Interpreting Measurement and Analysis in CMMI

Dennis Goldenson – SEI
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Attendee background:

CMMI Knowledge
- Heard of it – 3
- Use it occasionally – 9
- Use it regularly – 10
- Arrived late – 8

CMMI/CMM appraisal experience
- SCAMPI Lead Assessor – 1
- CMMI Team Participation - 2
- CMM Lead Assessor – 2
- CMM Team Participation – 10
- Arrived late – 8

Decision to adopt CMMI
- Yes - 22
- Other Model - 1
- Arrived late – 8

Attendee discussion, questions, clarifications:

CMMI fixes holes in measurement that existed in the SW-CMM, which allowed an organization to achieve higher levels of maturity without having a robust measurement program.

Question about differences in application of GP 4x and 5x between staged and continuous representations.

How much measurement do GP 2.8 and 3.2 require? How can an organization decide how much is enough? Need there be measures for all PA's? Can the question be answered by your business needs?

CMMI Interpretive Guidance is meant to help organizations understand parts of the model that might be "fuzzy" to them.

What will be done to "flat-line" the interpretations done by appraisers? Training? Consistency in appraisals?

15939, PSM and CMMI all talk about measurement. Will you be okay if you build your plan according to that?

More examples of correct ways to do things are needed than what appears in the CMMI subpractices and other informative materials. More concrete or robust examples are necessary of how an organization might satisfy the models goals. For measurement as well as much of what's new to CMMI, for example, DAR and Validation.
Community of practices where people share experiences

A question was asked about the SEI having created sample artifacts to prove to assessors that processes have been implemented. A long discussion ensued about the need for practice implementation indicators to help in process improvements as well as appraisals, especially for GP's.

Interpretive guidance – rules of thumb – are needed for systems engineering – how to possibly apply in an organization.

Roundtable Discussion:

What existing interpretive guidance already exists?
NAVAIR: Document created about measurement not necessarily CMMI
SPC: Guidebooks about lots of CMMI interpretation, not just measurement

Adoption Issues:

Positive:

CMMI helps organizations include systems engineering in process improvement. It's not just software any more. The model has worked better for contractors as it has fostered conversation between forces that might not have done it before.

CMM called for collecting measures without thinking about why or using them - now under CMMI there is a culture-change that is necessary to create an environment that fosters measurement. A need to understand the information needs of the organization. It has caused the organization (the engineers as well as management) to think about what measures are needed and will be useful for the organization.

- SW-CMM Level 3 required us to collect measures – whether or not they were used. CMMI requires us to collect measures for a purpose.
- This a culture change for us.
- Not just a culture change at the engineering level but our senior managers need to be involved as well (this is a good thing)
- There is so much internally required for CMMI (we are SW-CMM Level 3). We are collecting lots of data but we're not using it.

Why should you adopt CMMI? Where are you as a company? Where do you want to compete? Do the strategic business planning and the answers will come from doing it. The case needs to be made to senior management that the costs of CMMI are justified by business value, for example by allowing them to participate in different markets.

- What are you about as a company? If you want to compete, you have to be at Level 3. Measurement and Analysis helps you do the strategic business planning first. It makes business sense to adopt CMMI.

Negative:

Do the appraisals now require more (too much?!) physical evidence (proof of performance)? This seems more of a problem for institutionalization in the CMMI.

- Requirements for physical evidence "If you don't have physical evidence, it never happened even if 50 people swear on a bible."
- Getting people into the habit of documenting everything (e.g., minutes of meeting, stakeholder involvement)

- Documentation is a function of the appraisal method (SCAMPI), not a function of the model itself. In fact, one can argue that CMMI required less documentation.

SCAMPI Method is more demanding in what it requires than the predecessor methods
How do you organize your artifacts in a way that is useful for process improvement and appraisals?

- Are there tools that map between the model and organizational processes?
- Needs to have additional capability to allow mapping between model and organizational processes

Generic Goals and Practices

Does expected really mean required? Appraisal community says that there are alternative practices. Is interpretive guidance needed on being able to tell when an alternative practice could be used?

GP 2.8 & 3.2: Must they be applied to all process areas? Is there consistency among appraisers? Need guidance on how to select what is important to the business case.

Process Areas

Issues with any new process areas because of the lack of resources – the lack of information on it – like DAR though it has roots in SE. Interpretive guidance? Problem with the language in contracts even though the developer does some validation – the acquirer didn't want to see that language in the contract – this presented problems when an assessment was done in order to prove that the developer did validate. The problem was in mapping the organization processes to the model that would allow the assessment team to see that validation was being performed. There is a lack of clarity on the universality of the definitions of terms like verification and validation.

- We had problems with any process that is new. Due to a lack of resources – there's no one to go to in order to ask questions.
- We have a customer who won't let us use the word "validation" for requirements. Our customer says that they do validation, not us as the contractor.
- You don't need to use the word "validation". All you need to do is map your processes to the model to show that you are doing validation.

MA PA appears to be clear and there were no questions concerning them. MA gets people prepared for higher maturity levels.

Is the delay in levels too far between the MA PA and the PAs at levels 4 & 5 that utilize the beginnings started in the MA process area? A discussion ensued about it being more difficult for organizations to move to higher maturity levels when they had done too little measurement earlier. The question isn't how little do you have to do for the rating, but how can measurement help you improve your decision making, even if you never get to be level 4 or 5.

- M&A – Level 2 gets people prepared for Level 4 and 5. Problems with SW-CMM is that people would get to Level 4 with no data for statistical interpretation so they would have to wait for a year or two just to get that data.
- Evidence helps you make informed decisions. This is something that ought to be done by any organization from the beginning. That's why M&A is at level 2.

What interpretive guidance already exists that helps understand how measurement capability improves? An article exists on the SEI website by Dave Zubrow that begins to address this issue. See also the article in the July issue of CrossTalk.

- There is interpretative guidance out there now that needs to be brought together
- E.g., Beth Layman's talk from 2002 PSM users group and Joyce Statz's from Feb PSM TWG (both papers are on PSM website)
- Bob MacIver – SPC – guidance relating 15939, CMMI, PSM (available to consortium members only)

More guidance is needed to help organizations decide on and clarify their business goals. How can you get management to participate in selecting their measurement objectives, instead of asking the measurement folks to take care of it for them?

More guidance is needed about the level 4 and 5 PA's

- Process performance modeling
- QPM
- OID

Next Steps

There is interpretive guidance about measurement that already exists, but it needs to be brought together in a more coherent and accessible manner, perhaps on-line.

- Additional guidance needs to be prepared

More needs to be done to educate management on why measurement is necessary, and involve them in setting the measurement agenda.

Need to do more of these kinds of workshops at PSM