CMMI and Agile Processes:



(ANT WE ALL JUST GET ALONG?

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The George Washington University presented to

2nd CMMI Technical Conference

November, 2002

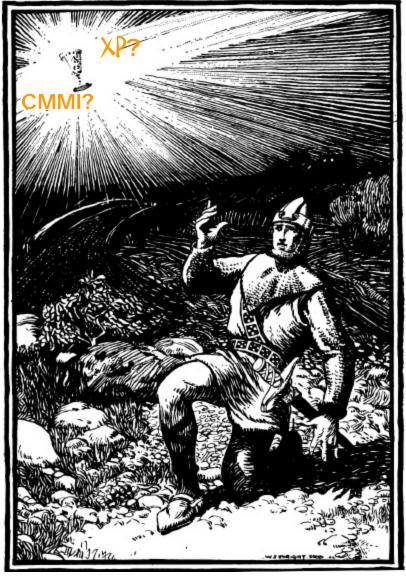
Overview

- Software development problems are ubiquitous
- CMMI and Agile Methods have been seen as didactic
- Mapping agile to CMMI elements
- Process maturity requirements for agility
- The bottom line



Like Alice's White Rabbit, software always seems to be late

The Situation



An ambiguous vision of the SW development grail

- We're all searching for a solution to the software problem
- CMMI and process improvement attempt to ensure consistency and predictability
- Agile is a response to over-specified processes and dehumanization
- Misunderstanding abounds

General Characteristics

- Primary goals
 - Predictability, Stability, high assurance
 - Customer satisfaction, Speed
- Scope
 - Broad, Inclusive and Organizational
 - Small, Focused
- Improvement focus
 - Process
 - People
- Motivation
 - Both want to develop high performance organizations

Management Characteristics

- Planning
 - Composite, explicit, as-detailed-as-possible planning
 - Collaborative, tacit, just-enough-detail planning
- **❖** Trust
 - Process Infrastructure
 - Working S/W, Participation
- Organization
 - Hierarchical Committees
 - Individuals and teams
- Size and scaling
 - Large projects and teams, scaling down difficult
 - Small projects and teams, scaling up largely
- Rules
 - Rules are important in both

Technical Characteristics

- Architecture
 - Thoughtful, predictive
 - Simple and emergent
- Rework
 - Avoid rework, rework costs increase over time
 - Continuous rework, rework costs low and constant
- Requirements, Documentation, and Quality Assurance
 - Comprehensive requirements and test documentation; independent test and quality assurance.
 - Customer participation and operational test cases; minimal documentation; team- based defect removal via refactoring
- Knowledge management
 - Process Assets
 - People

People Characteristics

- Practitioners and advocates
 - Disciplined, Follow Rules and Risk Managers
 - Informal, Creative and Risk Takers
- Skill Level
 - Mix of skills with few experts
 - Multi- skilled with more experts
- Communication
 - Macro, Organizational
 - Micro, Person to Person
- Problem Solving
 - Words and Plans
 - Product and Priorities

CMMI vs. Agility - The Process Area View

- Project Planning
- Project Monitoring and Control
- Supplier Agreement Management
- Integrated Project Management
- Risk Management
- Integrated Teaming
- Quantitative Project Management
- Requirements Management
- Requirements Development
- Technical Solution
- Product Integration
- Verification
- Validation

KEY (GREEN: Complementary, BLACK: Neutral, RED: Rough Edges)

CMMI vs. Agility - The Process Area View

- Organizational Process Focus
- Organizational Process Definition
- Organizational Training
- Organizational Process Performance
- Organizational Innovation and Deployment
- Configuration Management
- Process and Product Quality Assurance
- Measurement and Analysis
- Decision Analysis and Resolution
- Organizational Environment for Integration
- Causal Analysis and Resolution

CMMI vs. Agility – The Improvement Path View

- - Identify scope of work
 - Perform the work
- - Organizational policy for plan, perform
 - Requirements, objectives and plans
 - Adequate resources
 - Assign responsibility and authority
 - Train the people
 - CM for designated work products
 - Identify and involve stakeholders
 - Monitor and control to plan and take action if needed
 - Objectively monitor adherence to process and QA products/services
 - Review with upper management and resolve issues

KEY {GREEN : Complementary, BLACK: Neutral, RED: Rough Edges}

CMMI vs. Agility – The Improvement Path View

- **. ** "LEVEL 3"**
 - Maintain as a defined process
 - Measure the process performance to support environment
- - Establish and maintain quantitative objectives for the process
 - Stabilize the performance of one or more sub-processes to determine its ability to achieve
- **❖** "LEVEL 5"
 - Ensure continuous improvement to support business goals
 - Identify and correct root causes of defects

KEY {GREEN : Complementary, BLACK: Neutral, *RED: Rough Edges***}**

How Higher Process Capability Supports Agility

Process experience

- Helps decide what process components are critical and which can be removed
- Instinctive use of minimal process with few artifacts while maintaining the required discipline for success

Process data

- Understanding the impact of processes
- Estimation mastery and knowing how far you can push the envelope and still survive

Process assets

- Encourage reuse and quick startups
- Help maintain and transition knowledge

Agility and Maturity Level 5: Agile Practices in Support of CMMI Level 5 Objectives *

- Improvements are selected based on an understanding of their expected contribution to achieving the organization's process improvement objectives versus the cost & impact.
 - * "Optimizing processes that are agile and innovative depend on the participation of an empowered workforce aligned with the business values and objectives of the organization." **
 - The organization's ability to rapidly respond to changes is enhanced by finding ways to accelerate and share learning.
- Alternative practices must clearly and unequivocally accomplish a result that meets the goal.
- CMMs enable creativity and improvement within a contextual framework
 - Many CMM practices are informative; providing insight as to what might be done to accomplish expected practices
 - Practitioners should be encouraged to improve the practices that are used to accomplish project and organizational objectives

^{* &}quot;Minimizing Unintended Consequences of Process Streamlining," STC2002, May 2002 presentation, Joe Jarzombek

^{** &}quot;Agile Development and the CMMI: Anti-Matter and Matter or Reconcilable Differences?" Presentation at STC, May 2002, Steve Ornburn & David Kane.

Conclusions

- Differences are often in approach rather than substance
- Perceptions (on both sides) are not necessarily valid
- "Liberal" interpretation of CMMI generally consistent with agile
 - Organizational facets of CMMI are most "out of synch"
 - Levels 3 and 4 are most problematic because they tend to be most process-centric
- Communication between the advocates will help reconcile differences and correct misconceptions

