other forms of quick-look, or incremental, Class C assessments could be performed within an organization that is seeking an initial baseline to measure their workforce practices against those of the People CMM. Such light assessments normally require minimal days of effort; are typically based on interviews with management, the human resources function, and workforce; and give only a snapshot of the people-related capabilities of the organization.

6.5 Implementing a People CMM-Based Improvement Program

In the following paragraphs, an approach to conducting a People CMM-based improvement program will be presented through the phases of the IDEAL model.

6.5.1 Planning and Executing an Improvement Project

One of the clearest lessons that we have learned is that successful improvement programs must be run like any other project. That is, they must have plans, their progress must be tracked, and someone must be held accountable for their performance. The IDEAL model presents a proven life cycle that can be used to manage and guide an improvement program in the same way that a standard development life cycle is used within a software development project.

As previously discussed, the first stage of IDEAL is the *Initiating* phase, wherein executive support is engaged and the infrastructure for improvement is organized. The most common reason for the failure of improvement programs is lack of executive support. Any improvement program should not be initiated until executive support is ensured. The effort often begins with one or more briefings to executives. These briefings should include information about

- ❑ the benefits of People CMM-based improvements, such as reduced turnover or departure rates and greater readiness to perform in fast-paced environments
- ❑ a description of the proposed responsibilities, effort, and schedule involved in the improvement program
- ❑ executive responsibilities under the People CMM and in supporting the improvement program

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Once executive support is ensured, the infrastructure for improvement should be organized. There are several groups that should be created to run the improvement program. The program should be run from an improvement group; process group, such as a software engineering process group (SEPG); or some other entity that reports to line management in the organization. If no such group exists, then one should be created explicitly for making workforce-related improvements.

A core improvement group should report to a Management Steering Committee that oversees and approves the improvement effort. This group should have representation both from line operations and from the human resources function. It should have immediate knowledge of how various workforce-related practices are being performed within the organization and a vision for improving the current practices. The steering group must also have authority to commit some of their own people to improvement activities.

Once executive support and an infrastructure for improvement have been established, the organization then prepares to enter the Diagnostic phase. During this phase, the organization conducts a People CMM-based assessment and develops the findings and recommendations. People CMM-based assessments have been discussed in Section 6.3.

With the assessment results in hand, the organization is ready to enter the *Establishing* phase. When moving beyond the Initial Level, many organizations have reported that two problems must be addressed. These two problems were:

- ❑ Defining their workforce process as an understood system of workforce practices
- ❑ Delivering appropriate management and supervisory training to develop skills in their workforce processes

For organizations that have achieved the Managed Level, the improvement team selects, during the Establishing phase, several of the most pressing problems for action and gets the Management Steering Committee to approve this strategic selection. Since the organization can absorb only a limited amount of change at one time, only the most serious problems should be chosen for action.

An action team should then be organized to address identified problem(s). The members of the action team should be chosen to ensure that it contains expertise both in the problem and in the method of solution. For instance, an action team addressing performance management in an organization should have people who understand the criteria against which performance should be measured, how best to work with the workforce in analyzing job performance, the methods of evaluating job performance, what kind of recognition and rewards motivate members of the workforce, and other related topics that are covered in the Performance Management key process area.

One of the first duties of the team is to develop an action plan that addresses planned improvements in their problem area. Developing and tracking such an action plan is one of the distinguishing factors of successful improvement teams. Another success factor is coordinating the plans and activities of the action teams to ensure that they do not degrade the organization's existing processes or negatively impact other improvements. To ensure that the action team stays on a successful trajectory, the team should be facilitated by someone from the core improvement group.

Once an action team has developed a basic plan for its activities, it launches into the *Acting* phase. The action team should identify best workforce practices that are already being used in the organization and build around them. Additional practices can be identified to implement a new process which complement and build on current best practice. Any proposed workforce practices should be reviewed by the action team with those who are expected to implement them. The core implementation group and the Management Steering Group should continually review the plans, activities, and progress of the action team during this phase.

As described in the Continuous Workforce Innovation process area, the improved practices that have been defined should be tested to ensure that they work as expected before being installed across the organization. After a successful trial has been conducted, then the practices can be implemented across the organization and institutionalized. Institutionalization implies that there is enough infrastructure developed in the organization to ensure that the practices are continually practiced even with the inevitable movement of people to new responsibilities and the assignment of new people.

When an action team has completed implementing practices in its assigned areas of concern, then the organization can complete the IDEAL cycle with the *Learning* phase. In this phase, each action team assesses their lessons learned in developing and implementing their improvements, and the improvement group determines how the process of future improvement efforts can be enhanced. They then begin planning the next implementation of an IDEAL cycle to make the next round of improvements. Since executive support should remain strong if a successful implementation has been completed, the improvement team can begin planning the next People CMM-based assessment.

IDEAL is a repeating cycle that establishes a continuous improvement capability within the organization. The IDEAL cycle is an expanded version of the Shewart-Deming plan-do-check-act improvement cycle. As such, it has much in common with other total quality management improvement activities. The use of IDEAL with workforce improvements implies that many of the same principles that have been used for improving other aspects of organizational life can be used in improving the development of the workforce.

6.5.2 Integrating Maturity-Based Improvement Programs

People CMM-based improvement efforts can be integrated with other maturity-based improvement programs, primarily because they build on the same integral frameworks. The following paragraphs discuss integrating People CMM-based improvements with SW-CMM-based improvement efforts and with CMMI-based improvement efforts.

6.5.2.1 Integrating with SW-CMM-based Improvement

The People CMM applies the essential elements of a capability maturity model to the workforce practices of the organization. Therefore, organizations that have some experience in applying another process-focused CMM, such as the SW-CMM for improving their software development processes, will find the People CMM to be compatible with an improvement philosophy they have already adopted.

Using the SW-CMM and People CMM together in an improvement program begs the question of whether the organization should synchronize its maturity levels on the two models. Maturity growth on one model does not require or restrict maturity growth on the other. However, maturity growth on either model assists or accelerates maturity growth on the other. Experience has shown that applying the People CMM has accelerated other process improvement activities [Porter 01, Vu 01, Tondon 00].

Both models begin at Maturity Level 2 by emphasizing the responsibility of project or unit managers for installing basic discipline in their environments. Creating this basic discipline using either model aids in creating the management attitudes that support growth in the other model. Basic management discipline will enable both the process of developing software or the process of developing the workforce.

At Maturity Level 3, the analysis of knowledge and skills and the determination of core competencies requires an understanding of the work being performed. Thus, it is probably best for an organization to define its software process before it begins defining the knowledge, skills, and process abilities required by the competencies involved in executing its defined organizational set of standard processes. This may be the area of dependency between the two models. Certainly, the concepts of an organization-wide way of performing technical activities and of an organization's core competencies fit well together, each supporting development in the other. The People CMM activities for defining and developing workforce competencies elaborate and extend the required training program activities described in the SW-CMM.

At Maturity Level 4, the data being generated by the software process provide an excellent source of information on whether the development of knowledge and skills is being effective, and where shortfalls might exist. That is, a mature software process will provide data that can be used in analyzing the trends that form the core of managing the organization's competency

development and performance alignment. At the same time, the development of high-performance, competency-based teams instills the kind of empowerment and increased employee satisfaction that has been observed in high maturity organizations [Billings 94, Paulk 95, Wigle 99, Yamamura 99].

At Maturity Level 5, both models emphasize establishing continuous improvement as an ordinary process. Both models also seek to engage individuals in making the continuous improvement of their own work a personal objective. Thus, at the Optimizing Level, the models begin to merge in their search for ways to improve performance continuously. At this level, the capability of the process will probably be difficult to distinguish from the capability of the workforce.

Since both the SW-CMM and People CMM share similar underlying philosophies about how to change and mature an organization, it should not be surprising that they support each other at each level of maturity. The challenge for an organization initiating an improvement program that has both SW-CMM and People CMM components is to integrate an improvement strategy that allows improvements guided by one model to help create an environment that supports improvements guided by the other model. At the same time, the organization must always balance the amount of change being undertaken so that the workforce is not inundated with change activities that interfere with conducting the organization's business. An organization that can balance these tensions and improvement strategies will find that it has a powerful competitive advantage in a well-defined process being executed by a well-prepared and motivated workforce.

6.5.2.2 Integrating with CMMI-based Improvement

The purpose of Capability Maturity Model (CMM®) IntegrationSM is to provide guidance for improving an organization's processes and its ability to manage the development, acquisition, and maintenance of products and services. CMM Integration places proven practices into a structure that helps organizations assess their organizational maturity and process area capability, establish priorities for improvement, and guide the implementation of these improvements.

There are no existing plans to integrate the People CMM into CMMI [CMMI 00], either directly or by extensions. Currently, the CMMs that have been integrated in CMMI all concern behavior performed in projects or on behalf of projects, whereas the People CMM concerns behavior performed continuously throughout the organization. Nevertheless, the People CMM (Version 2) has adopted some of the advances made in the CMMI framework. The People CMM is being produced only in a staged representation. After lengthy review of the literature on programs to improve workforce practices, the authors determined that these programs often fail when workforce practices are not introduced as a system, but rather are deployed in isolation. For instance, efforts to install empowered workgroups are likely to fail if compensation practices continue to reward individual performance without recognizing contribution to workgroup

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performance and success. The staged representation is best suited for integrating practices from various domains into an overall program for improving the capability of the workforce.

People CMM improvement programs can be integrated with improvement programs guided by CMMI. The People CMM's focus on process abilities in workforce competencies at Maturity Level 3 and quantitative performance management practices at Maturity Level 4 will make integrating these various models much easier. Another area where the models reinforce each other is in the area of support to integrated product and process development (IPPD) teams. Because of its inherent subject matter, the People CMM presents a more detailed model for the evolutionary development of workgroups or teams. CMMI, including the IPPD extensions, and the People CMM both focus on process-based workgroup development at Maturity Level 3. The IPPD extensions to CMMI are each supported by several processes areas in the People CMM as shown in the following table.

CMMI Process Area	People CMM Process Area
Integrated Project Management	Workgroup Development Competency Analysis
Integrated Teaming	Communication and Coordination Workgroup Development
Organizational Environment for Integration	Work Environment Communication and Coordination Compensation Workgroup Development Participatory Culture Workforce Planning Competency Development Competency-Based Practices

Figure 6.7 – People CMM Process Areas that Support the CMMI IPPD Extensions