CMMI and Agile Processes: CAN'T WE ALL JUST GET ALONG?

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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

- 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

An ambiguous vision of the SW development grail
Comparing CMMI and Agile Characteristics

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
Comparing CMMI and Agile Characteristics

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
Comparing CMMI and Agile Characteristics

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
Comparing CMMI and Agile Characteristics

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
CMII 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

KEY {GREEN : Complementary, BLACK: Neutral, RED: Rough Edges}
CMMI vs. Agility – The Improvement Path View

- **“LEVEL 1”**
  - Identify scope of work
  - Perform the work

- **“LEVEL 2”**
  - 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}
“LEVEL 3”
- Maintain as a defined process
- Measure the process performance to support environment

“LEVEL 4”
- 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

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