

MOS Pasadena Operations

CMMI-DEV v1.3 versus CMMI-SVC v1.3

1. Introduction and Background

Maintaining Pasadena Operations' Capability Maturity Model Integration (CMMI) certification is a goal for Missions Operations and Solutions (MOS). Pasadena Operations initially attained its Level 3 Capability for CMMI-DEV for Services certification on December 2004 by defining a creative way of applying CMMI-DEV to a service organization. Again, in 2007 and 2010 Pasadena Operation obtained CMMI-DEV for Services re-certification by using the approach defined in 2004.

Since 2004 the CMMI-SVC has evolved, matured and finally approved by SEI in March of 2009. The time is right to re-evaluate the CMMI model selection for Pasadena, primarily a services organization. The purpose of this paper is to identify, document and make a recommendation to Mission Operations and Solutions and Pasadena Operations leadership team on what model: CMMI-DEV or CMMI-SVC should be followed for the next CMMI appraisal in 2013.

2. Understanding CMMI-DEV/CMMI-SVC Relation

Maturity Level (ML) 3 CMMI-DEV has a total of 18 Process Areas (PA), from which 17 PAs directly apply to Pasadena Operations. For ML 3 there are 12 core PAs, that is, these 12 PA are the same for CMMI-DEV and CMMI-SVC, In comparison, ML 3 CMMI-SVC has a total of 19 PAs.

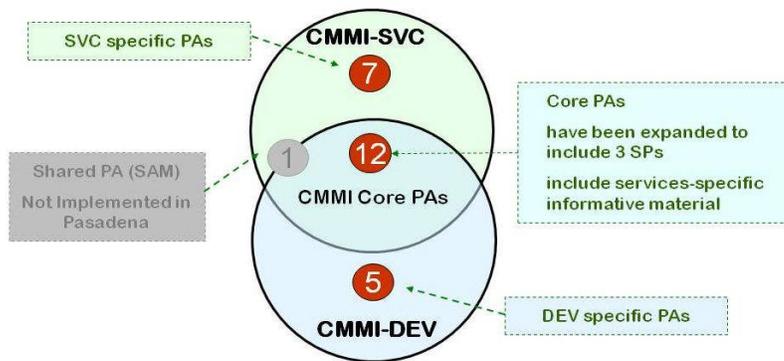


Figure 1 - Pasadena CMMI-DEV and CMMI-SVC Overview

The CMMI constellation of CMMI-DEV, CMMI-SVC, and CMMI-ACQ has recently been updated to version 1.3. The updated DEV and SVC models were reviewed for information pertaining to the relationship between the two models to see if the SEI would recommend that service-type organizations who have achieved accreditation under the DEV model need to pursue accreditation under the SVC model since it is now available. These quotes are from the CMMI for Services, v1.3 technical report:

“Organizations interested in evaluating and improving their processes to develop systems for delivering services can use the CMMI-DEV model. This approach is especially recommended for organizations that are already using CMMI-DEV or that must develop and maintain complex systems for delivering services. However, the CMMI-SVC model provides an alternative, streamlined approach to evaluating and improving the development of service systems that can be more appropriate in certain contexts.”

“Service provider organizations can also choose to use the CMMI-DEV model as the basis for improving and appraising their service system development processes. This use of the CMMI-DEV model is preferred for organizations that are already experienced with CMMI-DEV and for organizations that develop large-scale, complex service systems.”

“Even organizations that use the CMMI-DEV model for service system development may wish to refer to the Service System Development process area for helpful guidance on applying development practices to service system components such as people, processes, and consumables.”

Based on this information from the SEI, there would seem to be no compelling reasons to switch to the SVC model simply because it is now available. Continued use of the DEV model would appear to be encouraged for organizations that have experience and existing accreditations with the DEV model. However, it is noted that some streamlining in the area of service system development is possible by using the SVC model.

3. Approach and Evaluation

Some of the questions we set-up to answer were:

1. Adopting CMMI-SVC in Pasadena, may mean starting some new things or reworking existing one, will need to consider:
 - Is what we're doing good enough?
 - *Answer:* Our customers fill out a monthly evaluation; the average score for the surveys for fiscal year 2010 was 4.86 out of a maximum of 5. This seems to indicate that what we're doing is good enough for our customers.
 - Is my customer happy with what we have?
 - *Answer:* With the high evaluation scores mentioned above, we can assume that our customer are happy with the services provided by Pasadena Operations.
 - Does CMMI-SVC work in our environment?
 - *Answer:* We have mapped our business model to the CMMI-SVC as follows:
 - Service Request = Statement of work (SOW)
 - Service Change Request = Mod to SOW
 - Service Delivery System = DSIO Contract Tool (DCT)
 - Service Request Management System = SOW in DCT
 - Service Agreement = Work Control Plan (WCP)
 - Service System integrated and interdependent combination of processes, resources and people that satisfies the 5 golden services requirements.

• Development project have a clear beginning and end. Once the contract is established (DSIO) a service request (SOW) is use to prompt an instance of service through a service agreement (WCP), these requests have clear beginning and ends. Typical industry, service agreements are repetitive where the same service is being offered to multiple customers. Although, CMMI-SVC could work in our environment,

based on our definition of services, the CMMI-DEV is a more appropriate model for Pasadena Operation.

- What does the change from CMMI-DEV to CMMI-SVC mean to Pasadena Operations?
 - *Answer:* Implementing CMMI-SVC will mean that Pasadena Operations will have to implement 7 new PA. 5 of these may be moderate to easy effort to implement, but two PA: Incident Resolution and Prevention (IRD), and Service Continuity Management (SCON) are high impact and complexity to implement.
 - What would additional costs be?
 - *Answer:* The implementation of these 7 additional PA can be up to three man months. In addition, CMMI-SVC has 2 more PAs than CMMI-DEV, this will add additional cost to evidence collection and SCAMPI assessments.
2. How do we want to be recognized?
- As a product developer?
 - As a service provider?
 - As both a product developer and a service provider?
 - As a combination or mixture of the two?
 - As not interested in CMMI?

The answer to question 2 is explored in the Decision Analysis Resolution (DAR) shown below.

Evaluation criteria were defined and weights associated with the evaluation criteria. A decision analysis resolutions (DAR) template is use to capture these.

The obvious two alternatives evaluated are Maturity Level 3 for CMMI-DEV and for CMMI-SVC; however, other alternatives are available and were also identified and evaluated. These alternatives are Maturity Level 3 certification in CMMI-DEV and CMMI-SVC, Maturity Level 3 for CMMI-SVC with engineering capability and Maturity Level 3 for CMMI-DEV with SVC capability. As part of identifying possible alternative, the alternative of not pursuing CMMI re-certification was indentified and evaluated.

The evaluation criteria defined is:

1. Less Impact to Pasadena Ops: measures the impact of each of these alternatives to the Pasadena Operations including customer work impact.
2. Reputation (Internal): tries to quantify the perception among Pasadena Operations CMMI practitioners' on whether CMMI-DEV is more desirable than CMMI-SVC and vice versa.
3. Cost: measures the overall estimated cost associated with successfully implementing each of these alternatives. This includes both Process Improvement and Assessment related costs (Assessors and Data Collection).
4. Increased benefit to MOS: measures whether a given choice may be more beneficial to MOS operations, when using the CMMI certification credentials on new pursuits.
5. Increased customer satisfaction.

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The same weight is assigned to all 5 criteria, to make each of the criteria equally important. These may not necessarily be the case, but there was not a compelling case to make any one criteria more important than other.

Values of 1, 3, or 9 were assigned for each alternative. A value of 9 is favorable, a value of 1 is unfavorable and a value of 3 is average. A high total score means a more favorable alternative.

CMMI-DEV vs CMMI-SVC											Σ	NOTE- This sum is 100, when the number is entered into the yellow cells					
Criteria Weight	Criteria																
	Less Impact to Ops			Reputation (Internal)			Cost			Increased Benefit to MOS			Increased Customer Satisfaction				
	1	3	9	1	3	9	1	3	9	1	3	9	1	3	9	Totals	Ranking
CMMI-DEV	9	180	3	9	180	3	3	60	3	3	60	3	3	60	3	540	I
CMMI-SVC	3	60	3	3	60	3	3	60	3	3	60	3	3	60	3	300	V
CMMI-DEV and CMMI-SVC	3	60	9	9	180	1	1	20	9	9	180	3	3	60	3	500	II
CMMI-SVC + CMMI-DEV Capability in Engineering	3	60	3	3	60	1	1	20	3	3	60	3	3	60	3	260	VI
CMMI-DEV + CMMI-SVC Capability	3	60	9	9	180	1	1	20	3	3	60	3	3	60	3	380	IV
No CMMI re-certification	9	180	1	1	20	9	9	180	1	1	20	3	3	60	3	460	III

4. Recommendation

The recommendation from the Pasadena Best Practices Steering Committee team is to continue using the existing Maturity Level 3 CMMI-DEV for Services approach for Pasadena's next re-certification.

A close second is to continue using the existing Maturity Level 3 CMMI-DEV for Services approach, but to add the entire CMMI Services Capability. This would mean implementing and assessing 7 new Process Areas. Adopting this approach in full at this time will be likely to exceed the budget of both Pasadena Operations and MOS.

With this said, there are some services best practices such as Incident Resolution and Prevention (IRP), Capacity and Availability Management (CAM) and Service Continuity (SCON) that may provide high value to the organization for future process improvement initiatives. Our alternate recommendation is to complete the upgrade of the Pasadena CMMI Services Lifecycle 4.0 from CMMI-DEV 1.2 to CMMI-DEV 1.3 and re-evaluate whether to also implement and, some or all of the CMMI-SVC Process Areas in the 4th Quarter of 2011.

Additional Supporting Material

Analysis of the SVC PAs vs. the existing Pasadena processes

An analysis of the 7 non-core SVC Practice Areas (PAs) and their Specific Practices (SPs) was conducted to see how the existing Pasadena processes would map and to identify gaps in the process baseline. The 12 core PAs were not evaluated with the assumption that only minor wording changes would be needed to address new terminology. Below is a summary of the results.

SVC Practice Area	Coverage Rating	Comments
Service Delivery (SD)		Covered well with existing processes. No gaps. Service Agreement is the SWO (Subcontract Work order); Service system is the combination of the 5 service components and is defined by the WCP; Service System component is one of the golden 5 service provision requirements; Service System Delivery is the DSIO Contract Tool; Service Request is the SOW;
Incident Resolution and Prevention (IRP)		Little or No coverage with existing processes. Many gaps. An incident is an indication of a problem or interference with service delivery. Typical instantiation of this would be help desk with tickets. A possible approach would be to use the DSIO contract tool to record incidents from the customer.
Service System Design (SSD) (optional)		Covered well with existing processes. No gaps. Well-covered with existing Engineering PAs; however opportunity exists to minimize engineering processes with SVC.
Service System Transition (SST)		Covered well with existing processes. No gaps. A Service system is represented and defined by the WCP; Service Systems are all of the WCPs under the DSIO contract. A request for a change (MOD) in service would be a service request; so a service transition would occur as a result.
Strategic Service Management (STSM)		Some coverage with existing processes. Some Gaps. Unclear as to what the standard services are and how they are presented to current and potential customers.
Capacity and Availability Management (CAM)		Some coverage with existing processes. Some Gaps. Personnel and Facilities planning exist; would need more emphasis of coordination across all services, as well as modelling, measurement, and analysis to make sure that all necessary resources for service delivery are at the right levels and available when needed.
Service Continuity Management (SCON)		Little or No coverage with existing processes. Many gaps. No continuity planning in place.

CMMI-SVC Practice Areas in Plain English

- Strategic Service Management (STSM):
 - deciding what services you should be providing, making them standard, and letting people know about them
- Service System Development (SSD): Optional
 - making sure you have everything you need to deliver the service, including people, processes, consumables, and equipment
- Service System Transition (SST):
 - getting new systems in place, changing existing systems, retiring obsolete systems, all while making sure nothing goes terribly wrong with service
- Service Delivery (SD):
 - setting up agreements, taking care of service requests, and operating the service system
- Capacity and Availability Management (CAM):
 - making sure you have the resources you need to deliver services and that they are available when needed—at an appropriate cost
- Incident Resolution and Prevention (IRP):
 - handling what goes wrong—and preventing it from going wrong in the first place if you can
- Service Continuity Management (SCON):
 - being ready to recover from a disaster and get back to delivering your service

Thanks to friends at Raytheon for sharing this paper