



**Carnegie Mellon
Software Engineering Institute**

Pittsburgh, PA 15213-3890



The CMMI[®] Product Suite and International Standards

The 4th International SPICE Conference On Process Assessment and Improvement

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Agenda

Evolution of Capability Maturity Models® and ISO/IEC 15504

ISO/IEC 15504 Overview and Status

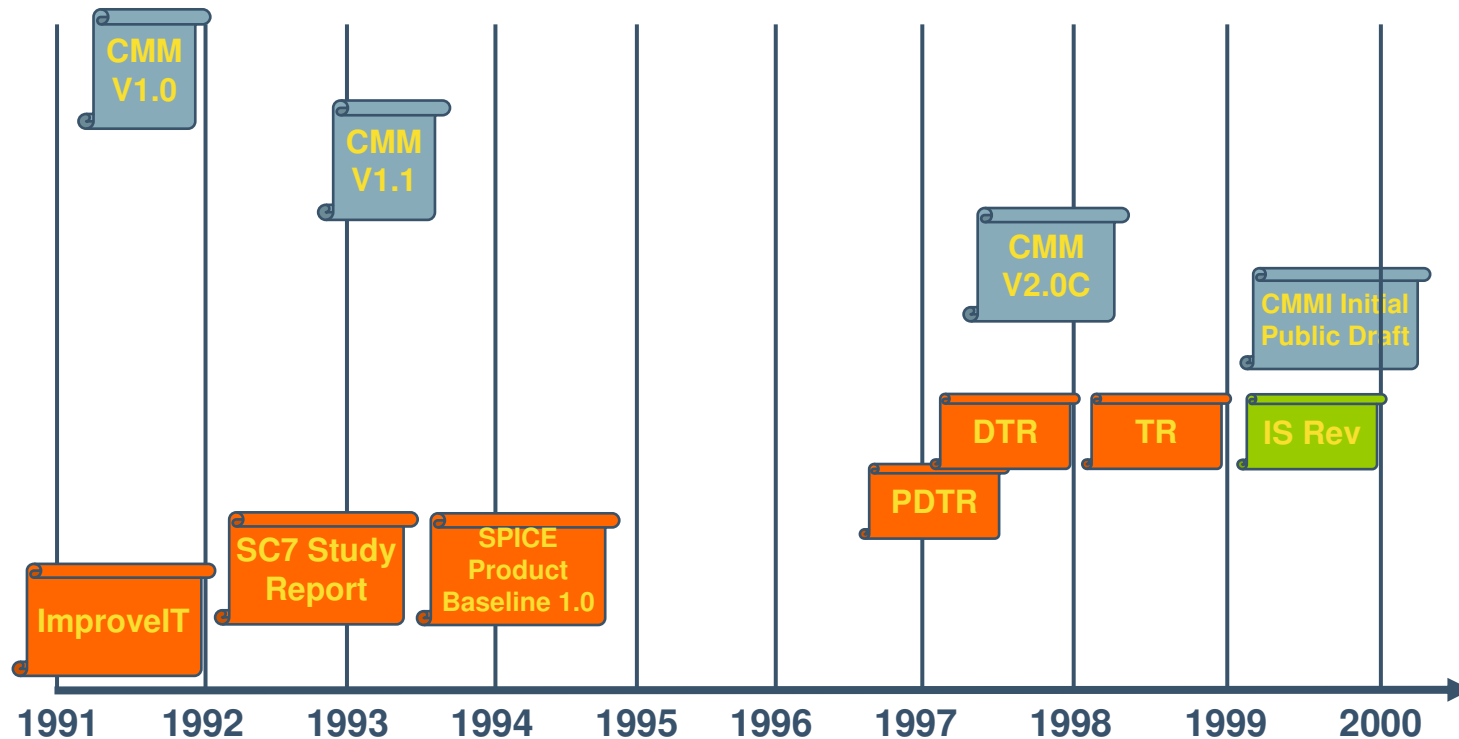
CMMI Synergy with International Standards

Work to be Done

Future Directions

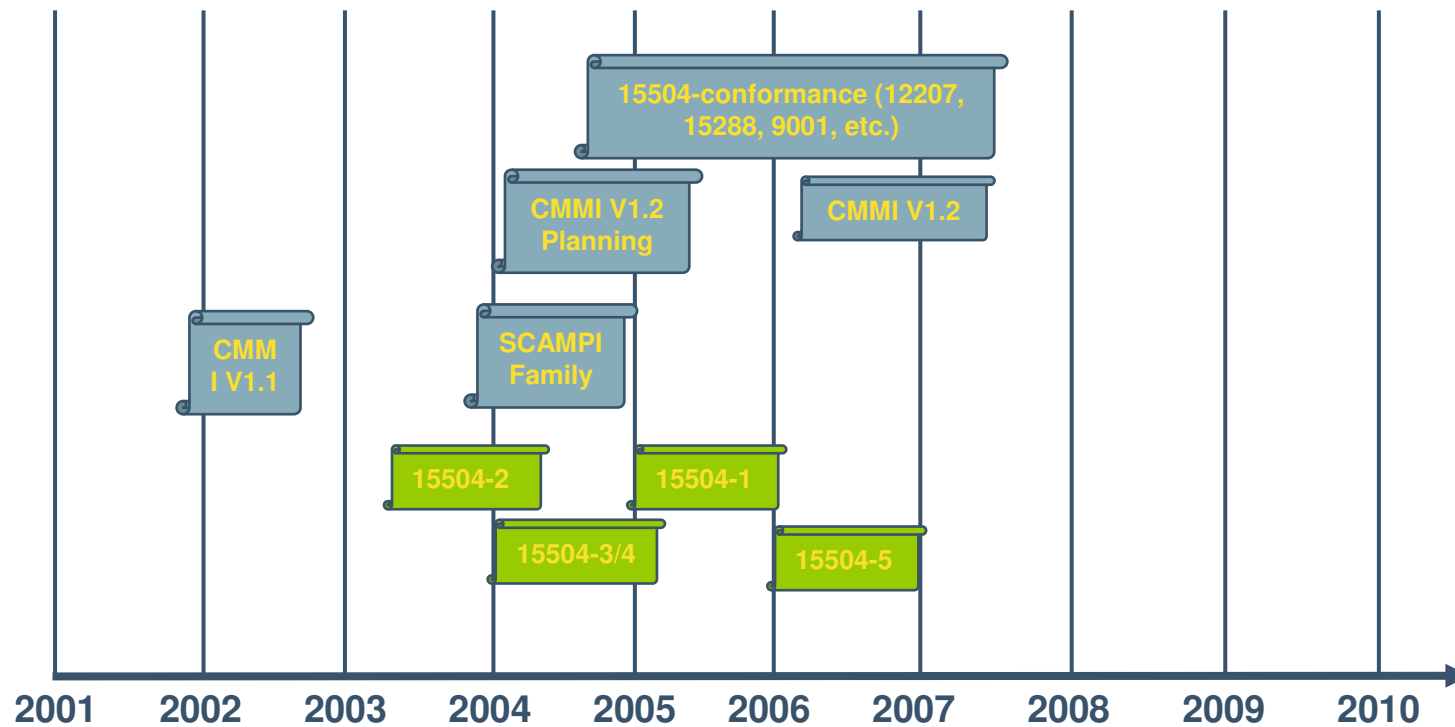
® Capability Maturity Model is registered in the U.S. Patent and Trademark Office by Carnegie Mellon University

Progression of CMMs[®] and 15504 -1



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Progression of CMMs and 15504 -2



What EXACTLY is 15504?

ISO/IEC 15504 is the *emerging* international standard being progressed by WG10 - a working group established by ISO/IEC/JTC1 SC7.

Prescribes requirements for process assessment; is a framework standard.

Consists of 5 documents (15504-1, ..., 15504-5); note that 3 of the 5 documents are now published or in publication.

Not the same as ISO/IEC TR 15504 – this is a 9-part set of documents published as ISO Technical Reports in 1998.

Key Premise Underlying 15504

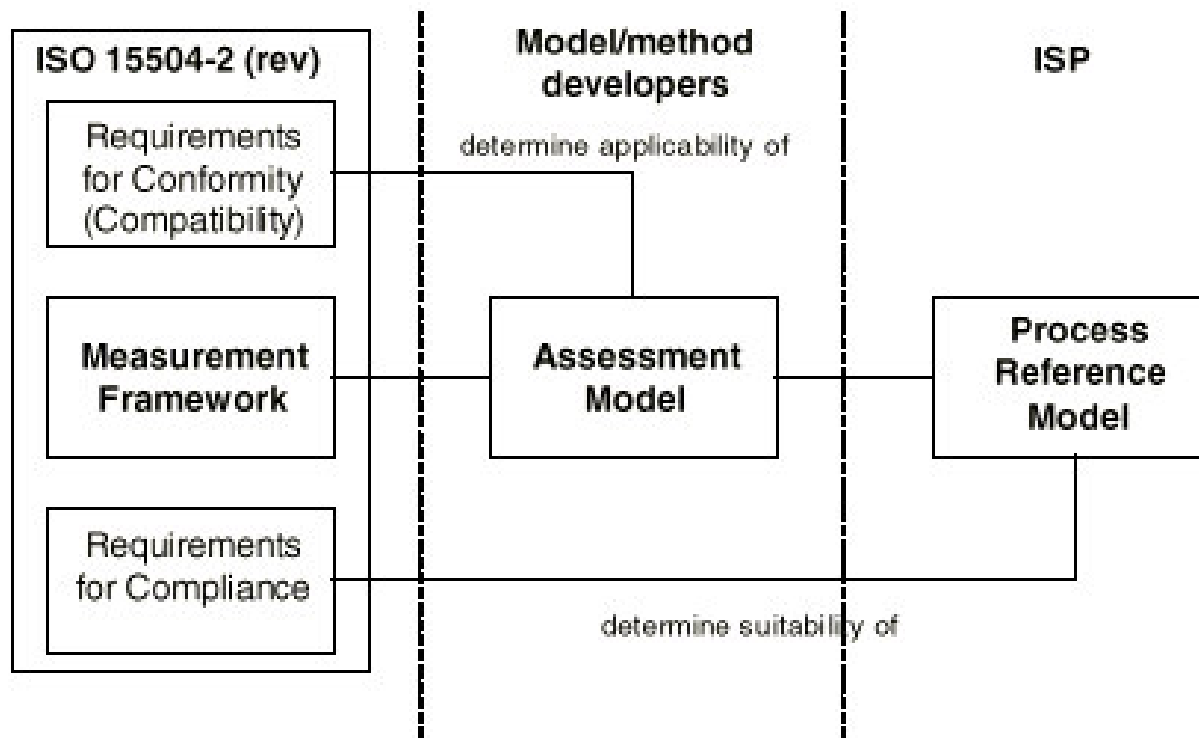
Assessments of process capability will yield results which are comparable as long as:

- the process assessment model satisfies 15504 model compatibility requirements
- the assessment process satisfies 15504 assessment requirements
- the assessment contexts are similar

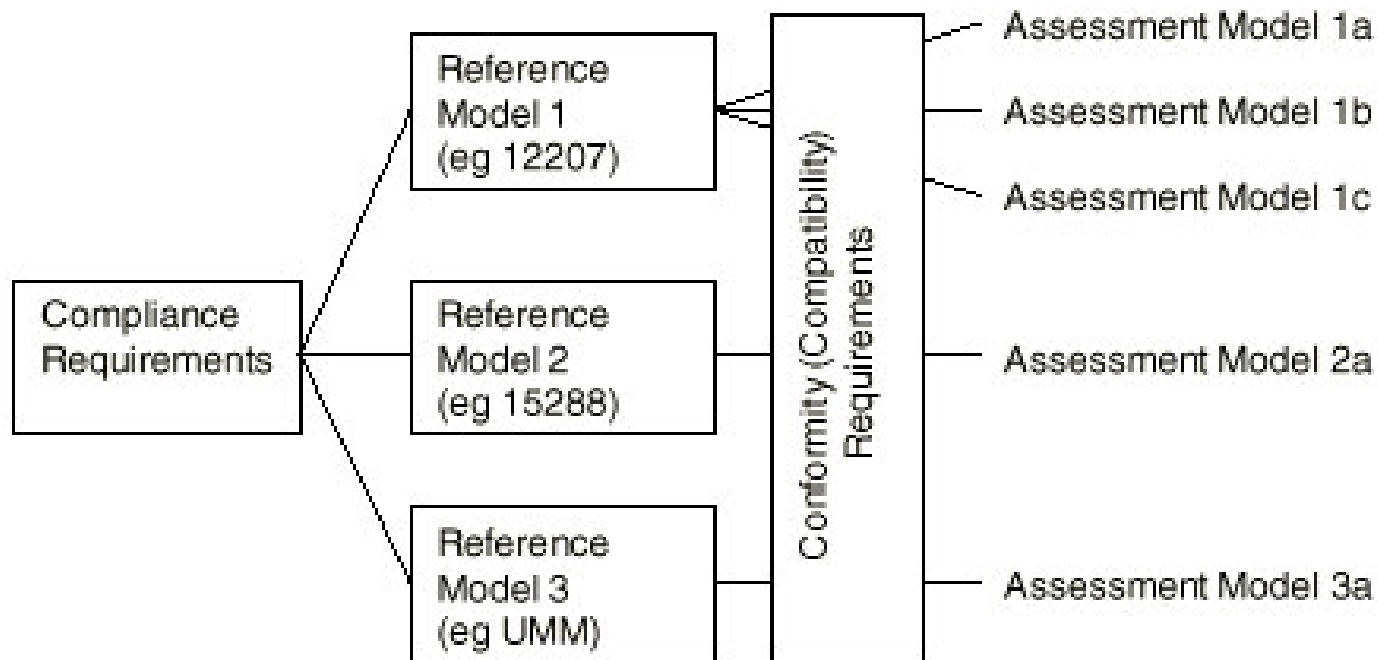
Evolution of 15504 Specificity

- 1st generation (pre-Pilanesburg) - practices were HARD-WIRED into 15504 (as a normative component - BPG)**
- 2nd generation (pre-IS) - process definitions were HARD-WIRED into 15504 (as a normative component - 15504-2)**
- 3rd generation (IS) - compliance requirements for Process Reference Models (PRMs) HARD-WIRED into 15504 (as a normative component - 15504-2):**
- **PRMs will be externally specified**
 - **12207 includes as an amendment a PRM encompassing TR 15504-2 process definitions (and more)**

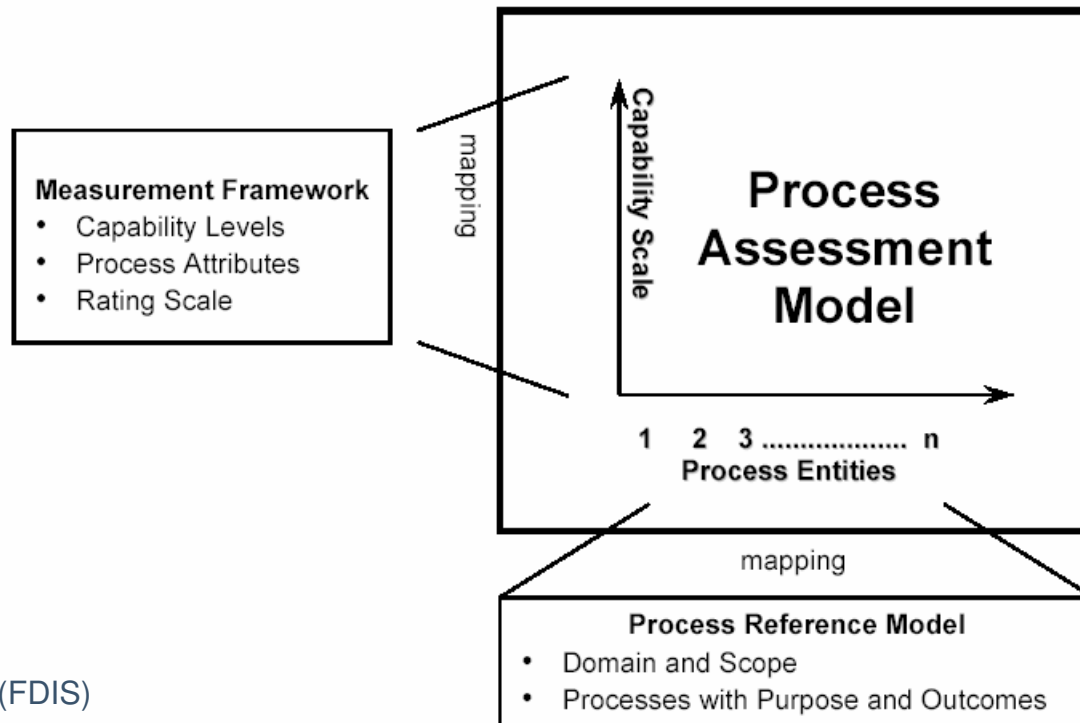
Architecture for 15504



Models in the Revised Framework

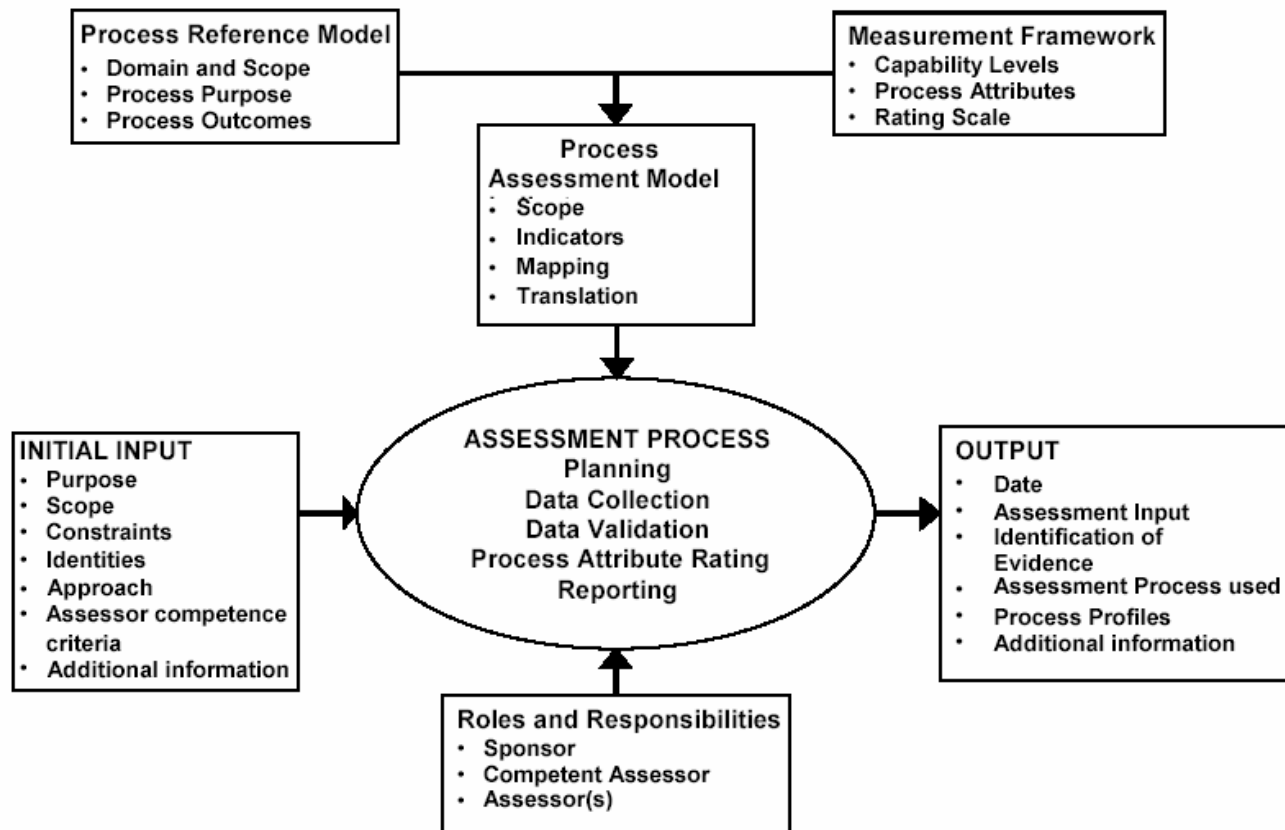


15504 Relationships



From 15504-2 (FDIS)

Normative Elements of 15504



CMMI and 15504

A-spec requirements relevant to international standards:

“2.3 Reference Documents

2.3.1 Applicable ISO/IEC documents, including
ISO/IEC 12207 and ISO/IEC 15504.”

“3.1 Development User Requirements

3.1.6 The CMMI Product Suite shall be consistent and
compatible with ISO/IEC 15504.”



Synergy With Selected International Standards -1

Identify areas where there are opportunities for synergy between key international standards and the CMMI Product Suite

Exploit these opportunities by developing appropriate work products and/or liaising with appropriate individuals and organizations



Synergy With Selected International Standards -2

Two of the key areas identified to date are the ISO 9000:2000 family of standards and the ISO/IEC 15504 standard

Note that 15504 provides a mechanism for establishing important relationships to other important process-related international standards such as ISO 9001:2000, 12207, 15288

Key Supplements Needed

Identification of suitable process reference models,

Mappings between CMMI model (s) and PRM (s)
satisfying 15504 -2 requirements,

Translation mechanism

Translation Mechanism

Purpose: for representing the results of an assessment as a set of process attribute ratings for each process selected from the specified Process Reference Model

How?:

1. direct translation of Process Assessment Model ratings into a process profile
2. or the conversion of the data collected during the assessment (with the possible inclusion of additional information) through further judgment on the part of the assessor.

An Example -1

Amendment 1 to ISO/IEC 12207 provides a PRM for 15504-5.

The content for this PRM was migrated from ISO/IEC TR 15504-2.

An Example -2

Project Management process (as defined in ISO/IEC TR 15504-2)

Project Management process PRM (as defined in Amendment 1 to 12207)

Project Management process PAM (as defined in ISO/IEC 15504-5 – CD version in WG10N482)

Project Management process (as defined in ISO/IEC TR 15504-2)

5.3.1.2 MAN.2 Project management process

New process

The purpose of the *Project management process* is to identify, establish, coordinate and monitor activities, tasks and resources necessary for a project to produce a product and/or service meeting the requirements. As a result of successful implementation of the process:

- the scope of the work for the project will be defined;
- the feasibility of achieving the goals of the project with available resources and constraints will be evaluated;
- the tasks and resources necessary to complete the work will be sized and estimated;
- interfaces between elements in the project, and with other projects and organizational units, will be identified and monitored;
- plans for execution of the project will be developed and implemented;
- progress of the project will be monitored and reported;
- actions to correct deviations from the plan and to prevent recurrence of problems identified in the project will be taken when project targets are not achieved.

NOTE This process supports performance of the process attribute 2.1 in those instances where it is invoked.



Project Management process PRM (as defined in Amendment 1 to 12207)

F.3.1.3 Project management

Purpose:

The purpose of *Project management* is to identify, establish, co-ordinate, and monitor the activities, tasks, and resources necessary for a project to produce a product and/or service, in the context of the project's requirements and constraints.

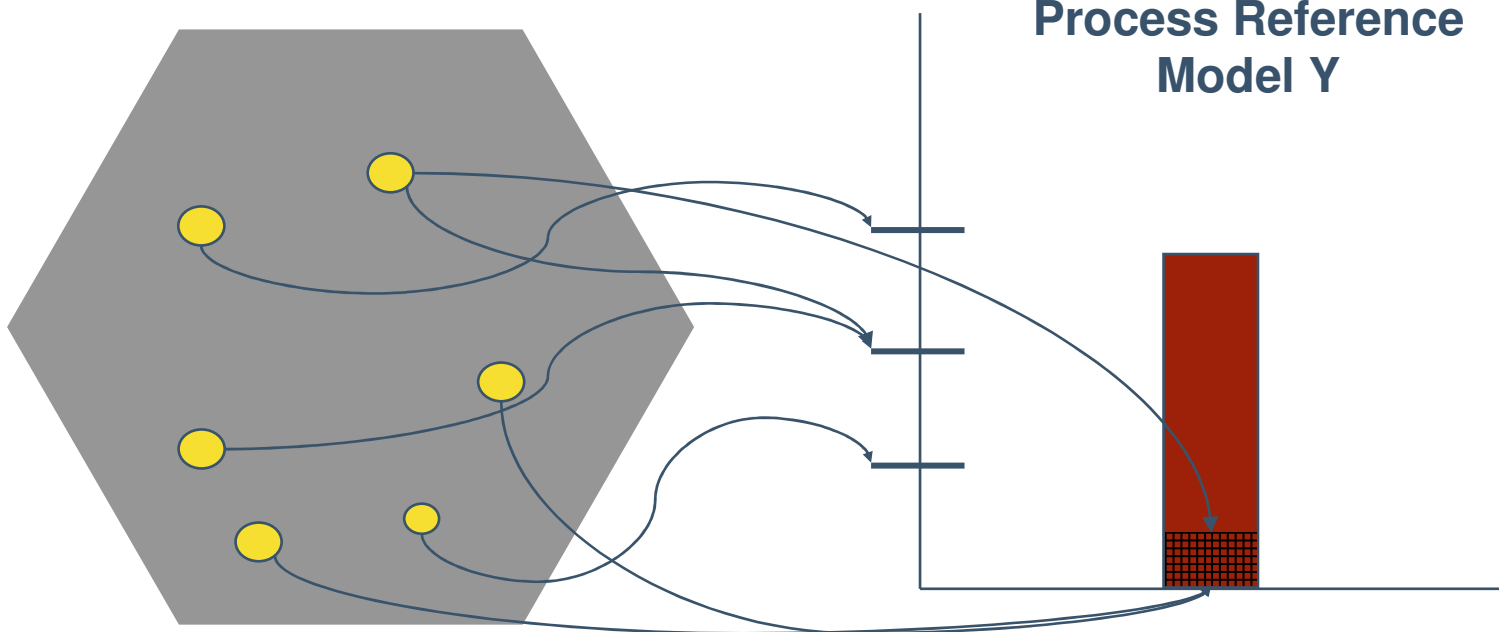
Outcomes:


As a result of successful implementation of *Project management*:

1. the scope of the work for the project is defined;
2. the feasibility of achieving the goals of the project with available resources and constraints are evaluated;
3. the tasks and resources necessary to complete the work are sized and estimated;
4. interfaces between elements in the project, and with other project and organizational units, are identified and monitored;
5. plans for the execution of the project are developed and implemented;
6. progress of the project is monitored and reported; and
7. actions to correct deviations from the plan and to prevent recurrence of problems identified in the project, are taken when project targets are not achieved.

Coverage of 15504 Mapping Targets

Process Assessment Model X

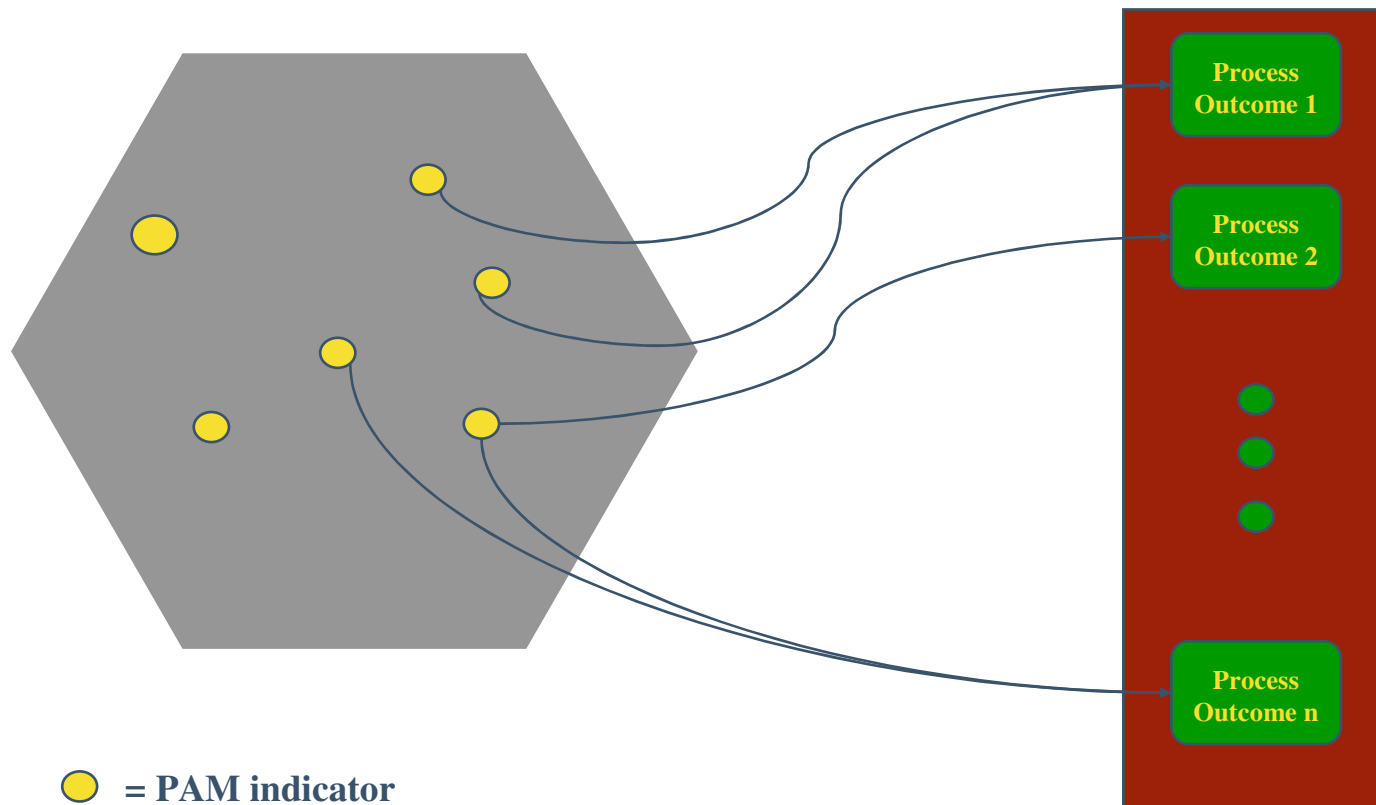


 = PAM indicator (assessment indicator: an objective attribute or characteristic of a practice or work product that supports the judgment of the performance of, or capability of, an implemented process)

15504 Coverage of a PRM Process

Process Assessment Model X

PRM Y Process



Example: Project Planning (12207)

Outcome	15504-5 (CD1)	CMMI V1.1
1) the scope of the work for the project is defined	MAN.3.BP1 : Define the scope of work. Define the work to be undertaken by the project, and determine that achievement of the goals of the project is feasible with available resources and constraints.	SP 1.1-1 Estimate the Scope of the Project: Establish a top-level work breakdown structure (WBS) to estimate the scope of the project.
2) the feasibility of achieving the goals of the project with available resources and constraints are evaluated	MAN.3.BP2 : Define project life cycle. Define the life cycle for the project, which is appropriate to the scope, context, magnitude and complexity of the project.	<p>SP 3.2-1 Reconcile Work and Resource Levels: Reconcile the project plan to reflect available and estimated resources.</p> <p>SP 3.3-1 Obtain Plan Commitment: Obtain commitment from relevant stakeholders responsible for performing and supporting plan execution.</p>

Future Directions

Capability to conduct 15504-conformant appraisals relative to selected PRMs; possibilities include

- 12207
- 15288
- 9001:2000
- CMMI (native)

Work is underway on 9001.

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