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CMMI® Version 1.2 and Beyond …a Tutorial

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CMMI Today

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CMMI Today

Version 1.1 CMMI Product Suite was released January 2002.

Errata sheets cover known errors and changes with book publication are available on CMMI website.

SCAMPI “classes” of methods support many needs

- internal process improvement
- supplier source selection
- contract process monitoring

SCAMPI B/C Team Leader Training available

Introduction to CMMI (Staged and Continuous) available

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CMMI Adoption Trends: Website Visits[1]

CMMI web pages hits

- 1.8M/month
- Exceeded 60K/day in August 2005

443 organizations visited the CMMI Website more than 200 times during September 2005:

29 Defense contractor organizations

12 DoD organizations

49 Universities

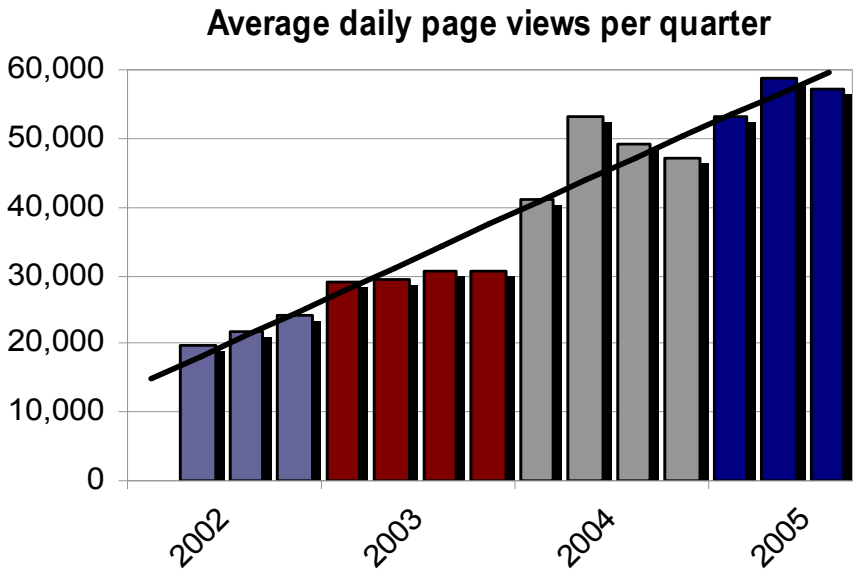
328 Commercial companies

25 Non-DoD government agencies

CMMI Adoption Trends: Website Visits$_2$

The following were the top viewed pages on the CMMI Website in September 2005:

- CMMI Main Page
- What is CMMI?
- CMMI Models and Modules
- Getting Started with CMMI Adoption
- CMMI Training, Events, & Forums



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Organizations Using CMMI

The following is an abbreviated list of organizations that are using CMMI.

Accenture
Boeing
Dyncorp
FAA
General Dynamics
Honeywell
Intel
L3 Communications
NASA
Nokia
NTT Data
Raytheon
Samsung
U.S. Air Force
U.S. Treasury Department
Bank of America
Bosch
EDS
Fannie Mae
General Motors
IBM Global Services
J. P. Morgan
Lockheed Martin
NDIA
Northrop Grumman
OUSD (AT&L)
Reuters
Social Security Administration
U.S. Army
Wipro
BMW
Ericsson
Fujitsu
Hitachi
Infosys
KPMG
Motorola
NEC
NRO
Polaris
SAIC
TRW
U.S. Navy
Zurich Financial Services

CMMI Transition Status – 10/31/05

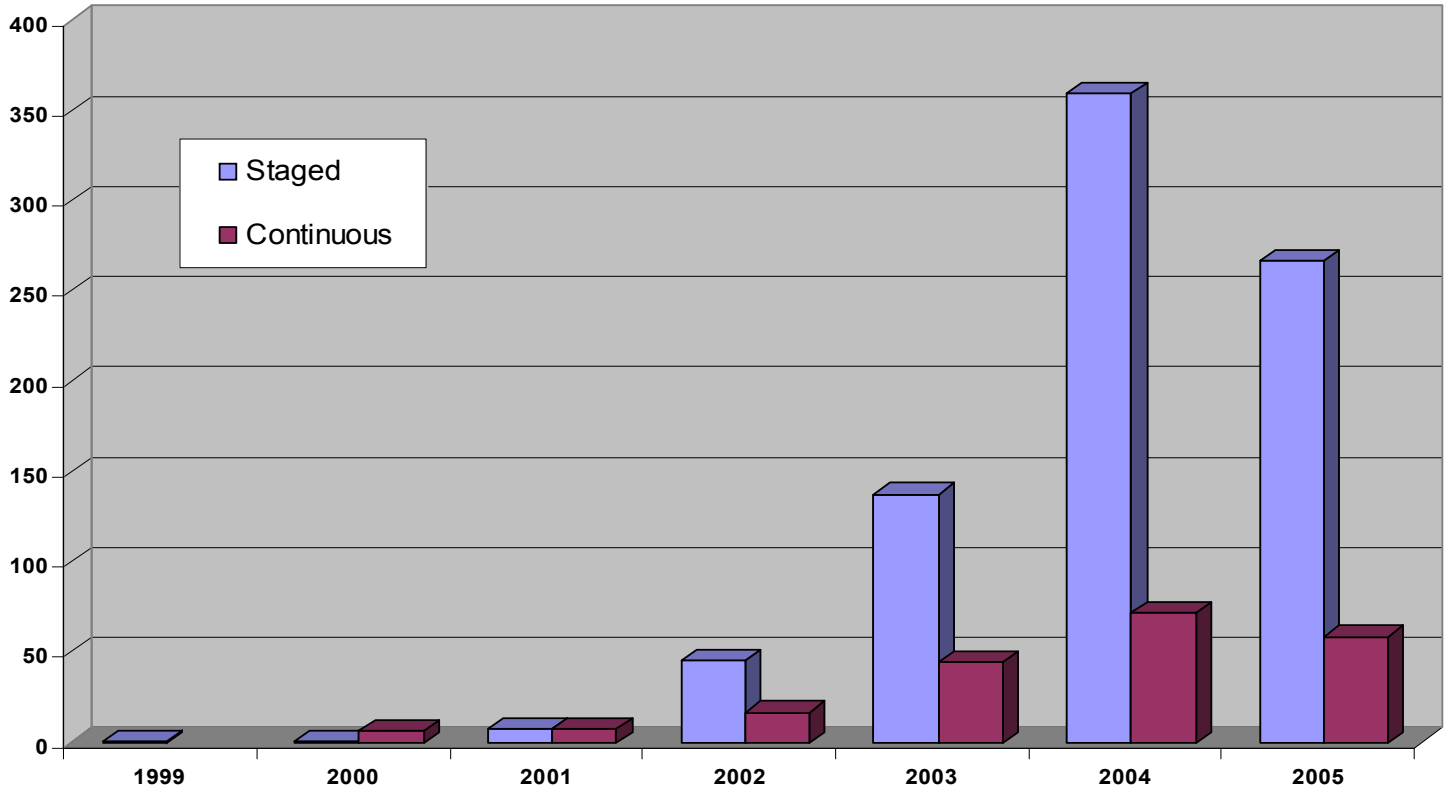
Training

- Introduction to CMMI – 40,809 trained
- Intermediate CMMI – 1,777 trained
- Introduction to CMMI Instructors – 384
- SCAMPI Lead Appraisers – 577 trained

Authorized

- Introduction to CMMI V1.1 Instructors – 292
- SCAMPI V1.1 Lead Appraisers – 405

Number of SCAMPI vx.x Class A Appraisals Conducted by Year by Model Representation*
Reported as of 30 September 2005
*Where representation is reported



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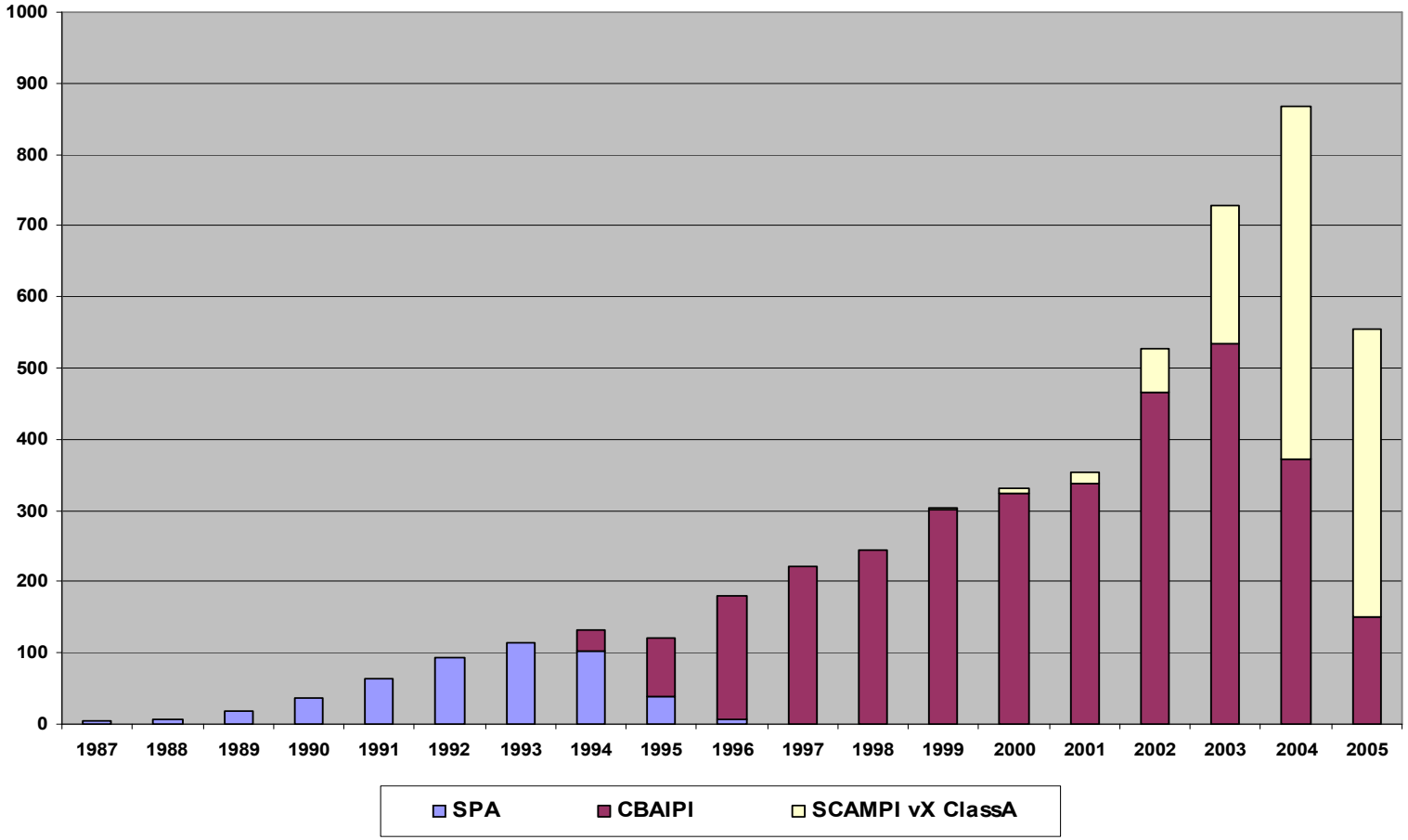
Current Appraisal Synopsis

Based on SCAMPI℠ V1.1 Class A appraisals conducted since April 2002 release through August 2005 and reported to the SEI by September 2005.

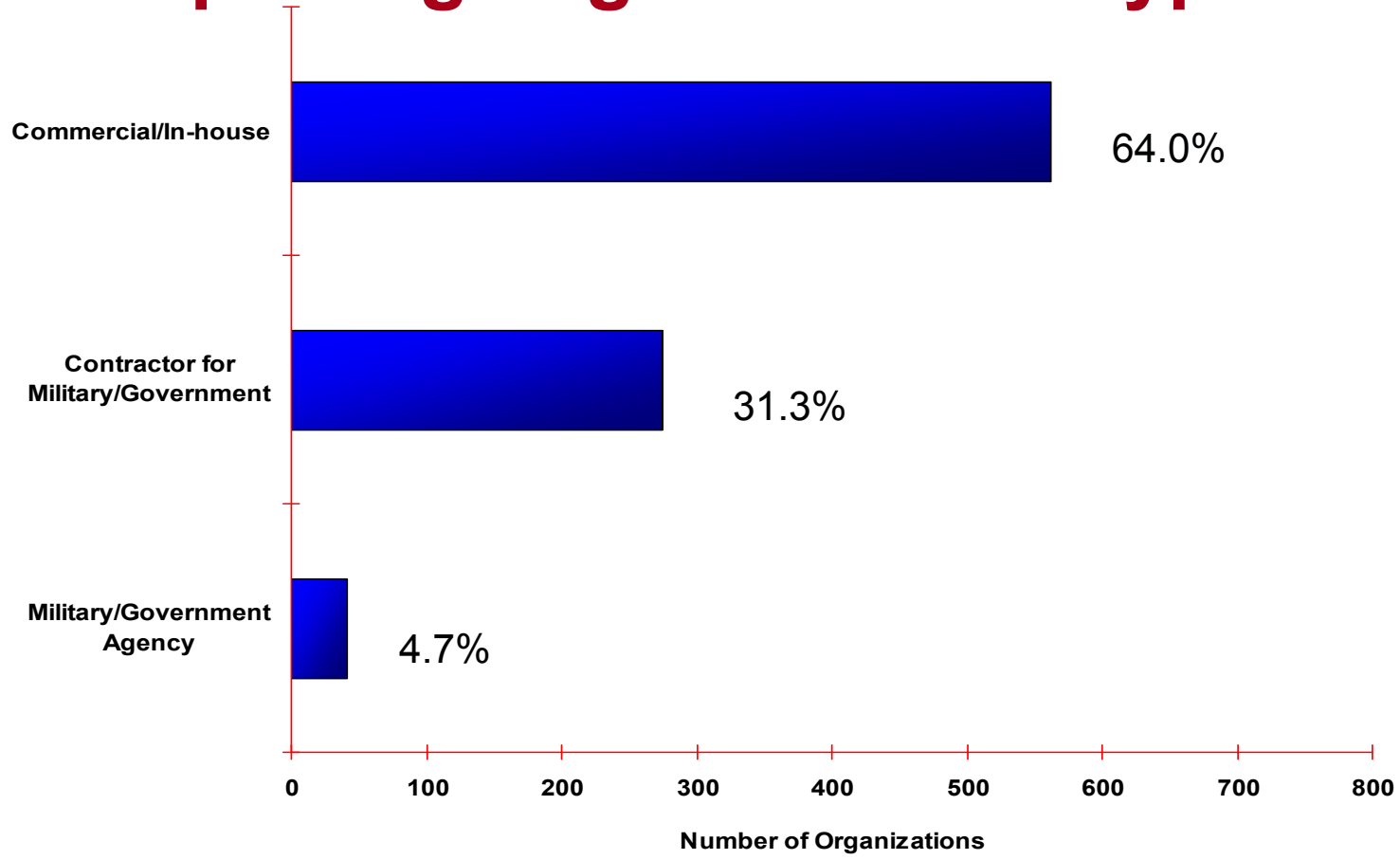
977	appraisals
878	organizations
206	participating companies
86	reappraised organizations
3,686	projects
59.6%	non-USA organizations

Organizations previously appraised against CMMI V1.0 and who have not reappraised against V1.1 are not included in this report

Number of Appraisals Conducted by Year
Reported as of 31 October 2005



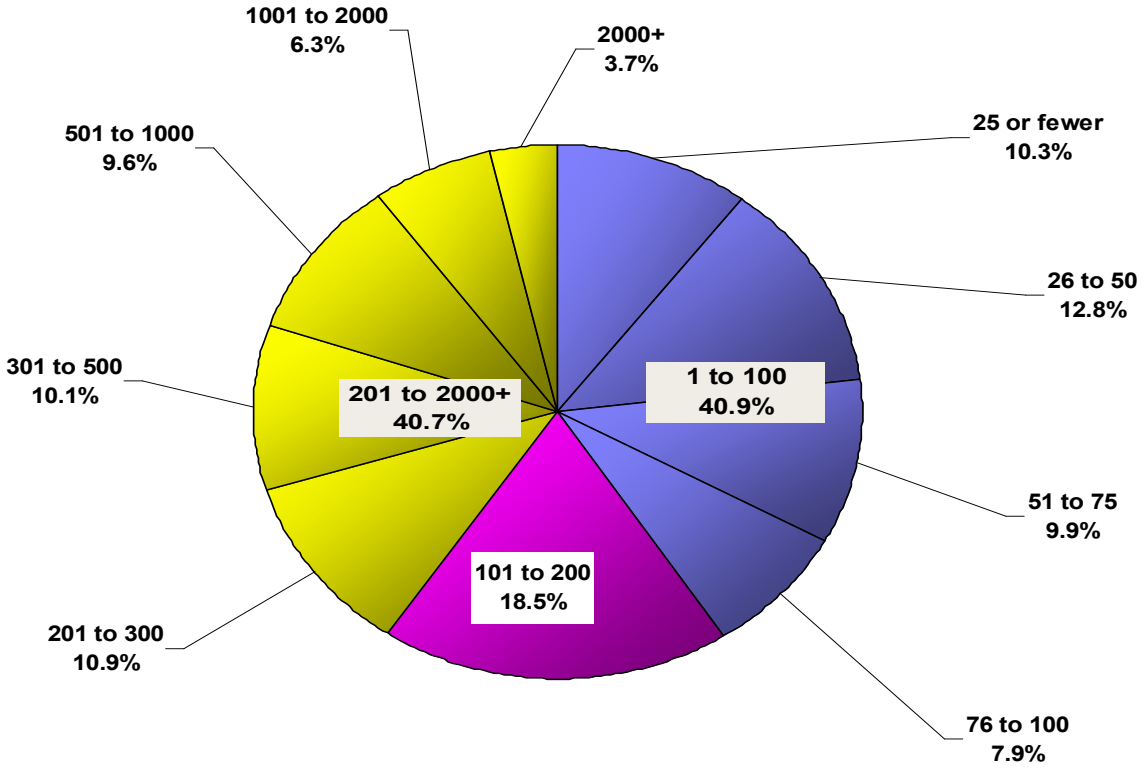
Reporting Organizational Types



Based on **878** organizations

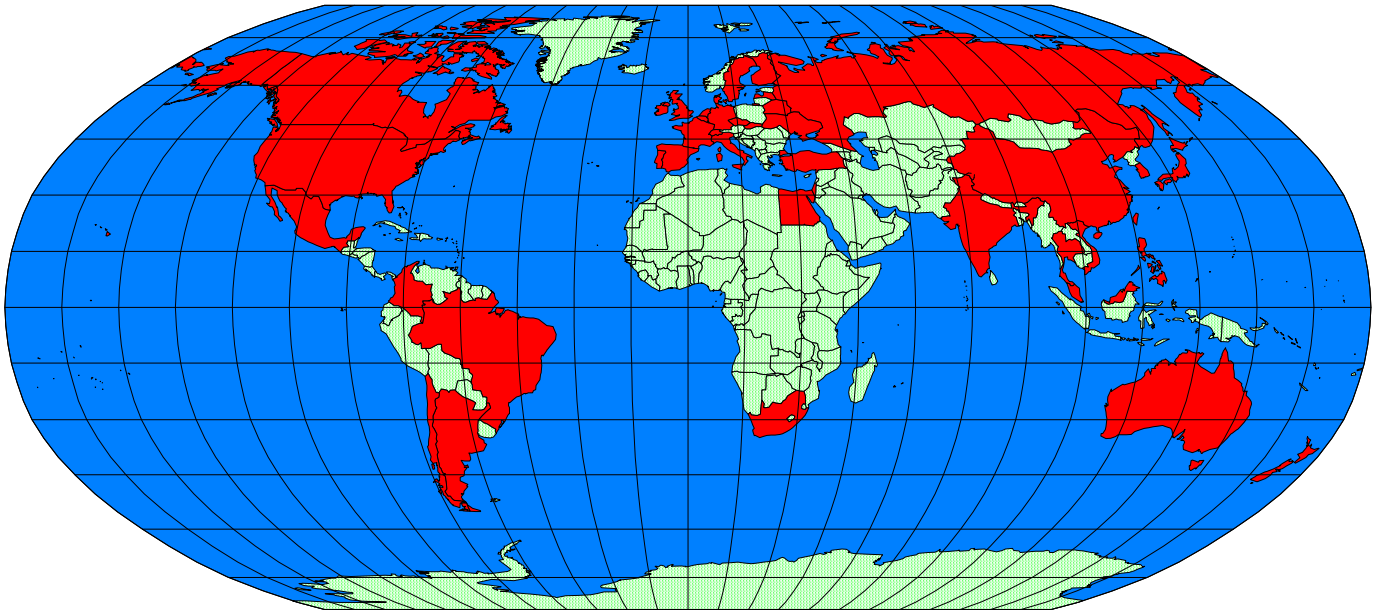
Organizational Size

Based on the total number of employees within the area of the organization that was appraised



Based on **861** organizations reporting size data

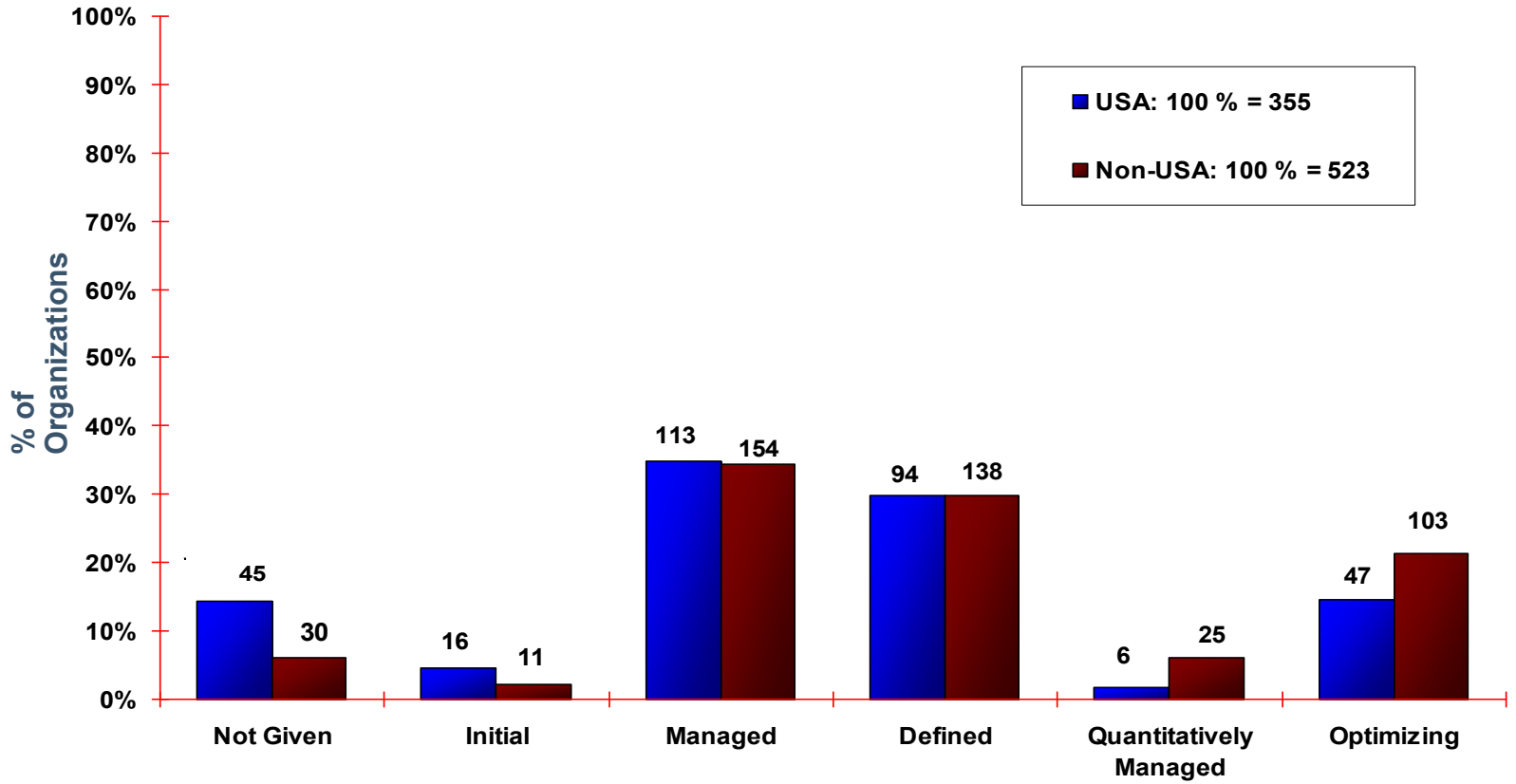
Countries where Appraisals have been Performed and Reported to the SEI



Argentina	Australia	Belarus	Belgium	Brazil	Canada	Chile
China	Colombia	Czech Republic	Denmark	Egypt	Finland	France
Germany	Hong Kong	India	Ireland	Israel	Italy	Japan
Korea, Republic of	Latvia	Malaysia	Mexico	Netherlands	New Zealand	Philippines
Portugal	Russia	Singapore	Slovakia	South Africa	Spain	Sweden
Switzerland	Taiwan	Thailand	Turkey	Ukraine	United Kingdom	United States
Vietnam						

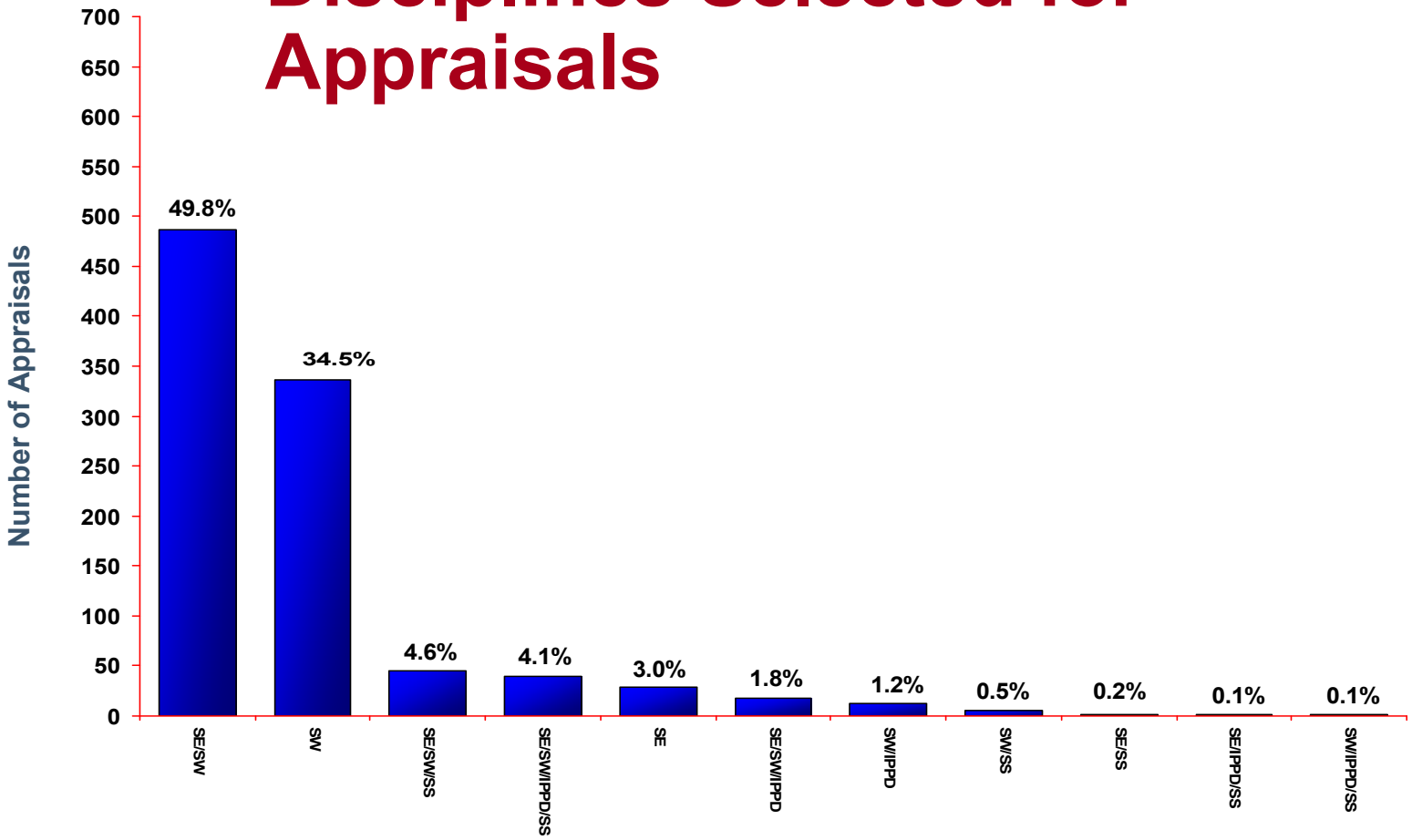
Purple country name: new additions with this reporting since Nov. 2004

Maturity Profile by All Reporting USA and Non-USA Organizations



Based on **355** USA organizations and **523** Non-USA organizations

Disciplines Selected for Appraisals



Based on **977** appraisals reporting coverage

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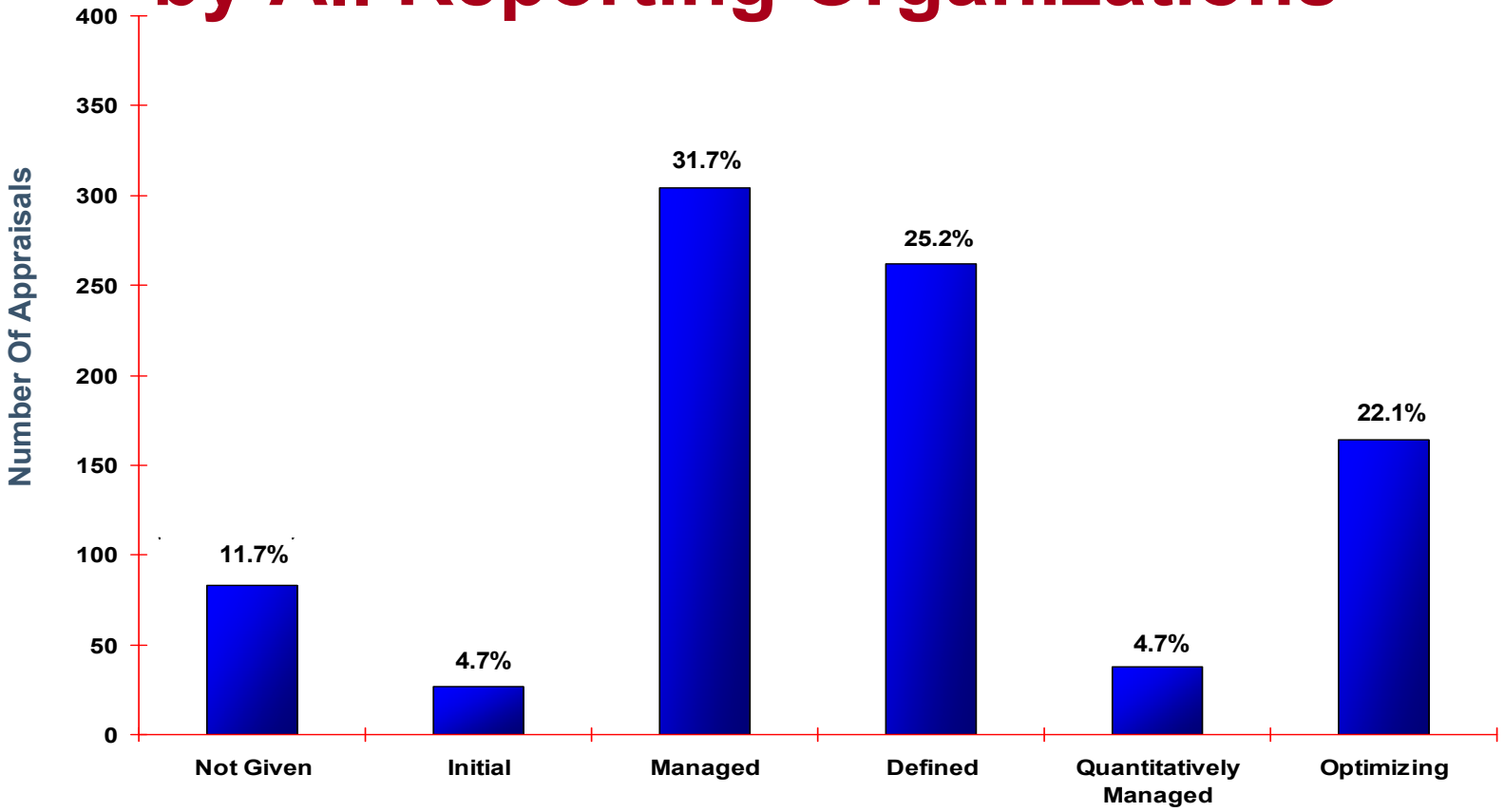
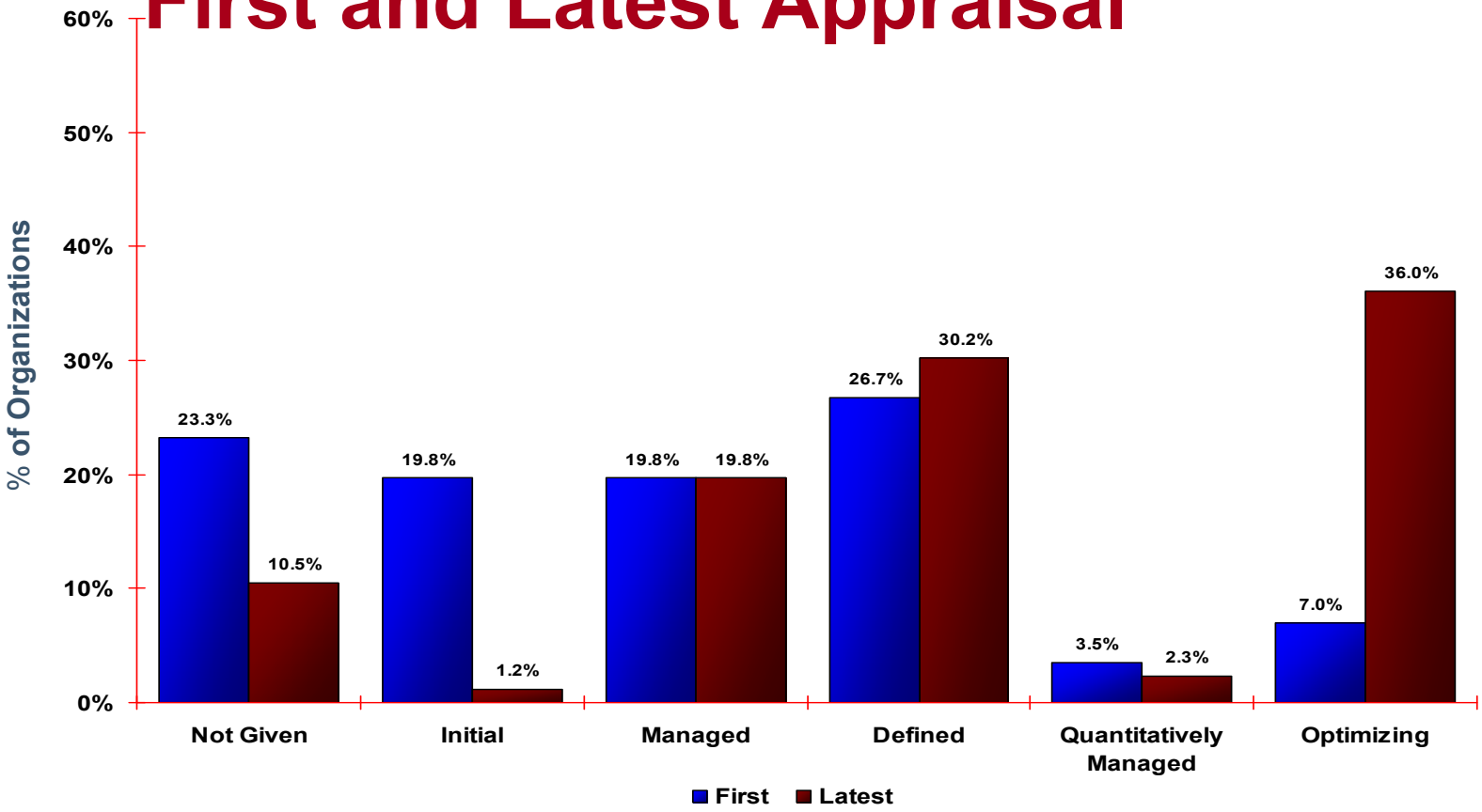
Maturity Profile by All Reporting Organizations



Based on most recent appraisal of **878** organizations

Maturity Level of First and Latest Appraisal



Based on **86** reappraised organizations using their first and latest appraisal

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Appraisal Results Summary

977 appraisals have been reported since the April 2002 SCAMPI Class A Version 1.1 release.

Commercial/In-House organizations reporting appraisals is increasing more rapidly than other organizational categories.

Government/Military and Government/Military Contractors reporting appraisals is increasing at a stable and consistent rate.

The highest percentage of Commercial/In-House organizations reporting appraisals is from outside the USA.

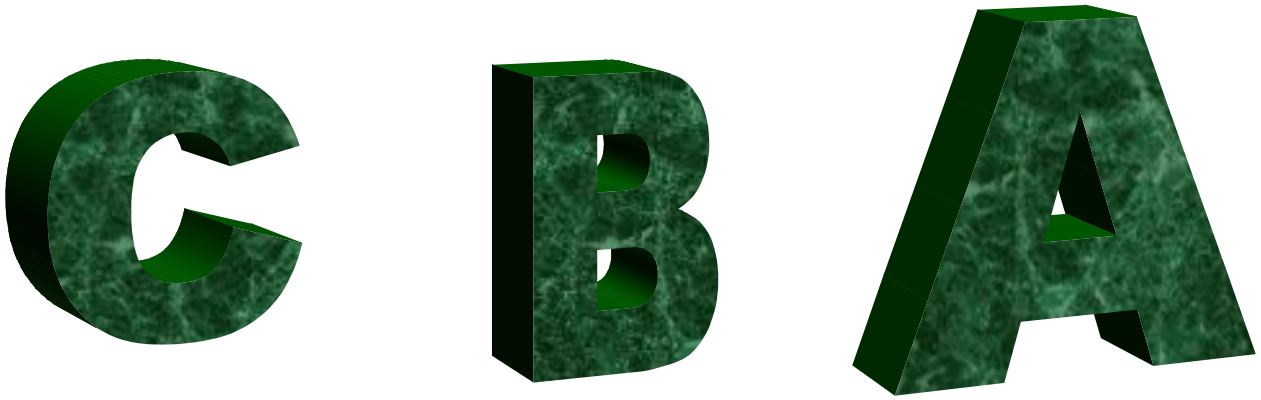
The highest percentage of Government/Military Contractors reporting appraisals is from the USA.

Comparing early reports of the SW-CMM maturity profile with early CMMI data reflects a more mature CMMI profile.

Additional information and charts will be released as more appraisals are reported and more data is available to support the breakdowns.

Three Classes of Appraisals

Characteristic	Class C	Class B	Class A
Amount of objective evidence	Low	Medium	High
Ratings generated	No	No	Yes
Resource needs	Low	Medium	High
Team Size	Small	Medium	Large



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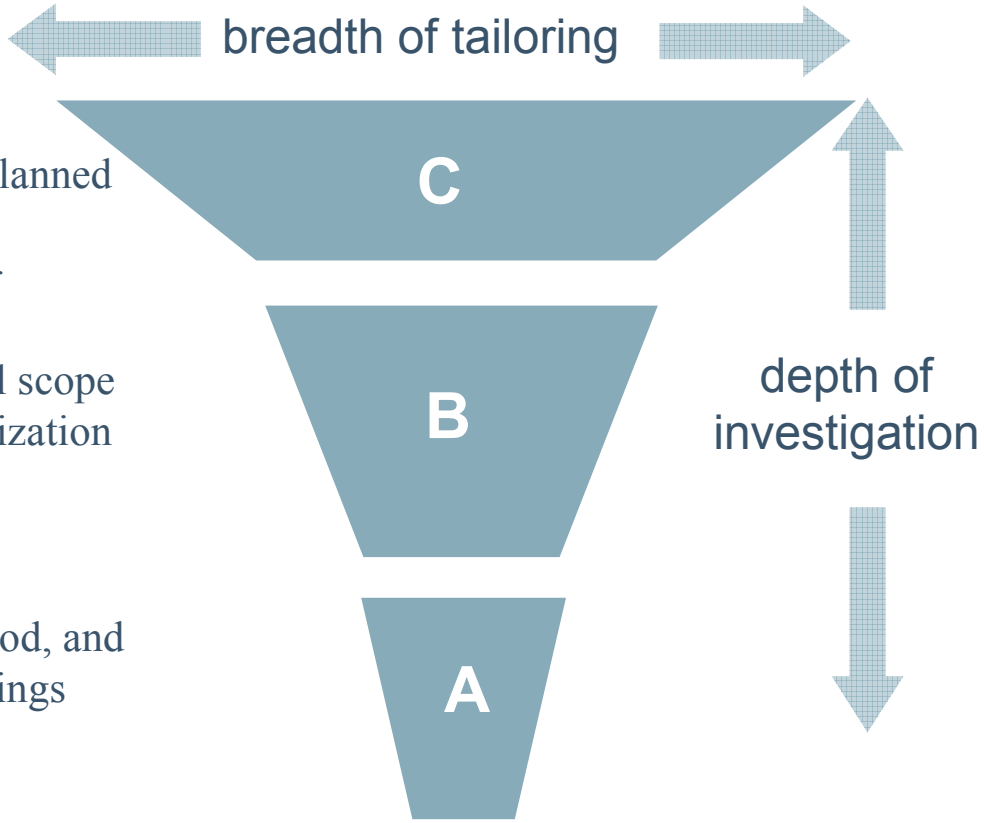
SCAMPI Family

SCAMPI C: provides a wide range of options, including characterization of planned approaches to process implementation according to a scale defined by the user

SCAMPI B: provides options in model scope and organizational scope, but characterization of practices is fixed to one scale and is performed on implemented practices

SCAMPI A: Is the most rigorous method, and is the only method that can result in ratings



Approach, Deployment, Institutionalization

	Approach	Deployment	Institutionalization
A			
B			
C			

- SCAMPI family methods can be used in a range from:
  - looking at the approach planned to satisfy process improvement goals to
  - examining deployment of processes in selected instances in an organizational unit (OU) to
  - benchmarking the institutionalization of CMMI in an OU

Reliability, rigor and cost may go down from A to B to C, risk may go up

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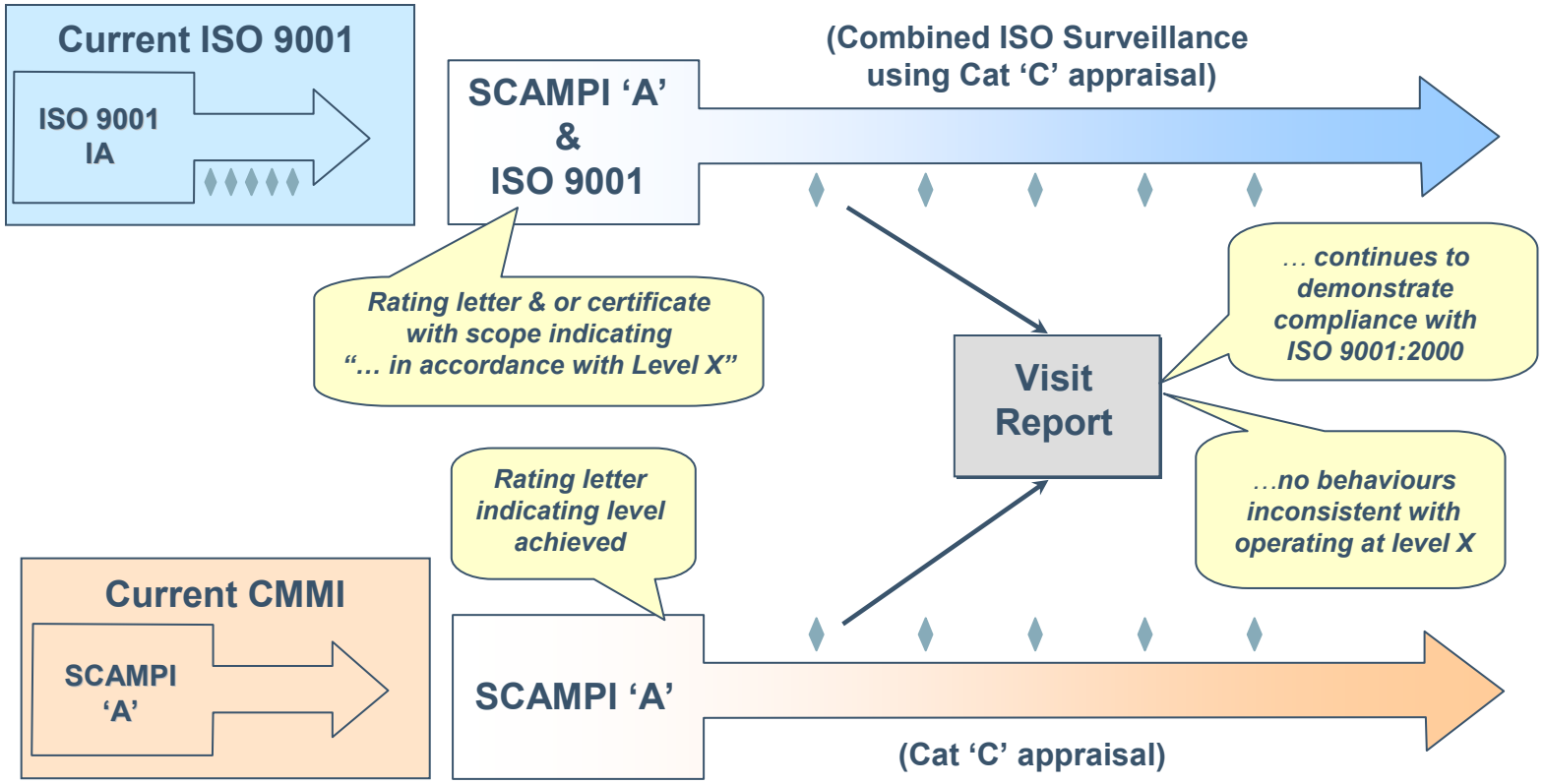
Combined Appraisal Opportunities

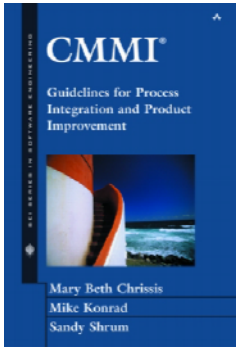


The possible options for assessment and surveillance

Adoption: What Else Is Happening?

The Addison-Wesley SEI Series Book and:

- CMMI Distilled: Second Edition
- Practical Insight into CMMI
- Interpreting the CMMI
- Real Process Improvement Using the CMMI
- Making Process Improvement Work
- CMMI: Un Itinéraire Fléché
- A Guide to the CMMI
- CMMI: A Framework…
- CMMI SCAMPI Distilled
- CMMI Assessments
- Systematic Process Improvement Using ISO 9001:2000 and CMMI
- Balancing Agility and Discipline



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How about SEI Publications?

Technical notes and special reports:

- Interpretive Guidance Project (Two Reports)
- CMMI and Product Line Practices
- CMMI and Earned Value Management
- Interpreting CMMI for Operational Organizations
- Interpreting CMMI for COTS Based Systems
- Interpreting CMMI for Service Organizations
- CMMI Acquisition Module (CMMI-AM) (V1.1)
- Interpreting CMMI for Marketing (in progress)
- Demonstrating the Impact and Benefits of CMMI (and web pages – www.sei.cmu.edu/cmmi/results)

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Performance Results Summary[1]

Improvements	Median	# of data points	Low	High
Cost	38%	14	5%	87%
Schedule	50%	14	20%	90%
Productivity	50%	13	11%	376%
Quality	50%	16	29%	94%
Customer Satisfaction	14%	5	10%	55%
Return on Investment	3 : 1	8	2 : 1	13 : 1

- N = 18, as of 5 March 2005 (out of total N = 26)
- Organizations with results expressed as change over time

CMMI V1.2…and Beyond

Version 1.2 Changes$_1$

- Eliminate concept of advanced practices and common features from text
- Bring ISM into baseline to eliminate
  - separation from SAM
  - supplier sourcing designation
- Recognize, given hardware additions, that providing separate development models no longer useful
  - “single book” approach (CMMI-DEV+IPPD)
- “Not applicable” process areas (PAs) for maturity levels will be significantly constrained (SAM/ISM, IPPD)

Version 1.2 Changes$_2$

- Clarify material based on 1000+ Change Requests (e.g., improve high maturity verbiage, appraisal terminology)
- Two work environment specific practices added:
  - one to OPD for organizational look
  - One to IPM for project specifics
- Glossary improved (e.g., higher level management, bidirectional traceability, subprocess)
- Overview text improved
- IPPD coverage consolidated and simplified

Integrated Product and Process Development (IPPD) Changes

IPPD material is being revised significantly.

- Organization Environment for Integration PA removed and material moved to Organizational Process Definition (OPD) PA.
- Integrated Teaming PA removed and material moved to Integrated Project Management (IPM) PA.
- IPPD goals have been consolidated.
  - "Enable IPPD Management" in OPD
  - "Apply IPPD Principles" in IPM
- Overall material condensed and revised to be more consistent with other PAs.

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SCAMPI A Changes Being Considered for V1.2

Method implementation clarifications

- interviews in “virtual” organizations
- practice characterization rules
- organizational unit sampling

Appraisal Disclosure Statement (ADS) improvements

- reduce redundancy with other appraisal documents
- improve usability for sponsor and government
- require sponsor’s signature on the ADS

Responsibility for determination of “applicability” for SAM/ISM and IPPD

Establish maturity level and capability level shelf life – 3 years

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Published Appraisal Results

List of Published SCAMPI Appraisal Results

ORGANIZATION NAME:	Satyam Computer Services Ltd.
SPONSOR NAME:	Nagaraj Chevour
LEAD APPRAISER NAME:	Raghavan Nandyal
SEI PARTNER:	SITARA Technologies Pvt. Ltd.
APPRAISAL END DATE:	4/3/2004
MATURITY LEVEL ASSIGNED:	5
APPRAISED ORGANIZATIONAL UNIT:	
Entity Name:	SRU GE-GDC
Location(s):	Secunderabad, AP, India
CMMI MODEL USED:	CMMI-SW/IPPD, V1.1, Continuous
APPRAISAL METHOD USED:	SCAMPI v1.1

MODEL SCOPE & CAPABILITY RATINGS ASSIGNED:

Process Management		Project Management		Engineering		Support	
OPF	Capability Level 3	PP	Capability Level 4	REQM	Capability Level 3	CM	Capability Level 3
OPD	Capability Level 3	PMC	Capability Level 4	RD	Capability Level 4	PPQA	Capability Level 3
OT	Capability Level 3	SAM	Not Applicable	TS	Capability Level 5	MA	Capability Level 3
OPP	Capability Level 3	IPM	Capability Level 3	PI	Capability Level 3	DAR	Capability Level 3
OID	Capability Level 3	RSKM	Capability Level 4	VER	Capability Level 5	OEI	Capability Level 3
		IT	Capability Level 3	VAL	Capability Level 3	CAR	Capability Level 3
		ISM	Not Rated				
		QPM	Capability Level 3				

CMMI Training v1.2

Introduction to CMMI (Staged and Continuous)
- editorial update released 9/05
- will be updated for v1.2

Introduction to CMMI, Staged Representation and *Introduction to CMMI, Continuous Representation*
- sunset at the end of 2005

Intermediate Concepts of CMMI
- will be updated for v1.2
- will better prepare students for SCAMPI training

CMMI Instructor Training
- updated earlier this year to reflect "combined" Introduction to CMMI course
- will be updated to reflect v1.2 changes

Beyond V1.2$_1$

Improved architecture will allow post-V1.2 expansion.

- Extensions of the life cycle (Services, Outsourcing/Acquisition) could expand use of a common organizational framework:
  - allows coverage of more of the enterprise or potential partnering organizations
  - adapts model features to fit non-developmental efforts (e.g., CMMI Services, CMMI Acquisition)

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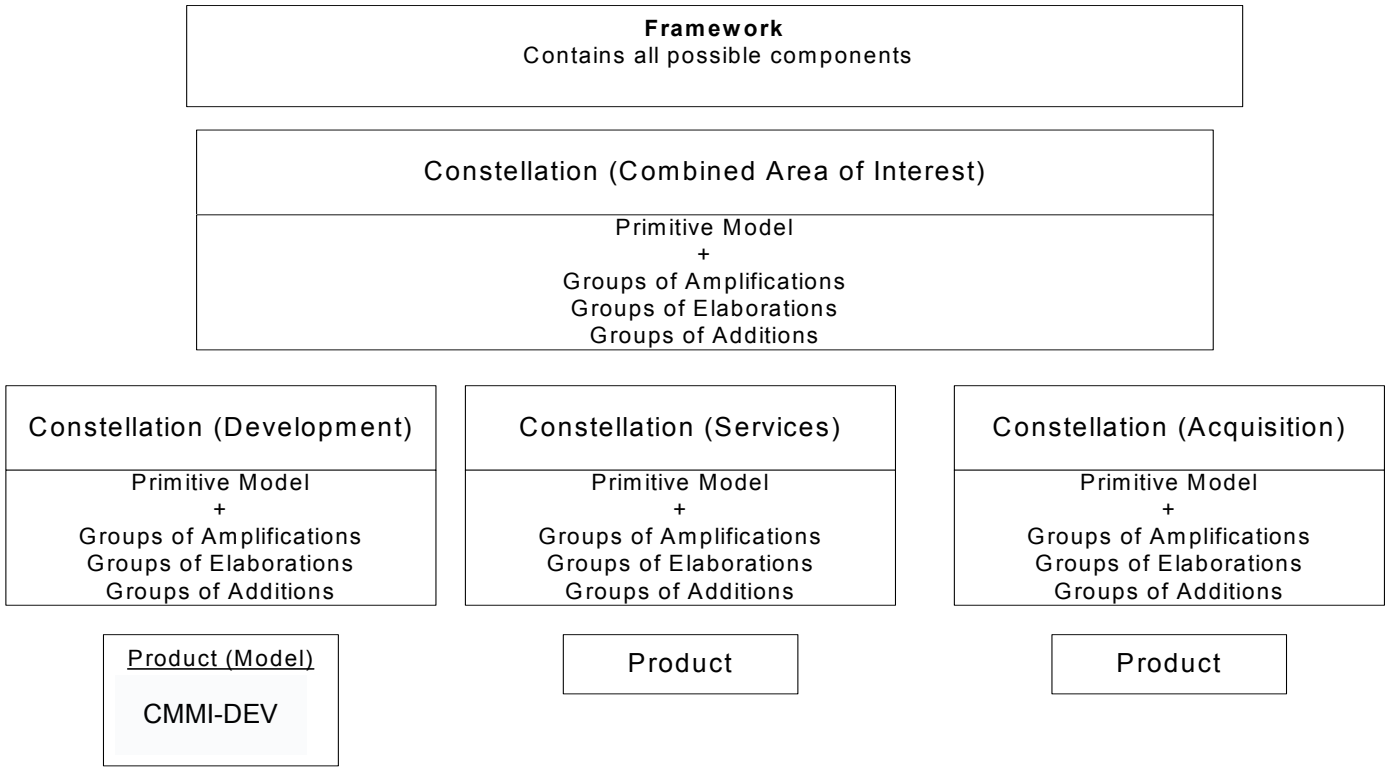
CMMI v1.2 Architectural Framework



Beyond V1.2$_2$

First two constellations, CMMI Services and CMMI Acquisition, have been “commissioned” by CMMI Steering Group. Development will be in parallel with V1.2 effort; publication sequenced after V1.2 rollout.

Northrop-Grumman is leading industry group for CMMI Services.

- Initial focus will be for organizations providing “DoD services” as well as internal IT:
  - System maintenance
  - Network Management, IT Services
  - IV&V

Beyond V1.2$_3$

SEI is coordinating requirements elicitation for CMMI Acquisition.

- Will build upon existing CMMI Acquisition Module and General Motors IT Sourcing expansion
- Will add government perspectives from both DoD and civil agencies

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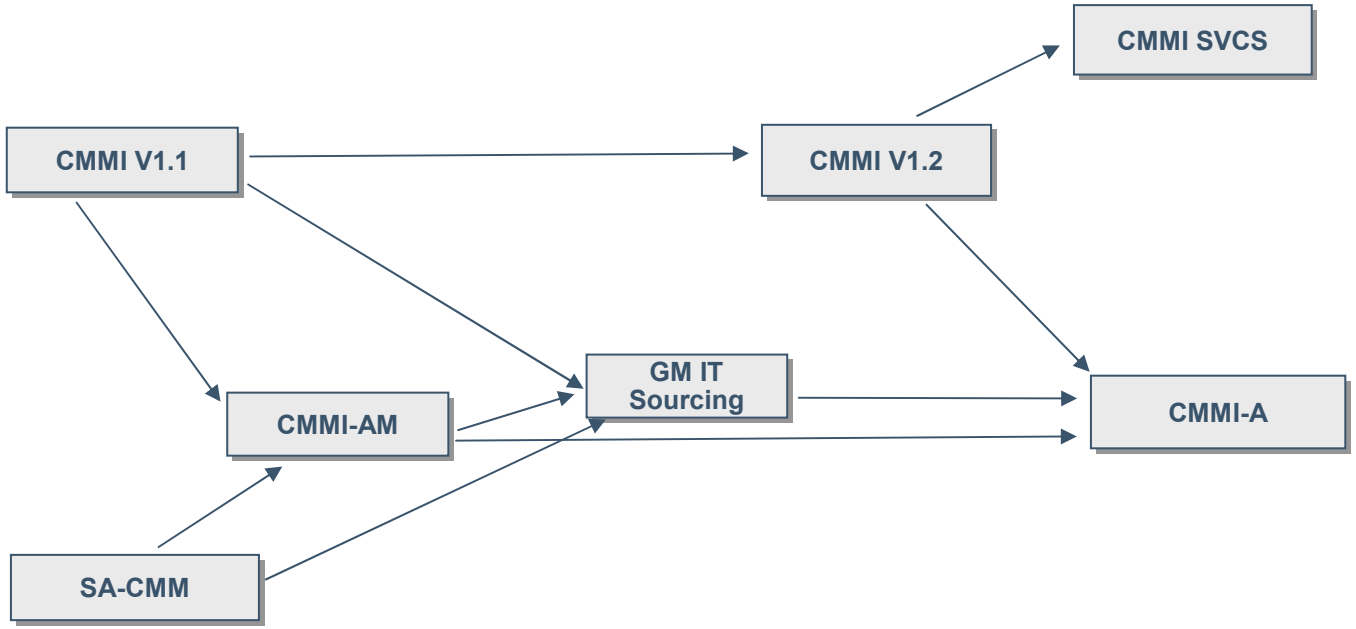
Planned Sequence of Models



CMMI V1.2…and Beyond …the details

The Steps

A long-term strategy, the V1.2 A-Spec, and the upgrade criteria approved by the Steering Group.

The teams review the Change Requests to identify possible Change Packages (CP) for a V1.2 of model, training, and/or method.

Change Control Boards determine which CPs, if any, should be accepted (stability goal remains).

Implementation Packages developed to create a “beta” for piloting (model, method, and training)

Piloting will be conducted in FY 06.

V1.2, incorporating piloting feedback, will be released in FY 06.

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CCB Membership (for content changes)

Mike Konrad	SEI
Mike Phillips	SEI
Roger Bate	SEI
Bob Rassa	Raytheon
Bill Schoening	Boeing & INCOSE
Nils Jacobsen	Motorola
Karen Richter	OSD
Warren Schwomeyer	Lockheed Martin
Tom Bernard	USAF
Mary Beth Chrissis	SEI
Bill Peterson	SEI
Rick Hefner	Northrop Grumman
Stephen Gristock	JP Morgan Chase
Gary Wolf	Raytheon
Paul Croll	CSC
Shane Atkinson	CMMI Partner
Millee Sapp	USAF
Katie Smith	USNavy
Larry Osiecki	USArmy
Sandy Shrum	SEI
Rhonda Brown	SEI

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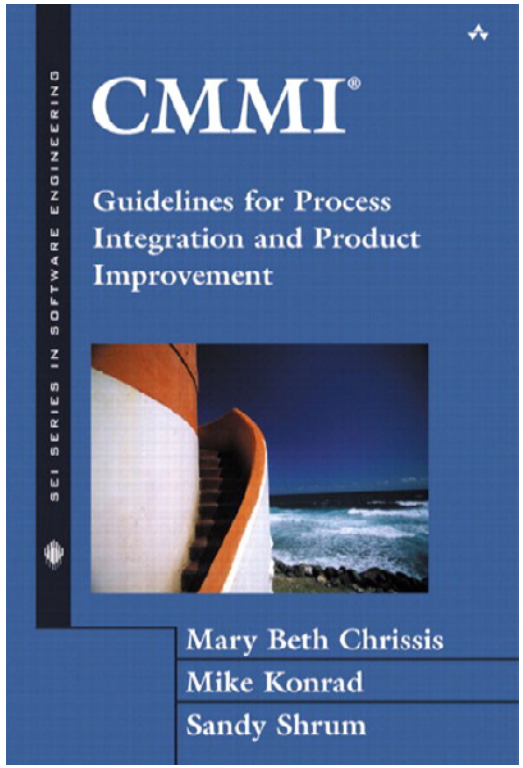
The Model Baseline for V1.2

Textbook:

CMMI: Guidelines for Process Integration and Product Improvement

Continuing the “Single model, single course” strategy

V1.2 release will be as a Technical Report



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Model Activities: Version 1.2

Model development team
- completing implementation packages
- model baseline redline

Configuration Control Board
- actively reviewing changes

Pilot planning underway

Expected release of v1.2 is summer 2006

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Major Themes

Reduce size/complexity

Increase coverage

- in existing elements
- discipline additions

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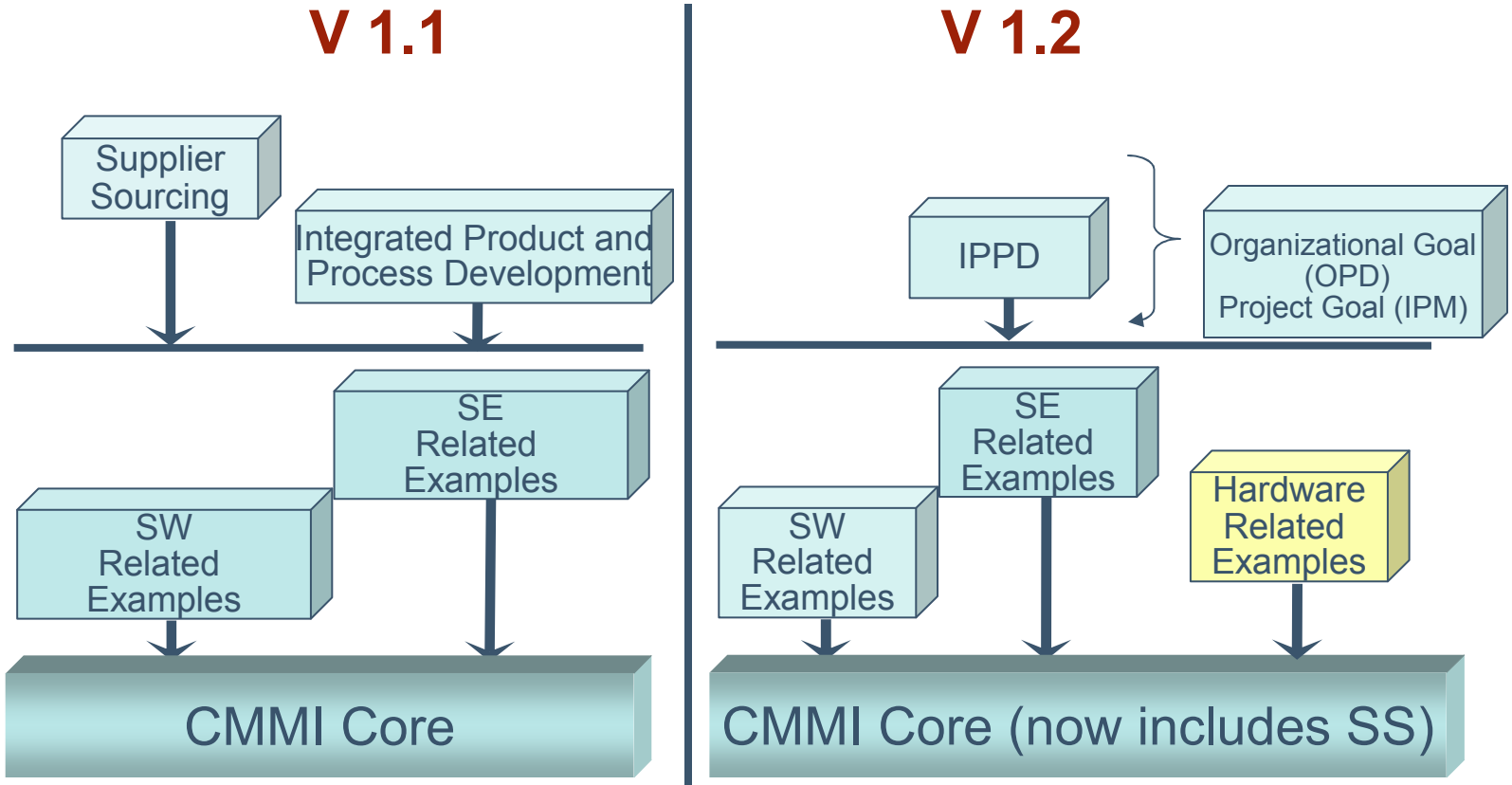
Reduce size and complexity

Single Technical Report, not 8 as in V1.1
Common features and advanced practice distinctions eliminated
Two process areas consolidated into other PA's
One "addition" or "discipline," Supplier Sourcing, eliminated as a separable "model."
Discipline distinctions reduced in amplifications

CMMI Model Combinations



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Example Hardware Amplification

Technical Solution

SP 2.1 Design the Product or Product Component
Develop a design for the product or product component.

For Hardware Engineering
Detailed design is focused on product development of electronic, mechanical, electro-optical, and other hardware products and their components. Electrical schematics and interconnection diagrams are developed, mechanical and optical assembly models are generated, and fabrication and assembly processes are developed.

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Version 1.2 Changes

Amplifications improved

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Amplifications Improved

Proposed Conceptual Solution: “Review amplifications and where appropriate modify the amplification to provide more insight into the discipline that is being described. For information that applies more generally and is captured as an amplification, move the information into a "note" rather than identifying it as an amplification.”

From Technical Solution V1.1

For Systems Engineering
Examples of criteria include the following:
- *Maintainability*
- *Reliability*
- *Safety*

Amplification removed from Technical Solution V1.2 since it is not unique to Systems Engineering

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Version 1.2 Changes

Common features and advanced practices eliminated

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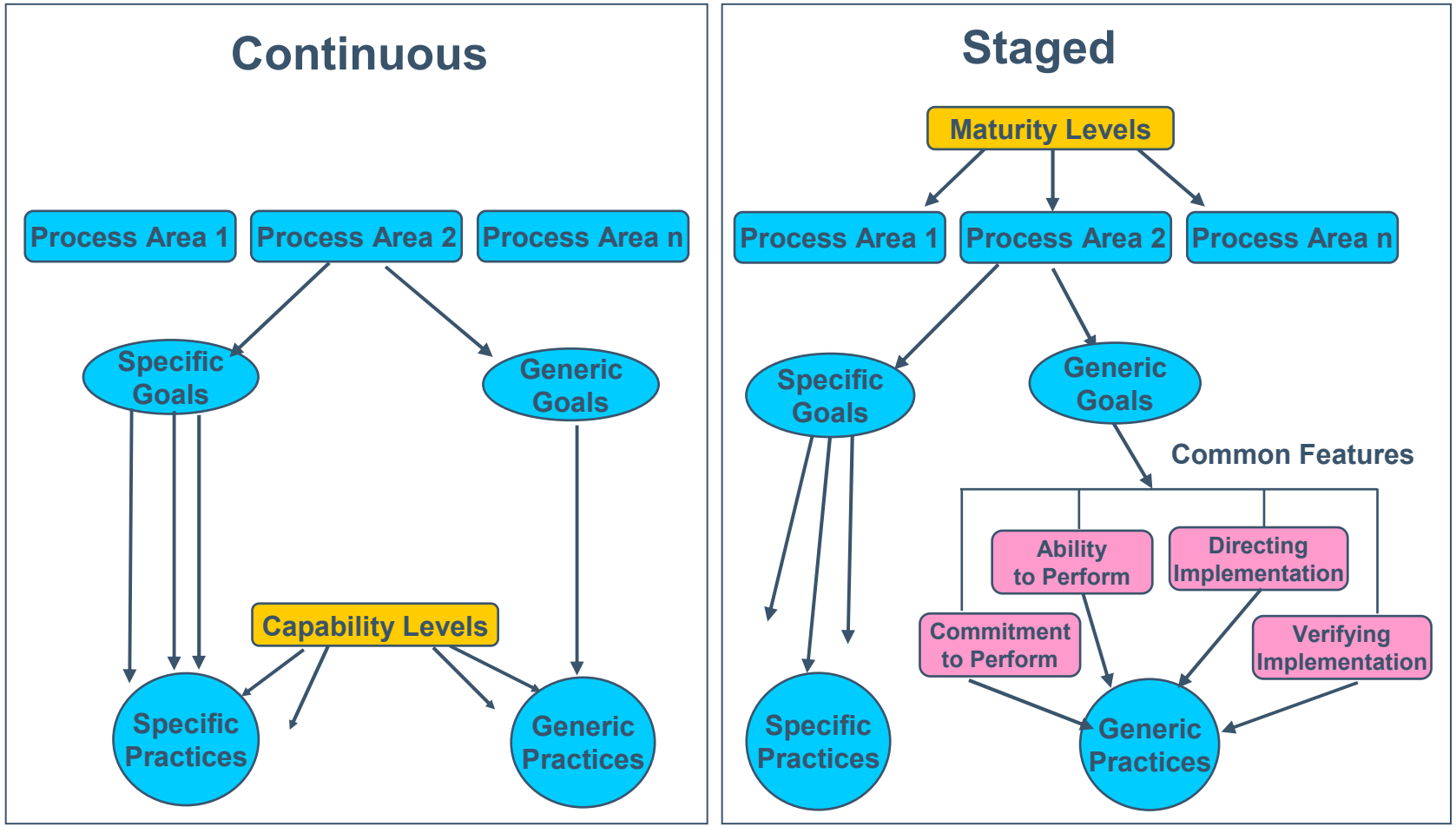
CMMI Model Structure (V1.1)



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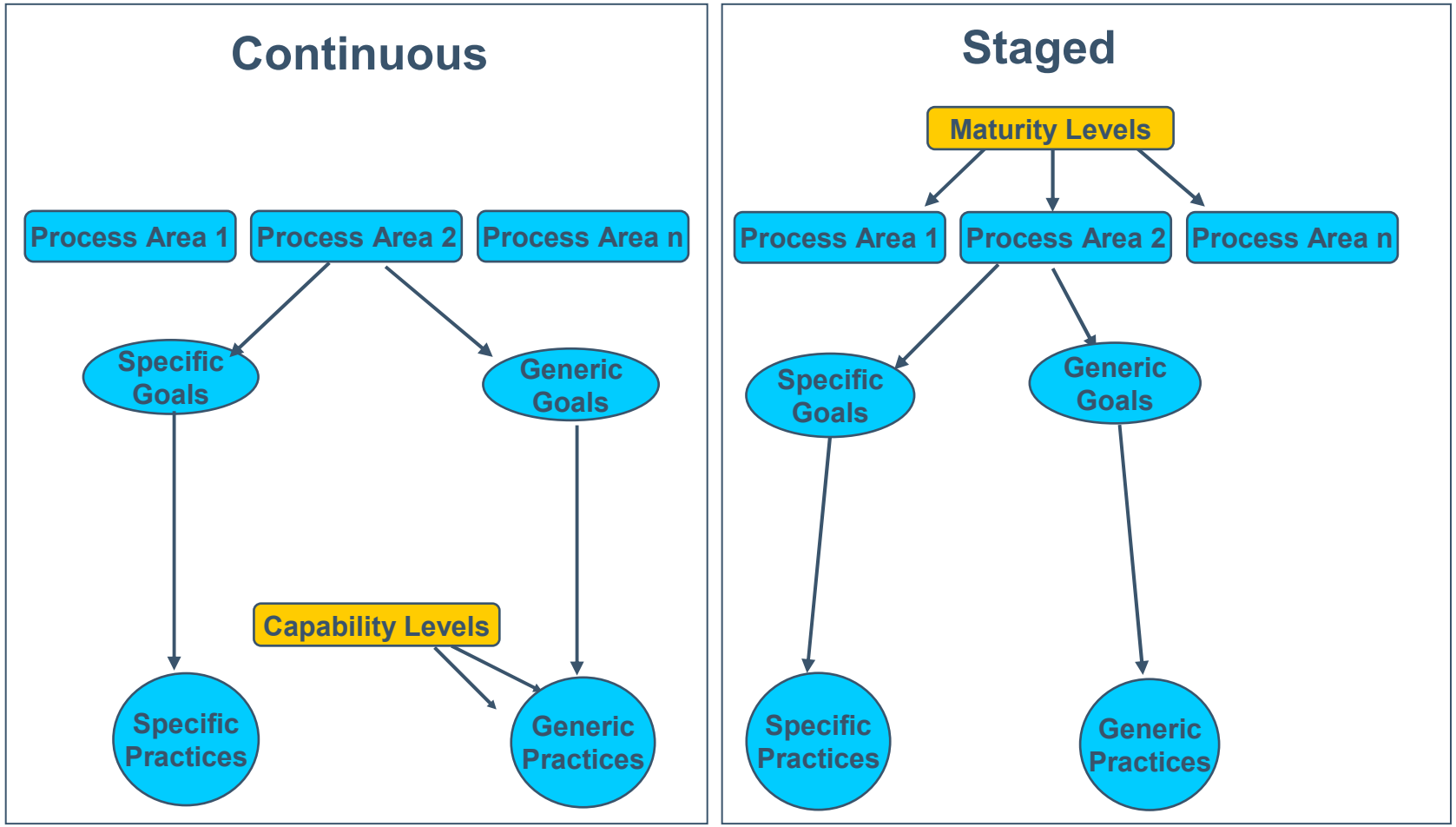
CMMI Model Structure (V1.2)



Requirements Management

Specific Goal	Specific Practice
Manage Requirements	1.1 – Obtain an Understanding of Requirements 1.2 – Obtain Commitment to Requirements 1.3 – Manage Requirements Changes 1.4 – Maintain Bidirectional Traceability of Requirements 1.5 – Identify Inconsistencies Between Project Work and Requirements

v1.2 SP 1.4 practice statement now reads, “Maintain bidirectional traceability among the requirements and work products.” Project plans are no longer mentioned in this SP statement.
Bidirectional Traceability description is improved in the notes and Glossary.

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Requirements Development -1

Specific Goal	Specific Practice
Develop Customer Requirements	**1.1 – Elicit Needs** **1.2 – Develop the Customer Requirements**
Develop Product Requirements	**2.1 – Establish Product and Product-Component Requirements** **2.2 – Allocate Product-Component Requirements** **2.3 – Identify Interface Requirements**

Base practice “Collect Stakeholder Needs” is eliminated.
Informative materials are added to SP1.1 to address standards and policies.

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Requirements Development -2

Specific Goal	Specific Practice
Analyze and Validate Requirements	**3.1 – Establish Operational Concepts and Scenarios** **3.2 – Establish a Definition of Required Functionality** **3.3 – Analyze Requirements** **3.4 – Analyze Requirements to Achieve Balance** **3.5 – Validate Requirements with Comprehensive Methods**

"Evolve Operational Concepts and Scenarios" (from TS SP1.1 in v1.1) is now part of SP 3.1.
The base practice "Validate Requirements" has been eliminated.

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Technical Solutions -1

Specific Goal	Specific Practice
Select Product-Component Solutions	**1.1 – Develop Detailed Alternative Solutions and Selection Criteria**
	1.2 – Select Product-Component Solutions

v1.1 SP 1.1 “Evolve Operational Concepts and Scenarios” is now part of RD SP 3.1.
Base practice “Develop Alternative Solutions and Selection Criteria” is eliminated.
“Identify candidate COTS products that satisfy requirements” is a new subpractice under SP1.1.

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Technical Solutions -2

Specific Goal	Specific Practice
Develop the Design	**2.1 – Design the Product or Product Component** **2.2 – Establish a Technical Data Package** **2.3 – Design Interfaces Using Criteria** **2.4 – Perform Make, Buy, or Reuse Analyses**
Implement the Product Design	**3.1 – Implement the Design** **3.2 – Develop Product Support Documentation**

Base practice “Establish Interface Descriptions” is eliminated.

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Product Integration -1

Specific Goal	Specific Practice
Prepare for Product Integration	**1.1 – Determine Integration Sequence**
	1.2 – Establish the Product Integration Environment
	1.3 – Establish Product Integration Procedures and Criteria
Ensure Interface Compatibility	**2.1 – Review Interface Descriptions for Completeness**
	2.2 – Manage Interfaces

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Product Integration -2

Specific Goal	Specific Practice
Assemble Product Components and Deliver the Product	**3.1 – Confirm Readiness of Product Components for Integration**
	3.2 – Assemble Product Components
	3.3 – Evaluate Assembled Product Components
	3.4 – Package and Deliver the Product or Product Component

Verification -1

Specific Goal	Specific Practice
Prepare for Verification	**1.1 – Select Work Products for Verification** **1.2 – Establish the Verification Environment** **1.3 – Establish Verification Procedures and Criteria**
Perform Peer Reviews	**2.1 – Prepare for Peer Reviews** **2.2 – Conduct Peer Reviews** **2.3 – Analyze Peer Review Data**

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Verification -2

Specific Goal	Specific Practice
Verify Selected Work Products	**3.1 – Perform Verification** **3.2 – Analyze Verification Results and Identify Corrective Action**

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Validation

Specific Goal	Specific Practice
Prepare for Validation	**1.1 – Select Products for Validation** **1.2 – Establish the Validation Environment** **1.3 – Establish Validation Procedures and Criteria**
Validate Product or Product Components	**2.1 – Perform Validation** **2.2 – Analyze Validation Results**

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Version 1.2 Addition – Work Environment Coverage

Work Environment material added to OPD and IPM

- OPD, SP 1.6: Establish Work Environment Standards
- IPM, SP 1.3: Establish the Project's Work Environment

Integrated Product and Process Development (IPPD) Changes

IPPD material is being revised significantly

- Organization Environment for Integration PA removed and material moved to Organizational Process Definition (OPD) PA
- Integrated Teaming PA removed and material moved to Integrated Project Management (IPM) PA
- IPPD goals in the IPM PA have been consolidated
  - Goal 3: Apply IPPD Principles
- Overall material condensed and revised to be more consistent with other PAs

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Organizational Process Definition

V1.1

SG 1 – Establish Organizational Process Assets

1.1 – Establish Standard Processes

1.2 – Establish Life-Cycle Model Descriptions

1.3 – Establish Tailoring Criteria and Guidelines

1.4 – Establish the Organization's Measurement Repository

1.5 – Establish the Organization's Process

V1.2

SG1 – Establish Organizational Process Assets

1.1 – Establish Standard Processes

1.2 – Establish Life-Cycle Model Descriptions

1.3 – Establish Tailoring Criteria and Guidelines

1.4 – Establish the Organization's Measurement Repository

1.5 – Establish the Organization's Process

1.6 – Establish Work Environment Standards

New

SG2 – Enable IPPD Management

2.1 – Establish Empowerment Mechanisms

2.2 – Establish Rules and Guidelines for Integrated Teams

2.3 – Establish Guidelines to Balance Team and Home Organization Responsibilities

Consolidated from V1.1 OEI PA

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Organizational Process Definition -1

Specific Goal	Specific Practice
Establish Organizational Process Assets	**1.1 – Establish Standard Processes**
	1.2 – Establish Life-Cycle Model Descriptions
	1.3 – Establish Tailoring Criteria and Guidelines
	1.4 – Establish the Organization's Measurement Repository
	1.5 – Establish the Organization's Process Asset Library
	New **1.6 – Establish Work Environment Standards**

Organizational Process Definition -2

IPPD Specific Goal	Specific Practice
Enable IPPD Management	**2.1 – Establish Empowerment Mechanisms**
	2.2 – Establish Rules and Guidelines for Integrated Teams
	2.3 – Establish Guidelines to Balance Team and Home Organization Responsibilities

NOTE: This Specific Goal and its associated Specific Practices are part of IPPD Addition.

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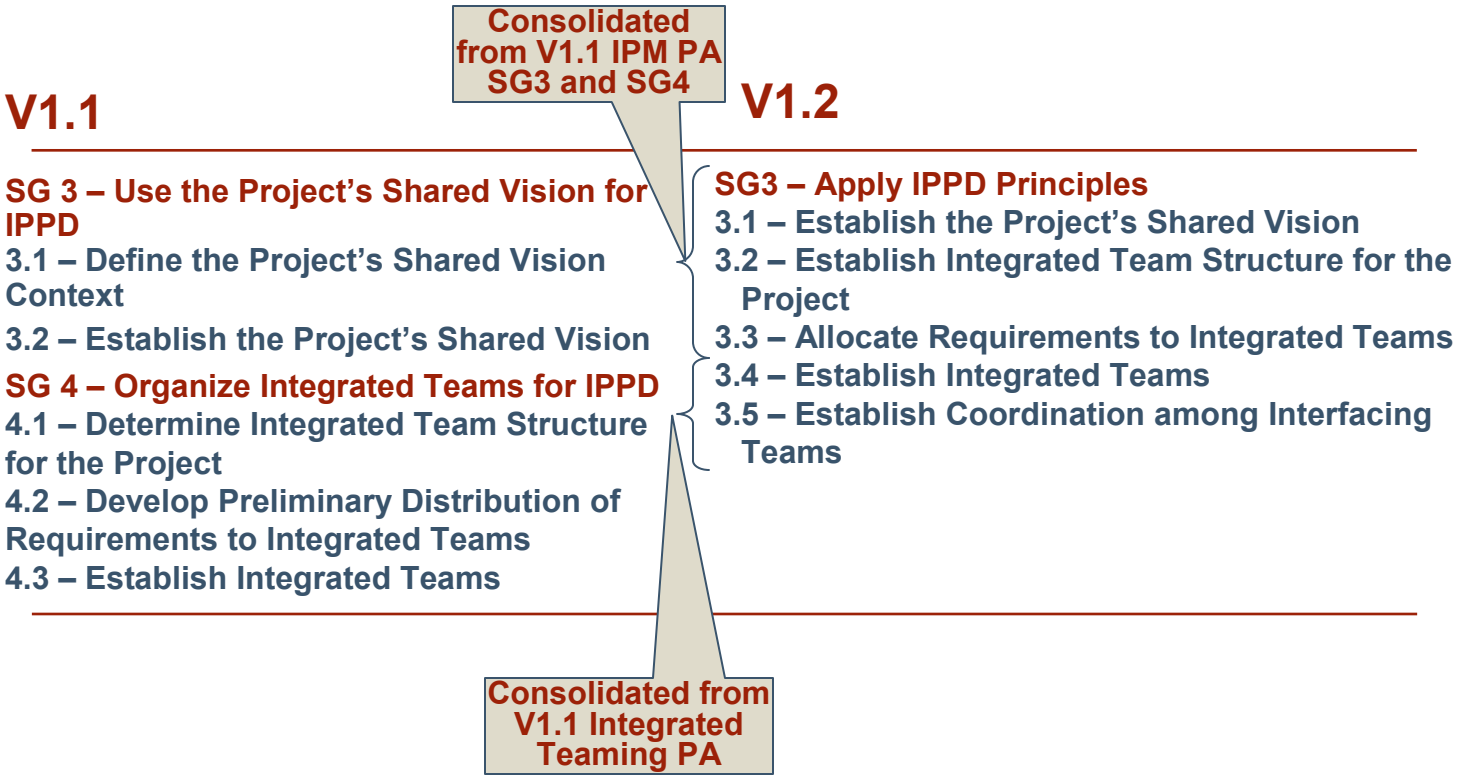
Integrated Project Management -1

V1.1	V1.2
SG1 – Use the Project's Defined Process	**SG1 – Use the Project's Defined Process**
1.1 – Establish the Project's Defined Process	1.1 – Establish the Project's Defined Process
1.2 – Use Organizational Process Assets for Planning Project Activities	1.2 – Use Organizational Process Assets for Planning Project Activities
1.3 – Integrate Plans	New: 1.3 – Establish the Project's Work Environment
1.4 – Manage the Project Using the Integrated Plans	1.4 – Integrate Plans
1.5 - Contribute to the Organizational Process Assets	1.5 – Manage the Project Using the Integrated Plans
SG2 – Coordinate and Collaborate with Relevant Stakeholder	1.6 - Contribute to the Organizational Process Assets
2.1 – Manage Stakeholder Involvement	**SG2 – Coordinate and Collaborate with Relevant Stakeholder**
2.2 – Manage Dependencies	2.1 – Manage Stakeholder Involvement
2.3 – Resolve Coordination Issues	2.2 – Manage Dependencies
	2.3 – Resolve Coordination Issues

Integrated Project Management -2



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Integrated Project Management -1

Specific Goal	Specific Practice
Use the Project's Defined Process	**1.1 – Establish the Project's Defined Process**
	1.2 – Use Organizational Process Assets for Planning Project Activities
	New **1.3 – Establish the Project's Work Environment**
	1.4 – Integrate Plans
	1.5 – Manage the Project Using the Integrated Plans
	1.6 - Contribute to the Organizational Process Assets

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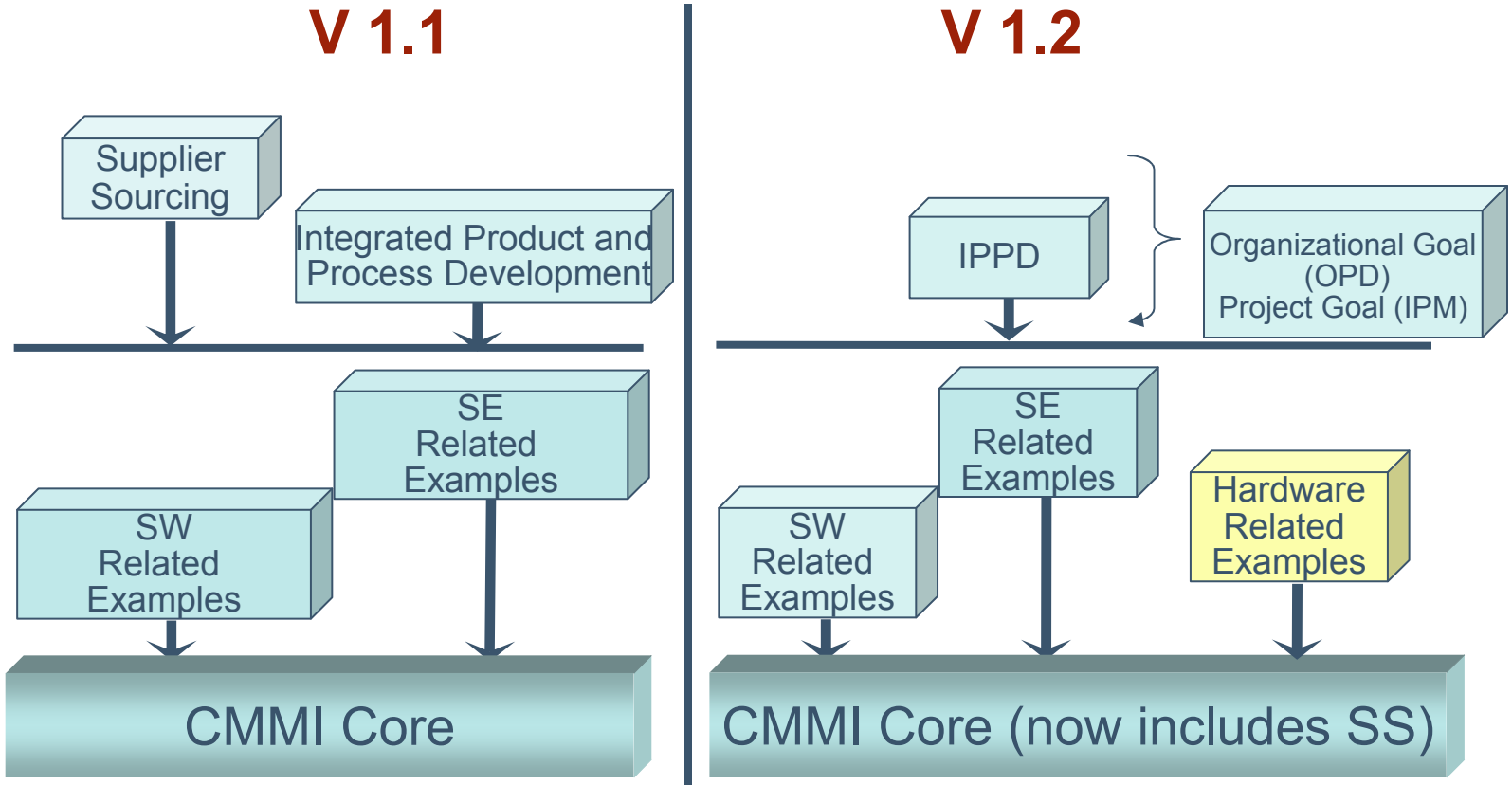
Integrated Project Management -2

Specific Goal	Specific Practice
Coordinate and Collaborate with Relevant Stakeholder	**2.1 – Manage Stakeholder Involvement** **2.2 – Manage Dependencies** **2.3 – Resolve Coordination Issues**
Apply IPPD Principles	**3.1 – Establish the Project's Shared Vision** **3.2 – Establish Integrated Team Structure for the Project** **3.3 – Allocate Requirements to Integrated Teams** **3.4 – Establish Integrated Teams** **3.5 Establish Coordination among Interfacing Teams**

The Specific Goal, "Apply IPPD Principles," and the associated Specific Practices are part of IPPD Addition.

CMMI Model Combinations



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Other Specific Practice Statement Changes

Revised Practices

- OID, SP 1.4: Select process and technology improvements [not "improvement proposals"] for deployment across the organization
- OPP, SP 1.1: Select the processes or subprocesses [not "process elements"] in the organization's set of standard processes that are to be included in the organization's process performance analysis

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Other Informative Changes --

High capability practice elaborations

- Improvements being created for more significant process areas (engineering, project management)
- Continuous equivalent appraisals have shown the need…

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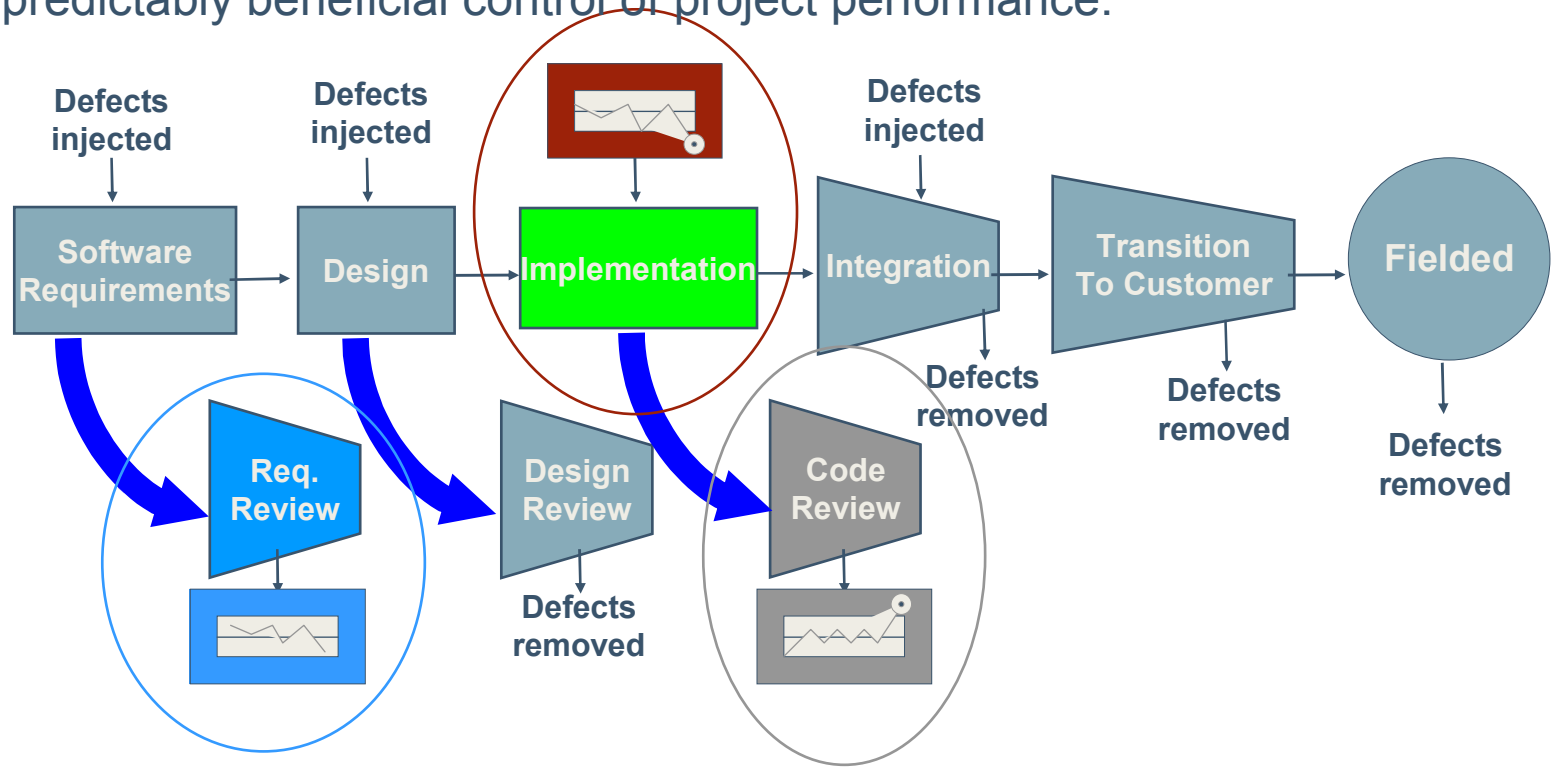
Select for Statistical Management

High-leverage elements of the constructed process are identified to provide strategic management options in order to support timely and predictably beneficial control of project performance.



Name	Abbr	ML	CL1	CL2	CL3	CL4	CL5
Requirements Management	REQM	2	Target Profile 2				
Measurement and Analysis	MA	2					
Project Monitoring and Control	PMC	2					
Project Planning	PP	2					
Process and Product Quality Assurance	PPQA	2					
Supplier Agreement Management	SAM	2					
Configuration Management	CM	2					
Decision Analysis and Resolution	DAR	3			Target Profile 3		
Product Integration	PI	3					
Requirements Development	RD	3					
Technical Solution	TS	3					
Validation	VAL	3					
Verification	VER	3					
Organizational Process Definition	OPD	3					
Organizational Process Focus	OPF	3					
Integrated Project Management (IPPD)	IPM	3					
Risk Management	RSKM	3					
Integrated Supplier Management	ISM	3					
Organizational Training	OT	3					
Integrated Teaming	IT	3					
Organizational Environment for Integration	OEI	3					
Organizational Process Performance	OPP	4	Target Profile 4				
Quantitative Project Management	QPM	4					
Organizational Innovation and Deployment	OID	5	Target Profile 5				
Causal Analysis and Resolution	CAR	5					

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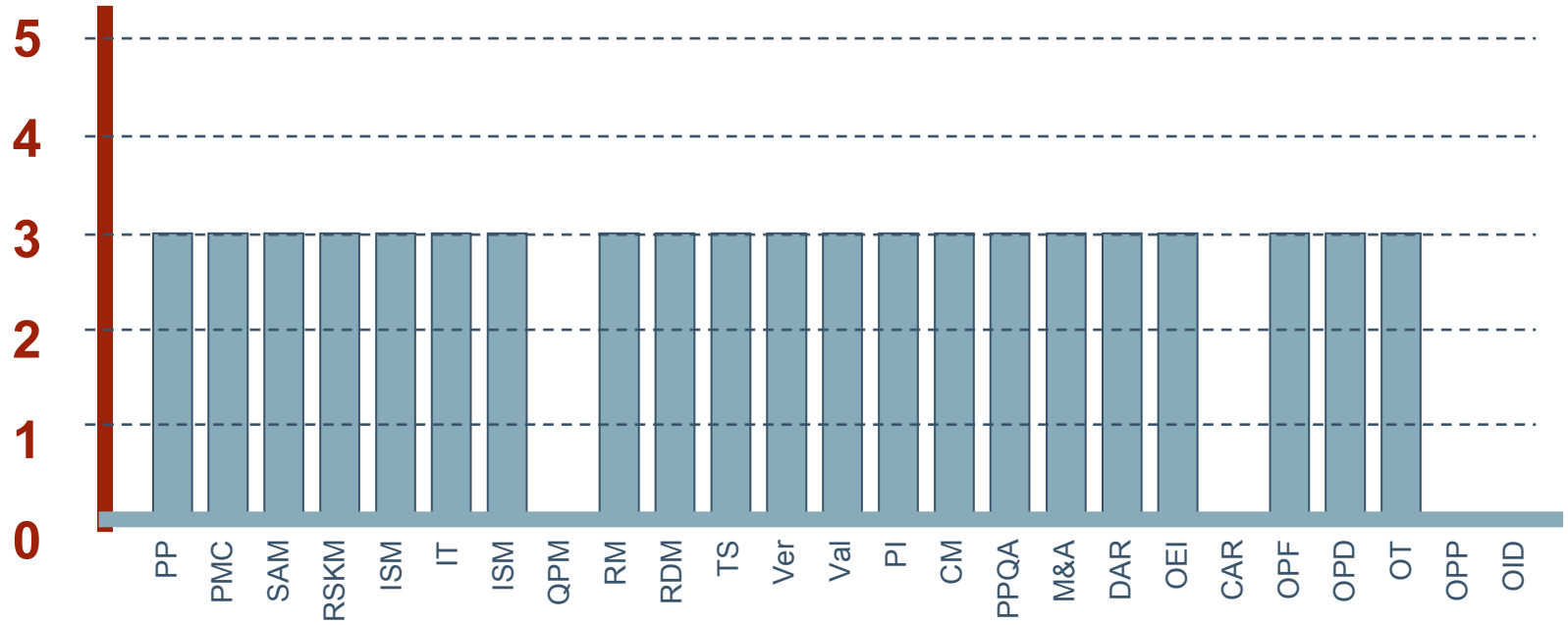
Example – Maturity Level 3

Equivalent to CMMI-SE/SW/IPPD/SS ML 3



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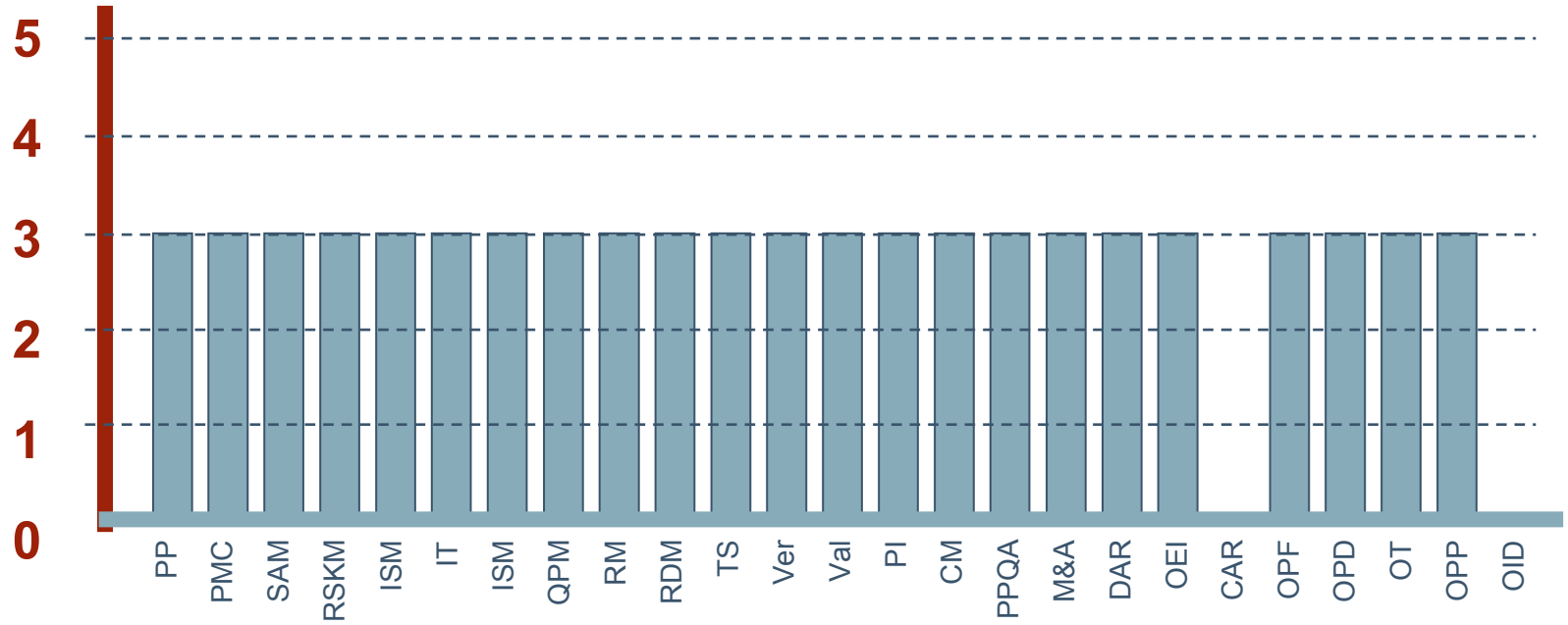
Example – Maturity Level 4

Equivalent to CMMI-SE/SW/IPPD/SS ML 4



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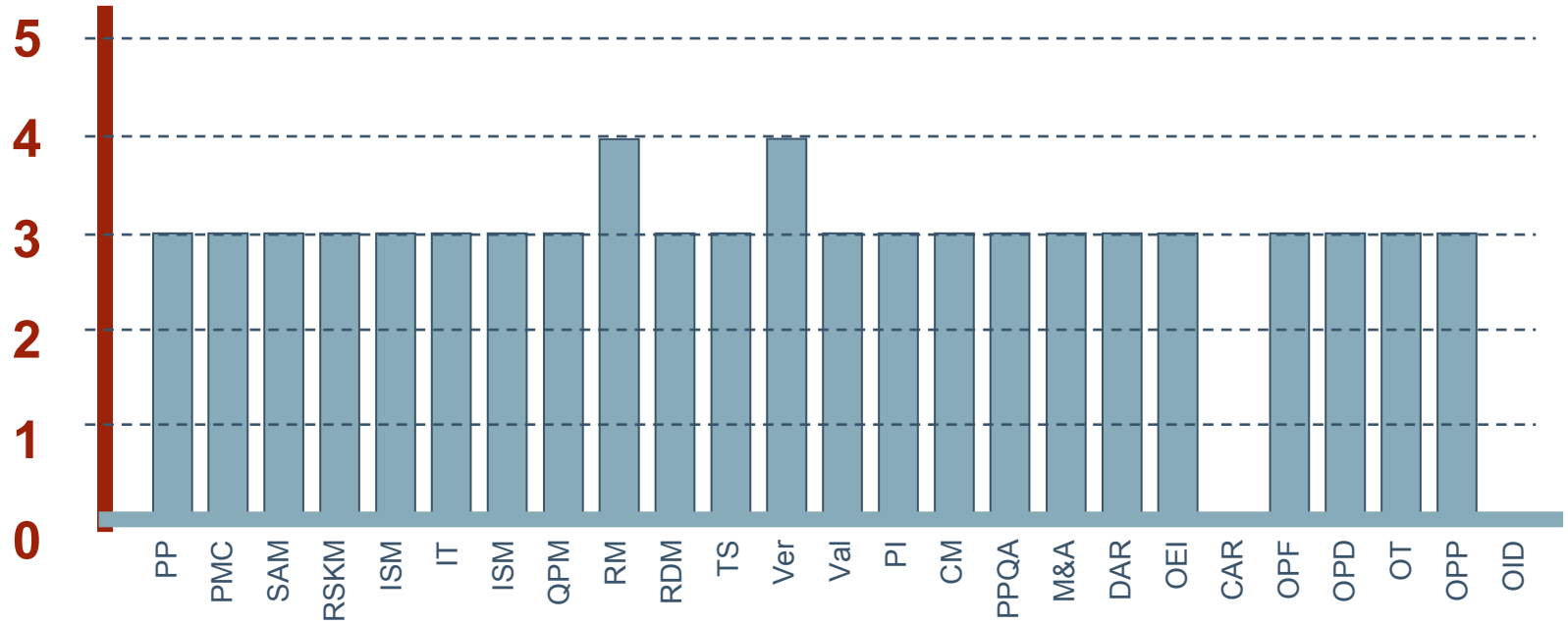
Example – Maturity Level 4

Equivalent to CMMI-SE/SW/IPPD/SS ML 4



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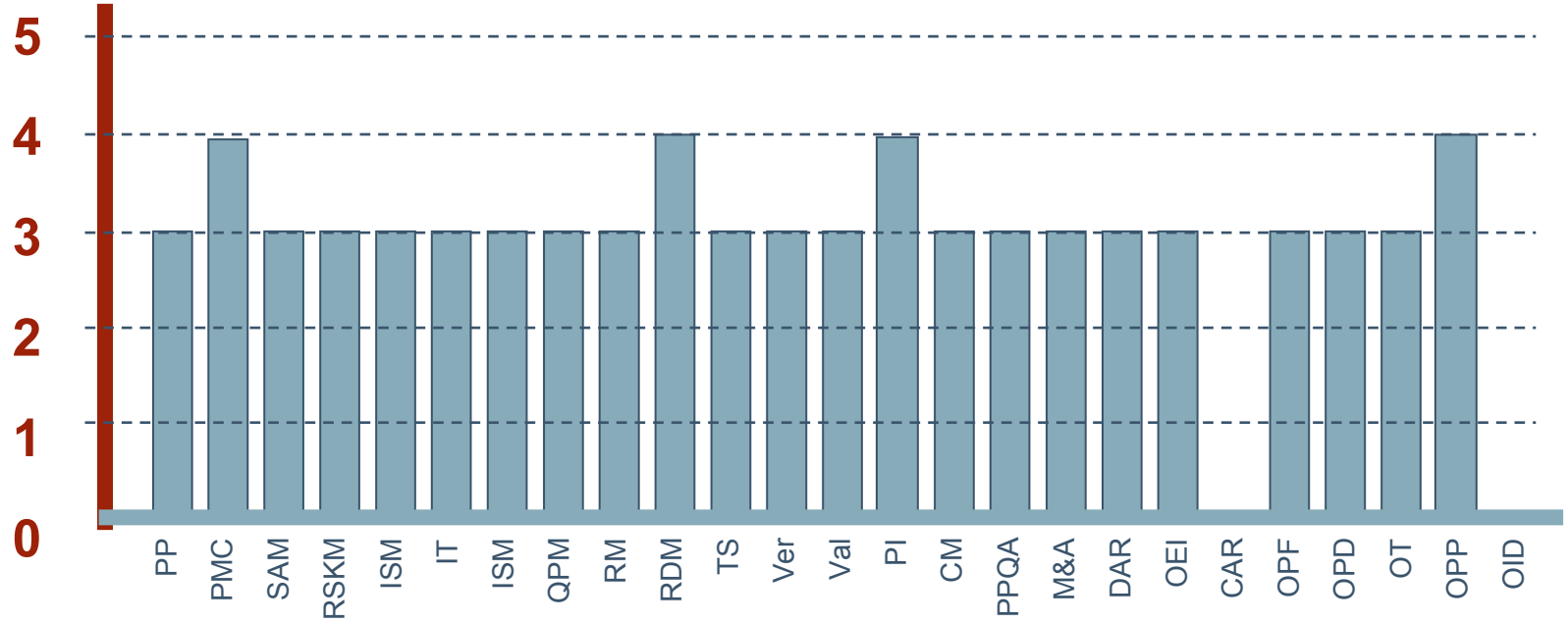
Example – Maturity Level 4

Equivalent to CMMI-SE/SW/IPPD/SS ML 4

Plus 8,388,607 other combinations!!



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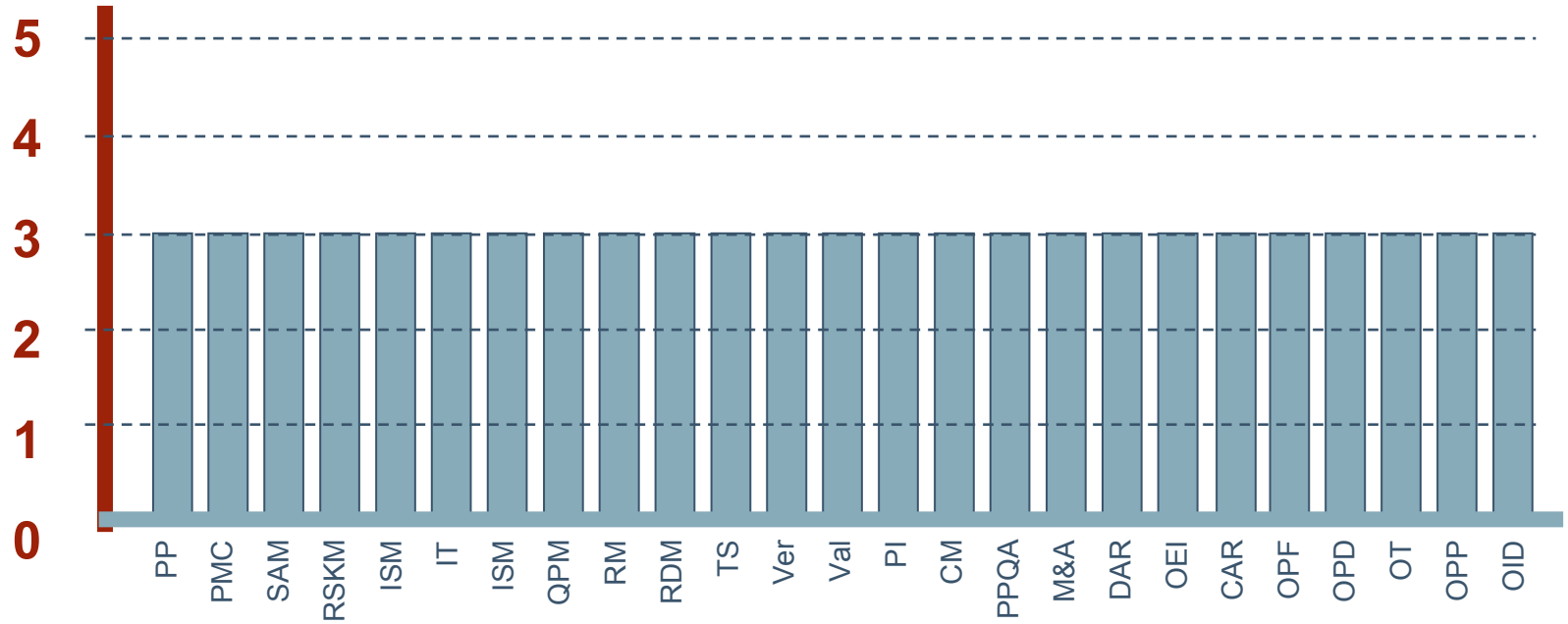
Example – Maturity Level 5

Equivalent to CMMI-SE/SW/IPPD/SS ML 5



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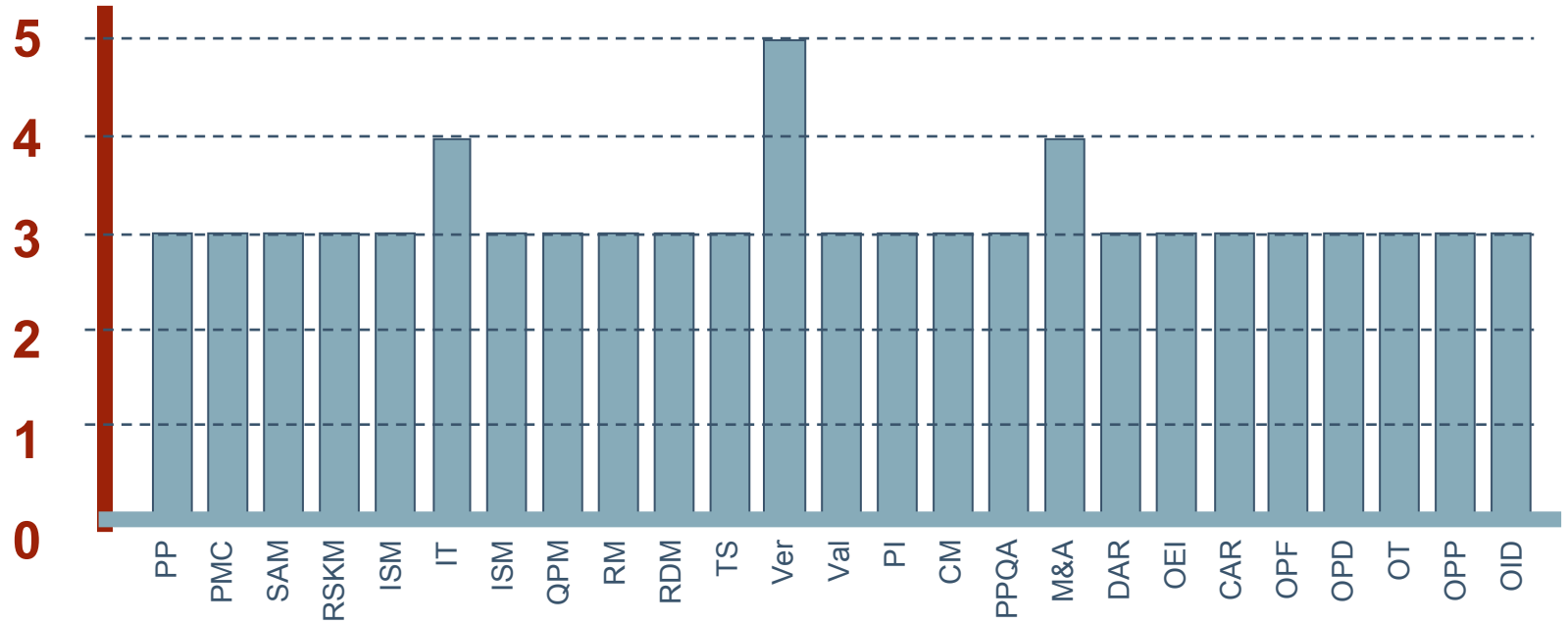
Example – Maturity Level 5

Equivalent to CMMI-SE/SW/IPPD/SS ML 5



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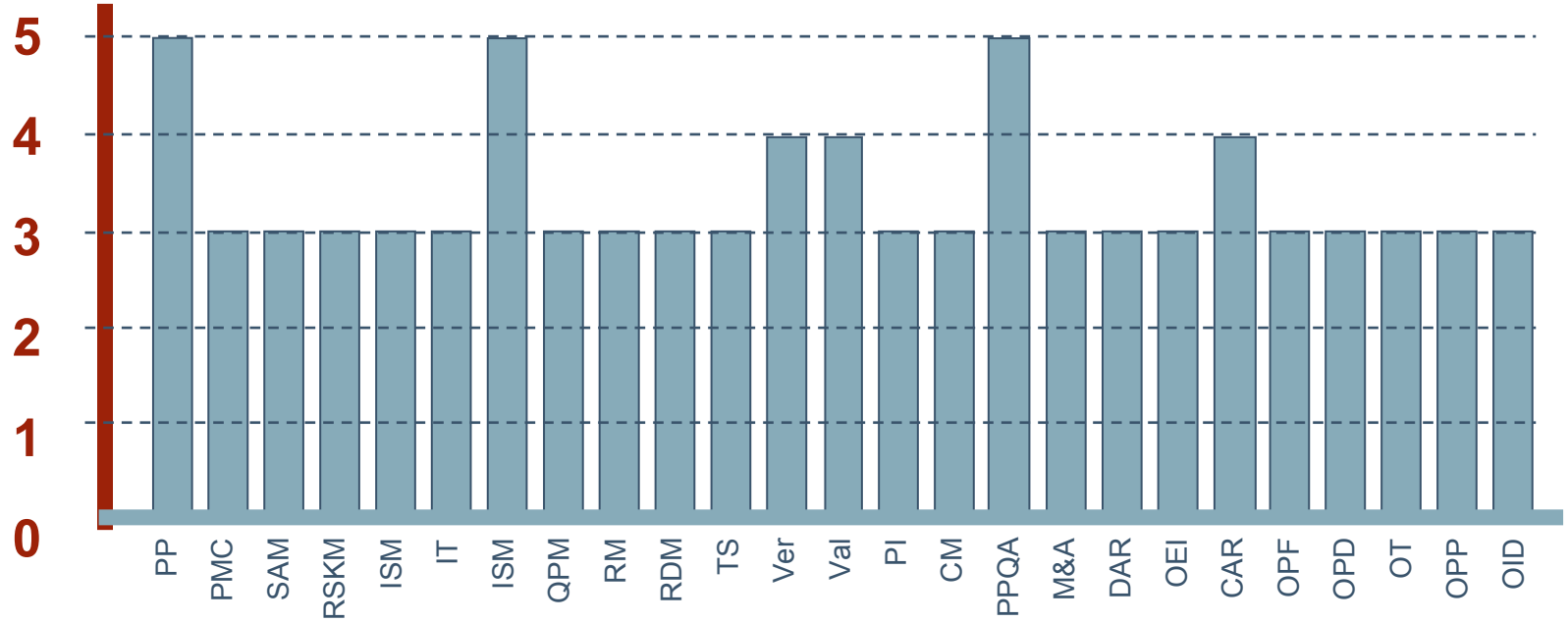
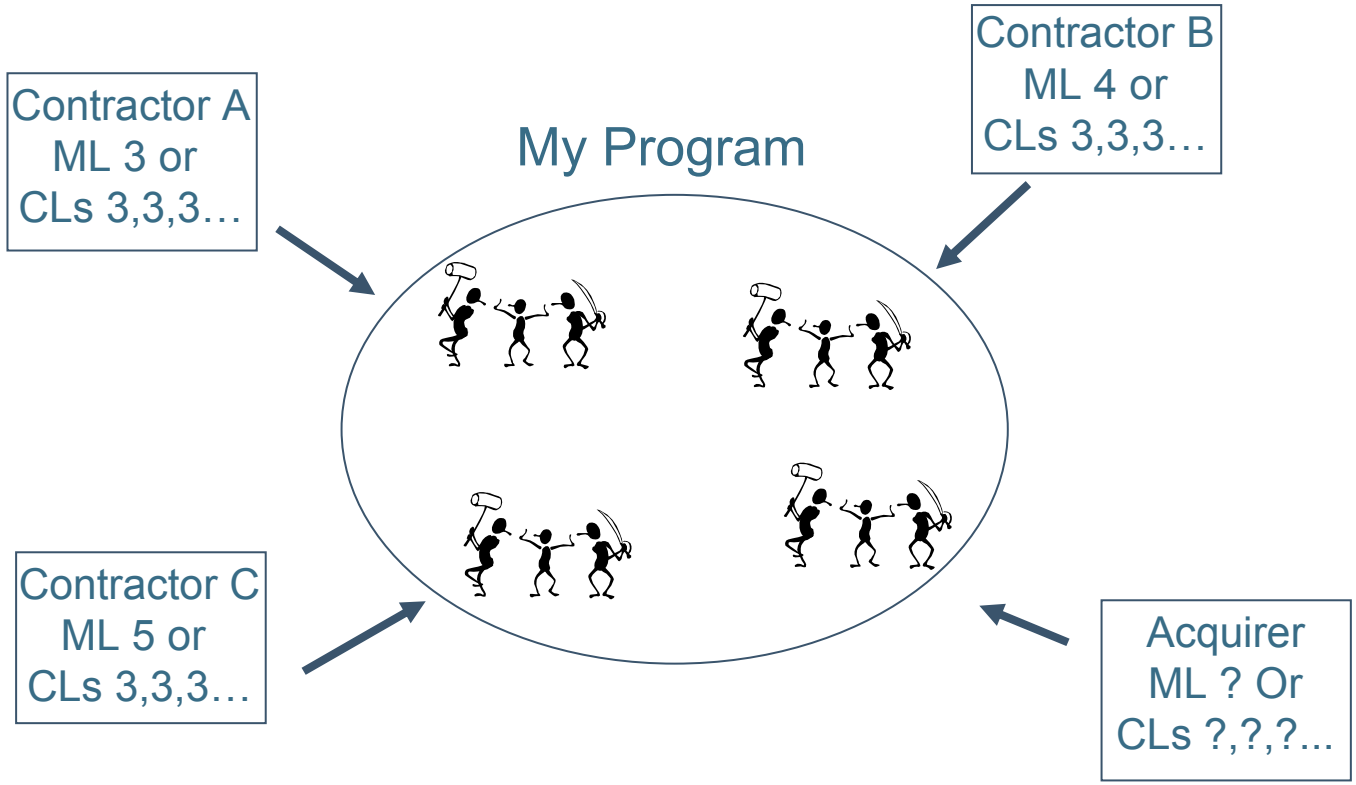
Example – Maturity Level 5

Equivalent to CMMI-SE/SW/IPPD/SS ML 5

Plus 847,288,609,442 other combinations!!



Additional Complexity



CMMI Math: 3 + 4 + 5 + ? = ?

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Version 1.2 Changes

"Not applicable" process areas (PAs) for maturity levels will be significantly constrained

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The "Not Applicable" Dilemma

The Problem

The significance of an organization being appraised to be at Maturity Level x is affected by the model scope used for the appraisal. Process areas can be classified as not applicable.

The Solution

The model core is now defined to include all components of the model except the IPPD components. For a staged appraisal only Supplier Agreement Management and Integrated Supplier Management can be classified as not applicable in the core and only then after careful analysis.

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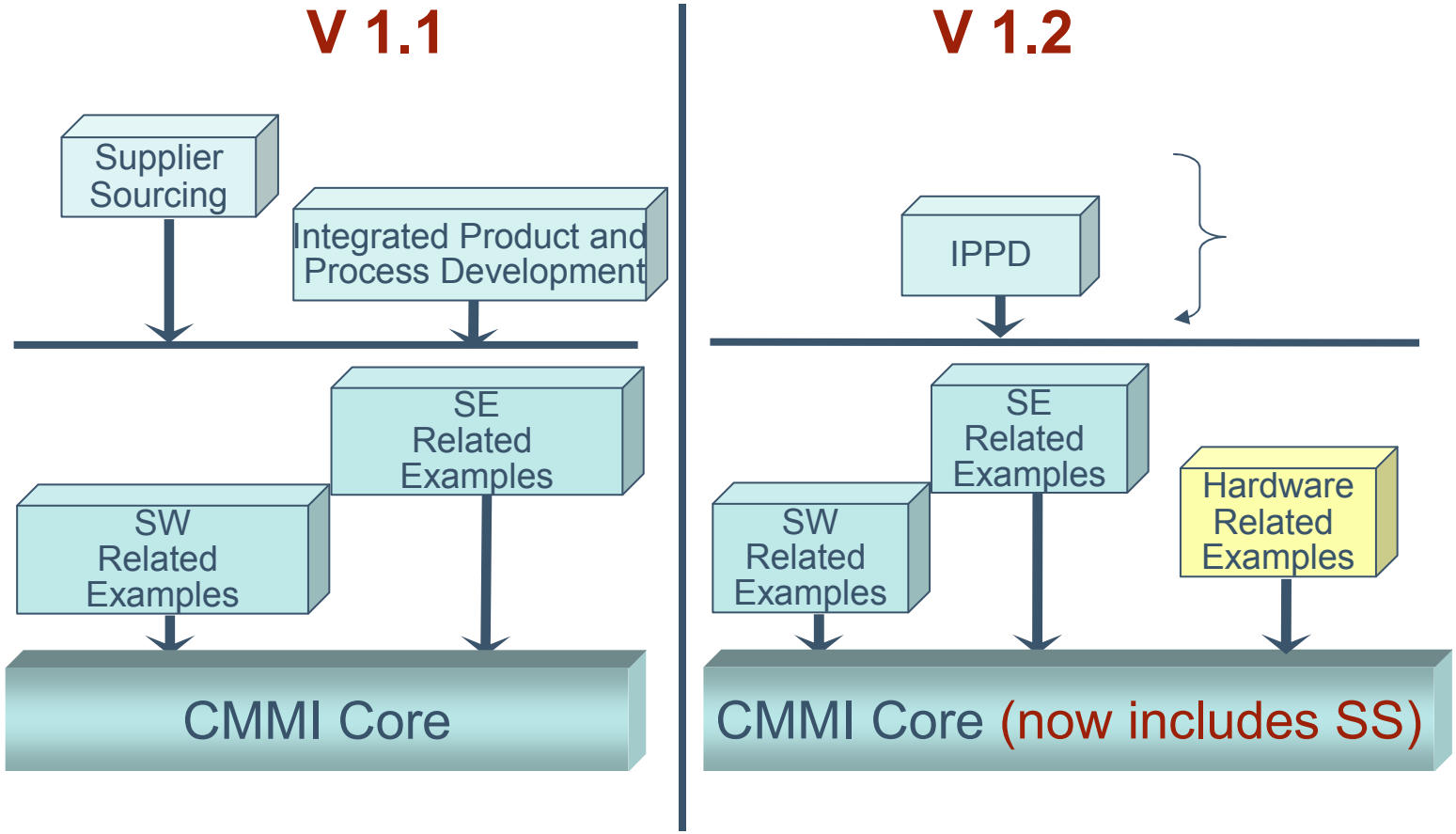
Version 1.2 Changes

Bring ISM into baseline and incorporate into SAM

CMMI Model Combinations



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Supplier Agreement Management
(before incorporation of ISM)

Specific Goal	Specific Practice
Establish Supplier Agreements	**1.1 – Determine Acquisition Type** **1.2 – Select Suppliers** **1.3 – Establish Supplier Agreements**
Satisfy Supplier Agreements	**2.1 – Execute the Supplier Agreement** **2.2 – Accept the Acquired Product** **2.3 – Transition Products**

v1.1 SP2.1 “Review COTS Products,” was eliminated. “Identify candidate COTS products that satisfy requirements” is a new subpractice under the Technical Solutions Process Area SP1.1, “Develop Alternative Solutions and Selection Criteria.”

Version 1.2 Changes - Recap

Major changes to expect for Version 1.2 include:

- Addison-Wesley book used as starting baseline
  - "single book" approach (CMMI-Development+IPPD)
- Hardware amplifications added
- Amplifications improved
- Common features and advanced practices eliminated
- "Not applicable" process areas (PAs) for maturity levels will be significantly constrained
- Glossary improved (e.g., higher level management, bidirectional traceability, subprocess)
- Overview text improved
- Work Environment material added to OPD and IPM
- IPPD coverage consolidated and simplified
- ISM will be brought into SAM

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Generic Practice Changes

GP 1.1: The practice title and statement changed from Perform Base Practices to Perform Specific Practices.

GP 2.2: The informative material was condensed to be more similar in size to other generic practices.

GP 2.4, Subpractice 1: “Authority” was added to stress assigning both responsibility and authority.

GP 2.6: “Levels of configuration management” was changed to “under appropriate levels of control” in the GP statement.

GP 5.2: Added informative material explaining the need for at least one quantitatively managed process.

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Translations

Japanese

- sponsored by Information-Technology Promotion Agency (IPA)
- CMMI models available
- *Introduction to CMMI* course available to authorized instructors

Traditional Chinese

- sponsored by the Institute for Information Industry (III)
- CMMI models available
- translation of *Introduction to CMMI* course underway

German Translation

- plans are being developed

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Applying CMMI in Small Settings

Where are we with our work in small settings?

- completed technical feasibility pilots in Huntsville, Alabama with two small companies in the US Army supply chain
- posted the toolkit from this pilot for review:
  - http://www.sei.cmu.edu/ttp/publications/toolkit
- chartered a project to further research in and evolve guidance for CMMI in Small Settings (CSS)

Where are we going?

- International Research Workshop for Process Improvement in Small Settings held October 19-20, 2005
- call for Interest in CSS project is posted on SEI web:
  - http://www.sei.cmu.edu/cmmi/acss/participation.html

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SCAMPI A Changes Considered for v1.2

Affirmation Clarifications
- clarify the use of “virtual” vs. “live” interviews
- change “face-to-face” affirmations to “oral” affirmations

Alternative Practice Characterization
- clarify how alternative practices are mapped and characterized

Practice Characterization Rules
- revise and clarify practice characterization rules in the SCAMPI Method Definition Document (MDD) Section 2.2.2

Incremental appraisals
- conduct appraisal in organization or model increments

Organizational unit sampling

Maturity level and capability level shelf life

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Proposed ARC V1.2 Changes

Remove requirement for instruments

- Only two types of Objective Evidence – Documents and Interviews
- Thus presentations may be either documents or interviews

Clarify “Not Rated”

- Process Areas out of the model scope are “Out of Scope”
- Process Areas that cannot be rated are “Not Rated”

Proposed Method Definition Document (MDD) v1.2 Changes-1

Affirmation Clarifications

- clarify the use of “virtual” vs. “live” interviews
- change “face-to-face” affirmations to “oral” affirmations

Alternative Practice Characterization

- clarify how alternative practices are mapped and characterized
- described in new Appendix C

Practice Characterization Rules

- revise and clarify practice characterization rules in the SCAMPI MDD Section 2.2.2
- change “substantial” weakness to “weakness”
- make rules consistent
- add “Not Yet” characterization to table

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Practice Characterization Rules-1

Label	Meaning
Fully Implemented (FI)	•One or more direct artifacts are is present and judged to be adequate and •at least one indirect artifact and/or affirmation exists to confirm the implementation and •no weaknesses are noted.
Largely Implemented (LI)	•One or more direct artifacts are present and judged to be adequate, and •at least one indirect artifact and/or affirmation exists to confirm the implementation and •one or more weaknesses are noted.

Practice Characterization Rules-2

Label	Meaning
Partially Implemented (PI)	•Direct artifacts are absent or are judged to be inadequate, and •one or more indirect artifacts or affirmations suggest that some aspects of the practice are implemented, and •one or more weaknesses are noted OR •one or more direct artifacts are present and judged to be adequate, and •no other evidence (indirect artifacts, affirmations) supports the direct artifact(s), and •one or more weaknesses are noted.
Not Implemented (NI)	•Direct artifacts are absent or judged to be inadequate, and •no other evidence (indirect artifacts, affirmations) supports the practice, and •one or more weaknesses are noted.
Not Yet (NY)	•The project has not yet reached the stage in the lifecycle to have implemented the practice

Proposed Method Definition Document (MDD) v1.2 Changes-2

Incremental appraisals
- conduct appraisal in organization or model increments

Organizational unit sampling, including for Enterprise appraisals

Maturity Level and Capability Level shelf life

Require Sponsor to sign the Appraisal Disclosure Statement
- agrees that CMMI Steward may review any appraisal artifacts and conduct any audits deemed necessary

Beyond CMMI v1.2 – Training

The SEI plans the following enhancements to CMMI training:

- update the *High Maturity with Statistics* course
- create a new course that addresses interpretation and implementation issues
- make a new course available that provides insight into using Team Software Process[SM]/Personal Software Process[SM] and CMMI

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For More Information…

For more information about CMMI

- http://www.sei.cmu.edu/cmmi/ (main CMMI site)

Other Web sites of interest include

- http://seir.sei.cmu.edu/seir/ (Software Engineering Information Repository)
- http://dtic.mil/ndia (annual CMMI Technology Conferences)
- http://seir.sei.cmu.edu/pars (publicly released SCAMPI appraisal summaries)
- https://bscw.sei.cmu.edu/pub/bscw.cgi/0/79783

Or, contact
SEI Customer Relations
Phone: 412 / 268-5800
Email: customer-relations@sei.cmu.edu