Comparing the eSCM-SP v2 and CMMI® v1.1

A comparison between the eSourcing Capability Model for Service Providers v2 and Capability Maturity Model® Integration v1.1

16 Dec 2005
CMU-ITSQC-05-005
Pittsburgh, PA

Mark C. Paulk, *Carnegie Mellon University*
Subrata Guha, *Satyam Computer Services Ltd.*
William E. Hefley, *Carnegie Mellon University*
Elaine B. Hyder, *Carnegie Mellon University*
Majid Iqbal, *Carnegie Mellon University*

ITSQC Carnegie Mellon

IT Services Qualification Center
Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213-3891
itsqc.cmu.edu

Abstract
The eSourcing Capability Model for Service Providers (eSCM-SP), a best practices model, gives providers of IT-enabled services a reference model and capability determination methods that they can use to develop and improve their capability to consistently deliver high-quality services. Capability Maturity Model® Integration (CMMI®) is a framework that guides organizations that build systems toward compliance with best practices with respect to systems engineering, software engineering, integrated process and product development, and sourcing selection. There are similarities and differences in the approaches, targets, and scopes of the eSCM-SP and CMMI. Each provides a framework for improving the quality of services while achieving organizational effectiveness and efficiency. This report provides a brief discussion of how the two are conceptually related, and a detailed mapping between the Practices of the eSCM-SP and the Specific Practices of CMMI.

Contributors
The authors received guidance and support from Dr. Jane Siegel of Carnegie Mellon University. Michael Upchurch and Keith Heston of Accenture provided many valuable comments. Editorial and technical writing support was provided by Ken Mohnkern of Carnegie Mellon University. The overall document design was done by Paul Burke of Carnegie Mellon University.

Information Technology Services Qualification Center (ITSqc)
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA 15213

itsqc.cmu.edu

Carnegie Mellon University
Information Technology Services
Qualification Center (ITSqc)
Comparing the eSCM-SP v2 and CMMI® v1.1
CMU-ITSQC-05-005

Published December 16, 2005 in
Pittsburgh, Pennsylvania, USA.

Additional copies of this material are available for download at the ITSqc website.

Keywords: eSCM-SP, eSourcing Capability Model, CMMI, Capability Maturity Model Integration, service provider model, quality models and systems, capability models, maturity models, IT-enabled outsourcing services, IT-enabled services, systems engineering, software engineering, outsourcing, outsourcing models, sourcing

Table of Contents

Preface

This technical report is written for organizations that have already invested in the Capability Maturity Model Integration℠ (CMMI®) and are now considering adoption of the eSourcing Capability Model for Service Providers (eSCM-SP). The report also provides guidance to organizations that have adopted the eSCM-SP and are considering investments in CMMI.

When an organization adopts a new framework[1] for capability improvement, it must consider whether the framework requires abandoning or drastically changing existing practices or processes. Specifically, organizations need to know the extent to which existing practices, processes, or systems count toward compliance with the new framework. While, in general, most frameworks have common ideas and principles, there are differences between them with respect to approach, focus, and emphasis.

The purpose of this report is to help organizations map their implementation of the Specific Practices in CMMI to the eSCM-SP's Practices. The requirements of CMMI and the eSCM-SP are complementary and supplementary to each other. This report highlights the areas where there is a significant degree of overlap between their requirements, where there is greater elaboration in one or the other, and where the requirements of one are out of the other's scope.

Section 1 of this report provides an overview of various frameworks for improving quality and process capabilities. Sections 2 and 3 provide brief overviews of the eSCM-SP [Hyder 2004a, Hyder 2004b] and CMMI [Chrissis 2003], respectively. Section 4 compares the requirements of the eSCM-SP v2 and CMMI v1.1 at a high level of abstraction. It includes a discussion of the challenges in mapping the requirements across the two frameworks. Section 5 provides the conclusions of this report. Appendices A and B provide more details on the eSCM-SP and CMMI, respectively. Appendix C provides a mapping of the eSCM-SP to CMMI, organized by eSCM-SP Capability Areas and Practices. Appendix D provides a mapping of CMMI to eSCM-SP, organized by CMMI Process Areas and Specific Practices. Appendix E maps the support Practices and related templates in the eSCM-SP to the Generic Practices in CMMI.

[1] In this report, the terms "framework" and "frameworks" collectively refer to models, standards and frameworks for quality management and capability or process improvement. In certain instances, they are used to refer to either the eSCM-SP or CMMI, or both.

1. Introduction

Since the birth of the modern industrial economy at the beginning of the twentieth century, there have been ongoing efforts to systematically improve the productivity of organizations and the quality of the products and services they deliver. From Taylor's work on scientific management to Shewart's statistical process control and, more recently, to the work of quality experts such as Deming, Juran, and Crosby, there has been an evolution in the understanding of how people, process, and technology interact to affect quality, customer satisfaction, productivity, and efficiency in doing work [March 1996]. The appreciation and understanding of the importance of a best-practice approach to process and quality management has widened beyond the initial focus on manufacturing systems and assembly line environments to include service organizations, and systems design and development. The eSourcing Capability Model for Service Providers (eSCM-SP) v2 [Hyder 2004a] is one of the most recent in a long line of frameworks aimed at improving the capability of organizations in developing and delivering products and services.

Information and communication technologies (IT) have been crucial in transforming the value chains of modern industrial organizations by providing access to a larger set of customers, partners, and suppliers than was earlier possible. Several new business models, products, and services have been made viable, from conception to realization, by the facilities and functions provided by IT systems. Such benefits allow IT-led organizations to make large capital investments in the development and extension of their in-house IT capabilities.

However, not all organizations have enjoyed the same returns with respect to their IT assets and investments [Roach 1991], leading them to reconsider the need to develop and maintain their own extensive IT capabilities and resources. In several of these instances, organizations found it advantageous to outsource certain functions and processes, and focus and reallocate their assets on core competencies and business strategies.

This increased reliance on external service providers requires diligence on the part of organizations that outsource their IT and business processes. Service providers, in turn, are required to sufficiently demonstrate that they can be capable and dependable business partners committed to a lasting and beneficial relationship with their customers. The eSCM-SP is specifically targeted at internal and external providers of IT-enabled services, to introduce best practice into the sourcing and delivery of those services.

There are two major strategies for improving performance: framework-based and measurement-based. The eSCM-SP has features of both. A framework-based strategy uses models and standards as frameworks to identify what processes and systems should be implemented in a successful organization. Improvement based on the eSCM-SP is an example of this strategy. Certification in some framework-based strategies, including ISO 9001 [ISO 2000a] and BS 15000 [BSI 2002b], is binary; an organization is either compliant with the standard or not. Models such as the eSCM-SP and CMMI measure organizations or processes using a form of ordinal scale (e.g., Capability Levels or Maturity Levels). Assessments using a framework identify what to do, but do not usually describe how to

do it. Frameworks typically do not specify performance levels for specific tasks (e.g., 5500 transactions per quarter).

The second strategy is measurement-based. The service provider's processes and systems are measured and compared to objectives set by management in order to identify which ones need to be improved. Measurement trends are used to confirm and quantify improvements. Framework-based strategies naturally evolve toward measurement-based strategies tailored to the business needs of the organization as the foundational capabilities described by the framework are successfully put in place. Other frameworks, models, and standards used by the organization may impact the improvement actions based on the eSCM-SP. By focusing on its business objectives, the organization can leverage its existing work on other improvement initiatives, allowing it to develop an integrated improvement strategy. Understanding the relationships between the eSCM-SP and other related models and standards can help the organization to complement or supplement its eSCM-SP implementation strategy.

A number of models and standards exist that are focused on quality or IT-related topics. These frameworks have a variety of issuing bodies, scopes, architectures, and rating methods:

- General Total Quality Management (TQM) philosophies, such as those of Deming [Deming 1986, Deming 1994], Juran [Juran 1992], and Crosby [Crosby 1979].
- Performance excellence strategies such as Six Sigma® [Harry 2000].
- The criteria for quality awards such as the following:
  - the Deming Prize in Japan [Deming]
  - the Malcolm Baldrige National Quality Award in the United States [Baldrige]
  - the European Quality Award [EQA]
  - the Rajiv Gandhi National Quality Award in India [RGNQA]
  - the Brazilian National Quality Award [PNQ]
- Standards such as the following:
  - ISO 9001 (Quality Management Systems—Requirements) [ISO 2000a]
  - Control Objectives for Information and related Technology (COBIT®) [ITGI 2000]
  - ISO/IEC 12207 (Software life cycle processes) [ISO 2002a]
  - ISO/IEC 15288 (System life cycle processes) [ISO 2002b]
  - ISO/IEC 15504 (Software process assessment) [ISO 2003]
  - BS 7799-2: 2002 (Information Security Management Systems—Specification with guidance for use) [BSI 2002a)
  - ISO 17799 (Code of Practice for Information Security Management) [ISO 2000b]
  - BS 15000 (IT Service Management) [BSI 2002b]
  - COPc-2000® CSP standards [COPC 2000]

- Process improvement models such as the following:
  - the Capability Maturity Model® (CMM®) for Software [Paulk 1995a]
  - the Systems Engineering CMM® [Bate 1995]
  - the Software Acquisition CMM® [Cooper 2002]
  - the People CMM® [Curtis 2001]
  - CMM Integration℠ (CMMI®) [Chrissis 2003]

This report is part of a series that analyzes the common ground between the requirements of the eSCM-SP and those of some of these frameworks. The reports in this series are intended to help organizations make efficient use of their resources and existing investments in capability improvement. The differences or gaps between the requirements of the eSCM-SP and those of another framework are highlighted as opportunities for improvement or value-addition. This report focuses on the relationship between the eSCM-SP and CMMI.

Some of the frameworks identified (e.g., Six Sigma, the Baldrige Award, and EQA) are sufficiently abstract that their relationship to the eSCM-SP can be briefly described in the introductory report for this series [Paulk forthcoming]. For other frameworks, a fairly detailed mapping is both possible and appropriate. While an overview is contained in the introductory report, separate reports with detailed comparisons are available or under development for ISO 9001 [Guha 2005], CMMI (this report), the Software CMM [Paulk 2005], the People CMM [Hefley, forthcoming a], BS 15000 [Iqbal 2004], COBIT [Iqbal forthcoming], the COPC-2000 CSP standards [Guha 2005a], BS 7799/ISO 17799 [Hefley, forthcoming b], and SS 507 [Guha forthcoming].

2. An Overview of the eSCM-SP

Competitive pressure, the need to access world-class capabilities, and a desire to share risks are among the primary drivers for organizations to delegate their IT-intensive business activities to external service providers [Hyder 2004a]. The tremendous growth in the sourcing of IT-enabled services, in particular, has been enabled by the rapid evolution and expansion of the global telecommunications infrastructure [ibid.]. The business processes being outsourced range from routine and non-critical tasks, which are resource intensive and operational, to strategic processes that directly impact revenue growth and profitability. The eSourcing Capability Model for Service Providers (eSCM-SP) v2 has been developed by a consortium led by Carnegie Mellon University's Information Technology Services Qualification Center (ITSqc) with the following purposes [ibid.]:

1. Give service providers guidance that will help them improve their capability across the sourcing life-cycle.
2. Provide clients with an objective means of evaluating the capability of service providers.
3. Offer service providers a standard to use when differentiating themselves from competitors.

Released in April 2004, the eSCM-SP v2 is composed of 84 Practices, which can be thought of as the "best practices" associated with successful sourcing relationships. Each Practice is distributed along three dimensions: Sourcing Life-cycle, Capability Area, and Capability Level.

The first dimension, Sourcing Life-cycle, is divided into Ongoing, Initiation, Delivery, and Completion. Ongoing Practices span the entire Sourcing Life-cycle, while Initiation, Delivery, and Completion occur in specific phases of that Life-cycle. During Initiation the organization negotiates with the client, agrees on requirements, designs the service that will be provided, and deploys (transitions) that service. Initiation may also include transfer of personnel, technology infrastructure, and intellectual property. During Delivery the organization delivers service according to the agreed-upon commitments. During Completion the organization transfers resources, and the responsibility for service delivery, back to the client, or to the client's designee.

The second dimension of the eSCM-SP, Capability Areas, provides logical groupings of Practices to help users better remember and intellectually manage the content of the Model. These groupings allow service providers to build or demonstrate capabilities in each critical sourcing function. The ten Capability Areas are Knowledge Management, People Management, Performance Management, Relationship Management, Technology Management, Threat Management, Contracting, Service Design & Deployment, Service Delivery, and Service Transfer.

The third dimension of the eSCM-SP is Capability Levels. The five Capability Levels of the eSCM-SP describe an improvement path that clients should expect service providers to travel. At Capability Level 1, a service provider is able to provide services but has not implemented all of the Level 2 Practices, and may be at a higher risk of failure.

At Capability Level 2, a service provider is able to consistently meet requirements, and has implemented, at a minimum, all 48 of the Level 2 Practices.

At Capability Level 3, a service provider is able to deliver services according to stated requirements, even if the required services differ significantly from the provider's experience, and has, at a minimum, implemented all 74 of the Level 2 and 3 Practices.

At Capability Level 4, a service provider is able to continuously innovate to add statistically and practically significant value to the services they provide. To achieve Level 4 the service provider has successfully implemented all 84 of of the eSCM-SP Practices.

At Capability Level 5, a service provider has demonstrated measurable, sustained, and consistent performance excellence and improvement by effectively implementing all of the Level 2, 3, and 4 Practices for two or more consecutive Certification Evaluations covering a period of at least two years. There are no additional Practices to be implemented at Level 5.

Appendix A provides further detail on the rationale and structure of the eSCM-SP, as well as the Capability Determination Methods associated with it.

3. An Overview of CMMI

Capability Maturity Model Integration (CMMI) addresses four disciplines: systems engineering, software engineering, integrated product and process development (IPPD), and supplier sourcing [Chrissis 2003]. The full model is abbreviated as CMMI-SE/SW/IPPD/SS, but organizations may choose to implement any combination of the four disciplines. A variant that addresses only systems engineering, for example, would be abbreviated CMMI-SE. The full CMMI model is analyzed in this comparison.

Systems engineering covers the development of total systems, which may or may not include software. Systems engineers focus on transforming customer needs, expectations, and constraints into product solutions and supporting these product solutions throughout the life of the product.

Software engineering covers the development of software systems. Software engineers focus on applying systematic, disciplined, and quantifiable approaches to the development, operation, and maintenance of software.

IPPD is a systematic approach that achieves a timely collaboration of relevant stakeholders throughout the life of the product to better satisfy customer needs, expectations, and requirements. The processes to support an IPPD approach are integrated with the other processes in the organization.

As work efforts become more complex, projects may use suppliers to perform functions or add modifications to products that are specifically needed by the project. When those activities are critical, supplier sourcing addresses improved source selection and contract monitoring.

CMMI models are designed to describe discrete levels of process improvement with respect to either process capability or organizational capability. Two different representations may be used, depending on what the improvement target is:

- In the continuous representation, the capability of each process area is measured in terms of six Capability Levels, and a profile of the capabilities of all of the process areas measures organizational capability.
- In the staged representation, the capability of the organization is measured in terms of five Maturity Levels, each of which represents a coherent set of process capabilities; the Maturity Levels outline a road map for organizational transformation.

In the staged representation, the five Maturity Levels provide both a recommended order for process improvement and a way to predict the future performance of an organization within a given discipline or set of disciplines. Experience has shown that organizations do their best when they focus their process-improvement efforts on a manageable number of Process Areas that require increasingly sophisticated effort as the organization improves. A Maturity Level is an evolutionary plateau of process improvement: (1) Initial, (2) Managed, (3) Defined, (4) Quantitatively Managed, and (5) Optimizing.

At Maturity Level 1 (Initial), processes are usually ad hoc and chaotic. The organization usually does not provide a stable environment. Success in these organizations depends on the competence and heroics of the people in the organization and not on the use of proven processes.

At Maturity Level 2 (Managed), the projects in the organization have ensured that requirements are managed and that processes are planned, performed, measured, and controlled.

At Maturity Level 3 (Defined), processes are well characterized and understood, and they are described in terms of standards, procedures, tools, and methods. The organization's set of standard processes, which is the basis for Maturity Level 3, is established and improved over time. These standard processes are used to establish consistency across the organization.

At Maturity Level 4 (Quantitatively Managed), processes are selected that significantly contribute to overall process performance and controlled using statistical and other quantitative techniques

At Maturity Level 5 (Optimizing), processes are continually improved based on a quantitative understanding of the common causes of variation inherent in processes.

Maturity Levels consist of a predefined set of Process Areas. The Maturity Levels are measured by the achievement of the Specific and Generic Goals that apply to each predefined set of Process Areas.

The continuous representation uses the same concepts but applies them to processes rather than organizations. The Capability Levels are 0) Incomplete, 1) Performed, 2) Managed, 3) Defined, 4) Quantitatively Managed, and 5) Optimizing.

A Process Area is a cluster of related Practices in an area that, when performed collectively, satisfy a set of Goals considered important for making significant improvement in that area. The Process Areas for CMMI-SE/SW/IPPD/SS v1.1 are listed in Table 1 according to the staged (i.e., Maturity Levels) representation. All CMMI Process Areas are common to both continuous and staged representations.

For the systems engineering and software engineering disciplines, the same Process Areas (with different amplifications or informative model components for each discipline) are used. For integrated process and product development two Process Areas are added, Integrated Teaming and Organizational Environment for Integration, along with two Specific Goals in Integrated Project Management. For sourcing selection, Integrated Supplier Management is added.

Table 1
Process Areas in CMMI-SE/SW/IPPD/SS v1.1

Maturity Level	Focus	Process Areas
1 Initial	Process is unpredictable, poorly controlled, and reactive.	
2 Managed	Process is characterized for projects and is often reactive.	Requirements Management (RM) Project Planning (PP) Project Monitoring & Control (PMC) Supplier Agreement Management (SAM) Measurement & Analysis (MA) Configuration Management (CM) Process & Product Quality Assurance (QA)
3 Defined	Process is characterized for the organization and is proactive.	Requirements Development (RD) Technical Solution (TS) Product Integration (PI) Verification (VER) Validation (VAL) Organizational Process Focus (OPF) Organizational Process Definition (OPD) Organizational Training (OT) Integrated Project Management (IPM) Risk Management (RSKM) Integrated Teaming (IT) Integrated Supplier Management (ISM) Decision Analysis & Resolution (DAR) Organizational Environment for Integration (OEI)
4 Quantitatively Managed	Process is measured and controlled.	Organizational Process Performance (OPP) Quantitative Project Management (QPM)
5 Optimizing	Focus is on quantitative, continuous process improvement.	Causal Analysis & Resolution (CAR) Organizational Innovation & Deployment (OID)

The Practices are organized in Common Features within each Process Area. Implementation is addressed via Specific Practices unique to a Process Area. Institutionalization of the process is addressed via Generic Practices in four Common Features of every Process Area: Ability to Perform, Commitment to Perform, Directing Implementation, and Verifying Implementation. The Generic Practices are discussed in more detail in Appendix E.

4. Conceptual Relationships Between the eSCM-SP and CMMI

4.1. A High-level Comparison of the eSCM-SP and CMMI

While the quality and process principles in the eSCM-SP and CMMI derive from the same roots, the targets are quite different. Although organizations that build systems can be considered service providers, the eSCM-SP has a broader scope of applicability than CMMI. CMMI provides more detailed guidance for systems development than the eSCM-SP.

CMMI supports both staged and continuous representations equally. The staged representation prioritizes the topics for transforming an organization's capability. The continuous representation is process-focused and is a more flexible depiction of improvement priorities. The best practices in the eSCM-SP are structured in a manner closer to a continuous representation. Table 2 shows a high-level comparison between the eSCM-SP and CMMI.

Table 2
A High-level Comparison of eSCM-SP and CMMI

	eSCM-SP	CMMI
Audience	Service providers of IT-enabled sourcing services.	Organizations developing or maintaining products or services.
Purpose	Building and improving service providers' capability to meet customer needs throughout the sourcing life cycle.	Providing best practices for systems engineering, software engineering, integrated product and process development, and sourcing selection.
Size	84 Practices in 10 Capability Areas	628 Practices in 25 Process Areas (continuous representation)
Coverage	5 Capability Levels 10 Capability Areas 84 Practices 1,234 Required Activities 4-part Sourcing Life-cycle · Ongoing · Initiation · Delivery · Completion	2 Architectures (continuous and staged) · 5 Maturity Levels (staged) · 6 Capability Levels (continuous) 25 Process Areas 5 Generic Goals per Process Area 17 Generic Practices per Process Area 55 Specific Goals 199 Specific Practices
Recognition	Certification by Carnegie Mellon University at one of four Capability Levels (Levels 2, 3, 4, and 5). Certification is valid for a period of two years.	Appraisal results; no formal certification. [Ferguson 2004]
URL	itsqc.cmu.edu/escm	www.sei.cmu.edu/cmmi

Organizations can benefit from using both the eSCM-SP and CMMI. The eSCM-SP helps service providers improve their service delivery capability and customer relationships. CMMI provides a framework for process improvement in the engineering service of developing and maintaining systems. Both complement each other. While the eSCM-SP has a broader scope, CMMI provides focused implementation guidance for many eSCM-SP Practices, especially for systems and software engineering organizations. For example, Configuration Management in CMMI provides focused guidance that supplements knw07, Version & change control, in the eSCM-SP.

Table 3 provides a comparison organized by eSCM-SP Capability Areas. The first column lists the Capability Areas. The second column describes topics that are addressed by both frameworks. The third column describes coverage of the Capability Area by CMMI, including any additional requirements in CMMI. The fourth column notes unique and additional requirements in the eSCM-SP. The last row, labeled "other," contains requirements that are not addressed in the eSCM-SP.

Table 3
Comparison of eSCM-SP Capability Areas with CMMI

CA	Overlap	CMMI v1.1	eSCM-SP v2
knw	Information, process assets, version and change control, and resource consumption.	This Capability Area is largely covered by Organizational Process Focus and Organizational Process Definition for process knowledge. CMMI has additional requirements for configuration management.	This Capability Area has additional requirements for information, knowledge, and reuse of work products.
ppl	Innovation, participation in decisions, work environment, assigning responsibilities, roles, workforce competency, and training.	This Capability Area is partially covered for training in Organizational Training, decision making in Decision Analysis & Resolution, roles in Organizational Process Definition, work environment in Project Planning, and innovation in Organizational Innovation & Deployment.	This Capability Area has unique requirements on performance feedback, career development, and rewards and recognition. It has additional requirements for innovation, work environment, and workforce competence.
prf	Engagement and organizational objectives, process verification, resources, improvement, capability baselines, preventive action, deploying innovations, benchmarking, organizational performance review, and programs to achieve objectives.	This Capability Area is largely covered by Organizational Process Focus, Organizational Process Definition, Organizational Process Performance, Causal Analysis & Resolution, and Organizational Innovation & Deployment. Quantitative control of the project, process, and product are addressed in Quantitative Project Management and the Level 4 and higher Engineering Process Areas.	This Capability Area has additional requirements for engagement and organizational objectives, benchmarking, organizational performance review, programs to achieve objectives, and preventing potential problems.
rel	Managing the selection of suppliers and stakeholder information.	This Capability Area is partially covered by Requirements Management, Supplier Agreement Management, Integrated Project Management for IPPD, Integrated Supplier Management, and Organizational Environment for Integration.	This Capability Area has unique requirements for cultural fit and value creation. It has additional requirements for managing relationships.
tch	Technology acquisition, and proactively identifying and introducing new technology.	This Capability Area is partially covered by Organizational Innovation & Deployment.	This Capability Area has unique requirements for integrating infrastructure and optimizing technology. It has additional requirements for acquiring technology, technology licenses, and controlling technology.
thr	Risk management.	This Capability Area is partially covered by Risk Management.	This Capability Area has unique requirements for cross-engagement risk management, protection of intellectual property, and disaster recovery. It has additional requirements for statutory and regulatory compliance and security.
cnt	Gathering, reviewing, and responding to requirements.	This Capability Area is partially covered by Requirements Management, Requirements Development, and Project Planning.	This Capability Area has unique requirements for negotiating, pricing, confirming existing conditions, market information, and creating and amending contracts. It has additional requirements for contract roles.
sdd	Communicating requirements, planning, service specification, designing and deploying services, design feedback, verifying design, and deploying services.	This Capability Area is covered by the Engineering Process Areas.	
del	Planning service delivery, training clients, verifying service commitments, correcting problems, and service modifications.	This Capability Area is largely covered by Project Monitoring & Control, although there is no good analog in CMMI for service delivery (development is best compared to service design; maintenance and operational support are the best comparison to service delivery).	This Capability Area has unique requirements for financial management. It has additional requirements for training clients.
tfr		This Capability Area is not covered in CMMI.	This Capability Area has unique requirements for service transfer both to and from the service provider.
other		CMMI explicitly addresses IPPD and sourcing selection, which are only addressed by inference in the eSCM-SP. Sourcing selection is more comprehensively addressed by eSCM-CL [Hefley, forthcoming c]. Another CMMI topic that is not addressed in the eSCM-SP is Decision Analysis & Resolution.	

Each eSCM-SP Practice was compared to the corresponding Specific Practices and Process Areas in CMMI. This Practice-level comparison was then given a label: "addressed," "partially addressed," or "not addressed." Values were assigned to each label (1, 0.67, or 0, respectively), and the average of the Practice values provide a comparison value at the Capability Area level ("largely covered," "partially covered," and "not covered"). These averages are plotted in Figures 1 and 2.

"Largely covered" means that the greater part of the Capability Area is addressed from the appropriate perspective; the average coverage of all Practices in the Capability Area was greater than 0.67. "Partially covered" means that a significant portion of the Capability Area is addressed, but some requirements may not be explicitly addressed. This corresponds to an average coverage of less than 0.67. Subjective judgment is involved in deciding how well requirements at different levels of abstraction and with different scopes and targets correspond. In addition, specific implementations may go beyond the requirements of either framework.

Figure 1 provides a graphical perspective on the overlap between the eSCM-SP and CMMI from an eSCM-SP perspective. It shows that organizations using CMMI have a significant advantage in initiating an eSCM-SP-based improvement program. As one might expect, however, there are unique contributions of the eSCM-SP that add value to an improvement or quality initiative. The score for each Capability Area is the average score for the Practices, as detailed in Appendix C.

Figure 1
Coverage of the eSCM-SP Capability Areas by the CMMI

Capability Areas	
knw	Knowledge Management
ppl	People Management
prf	Performance Management
rel	Relationship Management
tch	Technology Management
thr	Threat Management
cnt	Contracting
sdd	Service Design & Deployment
del	Service Delivery
tfr	Service Transfer

As shown in Figure 2, organizations using the eSCM-SP that develop or maintain systems or software have a significant advantage in initiating a CMMI-based improvement program. There are unique contributions in CMMI that add value to an eSCM-SP improvement or quality initiative. The eSCM-SP and CMMI can be viewed as both complementary and supplementary when used within the appropriate, overlapping domains. The score for each Process Area is the average score for the Practices, as detailed in Appendix D.

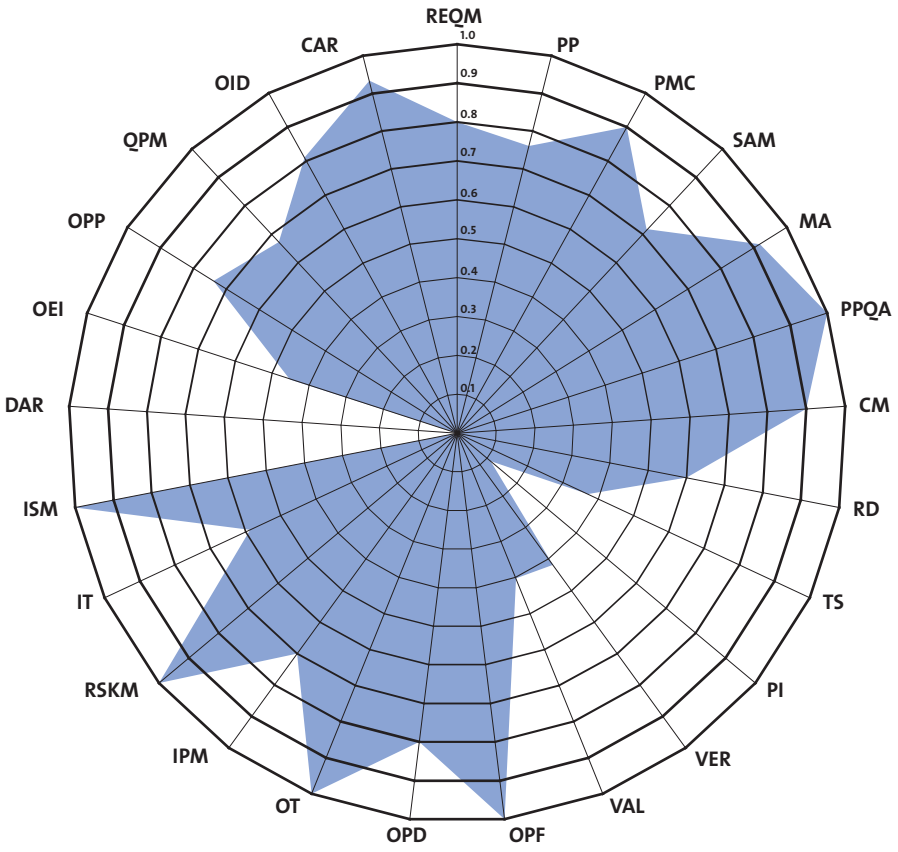

Figure 2
Coverage of the CMMI Process Areas by the eSCM-SP

PP	Project Planning
PMC	Project Monitoring and Control
SAM	Supplier Agreement Management
MA	Measurement and Analysis
PPQA	Process and Product Quality Assurance
CM	Configuration Management
RD	Requirements Development
TS	Technical Solution
PI	Product Integration
VER	Verification
VAL	Validation
OPF	Organizational Process Focus
OPD	Organizational Process Definition
OT	Organizational Training
IPM	Integrated Project Management for IPPD
RSKM	Risk Management
IT	Integrated Teaming
ISM	Integrated Supplier Management
DAR	Decision Analysis and Resolution
OEI	Organizational Environment for Integration
OPP	Organizational Process Performance
QPM	Quantitative Project Management
OID	Organizational Innovation and Deployment
CAR	Causal Analysis and Resolution
REQM	Requirements Management

In addition to the practices in these two models that are specifically comparable, there are also templates that are used to capture generic process management in the eSCM-SP Practices and in CMMI Process Areas. Those templates are compared in Appendix E, where the CMMI Generic Goals and Generic Practices are described.

4.2. Challenges to Mapping

Several challenges arise when comparing the eSCM-SP and CMMI. These challenges do not impact the ability of an organization currently using CMMI to adopt the eSCM-SP. Instead, the impact is frequently based on the need to broaden the implementation of what is being done in a CMMI context to a business or technology-specific perspective, as is described in the eSCM-SP.

The challenges arise because of several differences in the two models:

- operational environment of a service provider versus the project environment of a systems/software organization
- capability model versus maturity model
- required versus informative model components
- breadth and depth differences

4.2.1. Service Providers versus Systems Development Organizations

One conceptual challenge in relating the eSCM-SP to CMMI is the difference between operational and project environments. By definition, operations are ongoing, while projects are temporary. The eSCM-SP focuses on service design, deployment, and delivery in an operational environment. Therefore, it is, at its core somewhat different from CMMI, which focuses on systems design and development in a project environment. Many practices are analogous without being exact matches. For example, eSCM-SP Practices that address planning for design, deployment, and delivery all map conceptually to CMMI Specific Practices for planning the project.

Another conceptual challenge is that the eSCM-SP has a much broader scope of application than CMMI. The eSCM-SP addresses business and technology issues, and it includes engagement initiation and completion activities that are out of the scope of CMMI, which assumes projects have been initiated in alignment with the organization's strategic objectives.

The eSCM-SP's Practices are written from a business perspective, so they have a different flavor from those of CMMI, which are written from a process perspective. For example, organizational objectives in the eSCM-SP include the process improvement perspective in CMMI but also cover other important aspects of control, competitiveness, and improvement.

To make a fair comparison between the eSCM-SP and CMMI, it is necessary to interpret the eSCM-SP, with its broader scope, from the perspective of providing the engineering service of building systems and software products. While this is only one instance of a service that can be provided, it allows a reasonable comparison of the intent of the practices in the models.

The mappings in Appendices C and D are therefore written from the perspective of a service provider that is designing, deploying, and maintaining systems for its clients. In this context, service design is equivalent to development, deployment is equivalent to delivery to the customer and/or end user, and service delivery is equivalent to ongoing maintenance

of a system and its operational support. CMMI does not separate development and maintenance activities, therefore CMMI practices map to multiple Capability Areas in the eSCM-SP, with different emphases (interpretations) on the meaning of the CMMI practice depending on context.

This comparison is against the full CMMI model. For the IPPD discipline in particular, a variant of the IPPD practice that was not IPPD-specific would provide more comprehensive coverage of its analogous eSCM-SP Practice(s). Partial coverage is assigned to IPPD-specific practices, even though an IPPD implementation is assumed for such CMMI practices. For example, OEI SP 1.3 on identifying IPPD-unique skills is partially covered in the eSCM-SP by identifying needed skills.

4.2.2. Capability Models versus Maturity Models

The eSCM-SP was developed as a capability model rather than a maturity model. Process capability indicates the predictability of the process and its outcomes, while process maturity indicates growth in process capability and involves building on one set of processes to establish a higher-maturity set of processes. This distinction is important in order to understand the expected use of the Model, what it means for a Practice to be defined at a specific Capability Level, and what it means for a service provider to be certified at a specific Capability Level. This is true for both continuous and staged representations of CMMI; although both the eSCM-SP and the CMMI continuous representation focus on process capability, the eSCM-SP architecture does not systematically build capability in the same manner as the CMMI continuous representation does. This is discussed in Appendix E, which compares the CMMI Generic Practices and the eSCM-SP Practice templates.

The fact that the eSCM-SP is defined as a capability model means that each Capability Level has Practices that, together, define a predictable set of processes and outcomes. An organization at Capability Level 2, for example, is predictably able to meet client requirements, provided those requirements do not vary significantly from the organization's experience. An organization at Capability Level 3 is predictably able to meet client requirements and measure and control its activities across multiple client engagements. An organization at Capability Level 4 is predictably able to respond to changing business environments and deliver innovative services.

Since staged maturity models have well-defined plateaus of process maturity, organizations are typically expected to master lower-level Process Areas before mastering higher-level ones. For the continuous representation, organizations are typically expected to implement lower-level Generic Practices within a Process Area before higher-level ones. An organization cannot be expected to gain the full benefit of higher-maturity (capability) practices without the foundation of the lower-maturity (capability) practices. Although the targets of staged and continuous representations differ (organizations versus processes respectively), a general progression of maturity (capability) is expected for maturity models that is not necessarily true for a capability model, which can be viewed as a collection of best practices, even when increasing levels of capability are associated with multiple best practices.

Capability models explicitly allow organizations to implement Practices from different levels simultaneously in a manner similar to a continuous representation model [Paulk 1995b]. For instance, an organization using the eSCM-SP may decide to create a capability baseline, a Level 4 capability, for its service delivery processes before it has implemented all of the Capability Level 2 Practices. The organization may choose to do this for a variety of reasons, including competitive pressures or specific client requirements for demonstrating measurable improvement. The important thing for users of the eSCM-SP to recognize is that, since the eSCM-SP is a capability model and not a maturity model, it is possible in principle to implement Practices in a higher Capability Level and receive a consistent organizational benefit before implementing all of the Practices in the lower Capability Levels.

It is also worth noting that the Capability Levels in the eSCM-SP are not defined using the same principles as the Maturity Levels in CMMI. Levels 2 and 3 are quite similar, although there is more of an emphasis on measurement at Level 3 in the eSCM-SP. Level 4 in the eSCM-SP is more similar to Level 5 in CMMI in its emphasis on adopting innovations. Level 5 in the eSCM-SP has no equivalent in any existing maturity model since it is based on demonstrable, persistent improvement against business objectives. This emphasis on results is closer to quality awards such as the Baldrige than to any of the current maturity models.

4.2.3. Required Components versus Informative/Expected Components

Some components in any framework are required; others are informative (or expected). The required CMMI components used to rate organizations (or processes) are the Goals, Process Areas, and Maturity/Capability Levels. Specific Practices in CMMI are expected but not required and may have informative subpractices and supplemental information under them. The eSCM-SP Practices are composed of three Major Activities, each of which contains multiple Required Activities. The required eSCM-SP components are Practices, Major Activities, and Required Activities. Required Activities may have Recommended Activities and supplemental information under them. Mapping between the eSCM-SP and CMMI may therefore involve mapping required components in one framework to informative components in the other.

While this difference is problematic from a mechanistic perspective, the practical use of comparisons such as this report should always remain at a conceptual level and involve professional judgment. The adequacy of the implementation of a reference model's "requirements" always has to be judged in the business context. This distinction is not always adequately appreciated by those using the models.

4.2.4. Breadth and Depth Differences

Breadth and depth differences between frameworks may occur simultaneously. The concept of "reviews" may be used in both frameworks yet cover a variety of techniques. A framework that uses technical reviews as a general review of the technical content of work products can include joint reviews with the customer, internal reviews within a project, and peer reviews. Joint reviews with the customer and peer reviews are substantially different

types of review, and a framework may or may not distinguish between the types. Design reviews are a specific form of technical review, therefore a practice on technical reviews has a broader scope than a practice on design reviews. A practice on design reviews may go into greater detail than a general practice on technical reviews. For example, the design reviews in sdd06 in the eSCM-SP involve the customer and are not, therefore, peer reviews as described in Verification in the CMMI, but they are similar to the milestone reviews (at design) described in PMC SP 1.7.

Judging the relationship between such practices depends on both context and professional judgment. Reviews in the eSCM-SP may be only partially addressed by peer reviews in CMMI, while at the same time the peer reviews in CMMI are only partially addressed by the requirements for reviews in the eSCM-SP.

In comparing general and discipline-specific practices, the general practice only partially addresses the unique concerns of the discipline-specific practice, and the discipline-specific practice only partially addresses the breadth of the general. For another example, CMMI's GP 2.4 on assigning responsibility is a broad practice that would include assigning responsibilities specifically associated with contract roles (cnt09 in eSCM-SP) and vice versa, with partial coverage in both directions.

Some practices, however, are too general for a useful mapping. Decisions are made throughout the eSCM-SP, but generic processes such as Decision Analysis & Resolution (DAR) are too general for a useful mapping to be made.

5. Conclusions

The eSCM-SP and CMMI are similar in many ways since both are five-level models developed by Carnegie Mellon University. They differ in that CMMI is a capability maturity model aimed at describing and transforming the process capability of organizations that build systems and software, while the eSCM-SP is a capability model aimed at describing and improving the capability of IT-enabled service providers throughout the sourcing life-cycle.

The eSCM-SP and CMMI can be complementary for organizations that include systems and/or software development and maintenance as one of the engineering services provided as part of their professional work. Many of the CMMI Practices elaborate on items described at a higher level of abstraction in the eSCM-SP. The eSCM-SP supplements CMMI by addressing business-related issues that are outside the scope of its focus on systems engineering, software engineering, integrated product and process development, and sourcing selection.

References

[Baldrige] Baldrige National Quality Award. www.quality.nist.gov.

[Bate 1995] Bate, Roger, Dorothy Kuhn, Curt Wells, et al. 1995. *A Systems Engineering Capability Maturity Model, Version 1.1.* CMU/SEI-95-MM-003. Pittsburgh, PA: Carnegie Mellon University.

[BSI 2002a] BDD/3 Technical Committee. 2002. *BS 7799-2:2002, Information Security Management Systems—Specification with guidance for use.* British Standards Institution.

[BSI 2002b] BDD/3 Technical Committee. 2002. *BS 15000-1:2002, IT Service Management, Part 1: Specification for Service Management.* British Standards Institution.

[Chrissis 2003] Chrissis, Mary Beth, Mike Konrad, and Sandy Shrum. 2003. *CMMI: Guidelines for Process Integration and Product Improvement.* Boston, MA: Addison-Wesley.

[COPC 2000] Customer Operations Performance Center (COPC-2000). www.copc.com.

[Cooper 2002] Cooper, Jack, Matt Fisher. 2002. *Software Acquisition Capability Maturity Model (SA-CMM) Version 1.03.* CMU/SEI-2002-TR-010. Pittsburgh, PA: Carnegie Mellon University.

[Crosby 1979] Crosby, P.B. 1979. *Quality is Free.* New York, NY: McGraw-Hill.

[Curtis 2001] Curtis, Bill, William E. Hefley, and Sally A. Miller. 2001. *People Capability Maturity Model.* Boston, MA: Addison-Wesley.

[Deming] Deming Prize. www.deming.org/demingprize/.

[Deming 1986] Deming, W. Edwards. 1986. *Out of the Crisis.* Cambridge, MA: MIT Center for Advanced Engineering Study.

[Deming 1994] Deming, W. Edwards. 1994. *The New Economics for Industry, Government, Education, Second Edition.* Cambridge, MA: MIT Center for Advanced Educational Services.

[EQA] European Quality Award. www.efqm.org/model_awards/eqa/intro.htm.

[Ferguson 2004] Ferguson, Jack R. 2004. "The SCAMPI Appraisal Method: Top Ten Myths." 2004 ed. Presented at the Fourth Annual CMMI Technology Conference and User Group. www.sei.cmu.edu/programs/acquisition-support/presentations/ferguson/top-myths/tsld005.htm.

[Guha 2005] Guha, Subrata, William E. Hefley, Elaine B. Hyder, Majid Iqbal, and Mark C. Paulk. 2005. *Comparing the eSCM-SP v2 and ISO 9001: A comparison between the eSourcing Capability Model for Service Providers v2 and ISO 9001:2000 (Quality Management Systems—Requirements).* CMU-ITSQC-05-001. Pittsburgh, PA: Carnegie Mellon University.

[Guha 2005a] Guha, Subrata, William E. Hefley, Elaine B. Hyder, Majid Iqbal, and Mark C. Paulk. 2005. *Comparing the eSCM-SP v2 and COPC-2000®: A comparison between the eSourcing Capability Model for Service Providers v2 and Customer Operations Performance Center (COPC)-2000 CSP Gold Standard, Release 3.4.* CMU-ITSQC-05-003. Pittsburgh, PA: Carnegie Mellon University.

[Guha forthcoming] Guha, Subrata, William E. Hefley, Elaine B. Hyder, Majid Iqbal, and Mark C. Paulk. Forthcoming. *Comparing the eSCM-SP v2 and SS 507: A comparison between the eSourcing Capability Model for Service Providers v2 and SS 507:2004 (Singapore Standard for Business Continuity/Disaster Recovery (BC/DR) Service Providers).* Pittsburgh, PA: Carnegie Mellon University.

[Harry 2000] Harry, Mikel, Richard Schroeder. 2000. *Six Sigma: The Breakthrough Management Strategy Revolutionizing the World's Top Corporations.* New York, NY: Doubleday.

[Hefley, forthcoming a] Hefley, William E., et. al.. Forthcoming. *Comparing the eSCM-SP v2 and People CMM®: A comparison between the eSourcing Capability Model for Service Providers v2 and People Capability Maturity Model® v2.* Pittsburgh, PA: Carnegie Mellon University.

[Hefley, forthcoming b] Hefley, William E., et. al. Forthcoming. *Comparing the eSCM-SP v2 and ISO 17799: A comparison between the eSourcing Capability Model for Service Providers v2 and ISO 17799:2000 (E) (Information Technology—Code of Practice for Information Security Management).* Pittsburgh, PA: Carnegie Mellon University.

[Hefley, forthcoming c] Hefley, William E., et. al. Forthcoming. *The eSourcing Capability Model for Client Organizations (eSCM-CL).* Pittsburgh, PA: Carnegie Mellon University.

[Hyder 2004a] Hyder, Elaine B., Keith M. Heston, and Mark C. Paulk. 2004. *The eSourcing Capability Model for Service Providers (eSCM-SP) v2, Part 1: Model Overview.* CMU-ISRI-04-113. Pittsburgh, PA: Carnegie Mellon University.

[Hyder 2004b] Hyder, Elaine B., Keith M. Heston, and Mark C. Paulk. 2004. *The eSourcing Capability Model for Service Providers (eSCM-SP) v2, Part 2: Practice Details.* CMU-ISRI-04-114. Pittsburgh, PA: Carnegie Mellon University.

[Iqbal 2004] Iqbal, Majid, Jenny Dugmore, Subrata Guha, William E. Hefley, Elaine B. Hyder, and Mark C. Paulk. 2004. *Comparing the eSCM-SP v2 and BS 15000: A comparison between the eSourcing Capability Model for Service Providers v2 and BS 15000-1:2002 (IT Service Management).* CMU-CS-04-129b. Pittsburgh, PA: Carnegie Mellon University.

[Iqbal forthcoming] Iqbal, Majid, Subrata Guha, William E. Hefley, Elaine B. Hyder, and Mark C. Paulk. Forthcoming. *Comparing the eSCM-SP v2 and COBIT®: A comparison between the eSourcing Capability Model for Service Providers v2 and Control Objectives for Information and related Technology (COBIT) 3rd Edition.* Pittsburgh, PA: Carnegie Mellon University.

[ISO 2000a] ISO 9001. 2000. "Quality Management Systems—Requirements." International Organization for Standardization.

[ISO 2000b] ISO 17799. 2000. "Information Technology—Code of Practice for Information Security Management." International Organization for Standardization and International Electrotechnical Commission.

[ISO 2002a] ISO/IEC 12207-1995/Amendment 1. 2002. "Information Technology—Software Life Cycle Processes." International Organization for Standardization and International Electrotechnical Commission.

[ISO 2002b] ISO/IEC 15288. 2002. "Systems Engineering—System Life Cycle Processes." International Organization for Standardization and International Electrotechnical Commission.

[ISO 2003] ISO/IEC 15504-2. 2003. "Software Engineering Process Assessment—Part 2: Performing an Assessment." International Organization for Standardization and International Electrotechnical Commission.

[ITGI 2000] The IT Governance Institute. 2000. "COBIT: Control Objectives for Information and related Technology 3rd Edition." www.isaca.org/cobit.htm.

[ITSqc 2005] ITSqc. 2005. *IT Services Qualification Center (ITSqc) Code of Professional Practice.* Pittsburgh, PA: Carnegie Mellon University.

[Juran 1992] Juran, J.M. 1992. *Juran on Quality By Design.* New York, NY: The Free Press.

[Kumar 2001] Kumar, B., V. Mahendra, E. Hyder, E. Nawrocki, K. Madhu, and R. Gupta. 2001. *eSCM Annotated Bibliography.* CMU-CS-01-125/CMU-ISRI-01-100. Pittsburgh, PA: Carnegie Mellon University.

[March 1996] March, Artemis. 1996. "A Note on Quality: The Views of Deming, Juran, and Crosby." *IEEE Engineering Management Review,* vol. 24, no. 1: 6-14.

[Paulk 1995a] Paulk, Mark C., Charles V. Weber, Bill Curtis, Mary Beth Chrissis. 1995. *The Capability Maturity Model: Guidelines for Improving the Software Process*. Addison-Wesley.

[Paulk 1995b] Paulk, Mark C., Michael D. Konrad, and Suzanne M. Garcia. 1995. "CMM Versus SPICE Architectures." *IEEE Software Process Newsletter,* No. 3, Spring 1995, pp. 7-11

[Paulk 2005] Paulk, Mark C., Subrata Guha, William E. Hefley, Elaine B. Hyder, and Majid Iqbal. 2005. *Comparing the eSCM-SP v2 and Software CMM v1.1: A Comparison Between the eSourcing Capability Model for Service Providers v2 and the Capability Maturity Model® for Software*. CMU-ITSQC-05-002. Pittsburgh, PA: Carnegie Mellon University.

[Paulk forthcoming] Paulk, Mark C., Subrata Guha, William E. Hefley, Elaine B. Hyder, and Majid Iqbal. Forthcoming. *Comparing the eSCM-SP v2 and Related Models and Standards: A Comparison Between the eSourcing Capability Model for Service Providers v2 and Related Models and Standards*. Pittsburgh, PA: Carnegie Mellon University.

[PNQ] Brazilian National Quality Award. www.fpnq.org.br.

[RGNQA] Rajiv Gandhi National Quality Award. Bureau of Indian Standard, Government of India. www.bis.org.in/rgnqa/rgnqa03.pdf.

[Roach 1991] Roach, S.S. 1991. "Services Under Siege—The Restructuring Imperative." *Harvard Business Review,* September-October, pp. 82-92.

[SEI 2001a] SEI. 2001. *Appraisal Requirements for CMMI Version 1.1 (ARC)*. CMU/SEI-2001-TR-034. Pittsburgh, PA: Carnegie Mellon University, Software Engineering Institute.

[SEI 2001b] SEI. 2001. *Standard CMMI Appraisal Method for Process Improvement (SCAMPI), Version 1.1: Method Definition Document*. CMU/SEI-2001-HB-001. Pittsburgh, PA: Carnegie Mellon University, Software Engineering Institute.

Appendix A: Description of the eSCM-SP v2

This section provides a detailed description of the eSourcing Capability Model for Service Providers (eSCM-SP) v2 [Hyder 2004a, Hyder 2004b].

A.1. Rationale Behind Development of the eSCM-SP

IT-enabled sourcing, or eSourcing, uses information technology as a key component of service delivery or as an enabler for delivering services. It is often provided remotely, using telecommunication or data networks. These services currently range from routine and non-critical tasks that are resource intensive and operational in nature to strategic processes that directly impact revenues.

IT-enabled services are being sourced at a rapid rate. The evolution of the Internet and the global telecommunications infrastructure has provided client organizations with a choice of service providers located anywhere in the world. Simultaneously, competitive pressures have driven organizations to find the most cost-effective way to get the IT-enabled services they need while maintaining or improving their quality of service.

Sourcing failures are largely related to a core set of critical issues affecting sourcing relationships. Based on literature review [Kumar 2001] and interviews with eSourcing service providers and clients, issues critical for successful eSourcing have been identified. These include developing and sustaining stakeholder relationships, building and keeping a competent workforce, defining and delivering quality service, assessing and managing threats (e.g., disasters, invasion of networks), remaining competitive through innovation and improvement, and managing transitions of resources and services.

The combination of high growth and significant failures in eSourcing highlights a growing need: clients and service providers both need to be able to address the critical issues in sourcing in order to increase their probability of success. Individually and as a whole, existing frameworks do not address all of the critical issues in eSourcing. Also, many of these frameworks do not readily provide methods to assess the capabilities of IT-enabled service providers to establish, manage, and improve relationships with clients.

A.2. Structure of the eSCM-SP v2

Released in April 2004, the eSCM-SP v2 is composed of 84 Practices, which can be thought of as "best practices" associated with successful sourcing relationships. Each Practice is assigned a value along three dimensions: Sourcing Life-cycle, Capability Area, and Capability Level.

Each of the 84 Practices in the eSCM-SP contains information about a sourcing best practice. This information includes a statement summarizing the best practice, a description of the best practice, a list of activities needing to be performed, and supplemental information that helps clarify those activities. For more information on the structure of the 84 Practices, see *The eSourcing Capability Model for Service Providers (eSCM-SP) v2, Part 2: Practice Details* [Hyder 2004b].

A.2.1. Sourcing Life-cycle

Although most quality models focus only on delivery capabilities, in eSourcing there are also critical issues associated with initiation and completion of engagements. The first dimension of the eSCM-SP highlights where in the Sourcing Life-cycle each Practice is most relevant. The Sourcing Life-cycle is divided into Ongoing, Initiation, Delivery, and Completion. Ongoing Practices span the entire Sourcing Life-cycle, while Initiation, Delivery, and Completion Practices occur in specific phases of that Life-cycle.

Ongoing Practices represent management functions that need to be performed during the entire Sourcing Life-cycle. In order to meet the intent of these Practices, it is important to perform them across the whole life-cycle; an organization that only performs an Ongoing Practice during Delivery is not meeting the intent of the Practice. Initiation Practices focus on the capabilities needed to effectively prepare for service delivery. These Practices are concerned with gathering requirements, negotiating, contracting, and designing and deploying the service, including transferring the necessary resources. Delivery Practices focus on service delivery capabilities, including the ongoing management of service delivery, verification that commitments are being met, and management of the finances associated with the service provision. Completion Practices focus on the capabilities needed to effectively close down an engagement at the end of the Sourcing Life-cycle. They mainly include the transfer of resources to the client, or to a third party, from the service provider.

A.2.2. Capability Areas

Delivery of eSourcing occurs through a series of interdependent functions that enables service providers to effectively deliver service. The second dimension of the eSCM-SP, Capability Areas, provides logical groupings of Practices to help users better remember and intellectually manage the content of the Model. These groupings allow service providers to build or demonstrate capabilities in each critical sourcing function, addressing all of the critical sourcing issues discussed above.

All of the Ongoing Practices are contained within six of the ten Capability Areas: Knowledge Management, People Management, Performance Management, Relationship Management, Technology Management, and Threat Management. The other four Capability Areas are temporal and are typically associated with a single phase of the Sourcing Life-cycle: Initiation, Delivery, or Completion. The exception is Service Transfer, which includes both Initiation and Completion Practices. In addition to Service Transfer, these temporal Capability Areas are Contracting, Service Design & Deployment, and Service Delivery.

The Knowledge Management Practices focus on managing information and knowledge systems so that personnel have easy access to the knowledge they need to effectively perform their work. This Capability Area addresses the critical issues of capturing and using knowledge, and measuring and analyzing reasons for termination.

The People Management Practices focus on managing and motivating personnel to effectively deliver services. They address understanding the organization's needs for personnel and skills, filling those needs, and encouraging the appropriate behaviors to effectively deliver service. This Capability Area addresses the critical issues of establishing

and maintaining an effective work environment, building and maintaining competencies, and managing employee satisfaction, motivation, and retention.

The Performance Management Practices focus on managing the organization's performance to ensure that the client's requirements are being met, that the organization is continually learning from its experience, and that the organization is continually improving across engagements. These Practices address the effective capture, analysis, and use of data, including data on the organization's capabilities relative to its competitors. This Capability Area primarily addresses the critical issues of maintaining competitive advantage, innovating, building flexibility, and increasing responsiveness. It also addresses monitoring and controlling activities to consistently meet service delivery commitments.

The Relationship Management Practices focus on actively managing relationships with stakeholders, including the client, as well as suppliers and partners who are integral to the delivery of services to the client. Relationship Management primarily addresses the critical issues of managing stakeholder expectations, establishing and maintaining trust and ensuring the effectiveness of interactions with stakeholders, managing supplier and partner relationships, managing the cultural differences between stakeholders, and monitoring and managing the client's and end-users' satisfaction. This Capability Area also addresses innovating, building flexibility, increasing responsiveness, establishing well-defined contracts with stakeholders, and maintaining a competitive advantage.

The Technology Management Practices focus on managing the availability and adequacy of the technology infrastructure used to support the delivery of the services. Their focus covers controlling the existing technology, managing changes to that technology, and appropriately integrating the technology infrastructure with the client, suppliers, and partners to effectively deliver service. This Capability Area addresses the critical issue of managing rapid technological shifts and maintaining technology availability, reliability, accessibility, and security. It also addresses innovating, building flexibility, and increasing responsiveness.

The Threat Management Practices focus on identifying and actively managing threats to the organization's ability to meet its objectives and the requirements of the client. They focus on active risk management, paying particular attention to the risks associated with security, confidentiality, infrastructure, and disasters that may disrupt service or fail to meet the requirements of the client. This Capability Area addresses the critical issues of managing clients' security, and ensuring compliance with statutory and regulatory requirements. It also addresses maintaining the continuity of service delivery, managing rapid technological shifts, and maintaining the availability, reliability, accessibility, and security of the technology.

The Contracting Practices focus on effectively managing the process of gathering client requirements, analyzing them, and negotiating a formal agreement that describes how the service provider will meet those requirements. A critical component of contracting is understanding the client's expectations and needs, and agreeing with the client on how the organization will meet those requirements. All Contracting Practices are in Initiation. This

Capability Area addresses the critical issues of translating implicit and explicit needs into the defined requirements, and establishing well-defined contracts with stakeholders.

The Service Design & Deployment Practices focus on translating the client's requirements and the contract language of what will be provided into a detailed design for how it will be provided, and on effectively deploying that design. This Capability Area is closely related to the Contracting Capability Area. All Service Design & Deployment Practices are in Initiation. This Capability Area addresses the critical issue of reviewing service design and deployment to ensure adequate coverage of the requirements. It also addresses developing procedures for monitoring and controlling activities to consistently meet service delivery commitments.

The Service Delivery Practices focus on the continued delivery of services according to commitments made to clients and based on service designs. They include planning and tracking of the service delivery activities. The Service Delivery Practices are the only ones in Delivery. This Capability Area addresses the critical issues of monitoring and controlling activities to consistently meet service delivery commitments, and maintaining continuity of service delivery. It also addresses establishing well-defined contracts with stakeholders, and maintaining a competitive advantage.

The Service Transfer Practices focus on transferring resources between service providers and clients or other service providers. In Initiation the resources are transferred to the organization as it takes responsibility for service delivery. This transfer may include people, processes, technology, and knowledge needed to effectively perform that service delivery. In Completion the organization transfers resources to the new service provider (either the client or an external service provider) in a manner that ensures continued service to the client during the transfer period. This Capability Area addresses the critical issues of smoothly transferring services and resources, and capturing and transferring the knowledge gained during the engagement to the client during contract completion. It also addresses maintaining continuity of service delivery.

A.2.3. Capability Levels

The third dimension in the eSCM-SP is Capability Levels. The five Capability Levels of the eSCM-SP describe an improvement path that clients should expect service providers to travel. This path starts from a desire to provide eSourcing services, and continues to the highest level, demonstrating an ability to sustain excellence.

The capabilities of Level 1 service providers vary widely. Some may have almost none of the eSCM-SP Practices implemented. These providers are very likely to be a high risk to work with because they often promise more than they deliver. Other service providers may have many of the eSCM-SP Practices implemented, including some Practices at Capability Levels 3 and 4. Because these service providers have not fully implemented all of the Capability Level 2 Practices, they may meet many of the client's needs successfully, but there will still be a risk of failure in areas where they have not implemented the necessary eSCM-SP Practices.

Service providers at Capability Level 2 have formalized procedures for capturing requirements and delivering the services according to commitments made to clients and

other stakeholders. These providers are able to deliver specific services according to stated client expectations, given that the services do not significantly vary from the provider's experiences. At Capability Level 2 the service provider is able to systematically capture and understand requirements, design and deploy services to meet the requirements, and successfully deliver the services according to agreed-upon service levels.

The infrastructure (e.g., work environment, training, technology, and information) is in place to support consistent performance of work that meets the service provider's commitments. Level 2 service providers have implemented all of the Capability Level 2 Practices and can demonstrate their effective usage.

Service providers at Capability Level 3 are able to deliver services according to stated requirements, even if the required services differ significantly from the providers' experience. At Level 3 the service provider is able to manage its performance across the organization, understand targeted market services and their varying requirements (including specific cultural attributes), identify and manage risks across engagements, and design and deliver services based on established procedures. The service provider supports this capability through sharing and using knowledge gained from previous engagements, objectively measuring and rewarding personnel performance, and monitoring and controlling technology infrastructure. Having established systems for forming and managing client relationships, providers at Capability Level 3 continuously aim to improve the services delivered. Improvements are reactive and are typically generated from the defined measurement and verification activities. The Level 3 service provider demonstrates measurable improvement with respect to organizational objectives. Organizational learning improves performance across engagements. Level 3 providers have effectively implemented all of the Level 2 and 3 Practices.

Service providers at Capability Level 4 are able to continuously innovate to add statistically and practically significant value to the services they provide to their clients and other stakeholders. At Capability Level 4 the service provider is able to customize its approach and service for clients and prospective clients, understand client perceptions, and predict its performance based on previous experiences. The service provider supports this capability through systematically evaluating and incorporating technology advances and setting performance goals from a comparative analysis of its current performance as well as from internal and external benchmarks. Level 4 providers systematically plan, implement, and control their own improvement, typically generating these plans from their own performance benchmarks. They have effectively implemented all of the Capability Level 2, 3, and 4 Practices.

Service providers at Capability Level 5 have demonstrated measurable, sustained, and consistent performance excellence and improvement by effectively implementing all of the Capability Level 2, 3, and 4 practices for two or more consecutive Certification Evaluations covering a period of at least two years. There are no additional Practices required to reach Capability Level 5; effective, continued, implementation of all 84 of the eSCM-SP Practices in a rapidly changing environment shows an ability to sustain excellence throughout the organization over time.

A.3. Capability Determination Methods

ITSqc provides four methods that can be used to assess the capabilities of service providers relative to the eSCM-SP Capability Levels. The four Capability Determination Methods systematically analyze evidence of the provider's implementation of the eSCM-SP v2 Practices to determine what Capability Level their organization has achieved [Hyder 2004a]. The Capability Determination may be of interest to, or required by, current or prospective clients of the service provider within a sourcing selection process. In this context, the Methods provide a consistent way for clients to evaluate their existing service providers or to compare two or more prospective providers. The knowledge from such an eSCM-SP Capability Determination may be used by clients to assess the risks and benefits of selecting a given service provider. Capability Determination may also be sponsored by service providers with the objective of evaluating their current capabilities and defining targets for self-improvement. In this context, the organization may or may not seek formal certification at an eSCM-SP Capability Level.

The four Capability Determination methods that are available from ITSqc are (1) Full Evaluation, (2) Full Self-appraisal, (3) Mini Evaluation, and (4) Mini Self-appraisal. The five major differences among these methods are (1) their purpose and outcome, (2) who does them, (3) who leads them, (4) who sponsors them, and (5) the number of eSCM-SP Practices that are analyzed (i.e., the model scope). Table 4 summarizes the four Methods.

Table 4
eSCM-SP Capability Determination Methods

		Evaluation	Self-appraisal
FULL	**Purpose**	For certification	To prepare for a Full Evaluation or launch or validate an improvement effort. No certification.
	Team	External, trained & authorized by Carnegie Mellon University	Internal, external, or combination
	Lead evaluator	Required	Strongly Recommended
	Sponsor	Client or service provider	Service provider
	Model scope	All eSCM-SP Practices	All eSCM-SP Practices
MINI	**Purpose**	To prepare for a Full Evaluation or as part of a provider selection process. No certification.	To launch or validate an improvement effort. No certification.
	Team	External, trained & authorized by Carnegie Mellon University	Internal, external, or combination
	Lead evaluator	Required	Recommended
	Sponsor	Client or service provider	Service provider
	Model scope	Subset of eSCM-SP Practices	Subset of eSCM-SP Practices

Only the Full Evaluation leads to an ITSqc certification. It is a third-party external evaluation of a service provider's capability. It is based on evidence of the provider's implementation of all the Practices in the eSCM-SP, and is sponsored by the service provider

or by its client(s). Members of the evaluation team must be trained by Carnegie Mellon University, be authorized to perform external evaluations of service providers, and follow a code of professional practice [ITSqc 2005]. An authorized Lead Evaluator must head the evaluation effort. The evaluation data is rigorously reviewed by a certification board at Carnegie Mellon University and, when warranted, results in certification by Carnegie Mellon of the provider's capability. Organizations can be Certified eSCM-SP-compliant at Capability Levels 2, 3, 4, or 5.

Appendix B: Description of CMMI v1.1

Capability Maturity Model Integration (CMMI) addresses four disciplines formerly covered by separate models developed by the Software Engineering Institute: systems engineering, software engineering, integrated product and process development (IPPD), and supplier sourcing [Chrissis 2003].

Systems engineering covers the development of total systems, which may or may not include software. Systems engineers focus on transforming customer needs, expectations, and constraints into product solutions and supporting these product solutions throughout the life of the product. Software engineering covers the development of software systems. Software engineers focus on applying systematic, disciplined, and quantifiable approaches to the development, operation, and maintenance of software. IPPD is a systematic approach that achieves a timely collaboration of relevant stakeholders throughout the life of the product to better satisfy customer needs, expectations, and requirements. The processes to support an IPPD approach are integrated with the other processes in the organization. As work efforts become more complex, projects may use suppliers to perform functions or add modifications to products that are specifically needed by the project. When those activities are critical, supplier sourcing addresses improved source selection and contract monitoring.

B.1. Maturity Levels

CMMI is designed to describe discrete levels of process improvement. In the staged representation, five Maturity Levels provide a recommended order for approaching process improvement in stages. The Maturity Level of an organization provides a way to predict the future performance of an organization within a given discipline or set of disciplines. Experience has shown that organizations do their best when they focus their process-improvement efforts on a manageable number of Process Areas that require increasingly sophisticated effort as the organization improves. A Maturity Level is a defined evolutionary plateau of process improvement: 1) Initial, 2) Managed, 3) Defined, 4) Quantitatively Managed, and 5) Optimizing.

At Maturity Level 1 (Initial), processes are usually ad hoc and chaotic. The organization usually does not provide a stable environment. Success in these organizations depends on the competence and heroics of the people in the organization and not on the use of proven processes.

At Maturity Level 2 (Managed), the projects in the organization have ensured that requirements are managed and that processes are planned, performed, measured, and controlled.

At Maturity Level 3 (Defined), processes are well characterized and understood, and are described in standards, procedures, tools, and methods. The organization's set of standard processes, which is the basis for Maturity Level 3, is established and improved over time. These standard processes are used to establish consistency across the organization.

At Maturity Level 4 (Quantitatively Managed), processes are selected that significantly contribute to overall process performance and controlled using statistical and other quantitative techniques.

At Maturity Level 5 (Optimizing), processes are continually improved based on a quantitative understanding of the common causes of variation inherent in processes.

Maturity Levels consist of a predefined set of Process Areas. The Maturity Levels are measured by the achievement of the Specific and Generic Goals that apply to each predefined set of Process Areas.

B.2. Process Areas

A Process Area is a cluster of related Practices in an area that, when performed collectively, satisfy a set of Goals considered to be important for making significant improvement in that area. All CMMI Process Areas are common to both continuous and staged representations.

The systems engineering and software engineering disciplines share the same Process Areas (with different amplifications for each discipline). For integrated process and product development, Integrated Project Management adds two Specific Goals (IPM SG3: Use the Project's Shared Vision for IPPD and IPM SG4: Organize Integrated Teams for IPPD), along with the associated Specific Practices, and the Process Areas of Integrated Teaming and Organizational Environment for Integration. For sourcing selection, the Process Area Integrated Supplier Management is added.

The Process Areas for CMMI-SE/SW/IPPD/SS v1.1 are listed in Table 5.

Table 5
Five levels of process maturity (For reference; identical to Table 1.)

Maturity Level	Focus	Process Areas
1 Initial	Process is unpredictable, poorly controlled, and reactive	
2 Managed	Process is characterized for projects and is often reactive	Requirements Management (RM) Project Planning (PP) Project Monitoring & Control (PMC) Supplier Agreement Management (SAM) Measurement & Analysis (MA) Configuration Management (CM) Process & Product Quality Assurance (QA)
3 Defined	Process is characterized for the organization and is proactive	Requirements Development (RD) Technical Solution (TS) Product Integration (PI) Verification (VER) Validation (VAL) Organizational Process Focus (OPF) Organizational Process Definition (OPD) Organizational Training (OT) Integrated Project Management (IPM) Risk Management (RSKM) Integrated Teaming (IT) Integrated Supplier Management (ISM) Decision Analysis & Resolution (DAR) Organizational Environment for Integration (OEI)
4 Quantitatively Managed	Process is measured and controlled	Organizational Process Performance (OPP) Quantitative Project Management (QPM)
5 Optimizing	Focus is on quantitative, continuous process improvement	Causal Analysis & Resolution (CAR) Organizational Innovation & Deployment (OID)

Process Areas can be grouped into four categories: Process Management, Project Management, Engineering, and Support.

Process Management Process Areas contain the cross-project activities related to defining, planning, resourcing, deploying, implementing, monitoring, controlling, appraising, measuring, and improving processes.

Organizational Process Focus (OPF)
Plan and implement organizational process improvement based on a thorough understanding of the current strengths and weaknesses of the organization's processes and process assets.

Organizational Process Definition (OPD)
Establish and maintain a usable set of organizational process assets.

Organizational Training (OT)
Develop the skills and knowledge of people so they can perform their roles effectively and efficiently.

Organizational Process Performance (OPP)
Establish and maintain a quantitative understanding of the performance of the organization's set of standard processes in support of quality and process-performance objectives, and provide the process performance data, baselines, and models to quantitatively manage the organization's projects.

Organizational Innovation & Deployment (OID)
Select and deploy incremental and innovative improvements that measurably improve the organization's processes and technologies. The improvements support the organization's quality and process-performance objectives as derived from the organization's business objectives.

Project Management Process Areas cover the project management activities related to planning, monitoring, and controlling the project.

Project Planning (PP)
Establish and maintain plans that define project activities.

Project Monitoring & Control (PMC)
Provide an understanding of the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan.

Supplier Agreement Management (SAM)
Manage the acquisition of products from suppliers for which there exists a formal agreement.

Integrated Project Management (IPM)
Establish and manage the project and the involvement of the relevant stakeholders according to an integrated and defined process that is tailored from the organization's set of standard processes.

For IPPD, Integrated Project Management adds two Goals that address the establishment of a shared vision for the project and a team structure for integrated teams.

Risk Management (RSKM)
Identify potential problems before they occur so that risk-handling activities may be planned and invoked as needed across the life of the product or project to mitigate adverse impacts on achieving objectives.

Integrated Teaming (IT)
Form and sustain an integrated team for the development of work products.

This Process Area is specific to IPPD.

Integrated Supplier Management (ISM)
Proactively identify sources of products that may be used to satisfy the project's requirements and manage selected suppliers while maintaining a cooperative project-supplier relationship.

This Process Area is specific to Sourcing Selection.

Quantitative Project Management (QPM)
Quantitatively manage the project's defined process to achieve the project's established quality and process-performance objectives.

Engineering Process Areas cover the development and maintenance activities that are shared across engineering disciplines (e.g., systems engineering and software engineering).

Requirements Development (RD)
Produce and analyze customer, product, and product-component requirements.

Requirements Management (RM)
Manage the requirements of the project's products and product components and identify inconsistencies between those requirements and the project's plans and work products.

Technical Solution (TS)
Design, develop, and implement solutions to requirements. Solutions, designs, and implementations encompass products, product components, and product-related life-cycle processes either singly or in combinations as appropriate.

Product Integration (PI)
Assemble the product from the product components, ensure that the integrated product functions properly, and deliver the product.

Verification (VER)
Ensure that selected work products meet their specified requirements.

Validation (VAL)
Demonstrate that a product or product component fulfills its intended use when placed in its intended environment.

Support Process Areas cover the activities that support product development and maintenance. The Support Process Areas address processes that are used in the context of performing other processes.

Configuration Management (CM)
Establish and maintain the integrity of work products using configuration identification, configuration control, configuration status accounting, and configuration audits.

Process & Product Quality Assurance (PPQA)
Provide staff and management with objective insight into processes and associated work products.

Measurement & Analysis (MA)
Develop and sustain a measurement capability that is used to support management information needs.

Organizational Environment for Integration (OEI)
Provide an Integrated Product and Process Development (IPPD) infrastructure and manage people for integration.

This Process Area is specific to IPPD.

Decision Analysis & Resolution (DAR)
Analyze possible decisions using a formal evaluation process that evaluates identified alternatives against established criteria.

Causal Analysis & Resolution (CAR)
Identify causes of defects and other problems and take action to prevent them from occurring in the future.

B.3. Specific Goals and Practices

Specific Goals apply to a Process Area and address the unique characteristics that describe what must be implemented to satisfy the Process Area. A Specific Practice is an activity that is considered to be important in achieving the associated Specific Goal. The Specific Practices describe the activities expected to result in achievement of the Specific Goals of a Process Area. Specific Practices are expected, but not required, model components.

Discipline amplifications are informative model components that contain information relevant to a particular discipline and are associated with Specific Practices.

B.4. Generic Goals and Practices

Generic Goals are called "generic" because the same Goal statement appears in multiple Process Areas. In the staged representation, each Process Area is assigned to a Maturity Level and has only one Generic Goal. That Generic Goal includes the Generic Goals for the corresponding Capability Level and all lower Capability Levels. In the continuous representation, a Process Area can be rated at six different Capability Levels.

Capability Levels, which belong to the continuous representation, apply to an organization's process-improvement achievement for each Process Area. There are six Capability Levels, numbered 0 through 5. Each Capability Level corresponds to a Generic Goal and a set of Generic and Specific Practices.

B.5. The SCAMPI Methods

The method for appraising organizations with respect to, or using, CMMI is called SCAMPI: the Standard CMMI Appraisal Method for Process Improvement [SEI 2001b]. Three types of appraisal method are described: A, B, and C. Class A SCAMPI methods fulfill all requirements for a CMMI appraisal [SEI 2001a]; class B and C methods fulfill defined subsets of the requirements.

Appendix C: Coverage of the eSCM-SP by CMMI

In support of the high-level comparison provided in section 4.1, illustrated in Figure 3, this section provides a detailed mapping of eSCM-SP Practices to the Process Areas and Specific Practices of CMMI. The objective of this comparison is to demonstrate the extent of coverage of eSCM-SP requirements by CMMI. This is only an indicative comparison based on the requirements of the two frameworks. This comparison should be used as a guideline, not as a rule.

Figure 3
(For reference; identical to Figure 1) Coverage of the eSCM-SP Capability Areas by the CMMI

Capability Areas	
knw	Knowledge Management
ppl	People Management
prf	Performance Management
rel	Relationship Management
tch	Technology Management
thr	Threat Management
cnt	Contracting
sdd	Service Design & Deployment
del	Service Delivery
tfr	Service Transfer

The table is organized according to the Capability Areas of the eSCM-SP. Note that in some cases, a Practice in the eSCM-SP maps to multiple Specific Practices, Goals, and/or Process Areas in CMMI. A summary mapping precedes such instances.

The following symbols are used to show coverage of eSCM-SP requirements by CMMI:

Symbol	Interpretation
●	The eSCM-SP Practice is addressed in the CMMI.
O	The eSCM-SP Practice is only partially addressed in the CMMI.
⌀	The eSCM-SP Practice is not addressed in the CMMI (to any significant degree).

Knowledge Management (knw)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
knw01: Share knowledge	○		Although the process aspect of this Practice is addressed in CMMI, this knowledge-sharing policy is not explicitly addressed in the same breadth as knw01. IPPD addresses communication and coordination between different project groups and the customer in a specific style of organizational structure. Decision making in DAR implies knowledge sharing in a generic way, which in turn implies a policy via GP 2.1: Establish an Organizational Policy.
	○	IPM: Integrated Project Management	Specific Goals 3 and 4 of IPM address knowledge sharing via IPPD, which implies a policy via GP 2.1: Establish an Organizational Policy.
	○	IT: Integrated Teaming	Integrated Teaming addresses knowledge sharing in the project team via IPPD, which implies a policy via GP 2.1: Establish an Organizational Policy.
knw02: Provide required information	○		This Support Practice is not explicitly addressed in CMMI although communication and coordination are important themes in CMMI. The process aspect is captured in the process assets in OPD and the skills-building aspect in the training materials in OT, but those topics are separately addressed in knw04 and ppl06. Decision making in DAR implies sharing required information in a generic way.
	○	GP 2.7: Identify and Involve Relevant Stakeholders	This Support Practice is generically addressed in part by involving stakeholders, which implies sharing of required information, in every CMMI Process Area.
knw03: Knowledge system	○	OPD SP 1.5: Establish the Organization's Process Asset Library	This Support Practice is not explicitly addressed in CMMI since "process assets" is separately covered in knw04. The examples contained in the process asset library are one kind of knowledge that would be contained in a knowledge system.
knw04: Process assets	●		This Support Practice is addressed both specifically in Organizational Process Definition and generically in CMMI.
	●	OPD: Organizational Process Definition	Practice knw04 is essentially equivalent to this Process Area.
	○	OPF SP 2.3: Deploy Organizational Process Assets	Deployment is addressed in knw04 (c1).
	○	IPM SP 1.5: Contribute to the Organizational Process Assets	Participation in process definition is addressed in knw04 (a2).
	○	IT SP 2.4: Establish Operating Procedures (IPPD)	Among the process assets established at the organizational level is the operating procedures for integrated teams.
	○	GP 3.1: Establish a Defined Process	This Support Practice is generically addressed by establishing a defined process—which is more directly addressed via the (a) template in the eSCM-SP—for every CMMI Process Area.
knw05: Engagement knowledge	○	OPF SP 2.4: Incorporate Process-Related Experiences into the Organizational Process Assets	Engagement knowledge is more than process-related experiences. CMMI-based process improvement includes lessons learned and process assets, which correspond to "engagement knowledge." That knowledge is used to both manage and improve the project-level process, but the business-oriented aspects are not explicitly addressed. In the eSCM-SP, process improvement proposals are justified by a business case analysis.
knw06: Reuse	○	TS SP 2.4: Perform Make, Buy, or Reuse Analyses	Reuse in the eSCM-SP is more than a make, buy, or reuse analysis.
knw07: Version & change control	●		This Support Practice is addressed specifically in Configuration Management and generically in CMMI.
	●	CM: Configuration Management	Version & change control is essentially equivalent to Configuration Management.
	●	GP 2.6: Manage Configurations	This Support Practice is generically addressed by configuration management for every CMMI Process Area.
knw08: Resource consumption	●		Measurement of the parameters used for project planning implies monitoring resource consumption, which, in conjunction with monitoring project-planning parameters, addresses management of resource consumption.
	○	PMC SP 1.1: Monitor Project Planning Parameters	Resources are generically described as project planning parameters in CMMI.
	○	MA: Measurement & Analysis	Measurement and analysis generically address the specific resource measures described by this Practice.

People Management (ppl)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
ppl01: Encourage innovation	○		Encouraging innovation is more than process improvement, but Organizational Innovation & Deployment implies a fairly general innovation policy related to quality and process via GP 2.1: Establish an Organizational Policy.
	○	OID GP 2.1: Establish an Organizational Policy	Organizational Innovation & Deployment includes an innovation policy for process and quality.
	○	OID SP 1.1: Collect and Analyze Improvement Proposals	Encouraging improvement proposals is an aspect of encouraging innovation.
ppl02: Participation in decisions	●		The clear intent of CMMI is to have professionals who participate in the major system decisions work as an integral part of the internal commitment process. The specific mechanism is typically IPPD, but participation practices are sprinkled throughout CMMI.
	○	REQM SP 1.2: Obtain Commitment to Requirements	The internal commitment process involves participation.
	○	PP SP 2.6: Plan Stakeholder Involvement	Staff of the service provider are stakeholders.
	○	PMC SP 1.5: Monitor Stakeholder Involvement	Staff of the service provider are stakeholders.
	○	IPM SP 2.1: Manage Stakeholder Involvement	Staff involvement in the decision-making process is part of managing their involvement as stakeholders.
	○	IPM SP 2.3: Resolve Coordination Issues	Coordination implies participation.
	○	IT SP 2.1: Establish a Shared Vision	A shared vision is the basis for active and informed participation.
	○	IT SP 2.5: Collaborate among Interfacing Teams	Collaboration implies participation.
	○	GP 2.7: Identify and Involve Relevant Stakeholders	All stakeholders should participate in decision making.
ppl03: Work environment	○		This Support Practice is specifically, if incompletely, addressed and generically addressed by implication in CMMI. While facilities and tools are mentioned, the "work environment" encompasses physical, social, cultural, and regulatory issues that are not explicitly addressed in CMMI.
	○	PP SP 2.4: Plan for Project Resources	Facilities and support tools needed to do the work are planned for at Maturity Level 2.
	○	OEI SP 1.2: Establish an Integrated Work Environment (IPPD)	The integrated work environment is a specific instantiation of a work environment that supports IPPD.
	○	GP 2.3: Provide Resources	This Support Practice is generically addressed in part by providing resources, many of which comprise the work environment, for every CMMI Process Area.
ppl04: Assign responsibilities	●		This Support Practice is addressed both specifically and generically in CMMI.
	○	IT SP 1.3: Assign Appropriate Team Members	In the IPPD context, this Maturity Level 4, Specific Practice directly corresponds to ppl04 at Capability Level 2.
	●	GP 2.4: Assign Responsibility	This Support Practice is generically addressed by assigning responsibility for every CMMI Process Area.
	○	GP 2.5: Train People	Training is a part of the infrastructure that builds personnel competencies for every CMMI Process Area.
ppl05: Define roles	●		This Support Practice is addressed via role definitions, which are part of the organization's set of standard processes. It is generically addressed via GP 2.4, but that is more explicitly related to ppl04.
	○	IPM SP 4.1: Determine Integrated Team Structure for the Project (IPPD)	Although the team structure in this IPPD practice is specifically for the IPPD context, role definition is a generic analog.
	●	IT SP 2.3: Define Roles and Responsibilities (IPPD)	In the IPPD context, roles and responsibilities are defined for the team.
	○	OPD SP 1.1.2	Roles are included in the definition of the organization's standard processes.
ppl06: Workforce competencies	○	OT: Organizational Training	Organizational Training primarily addresses workforce competencies via training as the specific mechanism for workforce skills building (ppl07) and personnel competencies (ppl08). Training is only one mechanism for building competencies, however.

ppl07: Plan & deliver training	●		This Support Practice is addressed both specifically in Organizational Training and generically in CMMI.
	●	OT: Organizational Training	Practice ppl07 is at Capability Level 3 and is directly analogous to Organizational Training at Maturity Level 3 in CMMI.
	○	GP 2.5: Train People	This Support Practice is generically addressed by training at Capability Level 2 for every CMMI Process Area.
ppl08: Personnel competencies	●		This Support Practice is addressed both specifically and generically in CMMI.
	○	PP SP 2.5: Plan for Needed Knowledge and Skills	Project- or engagement-specific training is provided to build competencies as needed.
	○	IT SP 1.2: Identify Needed Knowledge and Skills (IPPD)	In the IPPD context, identify the needed skills and build the competencies needed for the engagement's work.
	○	GP 2.5: Train People	This Support Practice is generically addressed by building personnel competencies for every CMMI Process Area, although mechanisms other than training may be used.
ppl09: Performance feedback	⌀		Performance feedback is not explicitly addressed in CMMI.
ppl10: Career development	⌀		Career development is not explicitly addressed in CMMI.
ppl11: Rewards	○	OEI SP 2.2: Establish Incentives for Integration (IPPD)	Rewards and recognition are not generally addressed in CMMI except in the specific case of incentives for integration in IPPD.

Performance Management (prf)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
prf01: Engagement objectives	○		Engagement objectives are diffusely addressed in the CMMI. Both the eSCM-SP and CMMI strongly emphasize communication with the customer when establishing engagement objectives and project commitments. The eSCM-SP includes business objectives that extend beyond the customer requirements, so the eSCM-SP is broader in scope.
	○	MA: Measurement & Analysis	Measurement and analysis is embedded in prf01 explicitly for measuring and monitoring engagement objectives. Measurement and analysis is addressed in del04 (Verify service commitments) specifically to meet service commitments,.
	○	IPM SP 3.1: Define Project's Shared-Vision Context (IPPD)	Establishing a shared vision, although IPPD-specific in CMMI, is based on (and arguably a prerequisite for) defining engagement objectives.
	○	IT SP 2.1: Establish a Shared Vision (IPPD)	Establishing a shared vision, although IPPD-specific in CMMI, is based on (and arguably a prerequisite for) defining engagement objectives.
	○	QPM SP 1.1: Establish the Project's Objectives	At Maturity Level 4, this Specific Practice targets quantitative process and quality objectives.
	○	QPM SP 2.1: Select Measures and Analytic Techniques	The measures and analysis techniques are process and quality focused.
prf02: Verify processes	●		This Support Practice is addressed both specifically in Process & Product Quality Assurance and generically in CMMI.
	●	PPQA: Process & Product Quality Assurance	PPQA addresses both process and product assurance. Verification in prf02 includes both processes and work products.
	●	GP 2.9: Objectively Evaluate Adherence	This Support Practice is generically addressed by objectively evaluating adherence of the process against its process description, standards, and procedures for every CMMI Process Area.
prf03: Adequate resources	●		This Support Practice is addressed both specifically and generically in CMMI.
	○	PP SP 2.4: Plan for Project Resources	Resource needs are estimated as part of planning a software project.
	○	GP 2.3: Provide Resources	This Support Practice is generically addressed by providing adequate resources for every CMMI Process Area.
prf04: Organizational objectives	○		Practice prf04 has no direct analog in CMMI because the eSCM-SP focus is on business issues from a client and market perspective, although improvement objectives are part of the organizational objectives. Organizational objectives in a business sense are outside the scope of CMMI, although alignment with strategic plans is mentioned.
	○	MA: Measurement & Analysis	Measurement should be aligned with strategic and business plans (see SP 1.1 specifically).
	○	OPF SP 1.1: Establish Organizational Process Needs	Organizational objectives include process improvement objectives.
	○	OPP SP 1.3: Establish Quality and Process-Performance Objectives	Quality and process objectives are part of the organizational objectives.
	○	OEI SP 1.1: Establish the Organization's Shared Vision (IPPD)	Organizational objectives are one aspect of establishing the organization's vision, but they are closer to the operational level.
prf05: Review organizational performance	○		This Practice is only partially covered in CMMI because senior management oversight of organizational performance is a broader, business-oriented practice in the eSCM-SP, where CMMI's focus on organizational performance is in a process/quality management and improvement context.
	○	OPF SP 1.2: Appraise the Organization's Processes	Assessments are one aspect of reviewing organizational performance.
	○	OID SP 2.3: Measure Improvement Effects	Reviewing the effectiveness of improvement efforts is one aspect of reviewing organizational performance.
	○	GP 2.10: Review Status with Higher Level Management	This Support Practice is generically addressed in part by reviews with senior management for every CMMI Process Area.
prf06: Make improvements	●	OPF: Organizational Process Focus	Organizational Process Focus addresses defining and improving processes at the organizational level, similar to prf06.

prf07: Achieve organizational objectives	○		Practice prf07 corresponds to a combination of the program aspects of Organization Process Focus and the business objectives of Process Change Management.
	○	OPF: Organizational Process Focus	Practice prf07 corresponds partially to Organizational Process Focus. The emphasis of the organizational objectives is on improving the capability and effectiveness of the organization, which includes business objectives as well as process improvement objectives. There is a "level mismatch" since prf07 is at Capability Level 4 and Organization Process Focus is at Maturity Level 3; the mapping ensures that the "program" aspect of prf07 is addressed.
	○	OID: Organizational Innovation & Deployment	"Achieve organizational objectives" at Capability Level 4 corresponds partially to Organizational Innovation & Deployment at Maturity Level 5. Organizational Innovation & Deployment emphasizes continual improvement that supports the organization's quality and process-performance objectives as derived from the organization's business objectives.
prf08: Capability baselines	●	OPP SP 1.4: Establish Process Performance Baselines	Capability baselines are equivalent to the organization's process performance baselines in CMMI.
prf09: Benchmark	○	OPF SP 1.2: Appraise the Organization's Processes	Practice prf08 at Capability Level 4 covers a broader set of benchmarking issues (e.g., quantitative benchmark or benchmarks against competitors or industry leaders) than is covered by the assessments in CMMI.
prf10: Prevent potential problems	○		The prevention of potential problems is distinct from the prevention of known problems (del06).
	○	CAR: Causal Analysis & Resolution	Causal analysis is more directly addressed at preventing known problems (del06), but it can provide inputs to preventing potential problems.
	○	OPF SP 1.3.1, 2.4.3, 2.4.4 OPD SP 1.3.6 OID SP 2.2.10	Lessons learned from analyzing improvements, pilots, and innovations are inputs to preventing potential problems.
	○	GP 3.2.3	Lessons learned are generically applied as part of collecting improvement information.
prf11: Deploy innovations	●	OID: Organizational Innovation & Deployment	Deploying innovations for achieving business objectives is equivalent to Organizational Innovation & Deployment. The "program" aspect of prf11 is addressed in Organizational Process Focus at Maturity Level 3.

Relationship Management (rel)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
rel01: Client interactions	○		CMMI focuses on the requirements aspects of client interaction and does not address broader issues, such as dispute handling and escalation (b6 and b11).
	○	REQM: Requirements Management	Requirements flow from the customer, and changes to those requirements are managed, in Requirements Management.
	○	PP SP 2.6: Plan Stakeholder Involvement	Clients are stakeholders, whose involvement in the project is planned.
	○	PMC SP 1.5: Monitor Stakeholder Involvement	Clients are stakeholders, whose involvement in the project is monitored.
rel02: Select suppliers & partners	○	SAM SP 1.2: Select Suppliers	Selecting suppliers is addressed, but partners are not necessarily included in the definition of "supplier."
rel03: Manage suppliers & partners	○	SAM: Supplier Agreement Management	Managing suppliers is addressed, but partners are not necessarily included in the definition of "supplier."
rel04: Cultural fit	⊘		Cultural fit is not explicitly addressed in CMMI.
rel05: Stakeholder information	●		This Support Practice is addressed both specifically and generically in CMMI, which, in aggregate, covers stakeholder information.
	○	PP SP 2.6: Plan Stakeholder Involvement	Collecting, analyzing, and using stakeholder information is part of planning stakeholder involvement.
	○	PMC SP 1.5: Monitor Stakeholder Involvement	Collecting, analyzing, and using stakeholder information is part of monitoring stakeholder involvement.
	○	IPM SG 2: Coordinate and Collaborate with Relevant Stakeholders	Collecting, analyzing, and using stakeholder information is part of coordinating and collaborating with stakeholders.
	○	IT: Integrated Teaming	In the IPPD context, stakeholders should be involved as part of an integrated team.
	○	GP 2.7: Identify and Involve Relevant Stakeholders	This Support Practice is generically addressed by involving relevant stakeholders for every CMMI Process Area.
rel06: Client relationships	○	IPM SG 2: Coordinate and Collaborate with Relevant Stakeholders	Although relationship building is not explicitly addressed in CMMI, collaboration with stakeholders, and the general philosophy of IPPD, imply building better relationships, although the long-term nature of client-supplier relationships in a service context must be inferred.
rel07: Supplier & partner relationships	○		Managing supplier relationships is addressed, at least in part, but partners are not necessarily included in the definition of "supplier."
	○	SAM: Supplier Agreement Management	Managing the supplier relationship is addressed, but partners are not necessarily included in the definition of "supplier."
	○	ISM: Integrated Supplier Management (SS)	Since Integrated Supplier Management is a Maturity Level 3 Process Area, its natural equivalent in the eSCM-SP is rel07 (Supplier & partner relationships), which builds on rel02 (Select suppliers & partners) and rel03 (Manage suppliers & partners). Although relationship building is not explicitly addressed in CMMI, the "integrated" form of supplier management in the sourcing selection variant of CMMI, and the general philosophy of IPPD, imply building better supplier relationships, although the long-term nature of client-supplier relationships in a service context must be inferred. Partners are not necessarily included in the definition of "supplier."
rel08: Value creation	⊘		Creating value is not explicitly addressed in CMMI. Eliciting requirements is separately addressed in cnt06.

Technology Management (tch)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
tch01: Acquire technology	○		This Support Practice is specifically, if incompletely, addressed and generically addressed by implication in CMMI. Technology is an example of resources that is not explicitly addressed in CMMI.
	○	PP SP 2.4: Plan for Project Resources	Technology needed to do the work is planned for at Maturity Level 2.
	○	OEI SP 1.2: Establish an Integrated Work Environment (IPPD)	The integrated work environment is a specific instance where technology may be acquired to support IPPD.
	○	GP 2.3: Provide Resources	This Support Practice is generically addressed in part by providing resources, including technology, for every CMMI Process Area.
tch02: Technology licenses	○	SAM SP 2.1.6, 2.3.4 PI SP 3.4.3	Technology licenses are addressed at the subpractice level in CMMI.
tch03: Control technology	○	GP 2.6: Manage Configurations	Although configuration management is primarily targeted toward the work products developed by the organization, technology in the form of acquired work products and tools are addressed by implication. Controlling the full scope of the technology infrastructure is not explicitly addressed in CMMI.
tch04: Technology integration	⊘		Integrating the organization's technology infrastructure with that of the client is not explicitly addressed in CMMI.
tch05: Optimize technology	⊘		Optimizing technology infrastructure for overall service performance is not explicitly addressed in CMMI.
tch06: Proactively introduce technology	●	OID: Organization Innovation & Deployment	Technology is an instance of innovation.

Threat Management (thr)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
thr01: Risk management	●	RSKM GP 2.1: Establish an Organizational Policy	The risk management policy is generically addressed in CMMI.
thr02: Engagement risk	●		Risk identification is addressed in Project Planning and risk monitoring in Project Monitoring & Control at Maturity Level 2. It is systematically addressed in Risk Management at Maturity Level 3, which is a level mismatch with this Level 2 Practice.
	○	PP SP 2.2: Identify Project Risks	Risk identification is part of risk management.
	○	PMC SP 1.3: Monitor Project Risks	Risk monitoring is part of risk management.
	●	RSKM: Risk Management	Risk management is addressed at Level 3 in CMMI as a more sophisticated, proactive implementation of the risk identification and tracking at Level 2, but it remains project (or engagement) focused.
thr03: Risk across engagements	⊘		Risk management across engagements is not explicitly addressed in CMMI.
thr04: Security	○	PP SP 1.2.1, 1.4.3, 2.3.1 PMC SP 1.1.4, 2.1.1 SAM SP 2.1.3 CM SP 1.2.1, 2.2.4 MA SP 1.3.3 TS SP 3.2.3 PI SP 3.4.3 RSKM SP 2.1.1 OEI SP 1.2.4	Security is addressed at the subpractice level in CMMI.
thr05: Intellectual property	⊘		Protection of intellectual property is not explicitly addressed in CMMI.
thr06: Statutory & regulatory compliance	○	IPM SP 3.2 supplemental QPM SP 1.2.1, 1.3.2	Compliance with statutes and regulations is addressed at the subpractice level in CMMI. Constraints imposed by outside authorities are mentioned in the supplemental information for IPM SP 3.2, Establish the Project's Shared Vision, in the IPPD context.
thr07: Disaster recovery	⊘		Disaster recovery is not explicitly addressed in CMMI.

Contracting (cnt)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
cnt01: Negotiations	⌀		Negotiation guidelines are not explicitly addressed in CMMI.
cnt02: Pricing	⌀		Pricing guidelines are not explicitly addressed in CMMI, although cost estimation is addressed in PP SP 1.4, and cost is a crucial component of pricing.
cnt03: Confirm existing conditions	⌀		"Due diligence," as confirming existing conditions is commonly known, is not addressed in CMMI, although it may be partially implied by requirements elicitation and analysis.
cnt04: Market information	⌀		Market information (and similarly strategic business-planning topics) is not explicitly addressed in CMMI.
cnt05: Plan negotiations	⌀		Changes to the requirements are discussed with the relevant stakeholders in CMMI. This implies negotiating with the client, but the timeliness of identifying the issues that are important to the client or of establishing negotiating positions is not explicitly addressed in CMMI.
cnt06: Gather requirements	●	RD SG 1: Develop Customer Requirements	Customer-requirements development is equivalent to gathering requirements.
cnt07: Review requirements	●		Reviewing the requirements to determine whether the organization can meet them is part of Requirements Management.
	○	REQM SP 1.1: Obtain an Understanding of Requirements	The requirements are reviewed to verify that they are clear, complete, consistent, appropriate, verifiable, and traceable.
	○	REQM SP 1.2: Obtain Commitment to Requirements	The internal commitment process for the project is a prerequisite to verifying that the organization can meet the requirements.
	○	RD SP3.5: Validate Requirements	Validation of the requirements to determine whether the system performs appropriately in the intended environment occurs during feasibility analysis as well as at completion.
cnt08: Respond to the requirements	●		Requirements management and development, in aggregate, in CMMI addresses the clarification of requirements.
	○	REQM SP 1.1: Obtain an Understanding of Requirements	Clarifying the requirements is intrinsic to understanding them.
	○	PP SP 3.3: Obtain Plan Commitment	Clarifying requirements with the client is part of the commitment process in eSCM-SP.
	○	RD SP 1.1: Elicit Needs	Clarifying requirements with the client is part of eliciting needs.
	○	RD SP 3.5: Validate Requirements with Comprehensive Methods	Clarification of ambiguous requirements is an aspect of validating the requirements.
cnt09: Contract roles	○	GP 2.4: Assign Responsibility	Although contract roles are not explicitly addressed in CMMI, they are implicitly and generically addressed by assigning responsibility.
cnt10: Create contracts	⌀		Creating contracts is not explicitly addressed in CMMI, although establishing the project plan and making external commitments is addressed.
cnt11: Amend contracts	⌀		Amending contracts is not explicitly addressed in CMMI, although managing changes to the requirements is addressed.

Service Design & Deployment (sdd)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
sdd01: Communicate requirements	●		Communication is intrinsic to Requirements Management and IPPD.
	○	REQM SP 1.5: Identify Inconsistencies between Project Work and Requirements	Communication with the service design and deployment team is necessary for maintaining consistency with the requirements.
	●	IT: Integrated Teaming	In the IPPD context, the integrated team is the mechanism for communication and coordination.
sdd02: Design & deploy services	●		The distinction between this Capability Level 3 Practice and its Level 2 counterpart, sdd03, is the capturing of organizational knowledge via procedures, thus it corresponds directly to Integrated Project Management and the Maturity Level 3 Engineering Process Areas.
	○	REQM SP 1.5: Identify Inconsistencies between Project Work and Requirements	The service design and deployment team work to provide a service that satisfies client requirements.
	○	IPM: Integrated Project Management	The planning of service design and deployment is in sdd02 (b1,b2).
	○	TS: Technical Solution	Developing a technical solution is part of designing a service.
	○	PI: Product Integration	Product integration is part of designing a service.
	○	VER: Verification	Verification includes reviewing the service design.
sdd03: Plan design & deployment	●		Planning and tracking service delivery in the eSCM-SP is conceptually equivalent to planning and monitoring the (development) project in CMMI. Although Project Planning and Project Monitoring & Control have more detailed guidance, the eSCM-SP Practice addresses the same concepts as these Process Areas and includes their Specific Practices by implication. Deployment is essentially the same as delivering the product to the customer. Deployment of a system might not include some of the factors typically important in deploying services: processes, technologies, people, and the work environment. They are implied in CMMI, but are not explicitly described.
	○	PP: Project Planning	Planning the development project is equivalent to planning design and deployment.
	○	PMC: Project Monitoring & Control	Tracking development activities is equivalent to tracking design and deployment.
	○	PI SP 3.4: Package and Deliver the Product or Product Component	Delivery of the product is equivalent to deploying the service.
sdd04: Service specification	●		The service specification is equivalent to the product requirements specification.
	○	REQM SP 1.5: Identify Inconsistencies between Project Work and Requirements	The service specification meets the client requirements.
	●	RD SG 2: Develop Product Requirements	The service specification is equivalent to the product requirements specification.
sdd05: Service design	●		The service design is equivalent to the product design. Note that the "service" design may address non-technological design issues, such as training.
	○	REQM SP 1.5: Identify Inconsistencies between Project Work and Requirements	The service design is based on the service specification.
	●	TS SP 2.1: Design the Product or Product Component	The service design is equivalent to the product design.
sdd06: Design feedback	●		Although communication with the customer is covered more broadly in the eSCM-SP in general, design reviews are part of CMMI's customer relationship management.
	○	PMC SP 1.7: Conduct Milestone Reviews	Customer feedback occurs as part of formal reviews in Project Monitoring & Control, although feedback on the design is only part of the customer feedback solicited.
	○	RD SP 3.5: Validate Requirements with Comprehensive Methods	Reviewing the service design is an aspect of validating the requirements.
	○	TS GP 2.7: Identify and Involve Relevant Stakeholders	Design feedback is part of stakeholder involvement for Technical Solution.
sdd07: Verify design	●	VER: Verification	The product design is one of the work products that is typically verified in CMMI.

sdd08: Deploy service	●		Delivering the product to the customer is equivalent to deploying the service. Deployment of a system might not include some of the factors typically important in deploying services: processes, technologies, people, and the work environment. They are implied in CMMI, but are not explicitly described.
	○	REQM SP 1.5: Identify Inconsistencies between Project Work and Requirements	Deployment is based on the service design.
	○	CM SP 1.3: Create or Release Baselines	Baselines are the controlled product that is delivered to the customer.
	●	PI SP 3.4: Package and Deliver the Product or Product Component	Delivering the product to the customer is equivalent to deploying the service.
	○	TS SP 3.1: Implement the Design	The service is deployed based on the design.

Service Delivery (del)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
del01: Plan service delivery	●		Service delivery is analogous to operating and maintaining the delivered system, which may or may not be within scope for a system. Development, maintenance, and operations may be performed by different parts of the same organization or by different organizations. Project planning and tracking are included in this Practice.
	O	PP: Project Planning	Project planning is part of planning the operation and/or maintenance of the system.
	O	PMC: Project Monitoring & Control	Project monitoring and control is part of tracking the operation and/or maintenance of the system.
del02: Train clients	O	TS SP 3.2: Develop Product Support Documentation	Client training includes any mechanisms for giving clients the skills needed to use the service (or system). This includes user documentation, but not installation or maintenance documentation.
del03: Deliver service	●		Delivering the service, using this interpretation, is analogous to operating and/or maintaining the system.
	O	REQM SP 1.3: Manage Requirements Changes	Managing changes to the client requirements is part of maintaining the system.
	O	TS: Technical Solution	Maintaining the technical solution is part of delivery.
	O	PI: Product Integration	Product integration is part of maintenance.
	O	VER: Verification	Verification is part of maintenance.
	O	VAL: Validation	Validation is part of maintenance.
del04: Verify service commitments	●		Verifying that service commitments are being met implies in this context that operations and/or maintenance is meeting its commitments.
	O	MA: Measurement & Analysis	Measurement is a prerequisite for verifying that service commitments are being met.
	O	PPQA: Process & Product Quality Assurance	Auditing work products against the relevant standards and requirements is objective verification that requirements have been met.
	O	VAL: Validation	In CMMI, validation involves demonstrating that a product fulfills its intended use when placed in its intended environment. From an eSCM-SP perspective, this is best demonstrated in the delivery of the service and meeting service commitments (del04).
del05: Correct problems	●		Problem correction in the eSCM-SP is corrective maintenance, which may be performed during development.
	●	CM SP 2.1: Track Change Requests	Correcting problems is addressed in CMMI via the tracking system for failures and defects.
	O	VER SP 3.2: Analyze Verification Results and Identify Corrective Action	Problems identified during verification are corrected.
del06: Prevent known problems	●	CAR: Causal Analysis & Resolution	Causal Analysis & Resolution in CMMI is a systemic process for preventing the recurrence of known problems (del06). Although Causal Analysis & Resolution has more detailed guidance, the eSCM-SP Practice addresses the same concept as the Process Area and includes its Specific Practices by implication. Preventing potential problems (prf10) is related but more proactive, and correcting problems is addressed in del05.
del07: Service modifications	●		Change requests for new or changed requirements in CMMI address conceptually the same point as service modification in the eSCM-SP.
	O	REQM SP 1.3: Manage Requirements Changes	Managing changes to the client requirements is part of maintaining the system.
	O	CM SP 2.1: Track Change Requests	Change requests address enhancements to the system as well as corrections.
	O	TS: Technical Solution	Maintaining the technical solution is part of delivery.
	O	PI: Product Integration	Product integration is part of maintenance.
	O	VER: Verification	Verification is part of maintenance.
	O	VAL: Validation	Validation is part of maintenance.
del08: Financial management	⊘		Financial management is not explicitly addressed in CMMI, although effort and costs are planned and tracked in PP SP 2.1, PP SP 2.4, and PMC SP 1.1.

Service Transfer (tfr)

eSCM-SP Practice	Relation	CMMI v1.1 Specific Practice	Comments
tfr01: Resources transferred in	∅		Resource transfer is not explicitly addressed in CMMI.
tfr02: Personnel transferred in	∅		Transferring people from the client to the organization is not explicitly addressed in CMMI.
tfr03: Service continuity	∅		Neither contract completion nor transition are explicitly addressed in CMMI.
tfr04: Resources transferred out	∅		Resource transfer is not explicitly addressed in CMMI.
tfr05: Personnel transferred out	∅		Transferring people from the organization to the client is not explicitly addressed in CMMI.
tfr06: Knowledge transferred out	∅		Knowledge transfer between the client and the organization is not explicitly addressed in CMMI.

Appendix D: Coverage of CMMI by the eSCM-SP

In support of the high-level comparison provided in section 4.1, illustrated in Figure 4, this section provides a detailed mapping of the Specific Practices of CMMI to the Practices of the eSCM-SP. The objective of this comparison is to demonstrate the extent of coverage of CMMI requirements by the eSCM-SP. This is only an indicative comparison based on the requirements of the two frameworks. This comparison should be used as a guideline, not as a rule.

Many of the 199 Specific Practices in CMMI map to a lower level of detail than the 84 Practices in the eSCM-SP. Where Specific Practices map to Required Activities within a Practice, the comments for the Process Area are typically sufficient, and no additional comment is made unless there is a specific reason. Multiple Required Activities may be mapped on a single row in the comparison table. Note that the Generic Practices are discussed in Appendix E.

This comparison is against the full CMMI model. For the IPPD discipline in particular, a variant of the IPPD practice that was not IPPD-specific would provide more comprehensive coverage of its analogous eSCM-SP Practice(s). Partial coverage is assigned to IPPD-specific practices, even though an IPPD implementation is assumed for such CMMI practices.

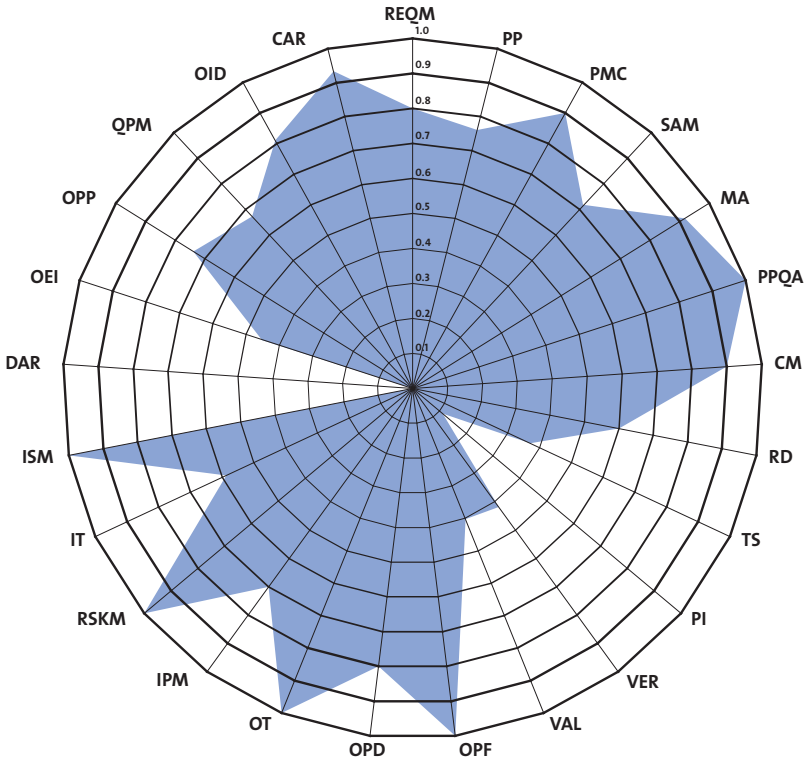

Figure 4
(For reference; identical to Figure 2) Coverage of the CMMI Process Areas by the eSCM-SP

PP	Project Planning
PMC	Project Monitoring and Control
SAM	Supplier Agreement Management
MA	Measurement and Analysis
PPQA	Process and Product Quality Assurance
CM	Configuration Management
RD	Requirements Development
TS	Technical Solution
PI	Product Integration
VER	Verification
VAL	Validation
OPF	Organizational Process Focus
OPD	Organizational Process Definition
OT	Organizational Training
IPM	Integrated Project Management for IPPD
RSKM	Risk Management
IT	Integrated Teaming
ISM	Integrates Supplier Management
DAR	Decision Analysis and Resolution
OEI	Organizational Environment for Integration
OPP	Organizational Process Performance
QPM	Quantitative Project Management
OID	Organizational Innovation and Deployment
CAR	Causal Analysis and Resolution
REQM	Requirements Management

The table is organized according to the Specific Practices of CMMI. Note that in some cases, a Specific Practice in CMMI may map to multiple Practices and/or Capability Areas in the eSCM-SP. A summary mapping precedes such instances where appropriate.

The following symbols are used to show coverage of CMMI requirements by the eSCM-SP:

Symbol	Interpretation
●	The CMMI Practice is addressed in the eSCM-SP.
O	The CMMI Practice is only partially addressed in the eSCM-SP
⌀	The CMMI Practice is not addressed in the eSCM-SP (to any significant degree).

Maturity Level 2 – Managed

REQM: Requirements Management

CMMI v1.1	Relation	eSCM-SP v2	Comments
REQM: Requirements Management			Requirements management depends on managing the customer relationship effectively (rel01 and rel06), as well as ensuring that the service provider understands the client's requirements (cnt07).
REQM SP 1.1: Obtain an Understanding of Requirements	●		Understanding the requirements is addressed in cnt03 and cnt07.
	O	cnt03: Confirm existing conditions	Due diligence in understanding the client's existing conditions is part of understanding the requirements.
	O	cnt07: Review requirements	The requirements are reviewed to verify that they are complete, appropriate, clear, consistent, verifiable, and traceable.
REQM SP 1.2: Obtain Commitment to Requirements	●	cnt07 (b4, b5): Review requirements	
REQM SP 1.3: Manage Requirements Changes	●		Requirements changes may be addressed as service modifications or contract amendments.
	O	cnt11: Amend contracts	
	O	del03 (b4): Deliver service	
	O	del07: Service modifications	
REQM SP 1.4: Maintain Bidirectional Traceability of Requirements	⌀		Maintaining bidirectional traceability of requirements is not explicitly addressed in the eSCM-SP.
REQM SP 1.5: Identify Inconsistencies between Project Work and Requirements	●		Client requirements are communicated to the service design and deployment team, who design and deploy a service to satisfy those requirements. The process includes a service specification that meets the requirements, a design based on the service specification, and deployment based on the service design. While it may appear that a "waterfall" life cycle is implied, any life cycle that maintains consistency between the service design and deployment work products would satisfy these Practices.
	O	sdd01: Communicate requirements	Client requirements are communicated to the service design and deployment team.
	O	sdd02: Design & deploy services	The service design and deployment team work to provide a service that satisfies client requirements.
	O	sdd04: Service specification	The service specification meets the client requirements.
	O	sdd05: Service design	The service design is based on the service specification.
	O	sdd08: Deploy service	Deployment is based on the service design.

PP: Project Planning

CMMI v1.1	Relation	eSCM-SP v2	Comments
PP: Project Planning		sdd03: Plan design & deployment	Planning development activities is addressed in sdd03 (Plan design & deployment). A related planning Practice is del01 (Plan service delivery), specifically with respect to maintenance activities, which are addressed in del07 (Service modifications).
PP SP 1.1: Estimate the Scope of the Project	●	cnt07: Review requirements	Understanding the scope of the project is intrinsic to understanding whether the organization can meet the requirements.
PP SP 1.2: Establish Estimates of Work Product and Task Attributes	○	cnt02 (b4): Pricing del07 (b3): Service modifications	
PP SP 1.3: Define Project Life Cycle Task Attributes	⌀		Defining project life-cycle task attributes is not explicitly addressed in the eSCM-SP.
PP SP 1.4: Determine Estimates of Effort and Cost	●	sdd03 (b1): Plan design & deployment del01 (b1): Plan service delivery	
PP SP 2.1: Establish the Budget and Schedule	●	sdd03 (b2): Plan design & deployment del01 (b2): Plan service delivery	
PP SP 2.2: Identify Project Risks	●	thr02 (b1): Engagement risk	
PP SP 2.3: Plan for Data Management	⌀		Planning for data management is not explicitly addressed in the eSCM-SP, but data management could be considered to be a form of information (knw02) or knowledge (knw03).
PP SP 2.4: Plan for Project Resources	●		Resources are generically addressed in c2 of every Practice and specifically addressed in sdd03 and del01.
	●	All Practices (c2)	As a template, resources for doing the work are generically addressed in c2.
	○	sdd03 (b2): Plan design & deployment del01 (b2): Plan service delivery	
	●	ppl03: Work environment	Facilities and support tools needed to do the work are planned for at Maturity Level 2.
PP SP 2.5: Plan for Needed Knowledge and Skills	●		Knowledge and skills are addressed at the engagement, personnel, and workforce levels in the eSCM-SP, although this Specific Practice primarily focuses on training.
	●	ppl07 (b2): Plan & deliver training	Project- or engagement-specific training is addressed in the eSCM-SP primarily through assigning qualified personnel (ppl04), where the training builds competencies (ppl08).
	○	ppl08: Personnel competencies	Knowing the skills of the staff is essential for planning to address needed knowledge and skills.
PP SP 2.6: Plan Stakeholder Involvement	●		Stakeholder management is broadly addressed in the eSCM-SP.
	○	All Practices (a2)	Stakeholder involvement in defining processes is addressed in a2 of every Practice.
	○	All Practices (c4)	Stakeholder involvement in doing the work identified in a Practice is addressed in c4 of every Practice.
	○	rel01 (b5): Client interactions rel02 (b2): Select suppliers & partners	
	○	rel05: Stakeholder information	Collecting, analyzing, and using stakeholder information is part of managing stakeholder involvement.
PP SP 2.7: Establish the Project Plan	●	sdd03 (a3, b2): Plan design & deployment del01 (a3, b2): Plan service delivery	

PP SP 3.1: Review Plans that Affect the Project	●	sdd03 (a2, b4): Plan design & deployment del01 (a2, b3): Plan service delivery	
PP SP 3.2: Reconcile Work and Resource Levels	⌀		Reconciling work and resource levels is not explicitly addressed in the eSCM-SP.
PP SP 3.3: Obtain Plan Commitment	●		Commitments are reviewed with all stakeholders in CMMI.
	O	cnt07: Review requirements	External commitments for the software project are reviewed to determine their feasibility.
	O	cnt08: Respond to the requirements	Clarifying requirements with the client is part of the commitment process in eSCM-SP.
	●	sdd03 (a2, b4): Plan design & deployment del01 (a2, b3): Plan service delivery	

PMC: Project Monitoring & Control

CMMI v1.1	Relation	eSCM-SP v2	Comments
PMC: Project Monitoring & Control		sdd03: Plan design & deployment	Tracking development activities is addressed in sdd03 (Plan design & deployment). A related tracking Practice is del01 (Plan service delivery), specifically with respect to maintenance activities, which are addressed in del07 (Service modifications).
PMC SP 1.1: Monitor Project Planning Parameters	●		Tracking is part of sdd03 (Plan design & deployment) and del01 (Plan service delivery).
	●	sdd03 (b5): Plan design & deployment del01 (b4): Plan service delivery	
	○	knw08 (b1): Resource consumption	Number of personnel utilized and duration of tasks are examples of resources tracked in knw08.
PMC SP 1.2: Monitor Commitments	●	sdd03 (c4): Plan design & deployment del01 (c4): Plan service delivery	
PMC SP 1.3: Monitor Project Risks	●	thr02 (b6): Engagement risk	
PMC SP 1.4: Monitor Data Management	⊘		Data management is not explicitly addressed in the eSCM-SP, but could be considered to be a form of information (knw02) or knowledge (knw03).
PMC SP 1.5: Monitor Stakeholder Involvement	●		Stakeholders include clients, suppliers, and partners, as well as other parties.
	○	ppl02: Participation in decisions	Staff of the service provider are stakeholders.
	○	rel01: Client interactions	Clients are stakeholders.
	○	rel05: Stakeholder information	This Practice is a general stakeholder management Practice in the eSCM-SP from the service provider's perspective.
	○	rel06: Client relationships	Clients are stakeholders.
	○	rel07: Supplier & partner relationships	Suppliers and partners are stakeholders.
	○	del03 (b3): Deliver service	
PMC SP 1.6: Conduct Progress Reviews	●	sdd03 (b5): Plan design & deployment del01 (b4): Plan service delivery	
PMC SP 1.7: Conduct Milestone Reviews	●		Customer feedback is broadly dispersed throughout the eSCM-SP; milestone reviews are a specific type of feedback oriented toward service design.
	○	sdd02 (b3i): Design & deploy services	
	○	sdd06: Design feedback	Customer feedback occurs as part of milestone reviews, although feedback on the design is only part of the customer feedback solicited.
PMC SP 2.1: Analyze Issues	●	sdd03 (b5): Plan design & deployment sdd06 (b5): Design feedback del01 (b4): Plan service delivery del07 (b3): Service modifications	
PMC SP 2.2: Take Corrective Action	●	sdd03 (b5b): Plan design & deployment sdd06 (b6): Design feedback del01 (b4b): Plan service delivery	
PMC SP 2.3: Manage Corrective Action	●	sdd03 (b5): Plan design & deployment sdd06 (b7): Design feedback del01 (b4): Plan service delivery	

SAM: Supplier Agreement Management

CMMI v1.1	Relation	eSCM-SP v2	Comments
SAM: Supplier Agreement Management		rel02: Select suppliers & partners rel03: Manage suppliers & partners rel07: Supplier & partner relationships	Selecting and managing suppliers (subcontractors) is described in rel02, rel03, and rel07. The scope of suppliers and partners addressed by the eSCM-SP is larger than in the CMMI.
SAM SP 1.1: Determine Acquisition Type	○	rel02 (b1a): Select suppliers & partners	
SAM SP 1.2: Select Suppliers	●		Selecting qualified suppliers and subcontractors is only part of rel02. Identification of the need for suppliers occurs in cnt10.
	●	rel02: Select suppliers & partners	Selecting qualified suppliers and subcontractors is only part of rel02.
	●	cnt10 (b4): Create contracts	
SAM SP 1.3: Establish Supplier Agreements	●	rel02 (b2, b3): Select suppliers & partners cnt11 (b6): Amend contracts	
SAM SP 2.1: Review COTS Products	⌀		Reviewing COTS products is not explicitly addressed in the eSCM-SP.
SAM SP 2.2: Execute the Supplier Agreement	●	rel03 (c): Manage suppliers & partners	
SAM SP 2.3: Accept the Acquired Product	○	rel03 (b8): Manage suppliers & partners	
SAM SP 2.4: Transition Products	○	tch01 (b5-b10): Acquire technology	Part of acquiring technology from a supplier is transitioning the technology.

MA: Measurement & Analysis

CMMI v1.1	Relation	eSCM-SP v2	Comments
MA: Measurement & Analysis		knw08: Resource consumption prf01: Engagement objectives prf04: Organizational objectives del04: Verify service commitments	Measurement and analysis is embedded in prf01 (Engagement objectives) and prf04 (Organizational objectives) in the broad sense. Specifically for meeting service commitments, measurement and analysis is addressed in del04 (Verify service commitments). Resource consumption is specifically measured in knw08.
MA SP 1.1: Establish Measurement Objectives	●	prf01 (b1): Engagement objectives prf04 (b1): Organizational objectives	
MA SP 1.2: Specify Measures	●	knw08 (b1): Resource consumption prf01 (b4): Engagement objectives prf04 (b3): Organizational objectives del04 (b1): Verify service commitments	
MA SP 1.3: Specify Data Collection and Storage Procedures	○	knw08 (b2): Resource consumption prf01 (b6): Engagement objectives prf05 (b1): Review organizational performance del04 (b2): Verify service commitments	
MA SP 1.4: Specify Analysis Procedures	●	knw08 (b2, b4): Resource consumption prf01 (b4c): Engagement objectives prf04 (b3c): Organizational objectives del04 (b1c): Verify service commitments	
MA SP 2.1: Collect Measurement Data	●	knw08 (b4): Resource consumption prf01 (b6): Engagement objectives prf05 (b1): Review organizational performance del04 (b2): Verify service commitments	
MA SP 2.2: Analyze Measurement Data	●	knw08 (b4): Resource consumption prf01 (b7): Engagement objectives prf04 (b3c): Organizational objectives prf05 (b2): Review organizational performance del04 (b3): Verify service commitments	
MA SP 2.3: Store Data and Results	○	knw04 (b2): Process assets	
MA SP 2.4: Communicate Results	●	knw08 (c4): Resource consumption prf01 (c4): Engagement objectives prf04 (c4): Organizational objectives prf05 (c4): Review organizational performance del04 (c4): Verify service commitments	

PPQA: Process & Product Quality Assurance

CMMI v1.1	Relation	eSCM-SP v2	Comments
PPQA: Process & Product Quality Assurance		prf02: Verify processes del04: Verify service commitments	PPQA addresses both process and product assurance, which are addressed by prf02 (Verify processes) and del04 (Verify service commitments) respectively.
PPQA SP 1.1: Objectively Evaluate Processes	●	prf02: Verify processes	Process assurance is covered by reviewing activities.
PPQA SP 1.2: Objectively Evaluate Work Products and Services	●		Product assurance in a CMMI context is conceptually equivalent to verifying service commitments in the eSCM-SP, although auditing work products is explicitly addressed in prf02 (Verify processes).
	●	del04: Verify service commitments	Auditing work products against the relevant standards and requirements is objective verification that requirements have been met.
	○	prf02 (b5): Verify processes	
PPQA SP 2.1: Communicate and Ensure Resolution of Noncompliance Issues	●	prf02 (b7, b8, b9, c4): Verify processes del04 (b5, c4): Verify service commitments	
PPQA SP 2.2: Establish Records	●	prf02 (b6): Verify processes del04 (b6): Verify service commitments	

CM: Configuration Management

CMMI v1.1	Relation	eSCM-SP v2	Comments
CM: Configuration Management		knw07: Version & change control	Practice knw07 (Version & change control) is essentially equivalent to Configuration Management.
CM SP 1.1: Identify Configuration Items	●	knw07 (b2): Version & change control	
CM SP 1.2: Establish a Configuration Management System	●	knw07 (b1): Version & change control	
CM SP 1.3: Create or Release Baselines	○	sdd08 (b5-b8): Deploy service	Deployment (i.e., delivery to the customer and/or end user) is similar to releasing baselines, but baselines are product rather than service oriented.
CM SP 2.1: Track Change Requests	●		Change requests and problem reports are separately addressed in the eSCM-SP.
	○	knw07 (b3): Version & change control	
	○	del05: Correct problems	The analog to "correct problems" in CMMI is the problem-tracking system used in fixing defects. A full analog to "correcting problems," however, would include concepts of workarounds and fault tolerance that are not explicitly addressed in CMMI.
	○	del07: Service modifications	Change requests address enhancements to the system as well as corrections.
CM SP 2.2: Control Configuration Items	●	knw07 (b4): Version & change control	
CM SP 3.1: Establish Configuration Management Records	●	knw07 (b5): Version & change control	
CM SP 3.2: Perform Configuration Audits	○	knw07 (c5): Version & change control	

Maturity Level 3 – Defined

RD: Requirements Development

CMMI v1.1	Relation	eSCM-SP v2	Comments
RD: Requirements Development		cnt06: Gather requirements cnt07: Review requirements cnt08: Respond to the requirements	Requirements development is addressed primarily in Contracting.
RD SP 1.1: Elicit Needs	●		Eliciting needs is addressed primarily in Contracting as part of initiating an engagement.
	○	cnt06: Gather requirements	Gathering requirements is part of eliciting needs.
	○	cnt07: Review requirements	Mapping the capability of the organization to meet the stated requirements is part of eliciting (satisfiable) needs.
	○	cnt08: Respond to the requirements	Clarifying requirements with the client is part of eliciting needs.
	○	rel08: Value creation	Proactively identifying opportunities to create value for the client is part of eliciting needs.
RD SP 1.2: Develop the Customer Requirements	●	cnt06 (b2, b6): Gather requirements	
RD SP 2.1: Establish Product and Product-Component Requirements	○	sdd04: Service specification	The service specification is based on the client requirements.
RD SP 2.2: Allocate Product-Component Requirements	⌀		Allocating product-component requirements is not explicitly addressed in the eSCM-SP.
RD SP 2.3: Identify Interface Requirements	⌀		Identifying interface requirements is not explicitly addressed in the eSCM-SP.
RD SP 3.1: Establish Operational Concepts and Scenarios	⌀		Establishing operational concepts and scenarios is not explicitly addressed in the eSCM-SP.
RD SP 3.2: Establish a Definition of Required Functionality	●	cnt06 (b2): Gather requirements	
RD SP 3.3: Analyze Requirements	●		Analyzing the requirements includes documenting them, clarifying ambiguities, and determining their feasibility.
	○	cnt07: Review requirements	
	○	cnt08: Respond to the requirements	
RD SP 3.4: Analyze Requirements to Achieve Balance	○	cnt07: Review requirements	Balancing stakeholder needs and constraints is an aspect of requirements review, specifically implied by cnt07 (c4).
RD SP 3.5: Validate Requirements with Comprehensive Methods	○		Validating that the requirements match the intended use in the operational environment is partially addressed by customer reviews, but they are not "comprehensive methods."
	○	cnt08: Respond to the requirements	Clarification of ambiguous requirements is an aspect of validating the requirements.
	○	sdd06: Design feedback	Reviewing the service design is an aspect of validating the requirements.

TS: Technical Solution

CMMI v1.1	Relation	eSCM-SP v2	Comments
TS: Technical Solution			Technical solutions are addressed in Service Design & Deployment in the eSCM-SP.
TS SP 1.1: Develop Detailed Alternative Solutions and Selection Criteria	⌀		Developing detailed alternative solutions and selection criteria is not explicitly addressed in the eSCM-SP.
TS SP 1.2: Evolve Operational Concepts and Scenarios	⌀		Evolving operational concepts and scenarios is not explicitly addressed in the eSCM-SP.
TS SP 1.3: Select Product-Component Solutions	⌀		Selecting product-component solutions is not explicitly addressed in the eSCM-SP.
TS SP 2.1: Design the Product or Product Component	●		Service design procedures at Capability Level 3 in the eSCM-SP and system design in CMMI are conceptually similar.
	O	sdd02: Design & deploy services	Procedures for service design and deployment build on the other Practices in Service Design & Deployment.
	O	sdd04: Service specification	The service specification is part of product design.
	O	sdd05: Service design	The service design is part of product design.
	O	del07: Service modifications	Maintenance of the system is explicitly included in this Specific Practice.
TS SP 2.2: Establish a Technical Data Package	⌀		Establishing a technical data package is not explicitly addressed in the eSCM-SP.
TS SP 2.3: Design Interfaces Using Criteria	⌀		Designing interfaces using criteria is not explicitly addressed in the eSCM-SP.
TS SP 2.4: Perform Make, Buy, or Reuse Analyses	O		Reuse is part of the make, buy, or reuse analysis, but the complete analysis is not covered by the occurance of reuse.
	O	knw06: Reuse	Reuse is part of the make, buy, or reuse analysis.
	O	sdd02 (b3a): Design & deploy services	Selecting opportunities to reuse work products is part of the make, buy, or reuse analysis.
TS SP 3.1: Implement the Design	●		Deploying and delivering the service equates to implementation.
	O	sdd08: Deploy service	Service is deployed based on the design.
	O	del03: Deliver service	The designed service is delivered.
TS SP 3.2: Develop Product Support Documentation	O	del02: Train clients	Client training includes any mechanisms for giving clients the skills needed to use the service or system, which includes user documentation. It does not include installation or maintenance documentation.

PI: Product Integration

CMMI v1.1	Relation	eSCM-SP v2	Comments
PI: Product Integration			The closest analog in the eSCM-SP to Product Integration is integrating the technology infrastructure of the service provider with the client, suppliers, and partners in tch04 (Technology integration), which addresses quite a different concern. This topic is not explicitly addressed in the eSCM-SP; if it were, it would be addressed in sdd05 (Service design).
PI SP 1.1: Determine Integration Sequence	⌀		Determining the integration sequence is not explicitly addressed in the eSCM-SP.
PI SP 1.2: Establish the Product Integration Environment	⌀		Establishing the product integration is not explicitly addressed in the eSCM-SP.
PI SP 1.3: Establish Product Integration Procedures and Criteria	⌀		Establishing product integration procedures and criteria is not explicitly addressed in the eSCM-SP.
PI SP 2.1: Review Interface Descriptions for Completeness	⌀		Reviewing interface descriptions for completeness is not explicitly addressed in the eSCM-SP.
PI SP 2.2: Manage Interfaces	⌀		Managing interfaces is not explicitly addressed in the eSCM-SP.
PI SP 3.1: Confirm Readiness of Product Components for Integration	⌀		Confirming readiness of product components for integration is not explicitly addressed in the eSCM-SP.
PI SP 3.2: Assemble Product Components	⌀		Assembling product components is not explicitly addressed in the eSCM-SP.
PI SP 3.3: Evaluate Assembled Product Components	⌀		Evaluating the assembled product components is not explicitly addressed in the eSCM-SP.
PI SP 3.4: Package and Deliver the Product or Product Component	●		Delivering the product to the customer is equivalent to deploying the service. Deployment of a system may not include some of the factors typically important in deploying services: processes, technologies, people, and the work environment. They are implied in CMMI but are not explicitly described.
	○	sdd02 (b5e): Design & deploy services	
	●	sdd08: Deploy service	Delivering the product to the customer is equivalent to deploying the service.

VER: Verification

CMMI v1.1	Relation	eSCM-SP v2	Comments
VER: Verification		prf02: Verify processes	In CMMI, verification is intended to ensure that selected work products meet their specified requirements. This is intended to be an incremental process that occurs throughout development. This is primarily addressed in the eSCM-SP in prf02 (Verify processes), which includes both processes and work products.
VER SP 1.1: Select Work Products for Verification	⌀		Selecting work products for verification is not explicitly addressed in the eSCM-SP.
VER SP 1.2: Establish the Verification Environment	⌀		Establishing the verification environment is not explicitly addressed in the eSCM-SP.
VER SP 1.3: Establish Verification Procedures and Criteria	⌀		Establishing verification procedures and criteria is not explicitly addressed in the eSCM-SP.
VER SP 2.1: Prepare for Peer Reviews	○	sdd07 (b1, b2, b3, b4): Verify design	
VER SP 2.2: Conduct Peer Reviews	○	sdd07 (b5): Verify design	
VER SP 2.3: Analyze Peer Review Data	⌀		Analyzing peer review data is not explicitly addressed in the eSCM-SP.
VER SP 3.1: Perform Verification	●		Review of the adherence of work products to the specified requirements, specifically include the service design.
	○	prf02 (b5): Verify processes sdd02 (b5e): Design & deploy services	
	○	sdd07: Verify design	Testing in CMMI is generally broader than verifying the design.
VER SP 3.2: Analyze Verification Results and Identify Corrective Action	●	prf02 (b6, b7, b8, b9): Verify processes sdd07 (b11, b12): Verify design	

VAL: Validation

CMMI v1.1	Relation	eSCM-SP v2	Comments
VAL: Validation		del04: Verify service commitments	In CMMI, validation involves demonstrating that a product fulfills its intended use when placed in its intended environment. From an eSCM-SP perspective, this is best demonstrated in the delivery of the service and meeting service commitments (del04).
VAL SP 1.1: Select Products for Validation	⌀		Selecting products for validation is not explicitly addressed in the eSCM-SP.
VAL SP 1.2: Establish the Validation Environment	⌀		Establishing the validation environment is not explicitly addressed in the eSCM-SP.
VAL SP 1.3: Establish Validation Procedures and Criteria	○	del04 (b1): Verify service commitments	
VAL SP 2.1: Perform Validation	○	del04 (b2): Verify service commitments	
VAL SP 2.2: Analyze Validation Results	○	del04 (b3): Verify service commitments	

OPF: Organizational Process Focus

CMMI v1.1	Relation	eSCM-SP v2	Comments
OPF: Organizational Process Focus		prf06: Make improvements prf07: Achieve organizational objectives	Organizational Process Focus addresses defining and improving processes at the organizational level, similar to prf06. Since improvement objectives are part of the organizational objectives, prf07 is included by implication. The process assets created in knw04 are tightly coupled with this Process Area.
OPF SP 1.1: Establish Organizational Process Needs	●	prf04: Organizational objectives	Organizational objectives include process improvement objectives.
OPF SP 1.2: Appraise the Organization's Processes	●		Assessments are primarily addressed by prf05 (Review organizational performance) at Capability Level 3, although that is not the primary intent of that Practice. They also correspond to aspects of prf09 (Benchmark) at Capability Level 4. Therefore, although they are not explicitly addressed in the eSCM-SP, they are covered by implication as part of the overall improvement emphasis.
	●	prf05: Review organizational performance	Assessments are one aspect of reviewing organizational performance at Capability Level 3.
	●	prf09: Benchmark	Benchmarking at Capability Level 4 covers a broader set of benchmarking issues (e.g., quantitative benchmark or benchmarks against competitors or industry leaders) than is covered by the assessments in CMMI.
OPF SP 1.3: Identify the Organization's Process Improvements	●	prf06 (b3a): Make improvements prf07 (b1): Achieve organizational objectives	
OPF SP 2.1: Establish Process Action Plans	●	prf06 (b3): Make improvements prf07 (b7): Achieve organizational objectives	
OPF SP 2.2: Implement Process Action Plans	●	prf06 (b4): Make improvements prf06 (c): Make improvements prf07 (b9): Achieve organizational objectives prf07 (c): Achieve organizational objectives	
OPF SP 2.3: Deploy Organizational Process Assets	●	knw04 (b2, c1): Process assets	
OPF SP 2.4: Incorporate Process-Related Experiences into the Organizational Process Assets	●	knw05 (b4, b5): Engagement knowledge	

OPD: Organizational Process Definition

CMMI v1.1	Relation	eSCM-SP v2	Comments
OPD: Organizational Process Definition		knw04: Process assets	Practice knw04 (Process assets) is essentially equivalent to this Process Area, and addresses the organization's standard software process, software process database, and tailoring guidelines.
OPD SP 1.1: Establish Standard Processes	●	knw04 (b1): Process assets	
OPD SP 1.2: Establish Life-Cycle Model Descriptions	⌀		Establishing life-cycle model descriptions is not explicitly addressed in the eSCM-SP.
OPD SP 1.3: Establish Tailoring Criteria and Guidelines	●	knw04 (b4): Process assets	
OPD SP 1.4: Establish the Organization's Measurement Repository	●	knw04 (b2): Process assets	
OPD SP 1.5: Establish the Organization's Process Asset Library	●	knw03: Knowledge system	CMMI-based process assets include examples, templates, training materials, lessons learned during a project, etc., which are specific kinds of knowledge.

OT: Organizational Training

CMMI v1.1	Relation	eSCM-SP v2	Comments
OT: Organizational Training		ppl06: Workforce competencies ppl07: Plan & deliver training	The organization's Organizational Training primarily addresses workforce competencies (ppl06), but it also includes training as the specific mechanism for skills building (ppl07) and personnel competencies (ppl08). Practice ppl08 is a Capability Level 2 Practice, however, and Organizational Training is a Maturity Level 3 Process Area.
OT SP 1.1: Establish the Strategic Training Needs	●	ppl06 (b1): Workforce competencies	
OT SP 1.2: Determine Which Training Needs Are the Responsibility of the Organization	●	ppl07 (b2): Plan & deliver training	Project- or engagement-specific training is addressed in the eSCM-SP primarily through assigning qualified personnel (ppl04), where the training builds competencies (ppl08).
OT SP 1.3: Establish an Organizational Training Tactical Plan	●	ppl06 (b5): Workforce competencies ppl07 (b2): Plan & deliver training	
OT SP 1.4: Establish Training Capability	●	ppl07 (b3): Plan & deliver training	
OT SP 2.1: Deliver Training	●	ppl07 (b4): Plan & deliver training	
OT SP 2.2: Establish Training Records	●	ppl06 (b7): Workforce competencies ppl07 (b6): Plan & deliver training	
OT SP 2.3: Assess Training Effectiveness	●	ppl07 (b7): Plan & deliver training	

IPM: Integrated Project Management (for IPPD)

CMMI v1.1	Relation	eSCM-SP v2	Comments
IPM: Integrated Project Management (for IPPD)			This Process Area primarily deals with tailoring organizational assets to the needs of the project (the project's defined process), with extensions in SG3 and SG4 for the IPPD context. Organizational assets are addressed by implication in the (a) templates in the Practices "across the organization" and (c) templates for using the (tailored) process in the eSCM-SP. From the engineering services perspective, this Process Area equates to managing the project at Capability Level 3.
IPM SP 1.1: Establish the Project's Defined Process	●	All Practices (a)	
IPM SP 1.2: Use Organizational Process Assets for Planning Project Activities	●	sdd02: Design & deploy services	This Capability Level 3 Practice for designing and deploying services is a procedure that invokes organizational assets that build on sdd03 (Plan design & deployment) and the other sdd Practices.
IPM SP 1.3: Integrate Plans	●	sdd02 (b3h, b5e): Design & deploy services	
IPM SP 1.4: Manage the Project Using the Integrated Plans	●	sdd02 (c): Design & deploy services	
IPM SP 1.5: Contribute to the Organizational Process Assets	O	knw04 (a2): Process assets	
IPM SP 2.1: Manage Stakeholder Involvement	●		The primary stakeholders include the client, suppliers, partners, and the staff. Although other stakeholders, e.g., regulatory agencies, could be identified, rel05 (Stakeholder information) provides a general hook for this Specific Practice.
	O	ppl02: Participation in decisions	Staff involvement in the decision-making process is part of managing their involvement as stakeholders.
	O	rel05: Stakeholder information	Collecting, analyzing, and using stakeholder information is part of managing stakeholder involvement.
	O	rel06: Client relationships	Managing the client relationship is part of managing stakeholder involvement.
	O	rel07: Supplier & partner relationships	Managing supplier and partner relationships is part of managing stakeholder involvement.
IPM SP 2.2: Manage Dependencies	O	rel06 (b6): Client relationships rel07 (b7): Supplier & partner relationships	
IPM SP 2.3: Resolve Coordination Issues	O	rel06 (b1, b2, b4, b5): Client relationships rel07 (b2, b3, b5, b6): Supplier & partner relationships	
IPM SP 3.1: Define Project's Shared-Vision Context (IPPD)	O	prf01: Engagement objectives	Defining the project's shared vision is implicitly addressed by establishing engagement objectives.
IPM SP 3.2: Establish the Project's Shared Vision (IPPD)	O	prf01: Engagement objectives	Establishing a shared vision, although IPPD-specific in CMMI, is based on (and arguably a prerequisite for) defining engagement objectives.
IPM SP 4.1: Determine Integrated Team Structure for the Project (IPPD)	O	ppl05 (b2): Define roles cnt09 (b1): Contract roles sdd05 (b6): Service design	Determining the integrated team structure for the project is IPPD-specific, but role definition addresses the more general topic.
IPM SP 4.2: Develop a Preliminary Distribution of Requirements to Integrated Teams (IPPD)	⌀		Developing a preliminary distribution of requirements to integrated teams is not explicitly addressed in the eSCM-SP, although sdd01 addresses communicating the requirements.
IPM SP 4.3: Establish Integrated Teams (IPPD)	⌀		Although teams are mentioned at numerous points in the eSCM-SP (e.g., client interaction teams in rel01 and delivery teams in sdd05 (b6c)), teams are not explicitly established in the eSCM-SP. Roles and responsibilities are addressed in ppl05.

RSKM: Risk Management

CMMI v1.1	Relation	eSCM-SP v2	Comments
RSKM: Risk Management		thr02: Engagement risk	Risk management is addressed at Level 3 in CMMI as a more sophisticated, proactive implementation of the risk identification and tracking at Level 2, but it remains project- or engagement-focused.
RSKM SP 1.1: Determine Risk Sources and Categories	●	thr01 (b2): Risk management	
RSKM SP 1.2: Define Risk Parameters	●	thr01 (b3): Risk management	
RSKM SP 1.3: Establish a Risk Management Strategy	●	thr01: Risk management	The risk management policy in thr01 is essentially equivalent to a risk management strategy.
RSKM SP 2.1: Identify Risks	●	thr02 (b1): Engagement risk	
RSKM SP 2.2: Evaluate, Categorize, and Prioritize Risks	●	thr02 (b2): Engagement risk	
RSKM SP 3.1: Develop Risk Mitigation Plans	●	thr02 (b3): Engagement risk	
RSKM SP 3.2: Implement Risk Mitigation Plans	●	thr02 (b6): Engagement risk	

IT: Integrated Teaming (IPPD)

CMMI v1.1	Relation	eSCM-SP v2	Comments
IT: Integrated Teaming (IPPD)			Integrated Teaming specifically assumes an IPPD implementation and thus is not completely covered by the eSCM-SP even when Specific Practices in CMMI have a fairly direct relationship to Practices in the eSCM-SP.
IT SP 1.1: Identify Team Tasks (IPPD)	O	sdd03 (b2b): Plan design & deployment	
IT SP 1.2: Identify Needed Knowledge and Skills (IPPD)	O	ppl06 (b4): Workforce competencies	
IT SP 1.3: Assign Appropriate Team Members (IPPD)	O	All Practices (c3)	
IT SP 2.1: Establish a Shared Vision (IPPD)	O	prf01: Engagement objectives	Establishing a shared vision, although IPPD-specific in CMMI, is based on (and arguably a prerequisite for) defining engagement objectives.
IT SP 2.2: Establish a Team Charter (IPPD)	⌀		Establishing a team charter is not explicitly addressed in the eSCM-SP.
IT SP 2.3: Define Roles and Responsibilities (IPPD)	O	ppl04 (b1): Assign responsibilities	
IT SP 2.4: Establish Operating Procedures (IPPD)	O	knw04: Process assets	Among the process assets established at the organizational level are the operating procedures for integrated teams.
IT SP 2.5: Collaborate Among Interfacing Teams (IPPD)	O	All Practices (c4)	

ISM: Integrated Supplier Management (SS)

CMMI v1.1	Relation	eSCM-SP v2	Comments
ISM: Integrated Supplier Management (SS)		rel07: Supplier & partner relationships	Since ISM is a Level 3 Process Area, its natural equivalent in the eSCM-SP is rel07, which builds on rel02 (Select suppliers & partners) and rel03 (Manage suppliers & partners).
ISM SP 1.1: Analyze Potential Sources of Products (SS)	●	rel02 (b1): Select suppliers & partners rel07 (b1): Supplier & partner relationships	
ISM SP 1.2: Evaluate and Determine Sources of Products (SS)	●	rel02: Select suppliers & partners	Supplier evaluation is intrinsic to selecting suppliers.
ISM SP 2.1: Monitor Selected Supplier Processes (SS)	●	rel03: Manage suppliers & partners	Supplier management is intrinsic to monitoring suppliers and their processes, although monitoring selected processes in CMMI implies tight integration between supplier and customer.
ISM SP 2.2: Evaluate Selected Supplier Work Products (SS)	●	rel03 (b8): Manage suppliers & partners rel07 (b7): Supplier & partner relationships	
ISM SP 2.3: Revise the Supplier Agreement or Relationship (SS)	●	rel03 (b12): Manage suppliers & partners	

DAR: Decision Analysis & Resolution

CMMI v1.1	Relation	eSCM-SP v2	Comments
DAR: Decision Analysis & Resolution			There is no equivalent to DAR in the eSCM-SP, although ppl02 (Participation in decisions) is a related Practice, as are, to a lesser degree, knw02 (Provide required information), knw03 (Knowledge system), and rel05 (Stakeholder information). DAR is a generic process, and, although many decisions are made throughout the eSCM-SP, there is no useful mapping.
DAR SP 1.1: Establish Guidelines for Decision Analysis	⌀		Establishing guidelines for decision analysis is not explicitly addressed in the eSCM-SP.
DAR SP 1.2: Establish Evaluation Criteria	⌀		Establishing evaluation criteria is not explicitly addressed in the eSCM-SP.
DAR SP 1.3: Identify Alternative Solutions	⌀		Identifying alternative solutions is not explicitly addressed in the eSCM-SP.
DAR SP 1.4: Select Evaluation Methods	⌀		Selecting evaluation methods is not explicitly addressed in the eSCM-SP.
DAR SP 1.5: Evaluate Alternatives	⌀		Evaluating alternatives is not explicitly addressed in the eSCM-SP.
DAR SP 1.6: Select Solutions	⌀		Selecting solutions is not explicitly addressed in the eSCM-SP.

OEI: Organizational Environment for Integration (IPPD)

CMMI v1.1	Relation	eSCM-SP v2	Comments
OEI: Organizational Environment for Integration (IPPD)			Organizational Environment for Integration is aimed at creating the IPPD infrastructure. Although ppl03 (Work environment) is related, it is not as specific as this CMMI Process Area.
OEI SP 1.1: Establish the Organization's Shared Vision (IPPD)	O	prf04: Organizational objectives	Organizational objectives are one aspect of establishing the organization's vision, but they are closer to the operational level.
OEI SP 1.2: Establish an Integrated Work Environment (IPPD)	O	ppl03: Work environment	The integrated work environment is a specific instantiation of a work environment that supports IPPD.
OEI SP 1.3: Identify IPPD-Unique Skill Requirements (IPPD)	O	ppl04 (b2): Assign responsibilities	
OEI SP 2.1: Establish Leadership Mechanisms (IPPD)	⌀		Establishing leadership mechanisms is not explicitly addressed in the eSCM-SP.
OEI SP 2.2: Establish Incentives for Integration (IPPD)	O	ppl11: Rewards	Incentives for integration are an IPPD-specific example of a behavior to be rewarded.
OEI SP 2.3: Establish Mechanisms to Balance Team and Home Organization Responsibilities (IPPD)	⌀		Establishing mechanisms to balance team and home organization responsibilities is not explicitly addressed in the eSCM-SP.

Maturity Level 4 – Quantitatively Managed

OPP: Organizational Process Performance

CMMI v1.1	Relation	eSCM-SP v2	Comments
OPP: Organizational Process Performance		prf08: Capability baselines	Organizational process performance is captured in process capability baselines for organizational standard processes in eSCM-SP.
OPP SP 1.1: Select Processes	●	prf08 (b1): Capability baselines	
OPP SP 1.2: Establish Process Performance Measures	●	prf08 (b2): Capability baselines	
OPP SP 1.3: Establish Quality and Process-Performance Objectives	O	prf04: Organizational objectives	Quality and process objectives are part of the organizational objectives.
OPP SP 1.4: Establish Process Performance Baselines	●	prf08: Capability baselines	Capability baselines are equivalent to the organization's process performance baselines in CMMI.
OPP SP 1.5: Establish Process Performance Models	⌀		Establishing process performance models is not explicitly addressed in the eSCM-SP.

QPM: Quantitative Project Management

CMMI v1.1	Relation	eSCM-SP v2	Comments
QPM: Quantitative Project Management			The eSCM-SP does not emphasize quantitative management, or statistical process control, to the same extent as CMMI does, although statistical control of services is better understood than that of software engineering. Engagement objectives (prf01) include measurement and tracking, but this is less than statistical control, although capability baselines (prf08) imply a similar capability. Much of the quantitative management explicitly described in CMMI is therefore implied in the measurement activities of the eSCM-SP. In all cases, the appropriate form of "quantitative management" should be driven by business objectives.
QPM SP 1.1: Establish the Project's Objectives	O	prf01 (b1): Engagement objectives	
QPM SP 1.2: Compose the Defined Process	O	All Practices (a)	The (a) Required Activities result in the definition of the various processes, which are then composed into an overall engagement process that is analogous to the "defined" process.
QPM SP 1.3: Select the Subprocesses that Will Be Statistically Managed	O	prf08 (b1): Capability baselines	
QPM SP 1.4: Manage Project Performance	O	prf01 (b7, b8, b9, b10): Engagement objectives	
QPM SP 2.1: Select Measures and Analytic Techniques	O	prf01 (b4): Engagement objectives prf02 (b1): Verify processes	
QPM SP 2.2: Apply Statistical Methods to Understand Variation	O	prf02 (b3, b4, b5): Verify processes	
QPM SP 2.3: Monitor Performance of the Selected Subprocesses	O	prf01 (b7): Engagement objectives prf02 (b4-b10): Verify processes	
QPM SP 2.4: Record Statistical Management Data	O	prf02 (b3, b6): Verify processes prf08 (b3): Capability baselines	

Maturity Level 5– Optimizing

OID: Organizational Innovation & Deployment

CMMI v1.1	Relation	eSCM-SP v2	Comments
OID: Organizational Innovation & Deployment		prf11: Deploy innovations	Deploying innovations (prf11) is equivalent to the Maturity Level 5 Organizational Innovation & Deployment. Making improvements (prf06) and achieving organizational objectives (prf07) are implied since Organizational Innovation & Deployment emphasizes continual improvement in achieving business objectives. The "program" aspect of prf07 is addressed in Organizational Process Focus at Maturity Level 3.
OID SP 1.1: Collect and Analyze Improvement Proposals	O	prf06 (b1b, b2): Make improvements prf11 (b1): Deploy innovations	
OID SP 1.2: Identify and Analyze Innovations	●	prf06 (b2): Make improvements prf07 (b1,b2): Achieve organizational objectives prf11 (b1,b2): Deploy innovations	
OID SP 1.3: Pilot Improvements	⌀		Pilot improvements are not explicitly addressed in the eSCM-SP.
OID SP 1.4: Select Improvements for Deployment	●	prf06 (b2d): Make improvements prf07 (b3): Achieve organizational objectives prf11 (b2b): Deploy innovations	
OID SP 2.1: Plan the Deployment	●	prf06 (b3): Make improvements prf07 (b7): Achieve organizational objectives prf11 (b3): Deploy innovations	
OID SP 2.2: Manage the Deployment	●	prf06 (b4): Make improvements prf07 (b9): Achieve organizational objectives prf11 (b5): Deploy innovations	
OID SP 2.3: Measure Improvement Effects	●	prf04 (b3): Organizational objectives prf05 (b1): Review organizational performance prf07 (b9): Achieve organizational objectives prf11 (b5b): Deploy innovations	

CAR: Causal Analysis & Resolution

CMMI v1.1	Relation	eSCM-SP v2	Comments
CAR: Causal Analysis & Resolution		del06: Prevent known problems	Causal Analysis & Resolution in CMMI is a systemic process for preventing the recurrence of known problems (del06). Although Causal Analysis & Resolution has more detailed guidance, the eSCM-SP Practice addresses the same concept as the Process Area and includes its Specific Practices by implication. Preventing potential problems (prf10) is related but is more proactive, and correcting problems is addressed in del05 (Correct problems).
CAR SP 1.1: Select Defect Data for Analysis	●	del06 (b1): Prevent known problems prf10 (b4a): Prevent potential problems	
CAR SP 1.2: Analyze Causes	●	del06 (b2): Prevent known problems prf10 (b4b): Prevent potential problems	
CAR SP 2.1: Implement the Action Proposals	●	del06 (c): Prevent known problems prf10 (b5): Prevent potential problems	
CAR SP 2.2: Evaluate the Effect of Changes	●	del06 (b6): Prevent known problems prf10 (b6): Prevent potential problems	
CAR SP 2.3: Record Data	O	prf10 (b6c): Prevent potential problems	

Appendix E: Support Practices of the eSCM-SP versus CMMI Institutionalization

One consequence of choosing a continuous representation for the eSCM-SP's Capability Areas is that Support Practices, sometimes called generic practices, are applied to each Practice in the eSCM-SP in the Practice templates. Unlike continuous models such as ISO 15504-2 [ISO 2003] and CMMI [Chrissis 2003], the templates in the eSCM-SP are applied to Practices rather than Capability Areas; eSCM-SP Practices are frequently more analogous to Goals or Process Areas in CMMI than they are to Specific Practices.

The work products and tasks appropriate for a specific eSCM-SP Practice result in minor differences in the templates. For example, work products include procedures, policies, and guidelines; programs and plans have slightly different templates. The most significant change is the difference between Level 2 templates, where documents may be unique to an engagement, and Level 3 templates, where documents are expected to be tailored from process assets as appropriate; therefore the Level 3 and 4 templates include the phrase "across the organization." Table 6 captures the general templates used throughout the Model, although there are some minor wording variations depending on the specific template. The table also includes the relevant Support Practices.

Table 6
Templates and Support Practices in the eSCM-SP v2

	Related Support Practices	
Activity Templates	**Level 2**	**Level 3&4**
a. Provide support for creating and maintaining the [work products and tasks required] for X *across the organization.*		
1. Provide sponsorship and resources for creating the [work products and tasks].	prf03	knw04 prf03
2. Involve relevant stakeholders in creating, improving, reviewing, and approving the [work products and tasks] as appropriate.	knw02	knw02 rel05
3. Maintain and improve the [work products and tasks] as appropriate.	knw07	knw04 knw07
b. Document the [work products and tasks required] for X. Documentation includes the following Activities:		
c. Implement X, according to the [documented work products and tasks].		
1. Communicate the availability and location of the [work products and tasks] to relevant stakeholders.	knw02	knw02 knw03
2. Provide resources to effectively perform the work.	knw02 ppl03 prf03 tch01	knw02 knw03 ppl03 prf03 tch01
3. Assign qualified personnel the responsibility, authority, and accountability to perform the work.	ppl04 ppl08	ppl04 ppl05 ppl07 ppl08
4. Communicate planned actions and their outcomes to relevant stakeholders.	knw02	knw02 knw03
5. Verify that the work is consistently and effectively performed according to the [work products and tasks] *across the organization.*	prf02	knw04 prf02

The Generic Goals and Practices in the CMMI v1.1 continuous representation are applied to all Process Areas. They are listed in Table 7.

Table 7
Generic Goals and Practices in CMMI v1.1

Identifier and Label	Generic Goal / Practice Statement
GG 1: Achieve Specific Goals	**The process supports and enables achievement of the specific goals of the process area by transforming identifiable input work products to produce identifiable output work products.**
GP 1.1: Perform Base Practices	Perform the base practices of the process area to develop work products and provide services to achieve the specific goals of the process area.
GG 2: Institutionalize a Managed Process	**The process is institutionalized as a managed process.**
GP 2.1: Establish an Organizational Policy	Establish and maintain an organizational policy for planning and performing the process.
GP 2.2: Plan the Process	Establish and maintain the plan for performing the process.
GP 2.3: Provide Resources	Provide adequate resources for performing the process, developing the work products, and providing the services of the process.
GP 2.4: Assign Responsibility	Assign responsibility and authority for performing the process, developing the work products, and providing the services of the process.
GP 2.5: Train People	Train the people performing or supporting the process as needed.
GP 2.6: Manage Configurations	Place designated work products of the process under appropriate levels of configuration management.
GP 2.7: Identify and Involve Relevant Stakeholders	Identify and involve the relevant stakeholders as planned.
GP 2.8: Monitor and Control the Process	Monitor and control the process against the plan for performing the process and take appropriate corrective action.
GP 2.9: Objectively Evaluate Adherence	Objectively evaluate adherence of the process against its process description, standards, and procedures, and address noncompliance.
GP 2.10: Review Status with Higher Level Management	Review the activities, status, and results of the process with higher level management and resolve issues.
GG 3: Institutionalize a Defined Process	**The process is institutionalized as a defined process.**
GP 3.1: Establish a Defined Process	Establish and maintain the description of a defined process.
GP 3.2: Collect Improvement Information	Collect work products, measures, measurement results, and improvement information derived from planning and performing the process to support the future use and improvement of the organization's processes and process assets.
GG 4: Institutionalize a Quantitatively Managed Process	**The process is institutionalized as a quantitatively managed process.**
GP 4.1: Establish Quantitative Objectives for the Process	Establish and maintain quantitative objectives for the process that address quality and process performance based on customer needs and business objectives.
GP 4.2: Stabilize Subprocess Performance	Stabilize the performance of one or more subprocesses to determine the ability of the process to achieve the established quantitative quality and process-performance objectives.
GG 5: Institutionalize an Optimizing Process	**The process is institutionalized as an optimizing process.**
GP 5.1: Ensure Continuous Process Improvement	Ensure continuous improvement of the process in fulfilling the relevant business objectives of the organization.
GP 5.2: Correct Root Causes of Problems	Identify and correct the root causes of defects and other problems in the process.

Table 8 contains a mapping between CMMI Generic Practices and the templates used in the eSCM-SP v2 Practices.

Key	
●	Addressed
O	Partially addressed
⌀	Not addressed *(to any significant degree)*

Table 8
Mapping eSCM-SP Templates to CMMI v1.1 Templates

eSCM-SP v2	Relation	CMM v1.1	Rationale
a1. Provide sponsorship and resources for creating the [work products and tasks].	●	GP 2.1: Establish an Organizational Policy	The policy practices in CMMI have the same intent in principle as the sponsorship and resources Required Activities in the eSCM-SP.
	O	OPF.GP.2.3: Provide Resources	The resources referenced in the (a1) template are targeted toward process definition and improvement, which is explicitly described in Organizational Process Focus.
	O	OPD.GP.2.3: Provide Resources	The resources referenced in the (a1) template are targeted toward process definition and improvement, which is explicitly described in Organizational Process Definition.
a2. Involve relevant stakeholders in creating, improving, reviewing, and approving the [work products and tasks] as appropriate.	O	OPF.GP.2.7: Identify and Involve Relevant Stakeholders	The stakeholder involvement in the (a2) template is targeted toward process improvement, which is explicitly described in Organizational Process Focus.
	O	OPD.GP.2.7: Identify and Involve Relevant Stakeholders	The stakeholder involvement in the (a2) template is targeted toward process definition, which is explicitly described in Organizational Process Definition.
a3. Maintain and improve the [work products and tasks] as appropriate.	O	OPF: Organizational Process Focus	The improvement focus is explicitly addressed in this Process Area.
	O	GP 2.6: Manage Configurations	Since knw07 (Version & change control) is a Support Practice for (a3), it implies that GP 2.6 of process assets also supports (a3); the general configuration management of work products does not map to (a3).
	O	GP 3.1: Establish a Defined Process	Establishing a defined process is not generically described in the eSCM-SP, although the (a3) template and knw04 (Process assets) imply a similar functionality.
	O	GP 3.2: Collect Improvement Information	Systematic improvement of processes is generically addressed in both models.
c1. Communicate the availability and location of the [work products and tasks] to relevant stakeholders.	●	OPF SP 2.3: Deploy Organizational Process Assets	Communicating the availability of process assets is addressed by this Specific Practice at Maturity Level 3.
c2. Provide resources to effectively perform the work.	●	GP 2.3: Provide Resources	The resources templates in CMMI and eSCM-SP are essentially equivalent.
c3. Assign qualified personnel the responsibility, authority, and accountability to perform the work.	●	GP 2.4: Assign Responsibility	Assigning personnel is essentially equivalent to assigning responsibility in CMMI.
	O	GP 2.5: Train People	Training is a mechanism for qualifying personnel, but (c3) is broader in scope than training.
c4. Communicate planned actions and their outcomes to relevant stakeholders.	O	GP 2.2: Plan the Process	Planning is implied by communicating planned actions.
c5. Verify that the work is consistently and effectively performed according to the [work products and tasks] *across the organization.*	●	GP 2.9: Objectively Evaluate Adherence	Quality assurance in CMMI addresses both process and product assurance activities.
	O	GP 2.10: Review Status with Higher Level Management	Senior management reviews are one form of management verification.
	O	GP 2.8: Monitor and Control the Process	Monitoring and controlling is one form of management verification.
N/A		GP 1.1: Perform Base Practices	Performing base practices has no generic equivalent in the eSCM-SP.
N/A		GP 2.6: Manage Configurations	Placing work products of a Capability Area under configuration management is not generically described in the eSCM-SP, although knw07 (Version & change control) is the relevant Support Practice.

eSCM-SP v2	Relation	CMM v1.1	Rationale
N/A		GP 4.1: Establish Quantitative Objectives for the Process	Establishing quantitative objectives for the process is not generically described in the eSCM-SP, although prf01 (Engagement objectives) and prf04 (Organization objectives) include related activities.
N/A		GP 4.2: Stabilize Subprocess Performance	Stabilizing subprocess performance is not generically described in the eSCM-SP, although prf08 (Capability baselines) describes a closely related Practice.
N/A		GP 5.1: Ensure Continuous Process Improvement	Systematic improvement of processes is generically addressed in both models, but the Level 5 CMMI Generic Practice is much more sophisticated than the eSCM-SP template for (a3), which was already addressed in GP 3.2.
N/A		GP 5.2: Correct Root Causes of Problems	The Level 5 CMMI Generic Practice is more sophisticated than the eSCM-SP template for (a3), which was already addressed in GP 3.2.

Appendix F: Acronyms List

CAR	Causal Analysis & Resolution (CMMI ML5 PA)
CL	Capability Level
CM	Configuration Management (CMMI ML2 PA)
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integration
CMU	Carnegie Mellon University
cnt	Contracting (eSCM-SP Capability Area)
DAR	Decision Analysis & Resolution (CMMI ML3 PA)
del	Service Delivery (eSCM-SP Capability Area)
eSCM	eSourcing Capability Model
eSCM-SP	eSourcing Capability Model for Service Providers
GG	Generic Goal
GP	Generic Practice
IPM	Integrated Project Management (CMMI ML3 PA)
IPPD	Integrated Process and Product Development
ISM	Integrated Supplier Management (CMMI ML3 PA) (SS-specific)
ISRI	Institute for Software Research International
IT	Information Technology
IT	Integrated Teaming (CMMI ML3 PA) (IPPD-specific)
ITSqc	IT Services Qualification Center
knw	Knowledge Management (eSCM-SP Capability Area)
MA	Measurement & Analysis (CMMI ML2 PA)
ML	Maturity Level
OEI	Organizational Environment for Integration (CMMI ML3 PA) (IPPD-specific)
OID	Organizational Innovation & Deployment (CMMI ML5 PA)
OPD	Organizational Process Definition (CMMI ML3 PA)
OPF	Organizational Process Focus (CMMI ML3 PA)
OPP	Organizational Process Performance (CMMI ML4 PA)
OT	Organizational Training (CMMI ML3 PA)
PA	Process Area
PI	Product Integration (CMMI ML3 PA)
PMC	Project Monitoring & Control (CMMI ML2 PA)
PP	Project Planning (CMMI ML2 PA)
ppl	People Management (eSCM-SP Capability Area)
PPQA	Process and Product Quality Assurance (CMMI ML2 PA)
prf	Performance Management (eSCM-SP Capability Area)
QPM	Quantitative Project Management (CMMI ML4 PA)
RD	Requirements Development (CMMI ML3 PA)
rel	Relationship Management (eSCM-SP Capability Area)
REQM	Requirements Management (CMMI ML2 PA)
RSKM	Risk Management (CMMI ML3 PA)
SAM	Supplier Agreement Management (CMMI ML2 PA)
SCAMPI	Standard CMMI Appraisal Method for Process Improvement

sdd	Service Design & Deployment (eSCM-SP Capability Area)
SE	Systems Engineering
SEI	Software Engineering Institute
SG	Specific Goal
SP	Specific Practice
SP	Service Provider
SP	Specific Practice
SPA	Software Process Assessment (method)
SS	Sourcing Selection
SW	Software Engineering
tch	Technology Management (eSCM-SP Capability Area)
tfr	Service Transfer (eSCM-SP Capability Area)
thr	Threat Management (eSCM-SP Capability Area)
TQM	Total Quality Management
TS	Technical Solution (CMMI ML3 PA)
VAL	Validation (CMMI ML3 PA)
VER	Verification (CMMI ML3 PA)