Background

- There is a marked difference between organizations that truly want to implement CMMI®, and those who are simply try to get a “certificate”
  - Contenders invest time and energy on understanding the industry best practices in the model, fitting them to their projects and organization, and improving their effectiveness and efficiency
  - Pretenders simply do enough to convince an appraiser to give them the maturity level -- along the way, they de-motivate their staff with bureaucratic processes, disappoint their customers with inconsistent performance, and generally give the model a bad name.
This presentation will take a critical look at the difference in how contenders and presenters approach improvement.

The observations are useful to:

- Customers trying to decide whether a potential contractor is a pretender or contender.
- Well-meaning organizations which may be inadvertently encouraging pretender behaviors.
Topics

- Goal setting
- Training and awareness
- Customer engagement
- Organizational support
- Appraisals
Goal Setting

Contenders

- Set realistic improvement goals after an initial appraisal, based on business goals and an investment/return strategy.
- All projects participate in the improvement effort – “if it’s good for anybody, it’s good for everybody”.

Pretenders

- Generate a slogan “Level X in 2007”, without any idea or what it will take to get there, or how much senior management is willing to invest.
- In fact, senior management may not be willing to invest anything, encouraging the staff to “improve on their own time”.
- When senior management realizes the goal is too aggressive, they limit the improvements to a few “cherry-picked” projects.
The IDEALSM Model

Following some version of the IDEALSM model provides discipline to ensure CMMI®-based improvements support organizational business goals
True Business Goals

- Shortened time to market
- Promotion of growth
- Improved product quality
- Reduced development costs
- Readiness for business change

Achieving a maturity level may reflect a business goal to remain competitive, but focusing on that sends the wrong message.
1. Process discipline leads to predictable project performance
   - Say what you do; do what you say
   - Document the plans/processes
   - Communicate them to the performers and stakeholders
   - Audit to ensure we are following them

2. Conscious choices lead to better processes
   - E.g., identify relevant stakeholders and their involvement; identify work products to be controlled and the control method; define validation procedures and criteria, …

3. Organizational learning improves project performance
   - Capture what works, and what doesn’t
   - Make rules (policies) to guide projects
   - Define expected processes, and let projects tailor them to fit
   - Capture work products and measures, and learn from them

Reference: “Interpreting the CMMI: It Depends!”, R. Hefner and S. Yellayi, 2005 CMMI Technology Conference and User Group
How Do the CMMI® Practices Add Value

- Each practice provides value in 3 possible ways:
  - **Performance** – the practice directly reduces cost and or schedule through either increased efficiency, increased effectiveness, or lowered rework
  - **Quality** – the practice produces higher quality products, by either preventing or uncovering defects
  - **Communications** – the practice helps everyone understand expected behavior, or provides insight leading to better decisions

- Many practices effect more than one dimension

- Some practices provide the potential for a positive impact or reduce the risk of a negative impact

*Rick Hefner, “How to Explain the Value of Every CMMI Practice”*
2007 CMMI Technology Conference and User Group, Wed, 11:00 am
Contenders

- Realize that improvement means learning how to implement new practices, and training is key

- Invest heavily in explaining how to implement the new practices, and why they add value

Pretenders

- Simply tell the staff to do it, “because the CMMI® says so”
Strategies for Organizational Training - 1

- Start by defining the key job functions in the organization
  - E.g., project manager, software engineer, quality assurance specialist

- Identify the requisite knowledge associated with each function

- Define a set of course modules that impart this knowledge
  - Map modules to job functions
  - Some modules will be common to multiple job functions

- Acquire training materials and trainers
  - Should reflect the organization’s policies and processes
  - Unlikely that standard vendor/university courses will fit

- Ensure all the CMMI® process areas are addressed
  - Knowledge needed to perform the process, NOT a course about the CMMI® requirements for that process area
  - Include performers of the process, and supporters of the process

Rick Hefner and Sree Yellayi, “What the CMMI Doesn’t Say About Training (But Should!)” 2005 CMMI Technology Conference and User Group
Identify each employee by their job function(s), map to required courses
- If the employee already has the identified minimum knowledge, they do not need to take the course

Establish student records
- Who has completed what course, waivers

Review required training with employees
- Career-planning, promotions, new hires

Where additional project-specific training is required (e.g., tools, methods), adopt a similar approach at the project level
- Project Planning SP 2.5 addresses project specific training
Communications Must Address the Underlying Beliefs

- Sponsors and performers must have a strong vision of the desired culture
  - What are my roles and responsibilities?
  - What changes in behavior are required?
  - What are the underlying beliefs and values?
  - How do I benefit – WIIFM?

Covert level  

Intermediate level  

Overt level  

Culture

Ethics  Values  Norms

Attitudes  Beliefs  Priorities

Opinions  Behavior  Conduct  Do & Don’ts

Rick Hefner, “Sustaining CMMI Compliance,” 2006 CMMI Technology Conference and User Group
Key Messages (or Develop Your Own!)

- Achieving and maintaining mature processes is essential to meeting our business goals
  - Predictability, performance, quality
- CMMI® involves short-term investment for long-term gain
- CMMI® is an enabler (not a guarantee) of project success
  - Other aspects (people, technology, customer relationship, etc.) are equally important
  - The value is often risk reduction (which may be difficult to measure)
- CMMI® is a set of proven, industry best-practices
  - Adoption is about learning how to apply these practices to our work
  - The practices may feel awkward and have limited value until we learn them
  - It’s OK to make mistakes – we will get better over time
- When the entire organization is behaving maturely, everyone’s job becomes easier
- Continuous improvement is a way of life

Rick Hefner, “Sustaining CMMI Compliance,” 2006 CMMI Technology Conference and User Group
Customer Engagement

Contenders

- Know that process improvement is about short-term investment for long-term gain
- Engage with their customers, by explaining the benefits CMMI® will provide, the timeline needed to see those benefits, and the improvements to be taken
- Enlist their customer’s help in identifying issues that CMMI® can address

Pretenders

- Attempt to fly “under the radar”
- When the extra burden of work starts to impact project schedules and budgets, practitioners often blame “that CMMI® stuff” for their inability to meet project objectives
## How Does Level 4 & 5 Benefit the Customer?

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Description</th>
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<tbody>
<tr>
<td>More accurate estimates</td>
<td>Problem behaviors are recognized faster, enabling quicker resolution</td>
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<tr>
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<td>The project benefits from improvements found and proven on other projects</td>
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<tr>
<td>The project benefits from improvements found and proven on other projects</td>
<td>The project fixes the source of defects to prevent future defects</td>
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<tr>
<td>Organizational process performance</td>
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<td>Quantitative project management</td>
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<td>Organizational innovation and deployment</td>
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<tr>
<td>Causal analysis</td>
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### Better Products and Services Produced Faster And Cheaper

Rick Hefner, “How Does High Maturity Benefit the Customer?,” Systems & Software Technology Conference, 18-22 April 2005
Organizational Support

Contenders

- Fully support the CMMI®-based improvement program by providing training, templates, tools, process assets libraries, measurement repositories and other work aids focused on improving the ability of practitioners to competently adopt the model.

Pretenders

- Largely ignore organizational support, often to save money.
- Where required by the model, they establish process asset libraries and measurement repositories, but they are largely shelfware.
Management Commitment and Support

- Understands the key messages
- Is willing to take actions to reinforce them
- Provides resources to support/sustain process improvement efforts
- Sets expectations that essential project functions will be funded and processes will be followed
  - Project planning, estimation, tailoring, CM, QA, etc.
- Supports process improvement and sustainment, rather than passing appraisals
- Rewards mature processes development and sustainment rather than individual heroics
  - Tell me how you will reward me, and I’ll tell how I will behave

Rick Hefner, “Sustaining CMMI Compliance,” 2006 CMMI Technology Conference and User Group
Appraisals

Contenders

- View appraisals as money well-spent in measuring the maturity of their processes, identifying improvements, and building buy-in
- Often appraise other aspects than simple model compliance, such as process effectiveness and efficiency
- Ensure that all projects within the organization participate in the appraisal, to reinforce the use of mature processes, and to ensure all customers receive the benefits of that maturity

Pretenders

- Often only adopt CMM on a subset of their projects, also severely limit the percentage of projects that they appraise
- Scope the work to what they think will pass, not what is best for the business.
Appraisal Inaccuracies

- **Methodology**
  - SCAMPI\textsuperscript{SM} A appraisals provide highly accurate appraisal results
  - SCAMPI\textsuperscript{SM} B, C, and other appraisal methods may be useful, but they are not designed to provide the same accuracy

- **Appraiser skill**
  - There is wide variation in appraiser skill, experience and insight
  - Although appraisal experience is a crucial contributor to accuracy, the appraisal methods do little to ensure sufficient experience – method, type of organization
  - There is wide variation in how the model is interpreted, even among experienced lead appraisers

- **Appraiser independence**
  - Appraiser independence is needed to ensure unbiased results
  - It is difficult to establish a completely independent situation

*Rick Hefner, “How Does High Maturity Benefit the Customer?,” Systems & Software Technology Conference, 18-22 April 2005*
Summary

- There is a marked difference between organizations that truly want to implement CMMI®, and those who are simply try to get a “certificate”

- By discussing the differences, we hope to help the CMMI® community the true value of CMMI®

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