SCAMPI A Applied to Small Settings – A Success Story

Sponsored by the U.S. Army Aviation and Missile Research, Development & Engineering Center (AMRDEC) Software Engineering Directorate (SED)

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Agenda

• Pilot Overview

• ASI - Company Profile

• Lead Appraiser’s Perspective
  - Appraisal Preparation - Success Factors
  - Appraisal Conduct - Leveraging MDD Tailoring Options

• ASI’s Perspective
  - Appraisal Preparation
  - Appraisal Conduct

• Lessons Learned
  - ASI’s Perspective
  - Lead Appraiser’s Perspective

• How Pilot Artifacts Can Help Small Businesses
Pilot Project Overview

- A Joint Project Performed by the Partnership Between the Software Engineering Institute (SEI) and AMRDEC SED to Establish the Technical Feasibility of Developing Guidance and Other Special-Purpose Transition Mechanisms to Support Adoption of CMMI by Small and Medium Enterprises (25 to 250 Employees in Huntsville)

- Selected 2 Pilot Companies: Analytical Services, Inc. (ASI) and Cirrus Technology, Inc. (CTI)
  - Presentation Today Focuses on ASI Appraisal

- Pilot Artifacts Will Be Available at the SEI Website by the End of the Year
  - Toolkit
  - Experience Reports (One for Each Company)
## CMMI Small Business Pilot Schedule

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<th>Jul '03</th>
<th>Aug '03</th>
<th>Sept '03</th>
<th>Oct '03</th>
<th>Nov '03</th>
<th>Dec '03</th>
<th>Jan '04</th>
<th>Feb '04</th>
<th>Mar '04</th>
<th>Apr '04</th>
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**Legend:**
- Contact/Awareness
- Understanding
- Trial Use
Summary of Materials Provided by Pilot

Adapted from Patterson & Conner, “Building Commitment to Organizational Change”, 1982.
LEAD APPRAISER’S PERSPECTIVE

Appraisal Preparation Success Factors
Company Profile
Analytical Services, Inc.

- Management and Technical Services Company
- Incorporated in 1992
- Hispanic, Woman-Owned, Small Disadvantaged Business
- ISO 9001:2000 Registered/Successful CMMI SCAMPI A Appraisal
- Top Secret Facility

Information Technology
Core Competencies
Engineering and Scientific Analysis

Professional and Organizational Development

Employee Growth 1995 - 2004
Revenue Growth 1995 – 2004 ($M)
Until ‘02, written corporate policies - few written processes
  – Worked with consultants from local university
  – Mentor Protégé Program provided guidance
• Nov ‘02 – Mar ‘03 - Established Quality Management System (QMS)
• Feb ‘03 - Pre-Assessment NQA Audit (external)
• Mar ‘03 - External certification audit for ISO 9001-2000 Registration -NQA
• May ‘03 - Selected to participate in CMMI Small Business Pilot Project
• Jun ‘03 - ISO Audit - 3 Month Registration Surveillance Audit
• Aug ‘03 - Initiated CMMI Pilot Project – (Continuous Representation)
• Apr ‘04 - ISO Audit - 2nd Surveillance Audit
• Apr/May ‘04 - Completed Pilot - SCAMPI A Appraisal of 5 process areas.
  – Achieved Target Capability Level Profile
• Oct ‘04 - ISO Audit - Oct ‘04 - 3rd Surveillance Audit
Initial Gap Analysis

- Collaborative Sessions Between ASI and Lead Appraiser to Identify Gaps Between ASI’s Practices and the CMMI

- Gap Analysis Used SCAMPI C Techniques

- In Each Session, ASI’s Practitioner/SME and the Lead Appraiser Walked Through the CMMI Practices to
  - Determine How Well the Practice Was Implemented
  - Identify Gaps
  - Develop Actions Required to Close the Gaps

✓ Significantly Increased ASI’s Understanding of CMMI
✓ Helped ASI Interpret CMMI for Their Environment
✓ Provided the Basis for the Development of an Improvement Plan
✓ Ensured That New Process Implementation Was Compliant With the CMMI
SCAMPI A Workshop

- Lead Appraiser Provided a SCAMPI A Workshop to ASI
  - Described Method
  - Addressed Appraisal Preparation and Conduct Activities
  - Provided Overview of Appraisal Plan and Schedule
  - Clearly Identified Roles and Responsibilities During Appraisal Preparation and Conduct
    - Appraisal Team Members
    - Appraisal Sponsor
    - Appraisal Organizational Unit Coordinator
    - Appraisal Participants

✓ Helped Set Expectations (ASI Understood What They Were Getting Themselves Into)
✓ Resulted in No Surprises During Appraisal Preparation or Conduct
Generics Workshop

- Objective Was to Reduce the Risk Associated With Misinterpretation of Generic Practices

- Workshop Scope
  - Overview of Generic Practices
  - Exercise Applying Each of the CL 2 Generic Practices to ASI’s Requirements Management Process

- Generic Practice Application Was Reinforced During Subsequent Meetings

- Helped ASI Understand and Interpret Generic Practices for Their Environment
- Ensured That Implementation of Generic Practices Was Consistent With CMMI Requirements
Guided Practice Implementation Indicator Descriptions Population

- Recommended Use of a Database Tool (Tracker) to Capture Mappings of ASI Evidence to the CMMI Practices
- Provided Very Specific Guidelines for the Population of PIIDs Using the Tracker Tool
- Held PIIDs Workshop to Ensure Guidelines Were Understood and Rules of SCAMPI Method Were Clear
- Performed Quick-Looks (Database Content Reviews) Prior to the Appraisal

- Ensured That PIIDs Were Readily Available for the Appraisal Team
- Significantly Reduced the Duration of the Readiness Review and Appraisal
LEAD APPRAISER’S PERSPECTIVE

Appraisal Conduct
Appraisal Scope

- **CMMI Model Scope**
  - PP, CL 2 (CCWS)
  - REQM, CL 2 (CCWS, TMDE)
  - M&A, CL 2 (System Management Group)
  - OPF, CL 3 (ASI Huntsville)
  - OT, CL 3 (ASI Huntsville)

- **Application Domain Characterization**
  - Services

- **Model/Version/Representation**
  - CMMI-SE/SW Version 1.1 (Continuous)
Key Appraisal Personnel

- **Team Leader**: Sandra Cepeda, CSSA
- **Team Members**:
  - Scott Reed, SEI (Mini-Team 1 Lead)
  - Beth Smith, ASI (Mini-Team 1)
  - Miguel Serrano, CIMAT (Mini-Team Lead 2)
  - Jeff Kauffman, SED (Mini-Team 2)
- **Organizational Unit Coordinator**: John Sullivan
- **Tool Support**: Annette Hughes, Jimmi Hendrix
- **Infrastructure**: Darin Rushing and Luis Torres
- **Executive Support**: Jack Conway, ASI Systems Management VP
- **Appraisal Sponsor**: Irma Tuder, ASI President and CEO
Leveraging MDD Tailoring Options

• Team Training
  - Reinforce Complex Model Concepts (GP -> PA Relationships, Content Overlap, etc.)

• Presentations by the Organization
  - Useful to Set Context and Familiarize Team With Organization
  - Opportunity to Get Affirmations

• Depth of Readiness Review
  - Characterize Practices as Much as Possible -> Key Risk Mitigation Activity
  - Use to Optimize Team Dynamics
Leveraging MDD Tailoring Options

• Re-Planning
  - To Address Lack of Objective Evidence
  - To Capitalize on High States of Readiness
  - To Ensure Expectations Are Met

• Structured Approach
  - Help Appraisal Team Stay Focused
  - Drive Efficient Method Execution
  - Meet Schedule

• Interviews
  - Run Concurrent Sessions (Assumes Highly Capable Mini-Teams)
  - Perform Concurrently With OE Review, if Possible
  - Capitalize on Resources
Scaling Down SCAMPI A

- 415 Documents Reviewed
- Conducted Team Training, Readiness Review and Appraisal in 4 Days (Two 1-Week Events Initially Planned)
Appraisal Results

Target Capability Level Profile Achieved
ASI’S PERSPECTIVE
Challenges/Surprises

SCAMPI Appraisal

- Challenges:
  - Level of Detail Required for Appraisal
  - Thoroughness of Appraisal
  - Documentation Required
  - Preparation Required

- Surprises
  - Appraisal Was Positive
  - Tools Provided Really Worked to Prepare for Appraisal
  - Preparation Efforts Paid Off
  - ISO 9001-2000 Was Excellent Preparation to SCAMPI Appraisal
ASI Experience & Perspective

- Initial Confidence/Optimism
- Intimidation Factor - Overwhelming
- Tracker Tool Provided
- Initial Reaction – Overwhelming
- Problems With Tracker Tool
- Get Serious
- Organize Artifacts
- Populate Data in Tool
- Develop Confidence
- Preparation for Appraisal Readiness Review
Appraisal Conduct

ASI Experience & Perspective

- Appraisal Well Organized and Non Intrusive
- Appraisal Team Established Schedule and List of Resources Required
- Information Required for Appraisal Was Clear and Definitive
- Appraisal Reviewed Tracker Tool and Artifacts Provided
- No Surprises
- Positive Experience
## ASI Pilot Program

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Results of SCAMPI

ASI Perspective

- Achieved Target Profile Capability Level Profile
- CL2 for 3 Process Areas From Pilot Program
- CL3 for 2 Process Areas
- Compatible With ISO 9001-2000
- Processes Are Incorporated Into QMS
- Pilot Program, CMMI Adoption and SCAMPI Appraisal Were All Beneficial and Worth Investment
LESSONS LEARNED
SCAMPI Appraisal

- Preparation Is Critical
- Consultants Required (First Time)
- Listen to the Consultants
- Set Schedule and Keep It Moving
- Experience With Quality Audits (ISO 9001-2000) Is Helpful
- State of Quality Management System Big Factor
- Use Tools to Prepare
- Organize Artifacts
- Leadership Involvement Is Essential
Appraiser’s Perspective - Preparation

- Existing Quality Management Systems Should Be Leveraged
  - Organizational Process Focus and Organizational Training Goals Were Met by the Existing ISO 9000:2001 Implementation

- Organization’s Understanding of the SCAMPI A Method Is Critical in Setting Expectations for Appraisal Preparation and Conduct

- Quick Looks (B’s and C’s) Significantly Improve the Chances for a Successful SCAMPI A

- Well-Populated PIDDS Are Critical for Appraisal Success - a Collaborative Approach Between the SLA and the Organization Is Recommended


- Using the Same Tool for the Initial Gap Analysis, the Incremental Quick Looks, and the SCAMPI A Appraisal Increases the Efficiency of the Appraisal

- Using the Same Tool for PIIDs Population and the Appraisal Can Also Increase the Efficiency of the Appraisal
Appraiser’s Perspective – Appraisal

- Leveraging SCAMPI A MDD Tailoring Options Can Significantly Decrease the Duration of the Appraisal
- A Consistent Understanding of Generic Practice Interpretation for the Organization Being Appraised Is Critical for an Appraisal Team
- A Documented, Well-Defined Appraisal Process That Integrates Tool Usage Simplifies the Implementation of the Appraisal Method for Appraisal Team Members
- Applying the Method as a Team, to One Instance in the Scope of the Appraisal, Is a Powerful Training Exercise for the Appraisal Team
- Ensuring Consistency Across Appraisal Mini-Teams Early in the Appraisal Simplifies the Team Consensus Activities

✓ Both CMMI and SCAMPI A Scale Down to Fit Small Settings
How Pilot Artifacts Can Help Small Businesses
Using CMMI in Small Businesses

- CMMI Provides a Set of Best Practices From Which Small Businesses Can Benefit
- The Continuous Representation of the CMMI Allows Small Companies to Focus on Improvements That Have the Highest Payoff for the Company
- Aligning Improvement With Business Goals Is Particularly Important for Small Businesses
- Simple CMMI-Based Improvements Can Have a Significant Impact in Small Organizations
- “Changing” the Practices Isn’t Necessary in Most Cases; Finding Alternative Practices Is Often Relevant
- Both CMMI and SCAMPI A Scale Down to Fit Small Settings

✓ The Greatest Challenge for Small Businesses is the Affordability of Subject Matter Experts, and the Implementation and Appraisal Costs
How the Pilot Artifacts Can Help Small Businesses

Three Artifacts From the Pilot Will Be Available on the SEI Website

- Toolkit
- 2 Experience Reports

The CMMI for Small Business Pilot Artifacts Should Prove Useful in Helping Small Businesses

- Focus Their Improvement Efforts
- Figure Out How and Where to Get Started
- Tie Their Improvements to Business Goals
- Train Their Staff
- Realize Payoffs Early in the Improvement
- Improve Their Ability to Prepare for Appraisals
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