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CMMI &
SCAMPI Appraisals

Presented by

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Sandia National Laboratories

Acronyms

- CMMI = Capability Maturity Model Integration
- IPPD = Integrated Product and Process Development
- SCAMPI = Standard CMMI Appraisal Method for Process Improvement
- SE = Systems Engineering
- SW = Software Engineering

CMMI History

Software CMM
Systems Engineering CMM
SW Acquisition CMM
People CMM
Integrated Product Development CMM
Systems Security Eng CMM
Business Specific CMM

Input/Guidance

- Office of the Secretary of Defense
- Air Force
- Navy
- Other government groups
  - SEI
  - Industry

CMMI

- **CMMI V1.2 Publication, 8/2006**
- **CMMI V1.1 Publication, 12/2001**
- **SW-CMM Sunset, 12/2003**

CMMI Overview

3 Constellations
Development + IPPD
Acquisition
Services

2 Representations
Staged
Continuous

22 Process Areas

5 Generic Goals
(only 2 for Staged)

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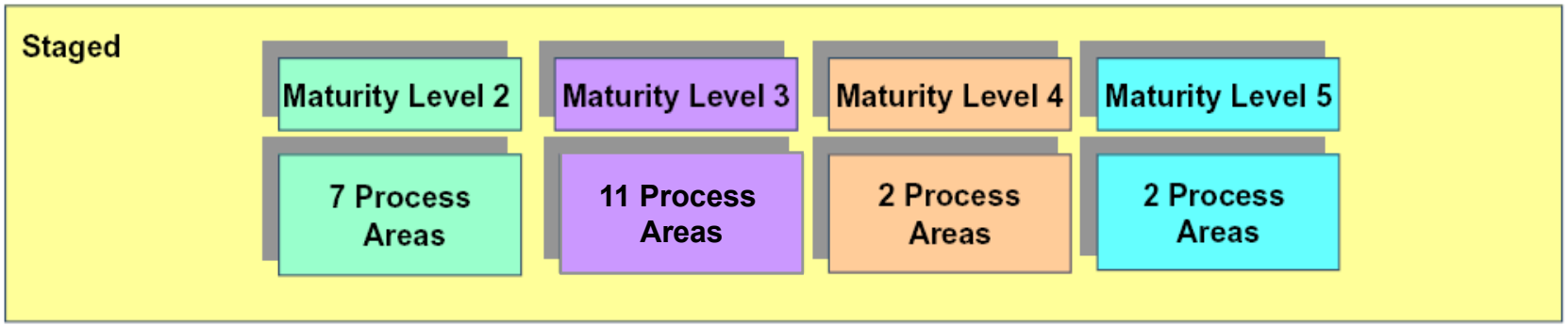
Staged Representation



- Requirements Management (REQM)
- Project Planning (PP)
- Project Monitoring & Control (PMC)
- Supplier Agreement Management (SAM)
- Measurement & Analysis (MA)
- Process & Product Quality Assurance (PPQA)
- Configuration Management (CM)

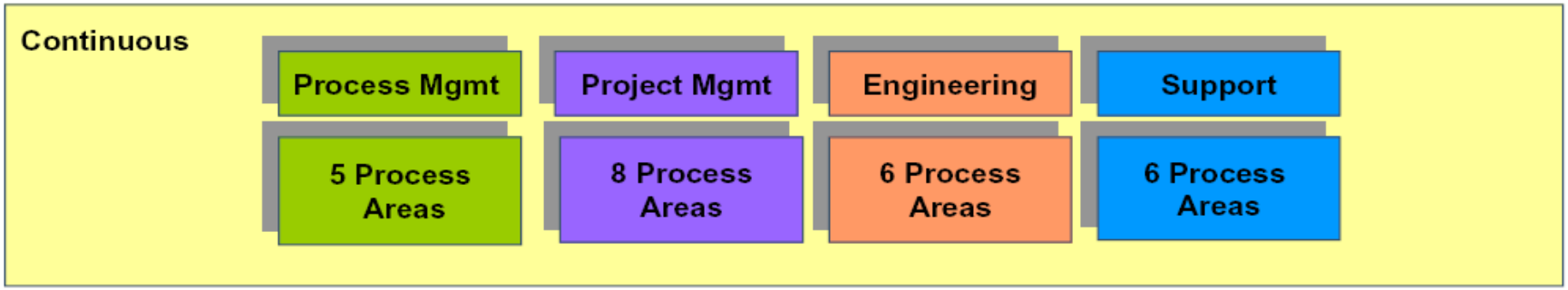
- Requirements Development (RD)
- Technical Solutions (TS)
- Product Integration (PI)
- Verification (VER)
- Validation (VAL)
- Organizational Process Focus (OPF)

- Organizational Process Definition (OPD) + IPPD
- Organizational Training (OT)
- Integrated Project Management (OPM) + IPPD
- Risk Management (RSKM)
- Decision Analysis & Resolution (DAR)

- Organizational Process Performance (OPP)
- Quantitative Project Management (QPM)

- Organizational Innovation & Deployment (OID)
- Causal Analysis & Resolution (CAR)

Continuous Representation



- Organizational Process Focus
- Organizational Process Definition
- Organizational Training
- Organizational Process Performance
- Organizational Innovation & Deployment

- Requirements Management
- Requirements Development
- Technical Solutions
- Product Integration
- Verification
- Validation

- Project Planning
- Project Monitoring & Control
- Supplier Agreement Management
- Risk Management
- Integrated Project Management + IPPD
- Quantitative Project Management

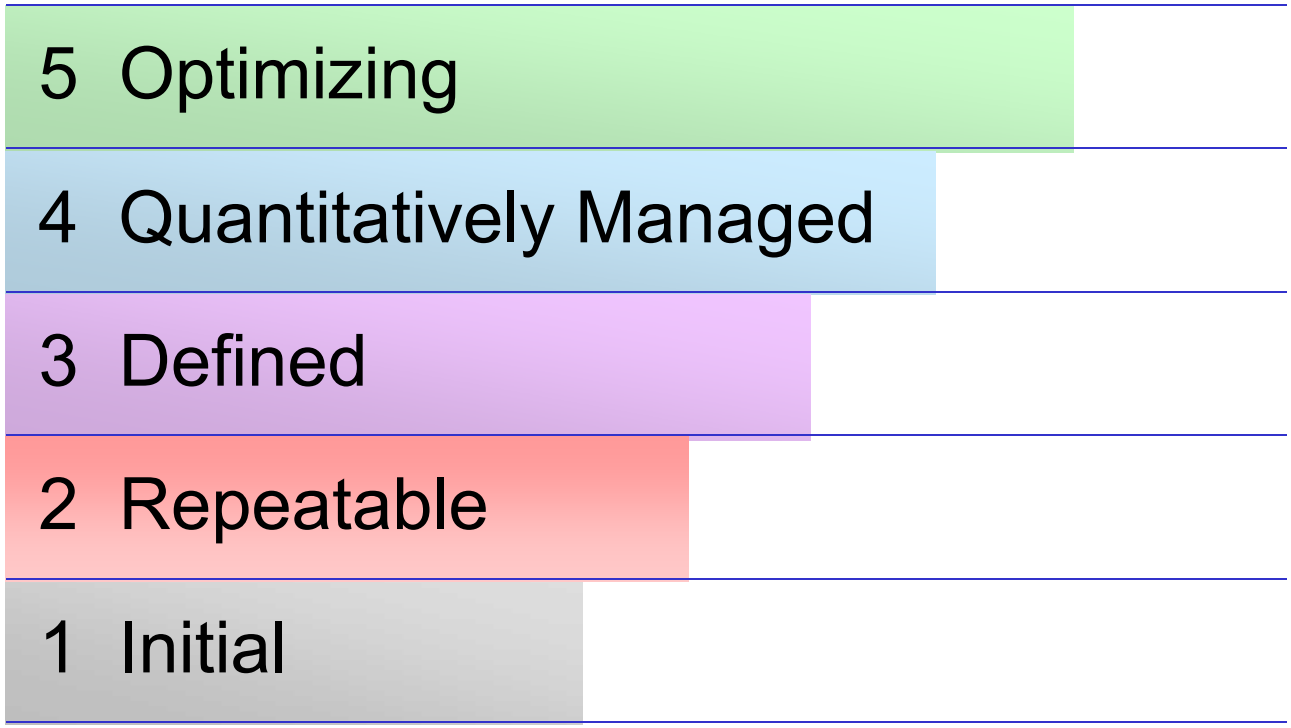
- Configuration Management
- Measurement & Analysis
- Process & Product Quality Assurance
- Causal Analysis & Resolution
- Decision Analysis & Resolution

CMMI v1.1 vs. 1.2

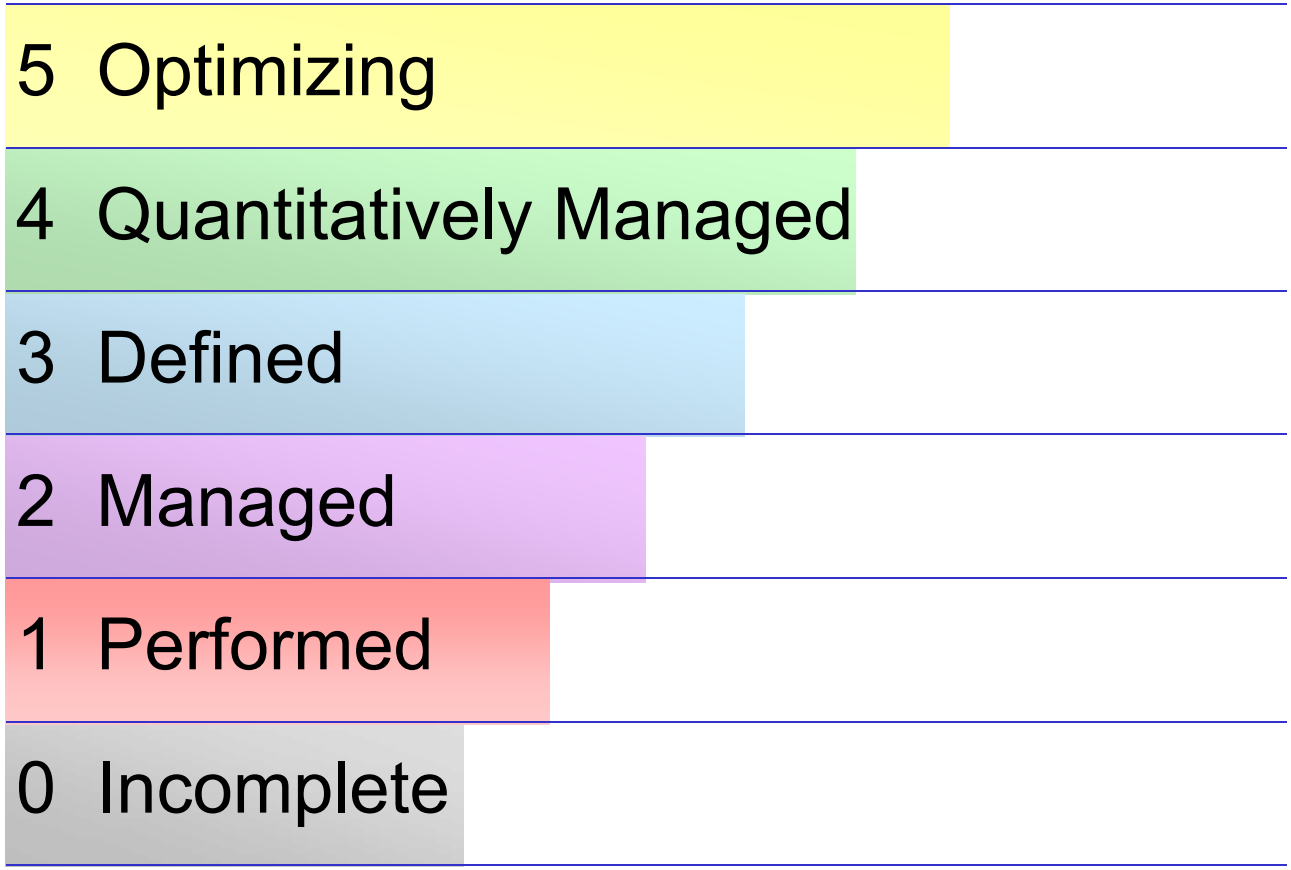
Characteristic	1.1	1.2
Documents	Staged Continuous	1 document
Categorization	**Disciplines:** SE, SW, Supplier Sourcing, IPPD	**Constellations:** Development, Acquisition, Services
Process Areas	Integrated Teaming (IT) Integrated Supplier Mgt (ISM) Organizational Environment for Integration (OEI)	IT→IPM ISM→SAM OEI→OPD IPPD→OPD/IPM
Practices	Base and Advanced	Combined base and advanced

Additional changes made to reduce complexity and size and to expand model coverage: combine practices, provide additional details and supporting information, add hardware amplifications, improve the glossary, etc.

Staged Maturity Levels



Continuous Capability Levels



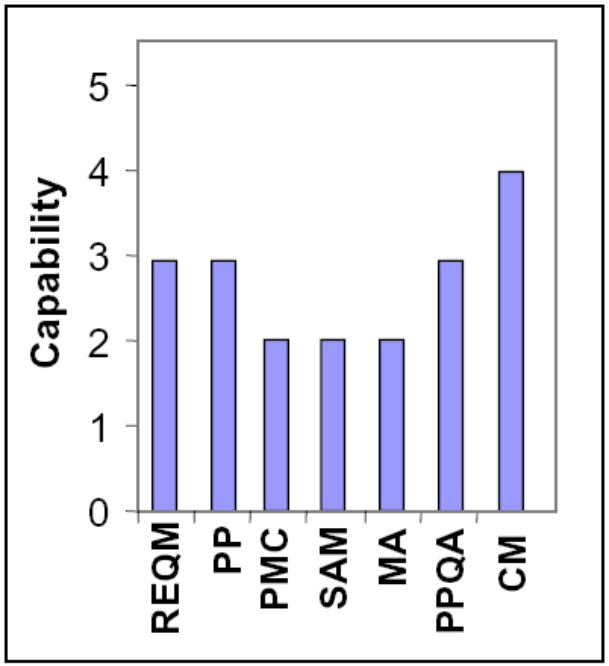
Representation Comparisons

Staged Representation	Continuous Representation
Predefined and proven path with case study and ROI data	Maximum flexibility for order of process improvement
Focuses on organizational improvement	Focuses on improvement within process areas
Overall results summarized in a maturity level	Improvement of process areas can occur at different rates
Maturity levels are common discriminators	Source selection investigation can target risky areas at any level

Appraisal Results

Staged Representation

Continuous Representation



SCAMPI Appraisals

Characteristic	SCAMPI C	SCAMPI B	SCAMPI A
Amount of objective evidence	• Little evidence reviewed • Heavy reliance on project team member interviews	• Some evidence reviewed • Depth of review is limited • Project team member interviews used • Similar in scope to previous ASC internal assessments	• In-depth evidence reviewed • Project team member interviews used
Ratings generated	No	No	Yes
Resources needed	Low	Medium	High
Team Size	1 or more	2 or more	4 - 9

Benefits to the SCAMPI Appraisal Methodology

- Consistent appraisal methodology allows for
  - Comparisons across projects, within projects, across the NWC, etc.
  - Baseline development to support process improvement activities
- Industry standard methodology
- Allows for scalable appraisals (SCAMPI A, B, C) that can be tailored to fit project budgets

Things to Consider

- Do we have sponsorship for our process improvement efforts?
- Do we have the needed resources for a process improvement effort?
- What standard should I use?
  - ISO9001, ISO15504, AS9100, IEEE, CMMI, internal/home-grown standards, etc.
- Are there any benefits to my organization in using one standard over another?
  - Are there any current quality standards/certifications in place that can be leveraged?
  - Do our customers prefer a particular standard?
  - What is our organization's objective for adopting a standard?
- Is there a standardized appraisal methodology for the standard I select?

Implementation Strategies for Small Organizations and Projects

- Consider the Continuous Representation
  - Focus on Process Areas that will impact you the most first
- Plan for improvement
  - Set aside funding, identify additional funding and resources, ensure you have a reliable sponsor
- Use iterative process improvements
- Find experts to help
- Collaborate with others
  - Share processes, templates, tools
- Utilize tools to address process implementations
  - Process Area specific tools (REQM, CM, MA, PP, PMC…)
  - Collaboration specific tools (PP, PMC, IPM, OPF, OPD, OT…)

Useful Resources

- CMMI v1.2 Overview
  - http://www.sei.cmu.edu/cmmi/general/index.html
- Detailed Changes from CMMI v1.1 to v1.2
  - http://www.sei.cmu.edu/cmmi/adoption/cmmiv12-changes.html#model
- CMMI and ISO/IEC 15504
  - http://www.sei.cmu.edu/cmmi/faq/15504-faq.html
- CMMI Performance Results/ROI
  - http://www.sei.cmu.edu/cmmi/2007results.html
  - I find the DACS website to be very informative (see above link)
- Getting Started with CMMI
  - http://www.sei.cmu.edu/cmmi/adoption/index.html
- SCAMPI Appraisals
  - http://www.sei.cmu.edu/cmmi/appraisals/index.html