



Maximizing Value for SCAMPISM Preparation



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Agenda



- Introduction
- Approach
- Applying the Lockheed Martin 21st Century (LM21) Approach
- Improvements to SCAMPI Preparation and Conduct
- Summary and Next steps



Introduction



- Lockheed Martin typically conducts SCAMPI As at the enterprise level (3 Business Areas and 9 Business Units):
 - Corporate policy requires use of CMMI-SE/SW/IPP/SS (will be CMMI-DEV+IPP V1.2)
 - Promotes a consistent process context across the Business Unit
 - Ensures a unified approach to process improvement across the Business Unit
 - Facilitates integration for new acquisitions and business unit consolidations
 - Eliminates the overlap/waste resulting from conducting multiple SCAMPI A's on the same set of organizational processes
- Lockheed Martin Business Areas and Units are large organizations, managing geographically distributed, complex programs
- Efficient SCAMPI preparation and conduct of SCAMPIs are required to ensure that they provide the best value for the business and the customer



Applying the LM21 Approach



- Considerable resources are spent by LM Business Units to plan, prepare for, and conduct SCAMPs
- Lockheed Martin has employed its “Lockheed Martin 21st Century (LM21)” approach to improve the process of appraisal preparation and conduct
 - Enterprise process improvement method
- Benefits to customer and business
 - Reduced Business Unit cost to be appraised
 - Reduced impact to programs participating in appraisals



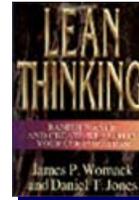
The LM21 - Lean Processes that Operate at Six Sigma Capability



LM21 is the how-to guide for cutting cost and improving quality and customer satisfaction.

It builds on the five principles of Lean as a set of leadership and decision-making mandates that define excellence:

1. Customer Value – define it from the customer’s perspective.
2. Value Stream – identify all activities used to make a product or provide a service.
3. Flow – create a system where value is continuously added. Clear away obstacles that don’t add value or clog the value stream.
4. Pull – initiate work only at the demand and to the specific specifications of the customer.
5. Perfection – continuously refine the process to improve efficiency, cycle time, costs and quality.



Principles:

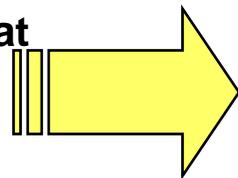
- **Value from the Customers perspective**
- **Value Stream - measured**
- **Flow**
- **Pull**
- **Perfection**
Rapid feedback
Mistake-proofing



The LM21 Approach



- This tool gives leadership a strategic look at its value streams and the ability to see waste at a macro level
- Leaders identify and prioritize the improvement events necessary to
 - Eliminate the waste
 - **Kaizen events (an activity where a team is chartered for a period of 3–5 days)**
 - Identify waste for a given process and
 - Implement immediate, sustainable solutions for waste elimination/reduction
 - **Other VSMS, projects - activities that require extensive work and change**
 - **Just Do Its - short term projects**



The result: a plan is in place to strategically identify and eliminate the waste that most interferes with the ability to deliver value to the customer.

Consistently Deliver Value Growth Thru Operating Excellence



Applied VSM to the Appraisal Process



- Formed a SCAMPI Tiger Team of process improvement leaders from across Lockheed Martin Business Units
- Performed a Value Stream Mapping
- Identified and evaluated candidate efficiencies
- Further defined the leading candidate efficiencies



Formed a SCAMPI Tiger Team



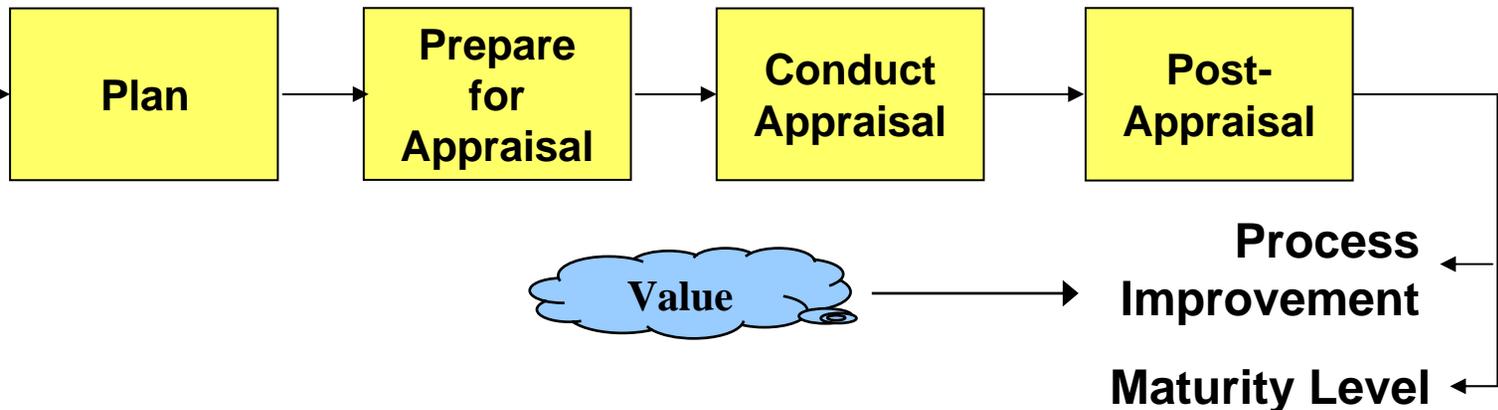
- Membership
 - Lockheed Martin Business Units with SCAMPI experience
 - Business Units had experience with a number of Lead Appraisers and Lead Appraiser organizations
 - Inputs represent a number of different approaches toward making SCAMPIs more efficient
- Objective
 - Define the as-is processes, analyze them for inefficiencies, and identify opportunities for improvements that reduce
 - Business Unit CMMI appraisal preparation labor by at least 50%
 - BU appraisal conduct costs by 25%



Performed a Value Stream Mapping (VSM)

- Appraisal cost is dominated by preparation costs
 - Implementation artifacts from the organization and programs must be identified, verified, and characterized in the PIIDs
 - Not all artifacts are needed by the business
- Efficient preparation is essential to maximize value

— Lockheed Martin Policy
(Enterprise Excellence)
— Business Needs



VSM is a Powerful Tool For Development of Strategic Performance Improvement Plans

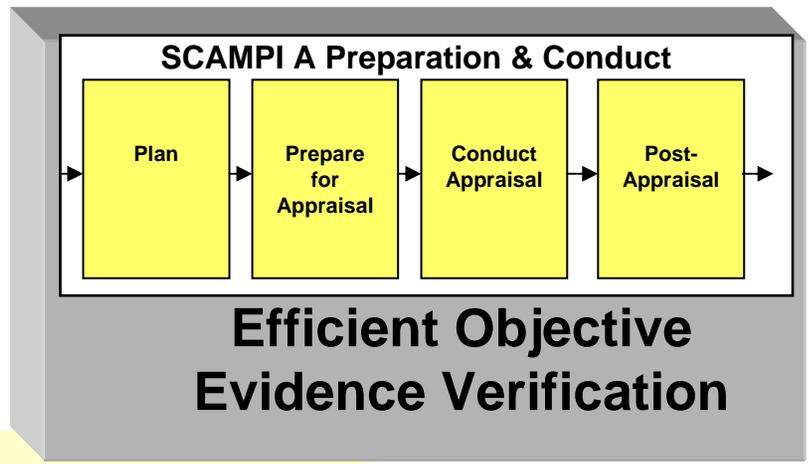


Improvements to SCAMPI Preparation & Conduct



- Legend:
-  - Prepare/Conduct Specific SCAMPI
 -  - Proposed Efficiencies

**Establish
&
Maintain
Support
Infrastructure**



**Establish & Maintain Process
& Objective
Evidence Mappings**



Improvements to SCAMPI Preparation & Conduct



**Establish
&
Maintain
Support
Infrastructure**

Expected benefits:

- Enable efficient, ongoing collection of data
- Eliminate generating/collecting objective evidence of no value to the business
- Support jump-starting new projects with templates for process artifacts

Improvements:

- **Establish data structure & tools**
- **Plan optimal evidence collection and mapping**



Data Structure and Tools - 1

- Maintain a CMMI compliance data structure and supporting tools to identify and manage all of the data necessary to prepare for and conduct a SCAMPI
 - Compliance data includes: CMMI, OSP, PDP, objective evidence, links
- Ideally, implement in a single database which is incrementally populated and verified
 - Distributes appraisal preparation effort as smoothly as possible across the interval between appraisals
 - Supports appraisal readiness by minimizing verification and update required in the immediate pre-appraisal period
- Implementation could vary: database report, web site, spreadsheets, etc.

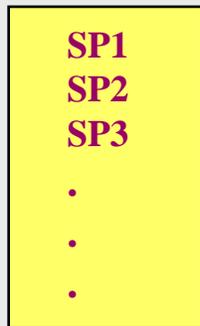


Data Structure and Tool - 2

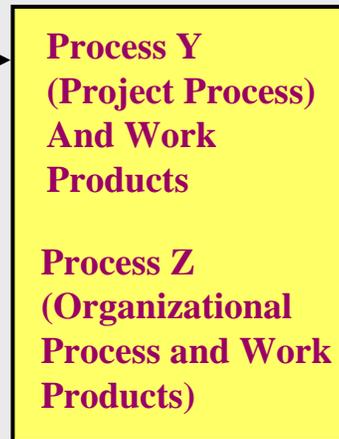
- Compliance data structure includes fields describing:
 - CMMI Model (PA, Goal, Practice)
 - Organizational Standard Process (OSP) and mappings to the CMMI
 - Direct and indirect evidence mapped to CMMI

Compliance Data Mapping Concept

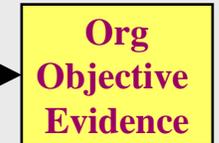
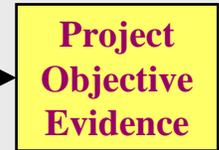
CMMI Process Area
Goal 1



OSP



**Project
Defined Process**





Data Structure and Tools - 3

- Use the compliance data structure/tools to create pre-populated PIID templates for programs
 - Jump start the programs by providing them with PIID templates
 - Identify the objective evidence that would result if the Organizational Standard Process is performed exactly as documented
- Make it easy for programs to document their specific work product information on an ongoing basis, e.g.,
 - Program specific work product names
 - Location of the work products



Plan Optimal Evidence Collection & Mapping

- Eliminate generating or collecting objective evidence not required by the business
- Eliminate redundant collection of objective evidence for Generic Practices
 - Generic Practices tend to be supported by Specific Practices, and in some cases, by other Generic Practices
 - Understand these relationships and identify where direct and indirect evidence that addresses the generic practices might already be produced
- Efficiently use indirect artifacts
 - Determine what indirect artifacts are naturally produced by organization's processes and map to the CMMI practices
 - Objective is to identify the minimal set of available indirect artifacts with a maximum correlation to corroborating the implementation of CMMI practices



Improvements to SCAMPI Preparation & Conduct



Improvement:

- Ongoing currency of mappings and evidence location

Expected benefits:

- Collecting information incrementally throughout the project life cycle
 - Is more efficient
 - Reduces program disruption
 - Supports sampling of programs across the enterprise

**Establish & Maintain Process
& Objective
Evidence Mappings**



Establish & Maintain

Process & Objective Evidence Mappings



- Maintain mapping of Organizational Standard Process (OSP) to CMMI practices (specific and generic)
 - Use/populate compliance data structure and tools
- Maintain mapping of Project Defined Process to CMMI practices (specific and generic)
 - Ensure that CMMI requirements are met at project startup and as changes are made to the OSP
- Collect basic information on the project's objective evidence on an ongoing basis:
 - As projects create their specific work products, they populate the compliance data structure and tools, e.g.,
 - Program specific work product names
 - Location of the work products.

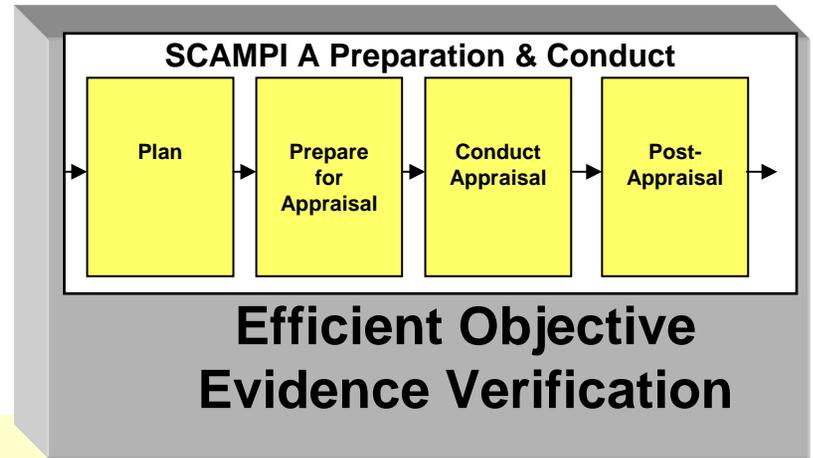


Improvements to SCAMPI Preparation & Conduct



Expected benefits:

- Provides efficient verification methods and tools
- Improves consistent interpretation of requirements



Improvements:

- **Verify evidence efficiently**
- **Use incremental preparation approach**



Efficient Objective Evidence Verification - 1



- Verify objective evidence efficiently
 - PIIDs must be carefully verified before an appraisal, including the links
 - Use a small team (e.g. 3-5 people)
 - Use a checklist which documents standard criteria to improve consistency
- Track progress and status of evidence collection
 - Collecting and verifying the objective evidence is time consuming and costly
 - Use compliance data structure and other tools to track the progress and status of evidence collection and evaluation



Efficient Objective Evidence Verification - 2



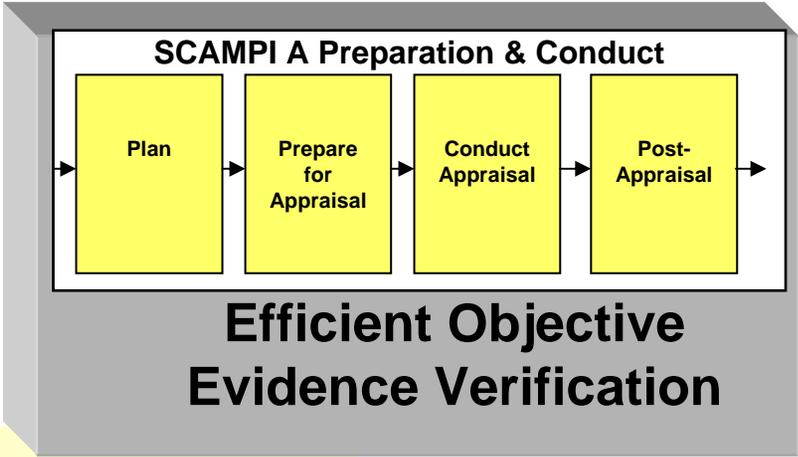
- Perform independent verification of objective evidence with appropriate appraisal methods
 - Independently verify objective evidence before a SCAMPI A
 - Lockheed Martin recommends the Lockheed Martin Continuous Appraisal Method (LM CAM)
 - CAM is an ARC Class B appraisal method
 - CAM enables incremental appraisal and improvement
 - Maintain continuity of the appraisal team members between appraisal events



Summary of Improvements

- Legend:
-  - Prepare/Conduct Specific SCAMPI
 -  - Proposed Efficiencies

**Establish
&
Maintain
Support
Infrastructure**



**Establish & Maintain Process
& Objective
Evidence Mappings**



Summary and Next Steps



- **Summary**

- Efficient SCAMPI preparation and conduct is a business imperative
- Improvements are expected to
 - Eliminate objective evidence not required by the business
 - Increase efficiency of data collection
 - Reduce program disruption
 - Support sampling of programs across the enterprise
 - Verify objective evidence efficiently (consistently, independently and incrementally)
- Enterprise process improvement methods are being applied to the appraisal process improvement

- **Next Steps**

- Complete the estimated savings by implementation of improvements
- Create a description of the “To Be” approach for SCAMPI preparation and conduct
- Conduct pilots (underway)