



Key to CMMI Success in a Maintenance Environment

March 9, 2006 SEPG
Nauman Muhammad

IBM Canada





Agenda

- Overview
- Challenges of Applying CMMI in a Maintenance Environment
- Key to CMMI Success
- Summary

Overview





Objectives

The objectives of this presentation are to share with the audience:

- Challenges of applying CMMI in a software maintenance environment
- A summary of critical success factors and lessons learned from a successful process improvement project



Audience Profile

This presentation will benefit those SEPG 2006 attendees who are:

- Starting their process improvement journey with a goal to attain CMMI Maturity Level 2 or 3
- Planning to implement CMMI in a mid size account (200-300 employees)
- Seeking critical success factors and lessons learned from successful process improvement projects



Background

The material in this presentation is based on the process improvement project that led to the attainment of CMMI Maturity Level 3 at IBM Canada

- IBM's Internal Account in Canada serves the software maintenance needs of IBM in Canada
- Consists of approximately 300 Full Time Employees
- Primarily a maintenance shop with enhancement and development projects
- May 2003 - IBM Canada attained SW-CMM Level 3
- Early 2004 - CMMI Level 3 project launched
- December 2004 - SCAMPI-B completed
- June 2005 - IBM Canada attained CMMI Maturity Level-3

A vertical strip on the left side of the slide. At the top is a wireframe globe. Below it is a close-up of a computer keyboard, specifically the "Enter" key. At the bottom, there is a group of people sitting around a table, working on laptops.

Challenges of Applying CMMI in a Maintenance Environment



A Dilemma

CMMI has been successfully applied across a broad spectrum of Application Development and Application Maintenance scenarios

Interpreting CMMI requirements for maintenance environments presents distinct challenges

- A literal interpretation of CMMI requirements makes process overheads disproportionate to the level of effort involved in small work requests
- Radical interpretation or skipping of some requirements may impact goal attainment



Proportional Process Overhead

Clip levels: Apply process details on a proportionate scale, for example

- Projects: > 1,000 hours
- Large Tasks: 100 – 1,000 hours
- Small Tasks: < 100 hours

A task exists at two levels, apply process overheads proportionately

- Individual task level - minimal process overhead
- Combine all tasks within a unit to form a framework plan - apply full process rigor at this level
 - For example create and document a test strategy once at the framework level and use it multiple times at the task level

Project Planning and Tracking

Guidelines for Applying Proportional Process Overhead

CMMI Requirement	Projects > 1 K Hours	Large Tasks 100-1 K H	Small Tasks < 100 Hours
Estimates	Modeling Techniques	High Level	Historical Data, Peer Input
Statement of Work	Detailed	Brief 2-3 pages	Brief Documentation (e-mail)
Project Schedule	Tool based, detailed	Work Breakdown Structure	Documented
Management Reviews	Detailed	Brief	Performance Thresholds
Process Assurance Reviews/Audits	Detailed	Brief	Planned Sampling

A vertical decorative strip on the left side of the slide, featuring a blue and purple color scheme. It includes a wireframe globe at the top, a close-up of a computer keyboard with an 'Enter' key, and a group of people sitting around a table in a meeting or workshop setting at the bottom.

Key to CMMI Success (Lessons Learned)

Scope and Approach

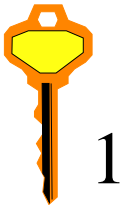
Time and effort invested in carefully defining the scope and approach of the Process Improvement Project deliver huge dividends:

Scope

- Select CMMI Representation appropriate for your organization: Staged or Continuous
- Determine if Supplier Agreement Management (SAM) is applicable
- Projects (Release Mgt.; Framework) vs. Tasks

Approach

- Practice what you preach
- Split into two distinct projects:
 - Develop and Deploy
 - Appraisals (SCAMPI B and A)



1

Selection of Lead Appraiser

Select and engage Lead Appraiser through all phases of the Process Improvement Project:

Issue Definition

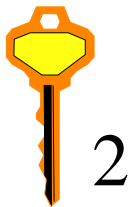
- CMMI is an interpretive model
- Different appraisers interpret CMMI details differently
- Process team's interpretation of CMMI must be validated

Solution

- Engage a Lead Appraiser throughout your process improvement journey - not just at appraisal time

Evaluate and Select

- Interview and seek references for the Lead Appraiser
- Look for compatibility and cultural fit with your organization



Lead Appraiser - II

Select and engage Lead Appraiser through all phases of the Process Improvement Project:

Discuss and Document

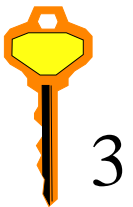
- When multiple interpretations for CMMI issues exist – Lead Appraiser has the last word
- Validate all design solutions
- Hold regular meetings and document minutes – from design stage until after appraisal
 - Keep Lead Appraiser updated and engaged
 - Familiarize Lead Appraiser with account environment and constraints



Sponsor, Stakeholders and SME

Commitment and active participation of Project Sponsor, Stakeholders and Subject Matter Experts are the building blocks of a successful Process Improvement Project

- **Sponsor:**
 - Preferably the account lead should be the sponsor
 - Clear and consistent communication from the top helps to establish and retain organizational focus
- **Stakeholders:**
 - Success of a CMMI Project depends on involvement of stakeholders across the organization
 - Process Group cannot deliver success in isolation
- **Subject Matter Expert:** Identify SME amongst the practitioners and involve them in selected design and development activities
 - Helps to generate a sense of participation and ownership
 - SME evolve into process champions



Smart Design

Know your work environment and give extra attention to the process asset design phase

- Do not reinvent the wheel; buy/adapt Process Assets
- Think how a practitioner will implement process
 - Provide detailed instructions and examples
 - Balance the process details - let the process assets reflect practitioner's terminology and experiences
- Design guidance for Level 2 Process Areas
 - PMC: Link Data Management with Configuration Management vs. a stand alone implementation
 - PPQA: Keep review effort proportionate to the total work effort
 - MA: Invest time in understanding business objectives and selecting the right measurements. Establish foundation for a Level 4 and 5 journey

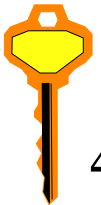


4

Smart Design - II

Know your work environment and invest heavily in your process asset design

- Design guidance for Level 3 Process Areas
 - TS & PI: Use existing forms of documentation (e.g. service request tickets, problem records) to document solution – get Lead Appraiser's consent
 - VER & VAL: Equate normal tests performed in your shop with the test requirements of VER and VAL (e.g. Integration test = VER test and UAT = VAL)
 - IPM: Integrate this process area with PP and PMC
 - DAR: For small maintenance projects define mandatory required decisions (e.g. selection of development methodology)



4

Skillful Institutionalization

Do not under estimate the level of effort required to nurture and support the Process Institutionalization phase

- Process team should be available and responsive
- Commit turn around time for Process Tailoring and Process Improvement Requests
- Provide process guidance to all project managers at project start and end
- Conduct all required process reviews
 - Insist on defect resolution
 - Escalate if necessary
- Communicate regularly with sponsor and stakeholders



SCAMPI B and A

Success in SCAMPI-A requires detailed planning, committed resources and excellent execution

- Use PPQA reviews to determine if process adoption and conformance evidence indicates “account readiness”
- Prepare for SCAMPI experience
 - Be aware of SCAMPI requirements
 - Bridge the CMMI and account terminology gap
 - Some participants may not have had a formal interview for more than a decade
 - Allocate adequate time for organizing evidence (PIID)
- Plan a SCAMPI-B 3-4 months before SCAMPI-A
 - Projects from SCAMPI-B can be part of SCAMPI-A
 - Address all SCAMPI-B findings



Sustained Improvement

Attainment of a CMMI Maturity Level should be considered the beginning and not the end of the Process Improvement Journey

- Keeping the focus on continuous process improvement after attainment of CMMI goal is a challenge
- Process improvement gains can disappear rapidly
- Sustain process assurance reviews, measurement collection and related process activities
 - Establish baselines for objective evaluation of process improvement or decline
- Keep sponsor and stakeholders involved
 - Demonstrate sustained process improvement gains (or loss) through the measurement program
 - Provide incentives for contribution of process improvement suggestions
 - Listen to the practitioners



Summary





Summary

There is no “shall” in CMMI – apply common sense. Keep process overhead proportionate to the total level of effort. Apply lessons learned:

1. Scope and Approach
2. Selection of Lead Appraiser
3. Sponsor, Stakeholder and SME
4. Smart Design
5. Skillful Institutionalization
6. SCAMPI B and A
7. Sustained Improvement



Questions and Feedback

Nauman Muhammad
nmuhamme@ca.ibm.com

