CMMI® Economics 203: Model Tailoring

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NDIA Systems Engineering Division

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# The Economics of CMMI

## Overview:
- Developed by NDIA CMMI Working Group
- Guidance by industry, and for industry, on achieving business value through CMMI
- Suggested CMMI strategies and mechanisms, intended to be tailored much like the model itself

## Section Topics

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| Economical Implementation of CMMI (Implementers) | • Use CMMI as an Integrating Framework  
• Develop and Deploy Processes Effectively  
• **Tailor CMMI Implementation Appropriately**  
• Implement CMMI in a Practical Way  
• Make an Informed Decision on High Maturity  
• Conduct Appraisals Economically |
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Who I am:

• Chief Engineer, Jacobs Technology, Inc./ITSS
• SCAMPI Lead Appraiser
• (Lean) Six Sigma Black Belt
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Outline

• Common tailoring issues
• Influential factors
• Selection of Process Areas
• Level of detail
• OSP tailoring approaches
• SP implementation tailoring
• What about levels?
• The organizational change engine
### Common Tailoring Issues

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<th>Common Issues</th>
<th>Recommendations</th>
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<td>• Organizations adapting to CMMI, instead of adapting CMMI to their business.</td>
<td>Tailor CMMI model implementations to the business context. Adapt CMMI implementations to meet the needs of the business.</td>
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<td>• Forcing a “one size fits all,” CMMI implementation on the diverse projects in the organization.</td>
<td>Recognize the needs of different types of projects. Allow and encourage project tailoring of the organization’s process.</td>
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<td>• Adopting the CMMI without knowing “what you want to be when you grow up”</td>
<td>Focus on achieving organizational or project performance improvement/ quality goals.</td>
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Factors that Influence Model Tailoring

• Organizational size
• Business objectives
• Customer market needs
• Project lifecycle models and development methods (e.g., incremental, spiral, agile)
• Problems the business may be experiencing
• Processes that are already being performed (whether documented or not)
• Company culture
• Process performance or product quality constraints
What Process Areas Should be Adopted?

- Consider organizational scope
  - One or two projects or services
  - An organization that manages projects or services
  - A geographically spread or virtual organization
- Consider maturity of current process culture
  - Chaotic culture points to broad “maturity level” sets of process areas
  - Mature culture may allow institutionalization of specific process areas (e.g. ISO Certification or Lean/Six Sigma)
- Consider business issues and objectives in the context of the organization
  - Uncontrolled requirements volatility points to REQM, RD in DEV model, others
  - Uncontrolled product defects may point to PPQA, CAR, VER, VAL in DEV, others as defects are analyzed
  - Uncontrolled service level breeches may point to SD, SSD and PPQA in SVC
- Be sensitive to Process Area relationships
A Reasonable” Level of Process Detail

• Rule of thumb: “Two similarly trained and knowledgeable people could be expected to produce essentially the same outcome”

• Consider the level of tacit knowledge in the organization

• Consider the need to pass process knowledge among and between organizational elements and projects (now and in the foreseeable future)

• Consider the influence of technology

• For Services, consider any need for Service Continuity

• Consider another “rule of thumb”: “If you’re not sure the detail is needed, leave it out and see what happens”
OSP Tailoring Approaches

• More than one Organizational Standard Process (OSP) may be warranted
  - If sub-organizations do business in significantly different ways
  - Significantly different product or service domains
  - Different market places and pressures
  - Different customer cultures
• Tailoring of an OSP (OPD SP 1.3) may vary widely:
  - In some cases, NO tailoring may be an appropriate solution
  - Tightly controlled “rules based” tailoring in which outcomes are reached via decision criteria
  - Less control that allow a greater of responsiveness to project or service conditions (Warning)
• At CL/ML 4 and 5, Processes are Composed
  - QPM SP 1.2 “Select the subprocesses that compose the project’s defined process based on historical stability and capability data.”
Implementation of a Specific Practice

- Review the business context of the organization, and ensure the implementation of the practice is true to that context.
- Review the business objectives (performance goals, quality goals, issues), and ensure the implementation helps to achieve those goals.
- Find the “reason” to implement the practice (decisions to implement “because the model says so” are too often regretted).
- Remember that an SP is an Expected Component of the model (you may write an Alternative Practice).
- Implementation of any SP must be consistent with implementation of related practices.
What about Levels?

• Capability Levels:
  - CL 0 (Incomplete) are not being performed, or only partially being performed
  - CL 1 (Performed) processes are being performed (but may not be recorded)
  - CL 2 (Managed) provides most institutionalization value
  - CL 3 (Defined) ensures process tailoring and improvement feedback to the organization
  - CL 4 (Quantitatively Managed) is applied to specific processes to be placed under process control
  - CL 5 (Optimizing) is applied to ensure relevant processes are fulfilling the business objectives of the organization

• Maturity Levels:
  - ML 1 (Initial) processes may not be recorded
  - ML 2 (Managed) ensures a prescribed set (depending on the model) of PAs are capable at CL 2 or above
  - ML 3 (Defined) ensures a prescribed set (depending on the model) of PAs are capable at CL 3 or above
  - ML 4 (Quantitatively Managed) ensure a prescribed set (depending on the model) of PAs are at CL 3, and at least one is at CL 4
  - ML 5 (Optimizing) ensure a prescribed set (depending on the model) of PAs is at CL 3 and at least one is at CL 5
What Kind of “Change Engine” is Needed?

• Assertion: A Maturity Level 3 (or higher) organization has at its disposal a “change engine”
  - Organizational Process Focus
  - Organizational Process Definition
  - Organizational Training
  - Process and Product Quality Assurance
  - Measurement and Analysis
  - GP 2.6 (process control)

• This “change engine” may be designed to:
  - Help the organization react to changes in market conditions
  - Identify and solve institutionalization issues
  - Accomplish very specific business objectives
  - Improve decision making mechanisms
  - Be lean, fast, and efficient
For More Information....

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