

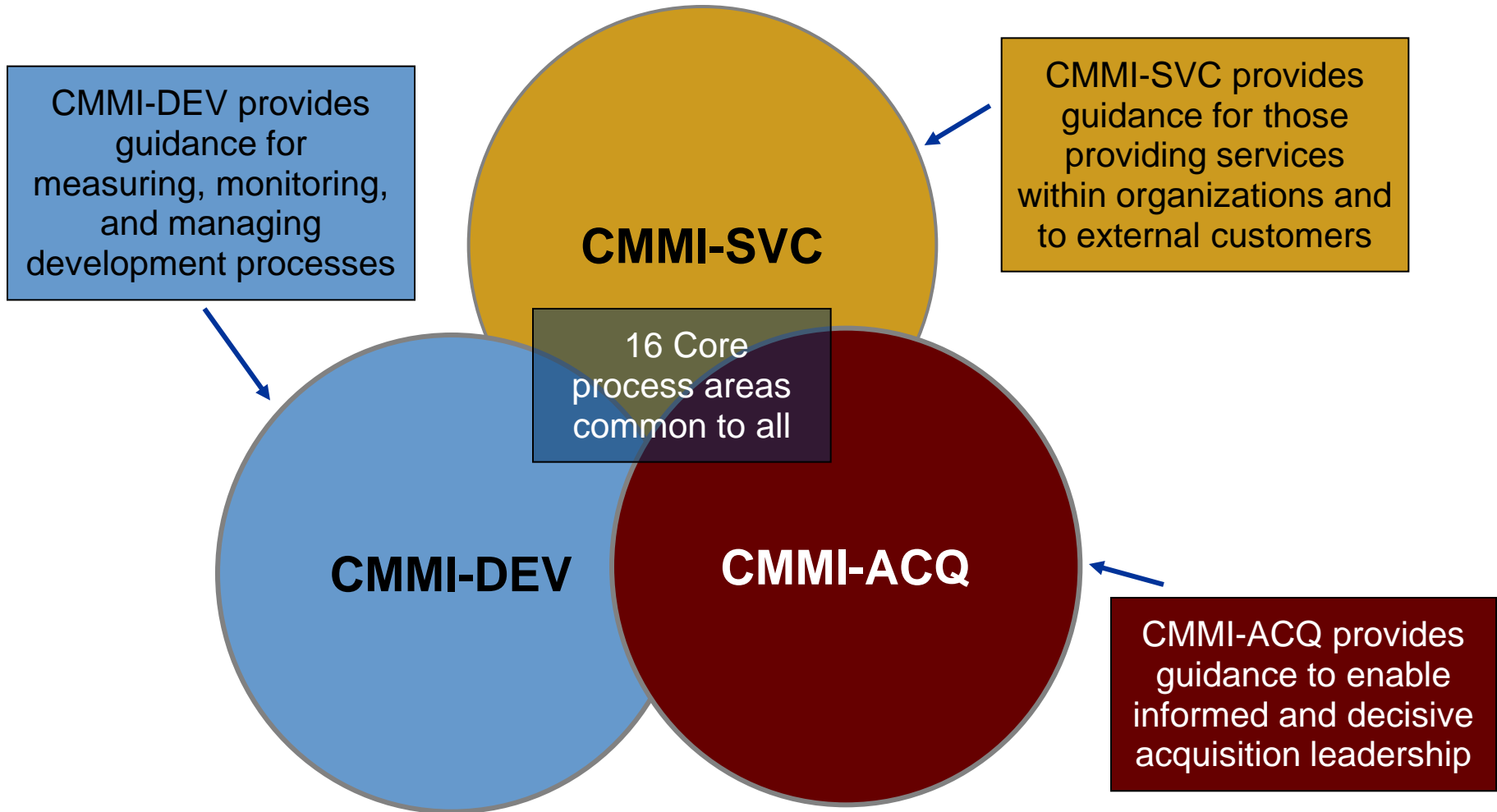
**CMMI® V1.3**  
**Planned Improvements**  
**November 19, 2009**

Software Engineering Institute  
Carnegie Mellon University

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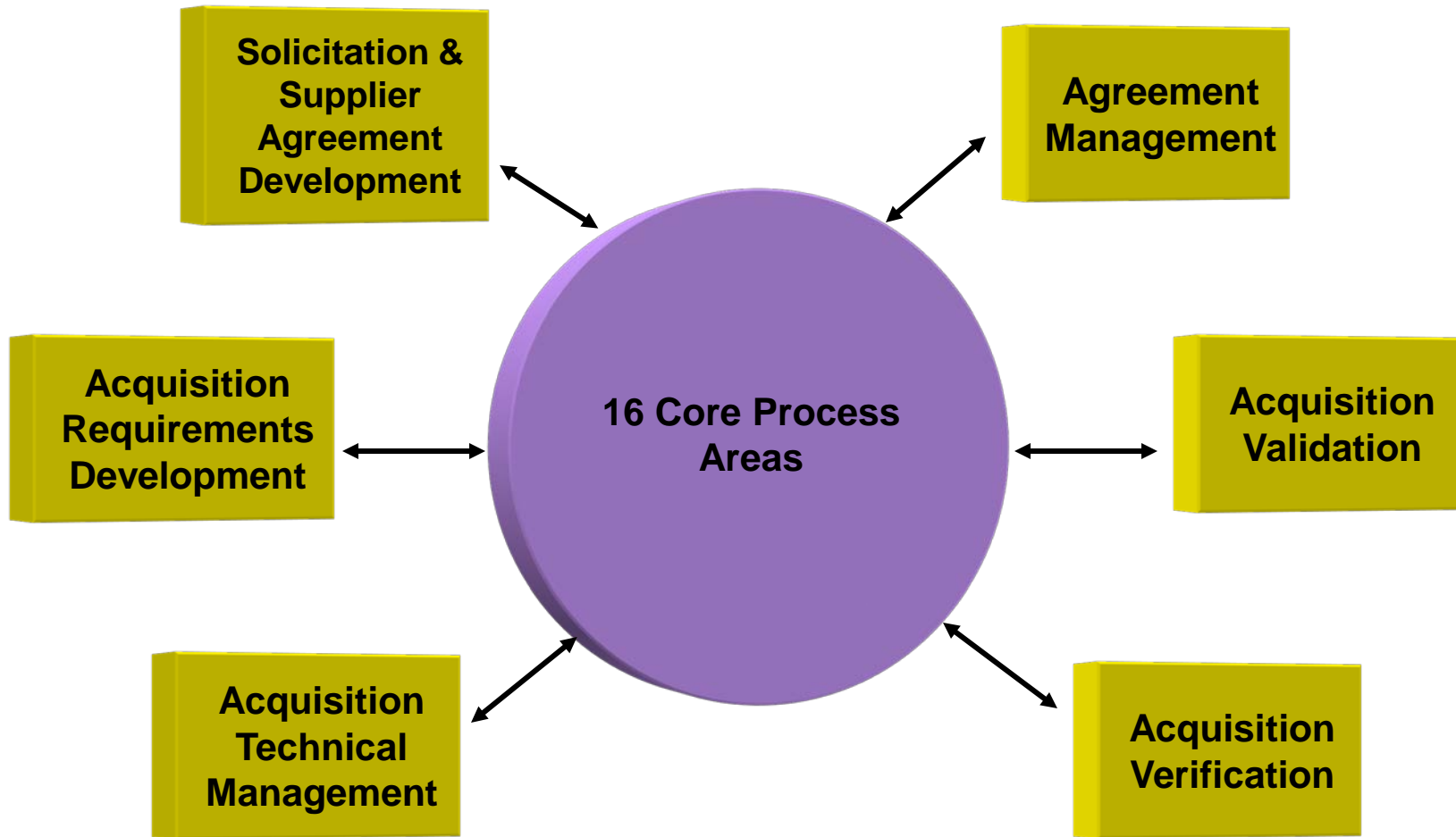


# Three Complementary Constellations

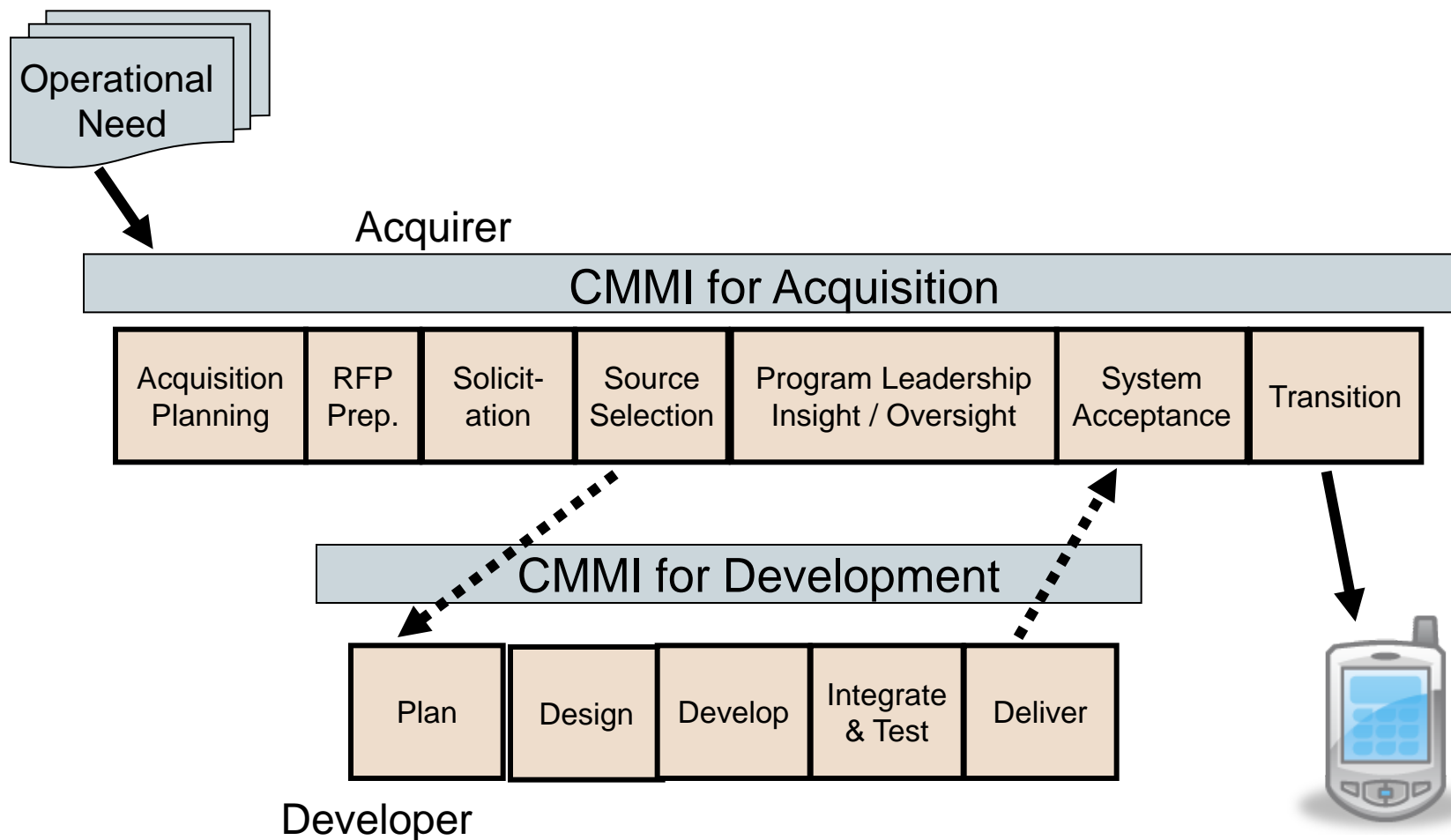


# CMMI-ACQ V1.2

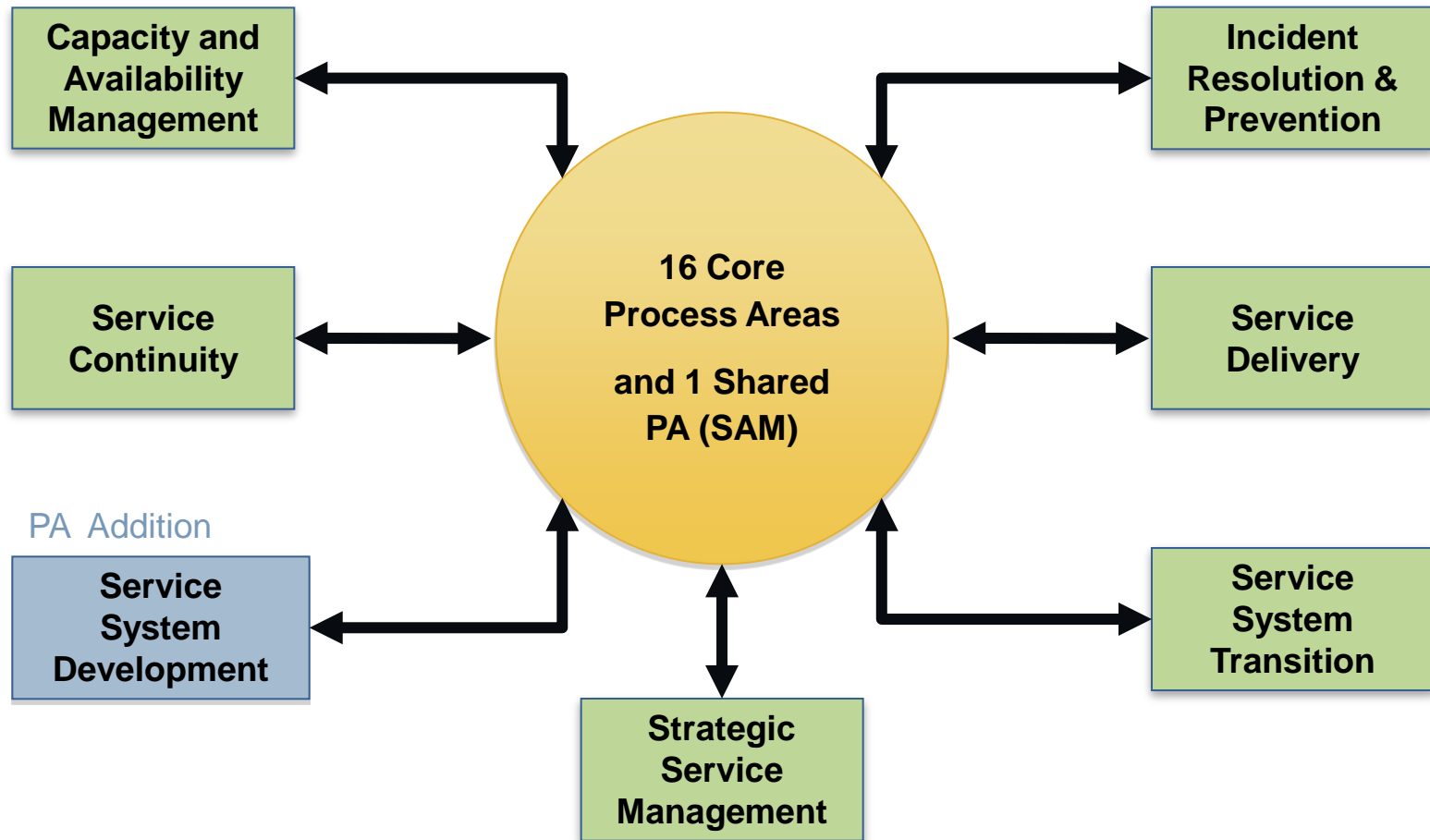
## Acquisition Process Areas



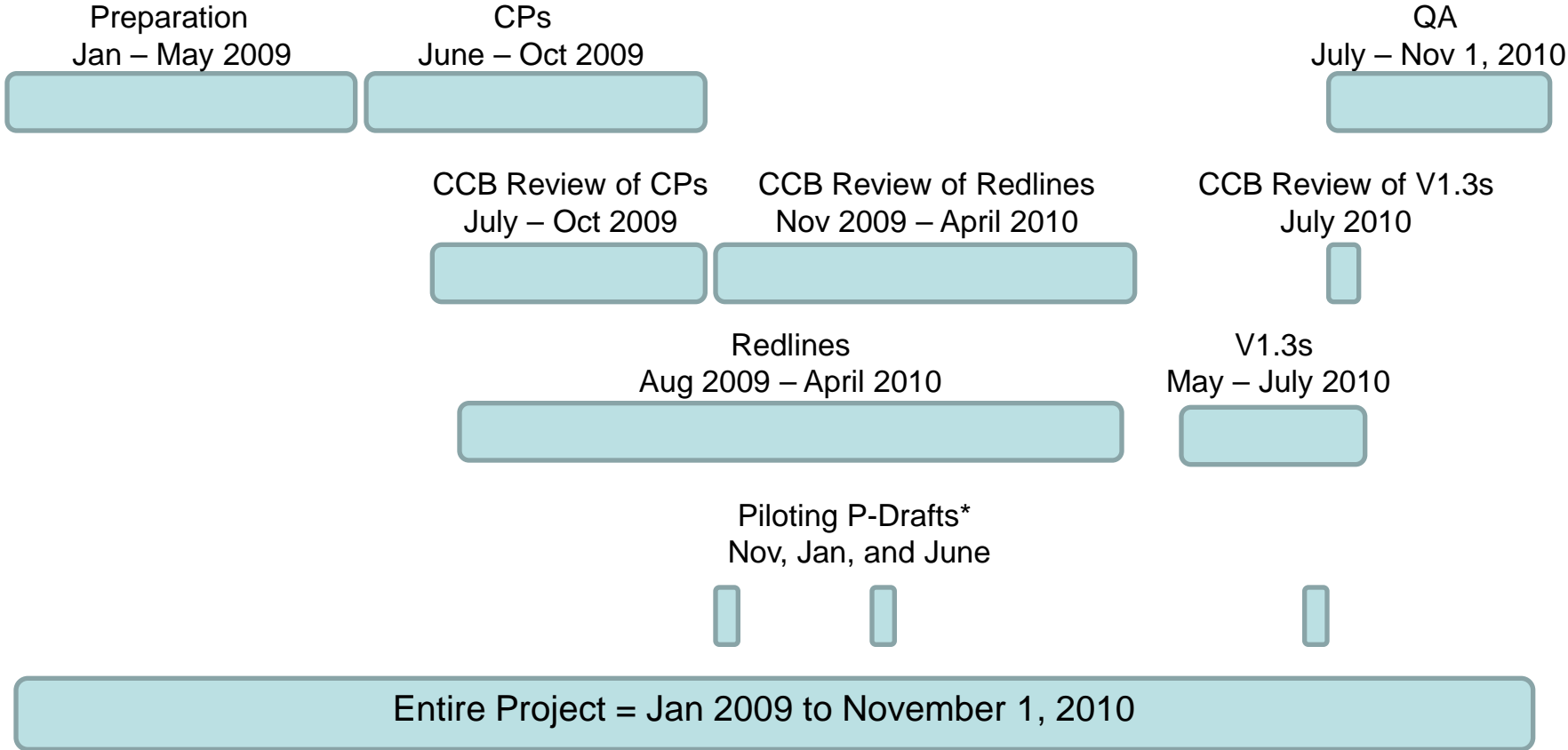
# Visibility into the Team's Capability



# CMMI-SVC V1.2



# Schedule for CMMI V1.3 Models



\* Piloting will include candidate solutions for appraising multiple constellations as well as a training approach for CMMI.



# CMMI V1.3 Criteria

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

Incorporate amplifications and clarifications as needed.

Accommodate potential additions to model coverage (e.g., safety, security, life cycle) only by specific direction of the CMMI Steering Group.

Decrease overall model size in v1.3 if possible; increases, if any, must not be greater than absolutely necessary.

Model and method changes should avoid adversely impacting the legacy investment of adopting companies and organizations.

Changes to model architecture will only be incorporated with specific CMMI Steering Group authorization.

Changes may only be initiated by Change Requests or the CMMI Steering Group.

Editorial changes to training may be released in advance of v1.3.

Changes must not cause retraining of the nearly 100,000 (as of Dec 2008) personnel already trained in CMMI. Upgrade training may be needed, especially for Instructors, Lead Appraisers, and appraisal team members.



# CMMI Product Suite, Version 1.3

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Version 1.3 will focus on but not be limited to the following:

- High Maturity
- Appraisal efficiency
- Consistency across constellations
- Simplify the generic practices

Version 1.3 is change request (CR) driven. Events such as this conference presentation are for information sharing and dialogue.





# Model Architecture

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## **Discipline Amplifications**

Eliminate discipline amplifications from CMMI models. Convert them to notes or example boxes.

## **References**

Update the references in all three models to improve usability.

## **Typical Work Products**

Rename typical work products to be “Example Work Products” to emphasize that they are only examples. Update these lists of work products to ensure that they suit the model they appear in.

## **Additions**

Eliminate “additions” from CMMI models except for possibly in CMMI for Services (due to SSD).



# PA Categories

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## PA Categories

Use six PA categories for V1.3: Process Management, Project Management, Support, Engineering, Acquisition, and Service Establishment and Delivery.

All PAs that are core must have the same PA category in all three models and this PA category must be one of the following: Process Management, Project Management, or Support.

PAs that are not core must be assigned to one of the following PA categories: Engineering, Acquisition, or Service Establishment and Delivery.

## Category of REQM

Assign REQM to the Project Management PA category in all CMMI models.



# GGs, GPs, and GP Elaborations

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Position generic goals, generic practices, and GP elaborations in one central location as the first section of Part 2 in all three models. This approach is identical to the one used in the CMMI-SVC model.

Change the word “designated” to “selected” in the generic practice “Place designated work products of the process under appropriate levels of control” to make it and informative material more consistent with the rest of the model.



# Improvements Across the PAs

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## **Compound Practice Statements**

Revise practices in OPF, IPM, and the GPs that use the phrase “work products, measures, and improvement information,” “work products, measures, and documented experiences” or “work products, measures, measurement results, and improvement information” to simplify them and make them consistent. (All 3 models)

## **Lifecycle Terminology**

Clarify whether the use of “lifecycle” refers to a project lifecycle, product lifecycle, or both throughout the model. (All 3 models)

## **Ease of Translation**

Aid the translation of CMMI models by involving the CMMI Translation Team during model development work to identify problematic word choices.



# CMF

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Define CMF operationally. CMF (CMMI model foundation) is the appropriate commonality among CMMI models within core and shared process areas.

When the model development team makes changes within a core or shared PA, it considers how appropriate the change is in all other affected CMMI models. If the same change can be made to all affected CMMI models, the change is made and commonality is thus maintained. If the change cannot be implemented in this way, the paragraph can no longer be common to (or shared by) a particular set of models.



# Core Process Areas

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Core process areas appear in all CMMI models. These core process areas can have different expected and informative material. For example, PP can have an SP in SVC that is absent in DEV's PP. Likewise, a few process areas are "shared" and appear in more than one but not all models. Shared process areas also can have different expected and informative material.

Work has been done to ensure that core process areas are as common as it makes sense for them to be. If material can work well in all three models, it is made consistent. If not, the material remains different.

Explanations of the following terms, including definitions in the glossary, will be added to all CMMI models: core process area, shared process area, constellation, and CMF.



# Teaming Practices

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Use the approach used to incorporate teaming practices in the SVC and ACQ models (in which the IPPD addition in DEV was abstracted into two non-addition practices in OPD and IPM on the more general topic of teaming) for all three models. Therefore, the teaming practices found in SVC and ACQ will be appropriately revised so that they can be included in all three constellations and the IPPD addition will be removed.

Update the wording of these practices to replace “integrated teams” with “self-managed teams” or similar wording.



# New Material

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## **Agile Examples**

Add agile-related examples throughout the PAs. (All 3 models)

## **Customer Satisfaction**

Add an emphasis on customer satisfaction to all three models by adding informative material. (All 3 models)

## **Preferred Supplier Agreements**

Add informative material about handling organization-level preferred supplier agreements in SSAD, OPD, IPM, and PP. (ACQ only)





# Glossary

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Ensure that the glossaries in all three models exactly the same, even though some terms defined may not appear in one or more of the models. Modify the glossary format to differentiate definitions from notes.

Add notes to explain why definitions in the glossary contain the phrase “products and services” even though “products” is intended to include services as well.

Adjustments to definitions include the following: development, process, subprocess, process element, corrective action, quality, quality and process-performance objectives, version control, supplier, supplier agreement, contract, higher level management, capability level, and all measurement-related terms. Terms removed include the following: discipline, amplification, functional configuration audit, physical configuration audit, assessment, and capability evaluation.



# Front Matter Improvements

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**Chapter 1** – Clarify that CMMI is not a process description. (All 3 models)

**Chapter 2** – (1) Add a section that discusses how core process areas are shared among all constellations, but are not exactly the same. (2) Revise the descriptions of “specific goal and practice summaries,” “required, expected, and informative model components,” “typical work products,” “typical supplier deliverables,” and “generic practices” to be consistent with their glossary definitions. (All 3 models)

**Chapter 4** – (1) Standardize on one approach for describing the interaction among the process areas of a model. (2) Add to the paragraph about recursion of the Engineering processes, that project management processes are likewise recursive. (All 3 models)



# PA Improvements -1

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**CM** – Add informative material that emphasizes that a baseline represents a fixed set of work products at a distinct point in time and specifies that configuration items may include hardware, equipment, and tangible assets. (All 3 models)

**DAR** – (1) Add informative material that explains that a well-defined decision statement places the appropriate focus on the decision to be analyzed, defines the scope of alternatives to be considered, and aids in defining evaluation criteria. (2) Incorporate communicating to appropriate stakeholders in the informative material. (All 3 models)

**IPM** – Add informative material to IPM about activities similar to CAR practices. (All 3 models)



# PA Improvements -2

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**IRP** – (1) Restructure goals 2 and 3 to reduce confusion. (2) Revise the practice “Select and analyze the underlying causes of incidents” to be “Analyze the underlying causes of selected incidents.” (3) Revise the practice “Identify the underlying causes of selected incidents and create an action proposal to address these causes” to be “Create an action proposal to address the underlying causes of selected incidents.” (4) Add informative material about periodic incident reviews to remove redundant or OBE entries. (5) Add status reports as a typical work product. (6) Reword the practice “Analyze incident data to determine the best course of action” to eliminate the subjective word “best.” (7) Move escalation to informative material for the practice “Monitor the status of incidents to closure and escalate if necessary.” (SVC only)

**MA** – Distinguish between and clarify the relationship among information needs and objectives, measurement objectives, and business/project objectives. (All 3 models)



# PA Improvements -3

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**OPD** – Add informative material about the desirable functions of a measurement repository and when the organization’s standard process should be revised. (All 3 models)

**OPF** – Provide examples of how to set up objectives derived from business objectives. (All 3 models)

**OT** – (1) Revise the goal “Training necessary for individuals to perform their roles effectively is provided” to eliminate subjective wording. (2) Eliminate the superfluous use of the word “necessary.” (3) Replace “instructors” with a more general term or add others that may deliver training. (4) Replace the word “conduct” with “deliver.” (5) Eliminate the word “technical” where it causes problems. (All 3 models)



# PA Improvements -4

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**PI** – (1) Eliminate the unnecessary use of the word “appropriate.” (2) Change the emphasis from “integration sequence” to “integration strategy” while retaining the importance of integration sequence. (DEV only)

**PMC** – (1) Add guidance on starting and ending projects. (2) Eliminate the superfluous use of the word “necessary.” (All 3 models)

**PP** – (1) Add guidance on starting and ending projects. (2) Eliminate the superfluous use of the word “necessary.” (All 3 models)

**PPQA** – (1) Change the word “designated” to “selected” to make practices and informative material more consistent with the rest of the model. (2) Clarify the applicability of PPQA at the organizational level in the informative material. (3) Clarify that peer reviews are an objective evaluation method. (All 3 models)



# PA Improvements -5

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**REQM** – (1) Remove the TWP “requirements decision database.” (2) Update the informative material to clarify that work products are expected to be included in bidirectional traceability. (3) Revise the practice “Identify Inconsistencies Between Project Work and Requirements” to make it easier for those not finding inconsistencies to meet the practice. (All 3 models)

**RSKM** – (1) Reword the practice “Develop risk mitigation plan for the the most important risks to the project as defined by the risk management strategy” to eliminate subjective terms. (2) Update the informative material to identify risks associated with “business objectives.” (3) Add examples to broaden the scope of risk sources. (All 3 models)

**SAM** – (1) Demote the practices “Monitor Selected Supplier Processes” and “Evaluate Selected Supplier Work Products” to subpractices of the practice “Execute the Supplier Agreement.” (2) Clarify the scope of SAM, particularly in regards to COTS, internal sourcing, and customer property. (SVC and DEV only)



# PA Improvements -6

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**SCON** – (1) Define the term “essential function” in the informative material. (2) Clarify that validation and verification mentioned in SCON refers only to the service continuity plan. (SVC only)

**SD** – (1) Add to the informative material that service providers should provide customer and end-user training and orientation as needed. (2) Indicate that changes to the service system may be traced to service requests and incidents. (SVC only)

**SSAD** – (1) Remove the words that make the practice “Review the solicitation package with stakeholders to ensure that the approach is realistic and can reasonably lead to the acquisition of a usable product” subjective. (2) Add informative material about reviewing requirements with end users and the selected supplier as part of establishing a mutual understanding. (SVC only)





# PA Improvements -7

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**SSD** – Add to the informative material that verification of selected service system components should include verification of their integrated operation with each other and with external interfaces. (SVC only)

**SST** – Add information about warranty coverage to the informative material. (SVC only)

**STSM** – Remove the word “relevant” from the practice title “Gather and Analyze Relevant Data.” (SVC only)

**TS** – (1) Reword the practice “Select the product component solutions that best satisfy the criteria established” to eliminate the subjective word “best.” (2) Revise confusing notes dealing with off-the-shelf but customizable product components. (DEV only)

**VAL/AVAL** – (1) Clarify in the introductory notes that validation is performed early and incrementally throughout the product lifecycle. (2) Add the concept of corrective action to VAL for consistency with VER. (DEV and ACQ only)



# Improvements Being Considered

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These improvements are currently being considered by the Core Model Team, but have not yet been formally proposed or approved:

## **Modern Engineering Practices**

Modernize engineering-related practices to balance the emphasis on functional requirements with emphasis on non-functional requirements and quality attributes.

## **Project Terminology**

Modify the use of the project-related terminology in a way that (1) addresses confusion and misuse by service providers who have difficulty interpreting the term “project” in the CMMI for Service model, (2) maintains successful use in the CMMI for Development and CMMI for Acquisition models, (3) ensures appropriate commonality across the three constellations.



# High Maturity Proposed Changes

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The overall objectives of high maturity changes to CMMI models are to do the following:

- Improve the clarity of high maturity practices
- Establish a clear understanding between requirements and expectations



# Improve Clarity of High Maturity Practices

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Problem statement:

- HM practices are currently unclear, leading to a variety of interpretations.

The objective in a nutshell:

- All CMMI users have a common understanding of the HM Practices.

Provide clarification on the following:

- Process models and process modeling
- How business objectives thread to high maturity
- Common causes - definition/concentration/expectations at ML5
- Defining high maturity expectations on individual PA performance
- High maturity re-structuring (including stronger alignment between ML 4 & ML5)
- Subprocess - selection/definition/level of instantiation



# Establish a Clear Understanding Between Requirements and Expectations

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Problem statement:

- Some people believe that the role of the informative material is being exaggerated in appraisals.
- The community has been relying on presentations and published “audit criteria” to better understand and appraise to high maturity.

The objective in a nutshell:

- Document high maturity requirements in high maturity process area goals and high maturity expectations in high maturity process area practices.

Involves:

- Eliminate the need for appraisers and implementers to use high maturity presentations or audit criteria to understand/ implement/ appraise high maturity.



# Necessary Changes to SCAMPI for V1.3

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Provide SCAMPI support for **each** constellation:

- Potential terminology barriers
- Scoping considerations
- Identifying appropriate pre-requisites for team members

Correct known defects and issues:

- Errors documented during the use of v1.2
- Common pitfalls encountered based on user feedback
- Areas frequently encountered by quality assurance



# Common Themes in the Change Requests<sub>1</sub>

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## Scoping Appraisals

- Confusion caused by “focus-” and “non-focus” projects
- Minimum scoping rules for a wide range of organization types

## Collecting Data

- Confusion caused by “direct” and “indirect” artifacts
- Handling generic practices

## Characterization and Rating

- Issues with characterization rules
- Issues with rating rules



# Common Themes in the Change Requests<sub>2</sub>

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## Pain Points that Make SCAMPI Difficult to Sustain

- Need to achieve efficiency
- Expanding organizational scope
- True cost of PIIDs

## Attaining/Maintaining Appraisal Ratings

- Period of validity
- Maintenance appraisals
- Delta appraisals
- Enterprise appraisals





# Considerations for Training

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Provide “on-line upgrade” as with V1.2

Maintain one day “difference” supplements for constellations

Deploy a CMMI-SVC three day course

Create a “difference” supplement for DEV



# Summary

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There are four drivers for Version 1.3:

1. Clarify high maturity practices
2. Simplify generic practices
3. Increase appraisal efficiency
4. Improve commonality across the constellations

We appreciate the input you've given us with your change requests!



# What Have We Missed?

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Now let's chat....

