Overview of Changes Introduced in CMMI® v1.3

TwinSPIN
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Based on a presentation provided by:

Mike Phillips
Software Engineering Institute,
Carnegie Mellon University
## CMMI Transition Status as of 4-30-10

### Training

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Introduction to CMMI</td>
<td>115,371</td>
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<tr>
<td>Intermediate CMMI</td>
<td>3,049</td>
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<tr>
<td>Understanding CMMI High Maturity Practices</td>
<td>595</td>
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<tr>
<td>Introduction to CMMI v1.2 Supplement for ACQ</td>
<td>1,172</td>
</tr>
<tr>
<td>Introduction to CMMI v1.2 Supplement for SVC (1 Day)</td>
<td>1,774</td>
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<tr>
<td>Introduction to CMMI Services v1.2 (3 Day)</td>
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<tr>
<td>CMMI Level 2 for Practitioners</td>
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<tr>
<td>CMMI Level 3 for Practitioners</td>
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### Certified

<table>
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<tr>
<th>Course</th>
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<tr>
<td>Introduction to CMMI v1.2 Instructors</td>
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<tr>
<td>CMMI-ACQ v1.2 Supplement Instructors</td>
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<tr>
<td>CMMI-SVC v1.2 Supplement Instructors</td>
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<tr>
<td>CMMI Level 2 for Practitioners</td>
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<tr>
<td>CMMI Level 3 for Practitioners</td>
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<tr>
<td>SCAMPI v1.2 Lead Appraisers</td>
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<tr>
<td>SCAMPI v1.2 High Maturity Lead Appraisers</td>
<td>166</td>
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<tr>
<td>CMMI-ACQ v1.2 Lead Appraisers</td>
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<tr>
<td>CMMI-SVC v1.2 Lead Appraisers</td>
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### Foreign Language Status as of 4-30-10

<table>
<thead>
<tr>
<th>Language</th>
<th>Status (for CMMI-DEV v1.2)</th>
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<tbody>
<tr>
<td>Japanese</td>
<td>Completed 8/07; Intro course translated 10/07</td>
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<tr>
<td>Chinese (trad.)</td>
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<tr>
<td>French</td>
<td>Completed 8/08</td>
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<tr>
<td>German</td>
<td>Completed 4/09; Intro course translated 10/09</td>
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<tr>
<td>Spanish</td>
<td>Completed 6/09</td>
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<td>Portuguese</td>
<td>Completed 5/10</td>
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<table>
<thead>
<tr>
<th>Language</th>
<th>Status (for CMMI-ACQ v1.2)</th>
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<tbody>
<tr>
<td>Chinese (trad.)</td>
<td>Completed 4/09</td>
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<table>
<thead>
<tr>
<th>Language</th>
<th>Status (for CMMI-SVC v1.2)</th>
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</thead>
<tbody>
<tr>
<td>Chinese (trad.)</td>
<td>Underway, to be completed in 5/10</td>
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<tr>
<td>Arabic</td>
<td>To start, pending agreement</td>
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</table>
“Intro” Attendees as of 4/30/10

- CMM Intro (discon'td. 12/31/05)
- CMMI Intro
Three Complementary Constellations

CMMI-DEV provides guidance for measuring, monitoring, and managing development processes.

CMMI-SVC provides guidance for those providing services within organizations and to external customers.

CMMI-ACQ provides guidance to enable informed and decisive acquisition leadership.

16 Core process areas common to all.
Early on, it was decided that v1.3 changes would focus primarily on:
- High Maturity
- Appraisal efficiency
- Consistency across constellations
- Simplifying the generic practices

Like previous upgrades, v1.3 was change request driven.
Transition...

• SEI provides on-line upgrade course as they did with CMMI v1.2
  – Users may make the transition by taking upgrade course
    • Required for ML4 and ML5 appraisal team members
    • Not required for ML2 and ML3 appraisal team members
  – Instructors and Lead Appraisers must take upgrade course
    • High Maturity Lead Appraisers must also pass a test

• During one year period, organizations may use either CMMI v1.2 or v1.3 models for their appraisals
  – One year period ends November, 2011
  – All appraisals using v1.2 models will be valid for 3 years.
Version 1.3 Model Updates
Model Architecture

Typical Work Products
– “Typical work product” changed to “example work product”

Amplifications
– Removed the “amplification” model component

IPPD/Teaming
– Removed the IPPD addition from CMMI-DEV and added “teaming practices” in its place

CMMI-DEV
– Moved REQM from the Engineering PA category to the Project Management PA category.
New Material

Update selected PAs to provide interpretation of practices for organizations with respect to the following topics:

- Agile methods
- Quality attributes
  - i.e., non functional requirements or “ilities”
- Allocation of product capabilities to release increments
- Product lines
- System of systems
- Architecture-centric development practices
- Technology maturation
- Customer satisfaction
GGs, GPs, and GP Elaborations

• Positioned generic goals, generic practices, and GP elaborations in one central location

• Simplified GG1 to make it more readable

• Renamed GP 2.6 from “Manage Configurations” to “Control Work Products”

• Added “selected work products” to the GP 2.9 statement

• Simplified the GP 3.2 statement
  – From: “Collect work products, measures, measurement results, and improvement information…”
  – To: “Collect process-related experiences…”

• Eliminate GG4 and GG5.
Impact on Model Size
## Comparison of Models

<table>
<thead>
<tr>
<th>Measure</th>
<th>CMMI for Development</th>
<th>CMMI for Acquisition</th>
<th>CMMI for Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>v1.1 Staged</td>
<td>v1.1 Cont</td>
<td>v1.2 v1.3</td>
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<tr>
<td>Pages</td>
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<td>710</td>
<td>560 461</td>
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<tr>
<td>Process Areas</td>
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<td>25</td>
<td>22 22</td>
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<tr>
<td>Generic Goals</td>
<td>2</td>
<td>5</td>
<td>5 3</td>
</tr>
<tr>
<td>Generic Practices</td>
<td>12</td>
<td>17</td>
<td>17 13</td>
</tr>
<tr>
<td>Specific Goals</td>
<td>55</td>
<td>55</td>
<td>50 48</td>
</tr>
<tr>
<td>Specific Practices</td>
<td>185</td>
<td>189</td>
<td>173 165</td>
</tr>
</tbody>
</table>
Version 1.3 Model Details
(Highlights Only)
CMMI v1.3 Criteria (Highlights)

• Correct identified model, training material, or appraisal method defects or provide enhancements

• Decrease overall model size if possible; increases, if any, must not be greater than absolutely necessary

• Model changes should avoid adversely impacting legacy investment of adopting companies and organizations

• Changes may only be initiated by CRs or the CMMI Steering Group

• Changes must not cause retraining of the nearly 100,000 personnel already trained in CMMI; upgrade training may be needed, especially for:
  – Instructors
  – Lead Appraisers
  – Appraisal team members.
Front Matter (Highlights)

• Clarified that CMMI models are not processes or process descriptions

• Removed any biases favoring maturity levels or capability levels.
PA Improvements (Highlights) – 1

- **CM** – Clarified that CM can apply to HW, equipment, and other tangible assets, as well as Agile environments.

- **DAR** – Added guidance on preparing to use DAR practices and communicating their results.

- **IPM** – Added SP1.6 to address teams (IPPD was eliminated).

- **MA** – (1) Clarified the relationship among information needs and objectives, measurement objectives, and business/project objectives.
  
  (2) Added a table providing some common examples of measures, measurement information categories, base measures, derived measures, and measurement relationships.

- **OPD** – Added SP1.7 to address teams (IPPD was eliminated).
PA Improvements (Highlights) – 2

• **OPF** – Simplified SP 3.4 compound statement to “collecting process-related experiences”

• **OT** – Minor changes only

• **PI** – Changed emphasis on “integration sequence” to “integration strategy”; changed SP 1.1 practice to be “Establish and maintain a product integration strategy;” a similar change was made to SP3.2

• **PMC** – Minor changes only

• **PP** – (1) In the Introductory Notes, added guidance on the suitability of the specific practices of the process area to endeavors other than projects

(2) Added subpractices to SP 2.3 and SP 2.4

• **PPQA** – Clarified that PPQA applies to both project and organization level activities and work products.
PA Improvements (Highlights) – 3

• **RD, TS, VER** – Added material to incorporate current engineering practices, such as quality attributes, product lines, system of systems, architecture-centric practices, etc.

• **RD** – Added informative material to acknowledge the importance of customer satisfaction and the requirements critical to satisfaction.

• **REQM** – (1) Changed the focus of SP 1.5 so that it now reads, “Ensure that project plans and work products remain aligned with the requirements.”

  (2) Moved REQM from Engineering category to Project Management category.

• **RSKM** – Minor changes only.
PA Improvements (Highlights) – 4

- **SAM** – (1) Demoted SP 2.2, Monitor Selected Supplier Processes and SP 2.3, Evaluate Selected Supplier Work Products to subpractices of SP 2.1, Execute the Supplier Agreement
  
  (2) Clarified the scope of SAM practices’ applicability

- **TS** – Added information about how Technical Solution works with Agile methodologies

- **VAL** – (1) Reinforced when validation occurs in the product lifecycle
  
  (2) Provided methods of validation for incremental development

- **VER** – Added information about how Technical Solution works with Agile methodologies.
Version 1.3 Model Updates
High Maturity
(Highlights Only)
High Maturity Restructuring

- Restructuring of ML4 and ML5:
  - OPP & QPM constitute ML4
  - Created a new process area called Organization Performance Management (OPM)
  - OPM & CAR constitute ML5
  - Revised QPM specific practices to reflect a connection between CAR and QPM.
Organizational Process Performance

SG1  Establish Performance Baselines and Models

   SP1.1  Establish Quality and Process Performance Objectives
   SP1.2  Select Processes
   SP1.3  Establish Process Performance Models
   SP1.4  Analyze Process Performance and Establish Process Performance Models
   SP1.5  Establish Process Performance Models.
Quantitative Project Management

SG1  Prepare for Quantitative Management
  SP1.1  Establish the Project’s Objectives
  SP1.2  Compose the Defined Process
  SP1.3  Select Subprocesses and Attributes
  SP1.4  Select Measures and Analytic Techniques

SG2  Quantitatively Manage the Project
  SP2.1  Monitor the Performance of Selected Subprocesses
  SP2.2  Manage Project Performance
  SP2.3  Perform Root Cause Analysis.
Causal Analysis and Resolution

SG1 Determine Causes of Selected Outcomes
   SP1.1 Select Outcomes for Analysis
   SP1.2 Analyze Causes

SG2 Address Causes of Selected Outcomes
   SP2.1 Implement Action Proposals
   SP2.2 Evaluate the Effect of Implemented Actions
   SP2.3 Record Causal Analysis Data.
Organizational Performance Mgt

SG1 Manage Business Performance
   SP1.1 Maintain Business Objectives
   SP1.2 Analyze Process Performance Data
   SP1.3 Identify Potential Areas for Improvement

SG2 Select Improvements
   SP2.1 Elicit Suggested Improvements
   SP2.2 Analyze Suggested Improvements
   SP2.3 Validate Improvements
   SP2.4 Select and Implement Improvements for Deployment

SG3 Deploy Improvements
   SP3.1 Plan the Deployment
   SP3.2 Manage the Deployment
   SP3.3 Evaluate Improvement Effects.
Interaction of High Maturity PAs

Causal Analysis and Resolution

Quantitative Project Management

Organizational Process Performance

Organizational Performance Management

Performance Issues

Improvement Proposals

Improvements

Progress toward achieving quality and process-performance objectives

Quality and process-performance objectives

Organization

Selected Outcomes

Root Causes/Solutions

Measures, baselines, and models

Measures, baselines, and models

Measures, baselines, and models

Updated measures, baselines, and models (actual performance)

Customer

Causal Analysis and Resolution

Organizational Performance Management

Organizational Process Performance

Quantitative Project Management

CMMI v1.3 – January, 2011
Questions???

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