Making the CMMI® Sing
- A Framework for Performance Excellence

CMMI® Technology Conference and User Group

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This presentation spans
TWO sessions
Administrivia

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• Who I am:
  – Chief Engineer, Jacobs Technology, Inc./ITSS
  – SCAMPI Lead Appraiser
  – (Lean) Six Sigma Black Belt
  – Certified Scrum Master
  – Member, NDIA Systems Engr Steering Committee
  – Member, NDIA CMMI Working Group
  – Member, CMMI-SVC Advisory Group
  – Visiting Scientist, SEI
Outline

- Goals of a performance improvement approach
- Discovering some driving principles
- Attributes of some performance improvement approaches
- Our journey
- Introducing the Framework for Performance Excellence
- Value propositions of framework components
- Making the Framework sing
Goals of a Performance Improvement Approach

- Respond to business objectives or solve problems
- Exhibit positive return on investment
- Produce sustainable improvements
- Be transferrable across projects and organizations
- Produce results fast enough to make business sense
Outline

• Goals of performance improvement
• Discovering some driving principles
• Attributes of some performance improvement approaches
• Our journey
• Introducing the Framework for Performance Excellence
• Value propositions of framework components
• Making the Framework sing
Some Driving Principles

- Focus on performance and quality objectives
- Direct involvement of leadership
- Process ownership
- Improvement velocity
Focus on Performance/Quality Objectives

• Examples of performance objectives
  – Reduce software life cycle time frame
  – Increase level of service
  – Respond to changes in customer demand in three months or less
  – Reduce cost of development by 35%

• Examples of quality objectives
  – Meet service levels 99.9% of the time
  – Reduce delivered defects to less than 3 per 1,000,000 opportunities
Why are Performance/Quality Objectives Important?

Because they change everything

- The improvement approaches chosen
- Interpretation of CMMI practices
- Workflow measures in Value Stream Mapping
- Measurement objectives
- Which CMMI Process Areas to implement
- What Maturity or Capability Levels to target
- What part of the organization to improve
- How much you’re willing to invest
Return on Investment Envelope

Estimated ROI

Focus on Organizational Performance and Quality Goals

Level 2 Level 3 Level 4 Level 5

Sharp focus on organizational performance and quality goals

Little or no focus on organizational performance and quality goals

WORST CASE ROI CURVE

MAXIMUM ROI CURVE

Break-Even Line

Opportunity Space
Direct Leadership Involvement

• “Allowing” the organization to improve is often not enough
  – Resources, personnel, money
  – Some level of process/work product review
  – Support for organizational change
  – Approval and support of process changes

• Direct, active involvement is key
  – Tie effort to real business objectives and issues
  – Be demanding of results in a meaningful time frame
  – Set high level performance and quality goals
  – Get “heroes” and key personnel directly and personally involved

LEADERSHIP is key....
Process Ownership

- Levels of removal from process ownership
  - Hire a professional to come in and write your processes (increasingly rare)
  - Form an SEPG of "process people"
    - Buy-in strategies
    - Dealing with "heroes"
    - Mandates for use of processes (!)
- Ownership by process "doers"
  - Charge the "heroes" with leading performance improvement
  - Exactly as intended by Lean Thinking
  - Make performance improvement everyone’s job
Improvement Velocity

- Velocity = speed in a specific direction
- Improvement “at the speed of business” is the key
- **Barriers to high velocity:**
  - Lack of focus (objectives, issues, scope, etc.)
  - Lack of leadership
  - Processes not owned by “doers”
  - Low process maturity
  - Misunderstanding of CMMI and other approaches
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Attributes of Performance Improvement Approaches

• Lean Thinking:
  – Pros:
  – Cons:

• The CMMI:
  – Pros:
  – Cons:

• The Information Technology Infrastructure Library:
  – Pros:
  – Cons:

• Six Sigma:
  – Pros:
  – Cons:
Our Lean/CMMI/ITIL/Six Sigma Journey

Customer Efforts
- CMMI-Software ML2
- Lean CMMI-DEV ML2
- Lean CMMI-DEV ML2
- Lean CMMI-DEV ML3
- Lean CMMI-DEV HM
- Lean/ITIL CMMI-SVC (C)

Internal Efforts
- CMMI-Software ML3
- Lean CMMI-DEV ML3
- Lean CMMI-DEV ML3
- Lean CMMI-SVC

Discoveries
- Lean/CMMI work together
- Lean/CMMI offers reduced costs and schedule
- 1st High Velocity effort
- Value of Performance Goals
- Directly involved leadership
- Integration of CMMI & 6σ
- Lean/ITIL/CMMI-SVC offers high value
- Continuous CMMI-SVC PAs in ISO certified org.

Lean CMMI-SVC in ISO 9001-2008
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Lean/CMMI/Sixσ Venn Diagram

- Strategic focus
- Customer value
- Rapid improvement

CMMI

- Improvement framework
- Mature best practices
- Robust appraisal methods

Lean Thinking

6σ
Process Control
The Framework for Performance Excellence
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Value Propositions for Framework Components

- The CMMI
- Lean Thinking
- Six Sigma
- ITIL
Capability Maturity Model Integration

• What is?
  – Models (goals, practices, informative material)
  – SCAMPI appraisal methods
  – Core training (SEI authorized)

• Value proposition:
  – Domain-specific best practices (development, services, and acquisition)
  – Practices for improvement infrastructure
  – Framework for continuous improvement
    • Maturity Levels
    • Process Area Capability Levels
  – Robust, extensible appraisal methods
    • Course correction
    • Learning mechanism
    • Benchmarking

• Downside:
  – No improvement approach or strategy
  – Needs focus and leaning

• Integration with other approaches:
  – Synergistic with Lean
  – Actualizes Six Sigma
  – Implements ITIL
Lean Thinking

• What is?
  – Focus on customer value
  – Value stream mapping (workflows)
  – Cadence and synchronization
  – Organizational rapid learning
  – Process doers are process owners
  – Reliance on tacit knowledge and skilled team members
  – Agile project management

• Value proposition:
  – High velocity (Presentation Wednesday 8AM)
  – Lean (smart) processes and process efficiency
  – Builds mature teams quickly
  – Rapid response to customer pressures

• Downside:
  – No improvement infrastructure
  – Suffers from lack of consistency and persistence

• Integration with other approaches:
  – Synergistic with CMMI models
  – Leverages Six Sigma
  – Sharpens business context of ITIL
Degradation Curve for the Lean/Agile Value Proposition

Lean Value (ROI)

Family of Lean/Agile Constructs
Six Sigma

- What is?
  - Statistical mechanisms for process control
    - Process variability
    - Central tendency
  - Some mechanisms:
    - Regression and correlation
    - Tests of Hypothesis
    - Analysis of variance
    - Statistical process control
    - Experimental design
    - Process performance modeling and optimization

- Value proposition:
  - Allows prediction of project performance
  - Leading vs. lagging indicators
  - High degree of process control (e.g. six sigma)

- Downside:
  - High cost
  - Extensive timelines (improved by lean)

- Integration with other approaches:
  - Fully integrable with CMMI
  - Energized by lean (shorter cycles/more data)
Sample Process Control Chart

- Upper Specification Limit - USL (Voice of the Customer)
- Upper Control Limit - UCL (Natural Process Limit)
- Central Tendency
- Lower Control Limit – LCL (Natural Process Limit)
- Lower Specification Limit – LSL

Process Stability

Time →

Process Capability
Information Technology Infrastructure Library

• What is?
  – Best practices for IT service operations
  – Fair implementation guidance
  – ITSM life cycle
    • (Strategy/Design/Transition/Operation/Continuous Improvement)

• Value proposition:
  – Excellent set of IT-specific practices
  – Several useable ITSM processes
  – Personal knowledge certifications
  – ISO 20000 registration
  – Some guidance for setting objectives and strategy

• Downside:
  – Little support for “organization for improvement”
  – No framework for benchmarking performance improvements

• Integration with other approaches:
  – Works well with CMMI-SVC
  – Can be benchmarked with CMMI SCAMPI A (presentation Wednesday 10AM)
  – Orthogonal to Six Sigma
  – Organizational context improved with Lean Thinking
Relative Contributions Fully Integrated Framework
(CMMI-SVC Example)
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Making the Framework Sing

• Applying the Framework
• Driving principles
  – Focus on performance and quality objectives
  – Direct involvement of leadership
  – Process ownership
  – Improvement velocity
• Choosing the improvement approaches
• Tuning the Framework – some examples
Applying the Framework

Add for high velocity and fanatical focus on customer needs

Add for statistical process control and optimization

Add for IT service organizations

Legend:
- Driving Principles
- Improvement Approaches
Example 1: Small SW Development Organization

- Performance Objectives:
  - Negotiated schedules are estimated and met with no more than a 10% variance
  - Financial costs within a 10% variance
  - Customer survey scores of 90+% satisfaction
  - Delivered product and development iterations meet or exceed committed requirements 100% of instances
  - Customer sign off occurring within 1 week after project completion

- 11 Months to achieve goals and ML3
Lean for Low Defects and Improvement Velocity

Sr. Leadership
Defined objectives and participated directly in process discussions

One week improvement cycles

Results: Achieved all performance goals and CMMI ML3 in 11 months

Performance Objectives:
- Negotiated schedules are estimated and met with no more than a 10% variance
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Example 2: IT Service Organization

- Large IT commercial organization
- Internal (Lean) CMMI-DEV ML3 software dev. organization
- Performance Objectives:
  - Mistake-free processes and services
  - Seamless flow between business departments
  - Single ownership of services
  - Delivered services meet or exceed Service Level Agreement (SLA) 100% of instances
  - Develop credible proof of delivery capability and continuous improvement
Example

Organization

Performance Objectives:
- Mistake-free processes and services
- Seamless flow between business departments
- Continuous improvement of defined services
- Single entry of information/data
- Single ownership of services
- Delivered services meet or exceed Service Level Agreement (SLA) 100% of instances
- Develop credible proof of delivery capability and continuous improvement

Lean VSMs for Customer Focus and Waste Elimination

Sr. Leadership
Defined objectives and participates directly in process discussions

13 Month Goal to achieve objectives and ML3

Results to date: Benchmark Kaizens complete. Services defined. Initial process interfaces reconciled.
• See article in Jan/Feb 2010 issue of Crosstalk
• To discuss further, contact me at: jeff.dutton@jacobs.com

QUESTIONS?