



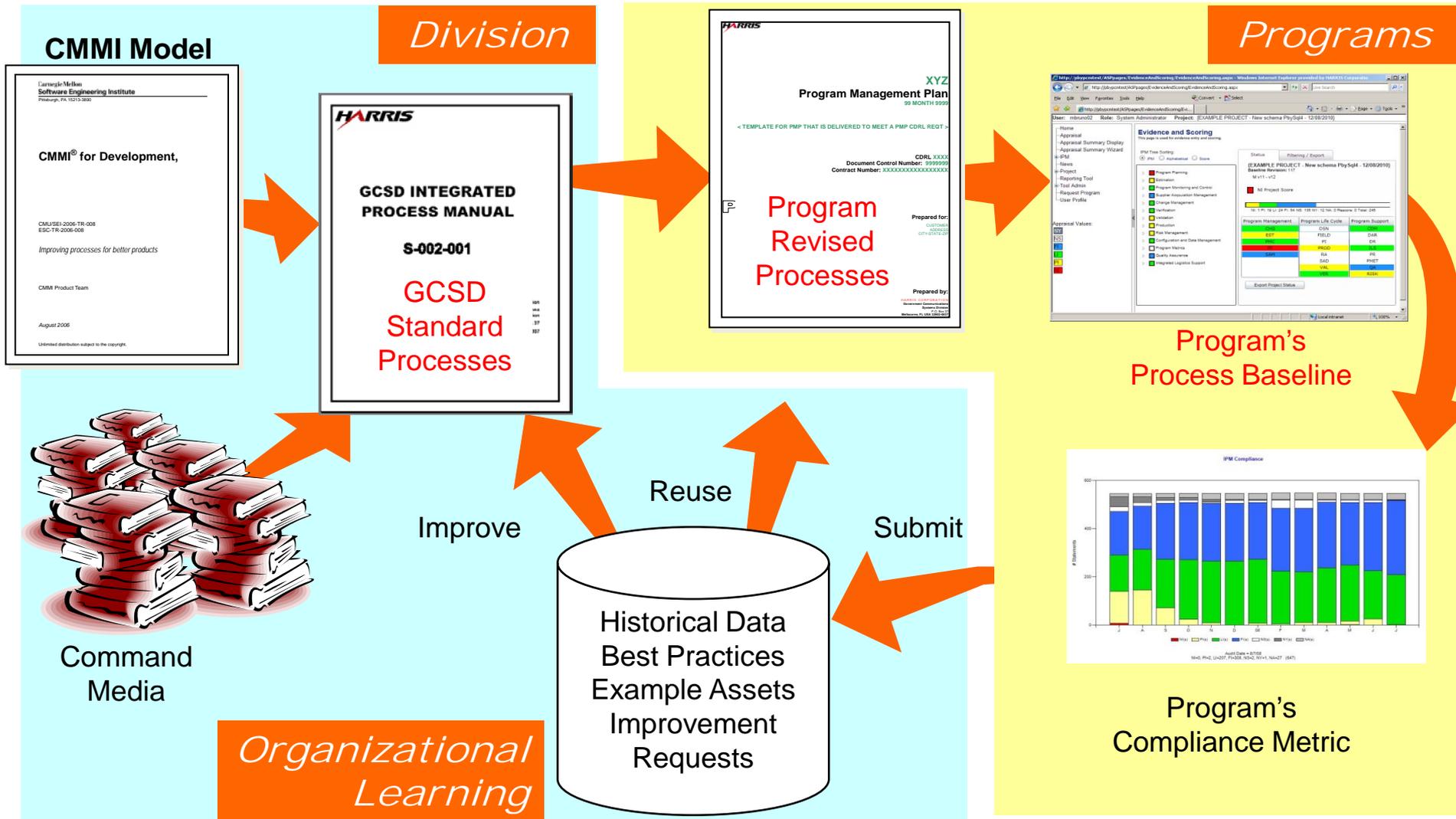
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Streamlining Process Deployment and Compliance

**Gary Natwick
Harris Corporation
16 November 2011**

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- Foundation
 - Approach and Challenges
 - Streamlining:
 - Organizational Processes
 - Work Products
 - Appraisal Process
 - Summary

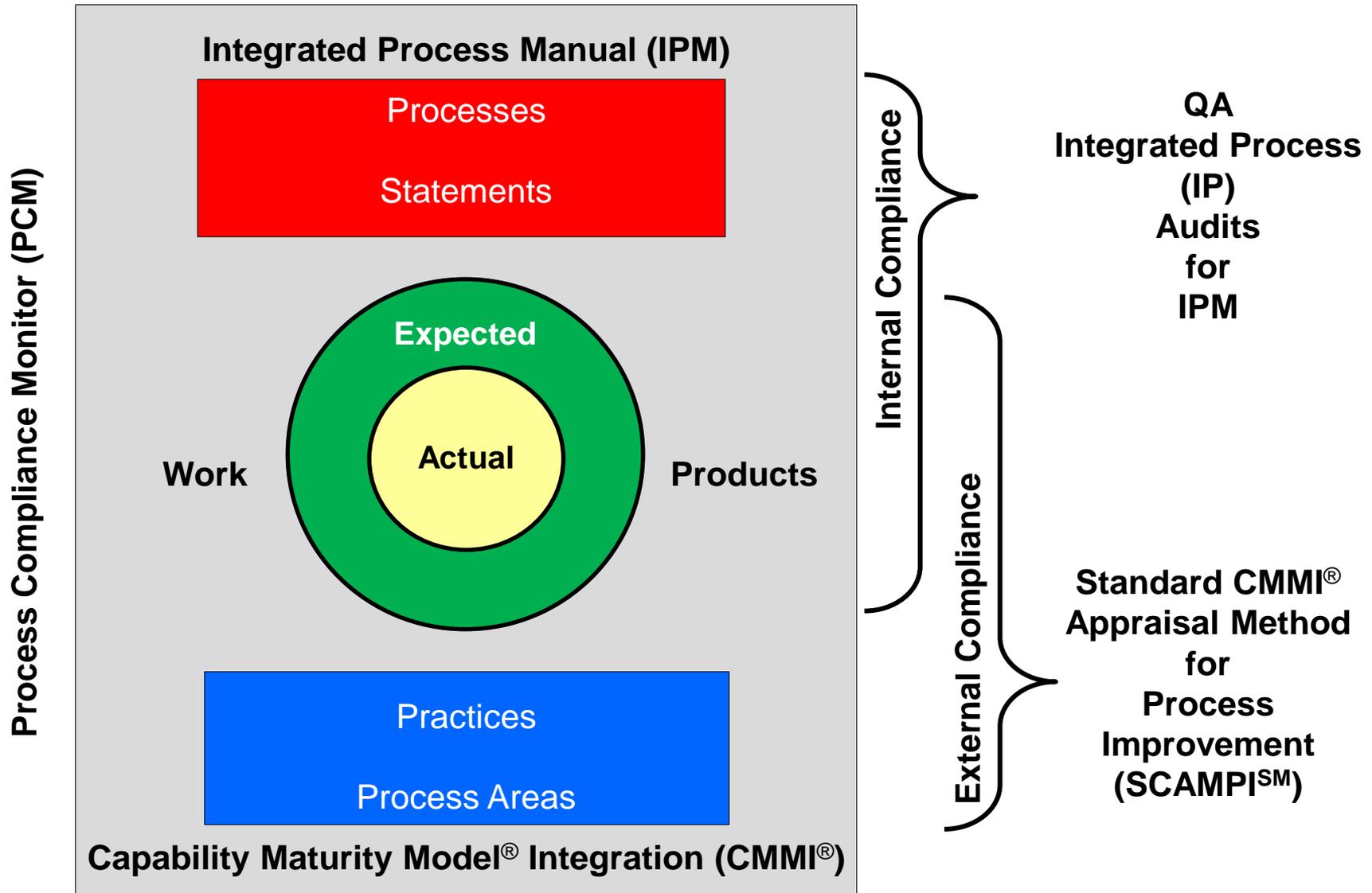
Integrated Compliance Approach



Overview A brief description of the process intent	
Entry Criteria State, Prerequisites, Criteria	Exit Criteria State, Criteria
Inputs Needed work products, resources	Outputs Resulting work products
Required Activities Mandatory tasks to implement the process	
Measures Process performance against plans	
Organizational Improvement Information Metrics, reusable work products	
Verification Process compliance oversight	
Tailoring Approved tailoring, process specific	
Implementation Guidance Common implementation descriptions	
Supporting Documentation and Assets Applicable organizational references	



**Program work products
needed to demonstrate
IPM process compliance**



- Streamline processes based upon systemic analysis of compliance and user feedback
- Balance of product-centric vs. process-centric
- Lean Six Sigma
- Continuous streamlining of organizational processes and appraisals in parallel while maintaining:
 - Compliance to organization internal requirements and external industry standards (e.g., CMMI®)
 - Minimal impact to organizational performance
- Validation
 - Internal assessments
 - SCAMPISM

- Common process tailoring across programs
- IPM statements with no CMMI relationship
- Consolidation, modification or deletion of IPM statements reducing the amount of work products without compromising the overall process requirements
- SCAMPI results to identify work products not required



- Entry/Exit Criteria and Verification sections removed from PCM tool in each process
 - Programs not required to tailor, provide work products, or audit
 - Remains in IPM as reference/guidance
- Deleted procedural detail
- Combined similar/related statements within a process
 - Examples
 - Establishing and maintaining plans, budgets, schedules, etc.
 - Identify and categorize risks
- Consolidated statements within a process that had similar/same expected work products resulting in fewer:
 - Statements for tailoring
 - Work products
 - Audits by QA

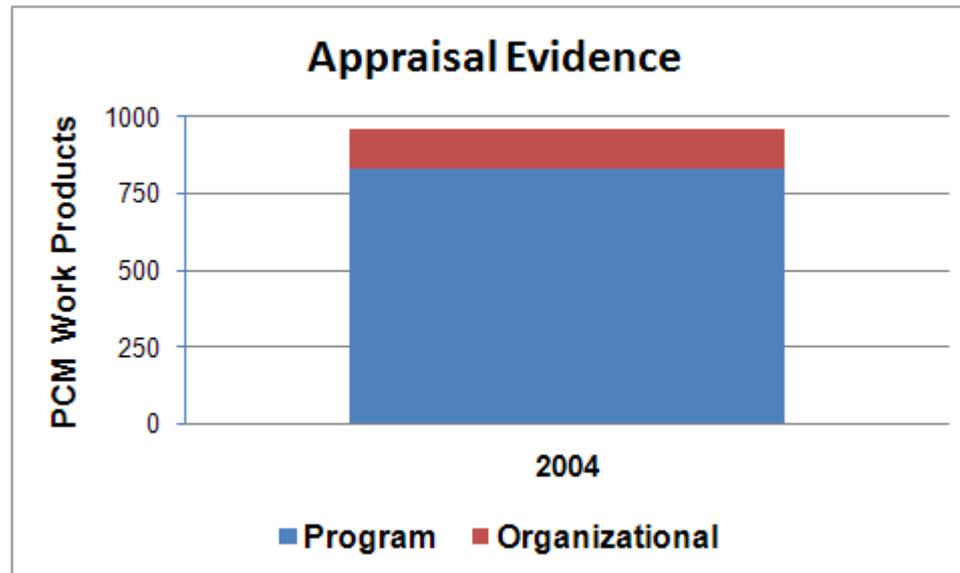
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Program work products needed to demonstrate IPM process compliance

2009

- Product-centric focus
- Reverse engineering to achieve simplification
- Reuse of unique work products
- Organization default work products and locations



- Instead of looking from the process view – looked from a program work products view
- Basic guidelines:
 - Every CMMI® practice shall have a minimum set of adequate expected work products in PCM
 - Every IPM statement shall have a minimum set of adequate expected work products in PCM
 - Every PCM work product (existing or new) shall map to one or more IPM statements and CMMI® practices
 - Maximize the re-use of existing work products
 - PCM Startup Template
 - Standard Directory Structure

- Mapped program work products to IPM statements and to relevant CMMI[®] practices
 - IPM mapping clearly documented in PCM tool
 - CMMI[®] mapping in PCM tool - transparent to the program
- Work product descriptions clarified to help the program understand relevance
 - Descriptions let the program know why this work product is important
 - IPM perspective
 - CMMI[®] perspective
- Provided name of typical project work product to be used
- Provided standard directory structure location where that work product should be maintained

IPM Tag	IPM Statement	Project Work Product	Expected Work Product Description	CMMI Tag
RA.RA.3	Work with stakeholders to capture needs, expectations, constraints, and interfaces for all phases of the system life-cycle.	Concept of Operations (CONOPS)	Approved Concept of Operations (CONOPS) that documents system mission, system operation, operational control, staffing, interfaces and operational environment - from an external perspective	RD.GP2.6 RD.SP1.1
		Customer requirements specification	Customer requirements specification (i.e., A-Spec)	RD.GP2.6 RD.SP1.1 RD.SP1.2
		Minutes from working groups	Records of requirements elicitation techniques utilized on the program (e.g., Prototypes, modeling, simulation, working groups, use cases)	RD.SP1.1

Product-Centric: WP → IPM → CMMI **HARRIS**

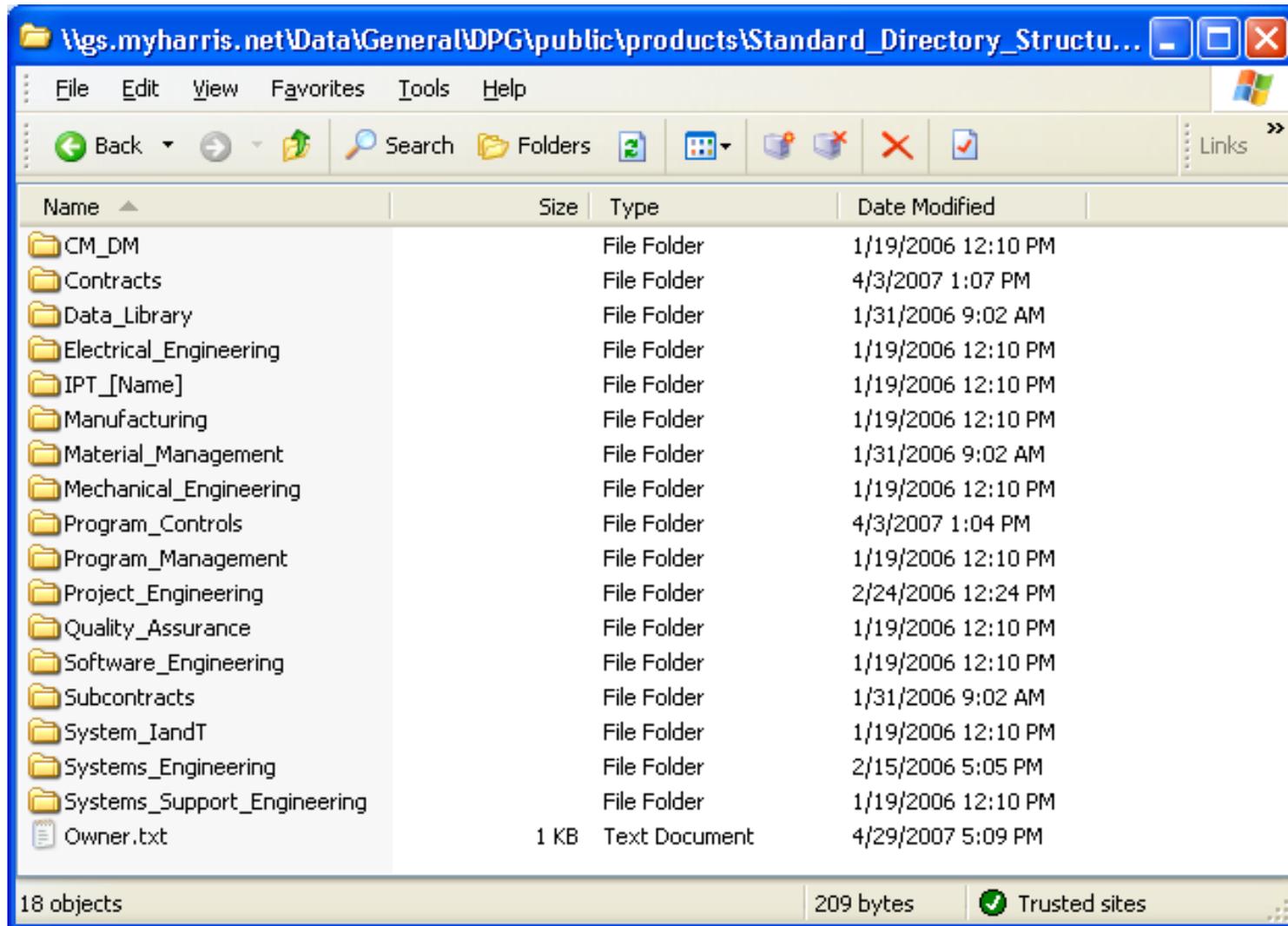
Project Work Product	IPM Tag	IPM Statement	CMMI Tag
Concept of Operations (CONOPS)	RA.RA.3	Work with stakeholders to capture needs, expectations, constraints, and interfaces for all phases of the system life-cycle.	RD.GP2.6
			RD.SP1.1
	RA.RA.4.a	Ensure the stakeholder mission and operational needs are validated and documented in the Concept of Operations (CONOPS).	RD.SP3.1
	SAD.RA.3.g	Define the system functional baseline.	RD.SP3.1
			TS.SP1.2

Product-Centric: WP → CMMI → IPM **HARRIS**

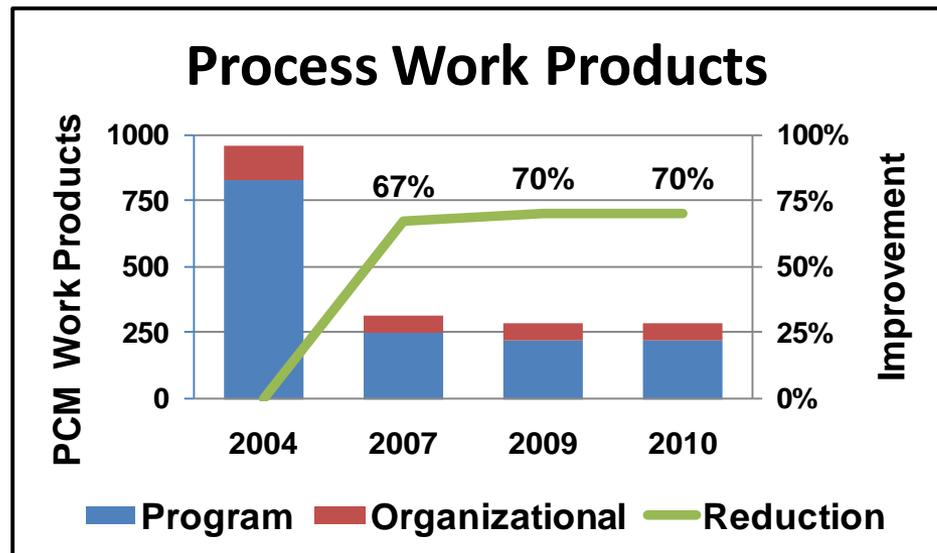
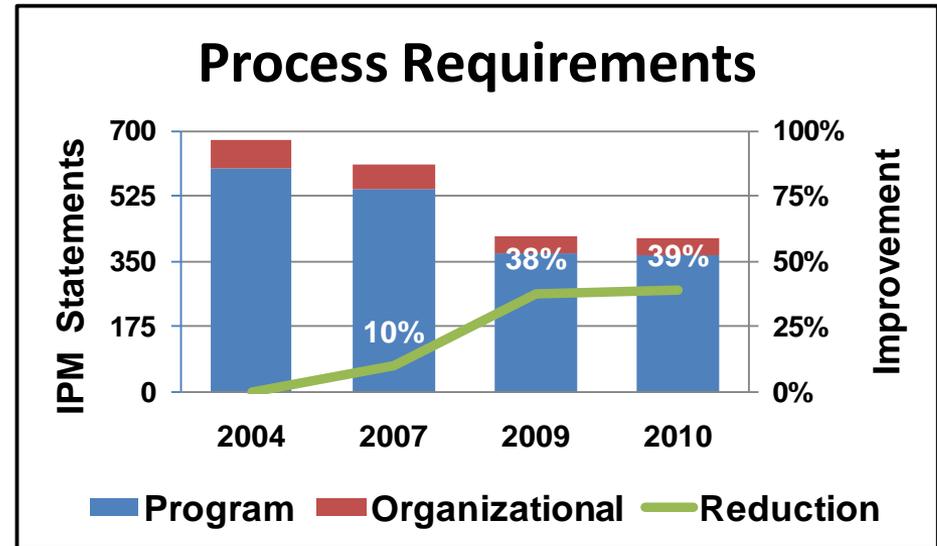
Project Work Product	CMMI Tag	CMMI Practice	IPM Tag
Concept of Operations (CONOPS)	RD.GP2.6	Place designated work products of the requirements development process under appropriate levels of control.	RA.RA.3
	RD.SP1.1	Elicit stakeholder needs, expectations, constraints, and interfaces for all phases of the product life cycle.	RA.RA.3
	RD.SP3.1	Establish and maintain operational concepts and associated scenarios.	RA.RA.4.a
	RD.SP3.4	Analyze requirements to balance stakeholder needs and constraints.	RA.RA.4.a
TS.SP1.2	Select the product component solutions that best satisfy the criteria established.	SAD.RA.3.g	

- Supports IPM Compliance with work products in a common structure across programs
- Top level directories are used as location for program work products
 - Avoids tying PCM work products to low level directories
 - Easy access by all program team members
 - Avoids confusion as to which is the latest version of a work product
 - Flexibility for custom directories which contain “work-in-progress”
- Pre-populated with latest forms, checklists and plan templates
 - Set up by IT group when program data server is assigned

Standard Directory Structure

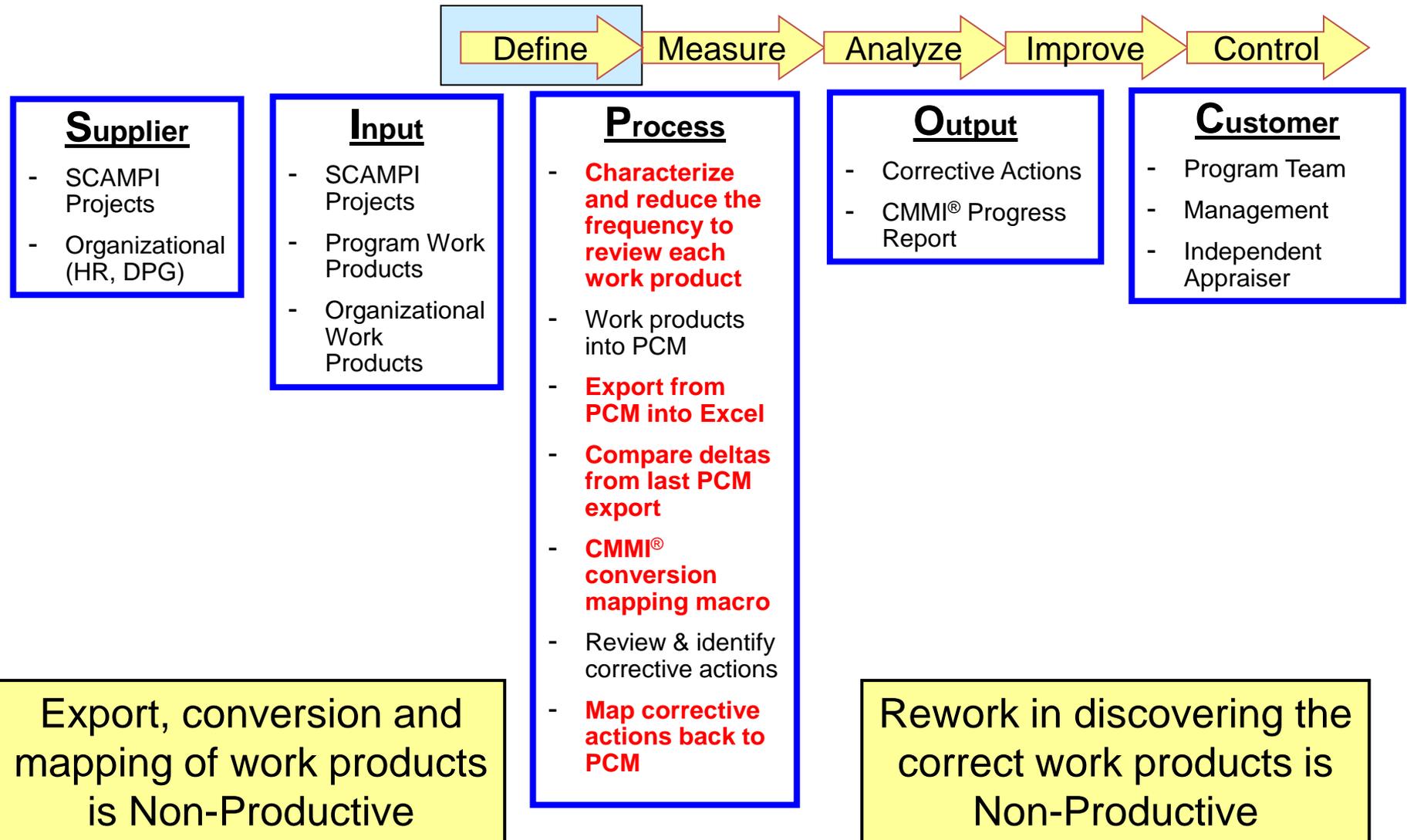


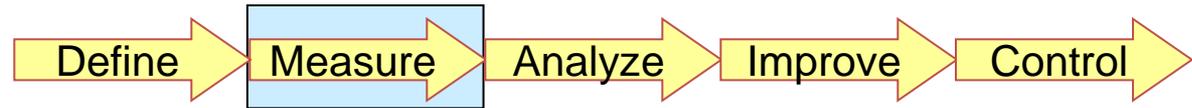
- Significant reduction in process requirements
- Maximized the re-use of appraisal evidence to minimize the number of unique work products
- Created a process-centric view to maintain program work products
- Reduced effort required by programs
- Maintained CMMI® compliance



- Problem
 - Total cost of SCAMPISM for division is significant and increases every SCAMPISM cycle (3-years)
- Goals
 - Reduce SCAMPISM preparation effort using Lean method
- Measurement
 - SCAMPISM preparation effort
- Benefits
 - More efficient SCAMPISM preparation process with earlier feedback for corrective actions

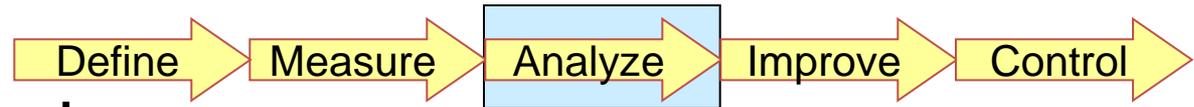
- Objective
 - Reduce effort in conversion for work products from internal organizational requirements to CMMI[®] Practices
 - Establish a work product priority to focus on the number of CMMI[®] practices affected by each work product
 - Reduce the rework in discovering the correct work product
- Implementation
 - Automate the conversion process
 - Prioritized work product review
 - Utilize process experts to data mine for work products
 - Complete improvements prior to next SCAMPISM
 - Establish more detailed measurements of SCAMPISM activities for future improvements
- Validation
 - SCAMPISM





- Facilitated session with team resulting in 42 items
 - Identified 3 possible Lean applications
 - Reduce effort in PCM to CMMI[®] conversion for projects work products
 - Establish a work product priority to focus on the items that typically have issues and minimize the amount of effort appraising
 - Reduce the frequency of discovering correct work products
 - No detailed measurement breakdown available from previous SCAMPISM components or subparts
 - Planning
 - ✓ Preparation
 - ✓ PCM to CMMI[®] conversion
 - ✓ Discovery of work products
 - Review work products for corrective action
 - ✓ CMMI[®] to PCM conversion
 - Conduct
 - Closeout

Limited Historical Data to Demonstrate Measureable Improvement



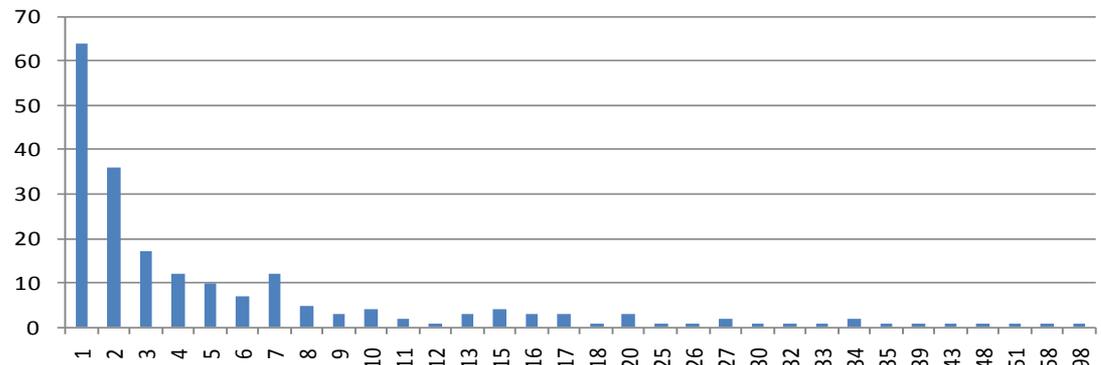
PCM to CMMI Conversion

- Sampled 4 months of SCAMPISM effort for 2 individuals involved in conversion and applied 50% to represent best estimate of time spent
 - Averaged 115 hours/month

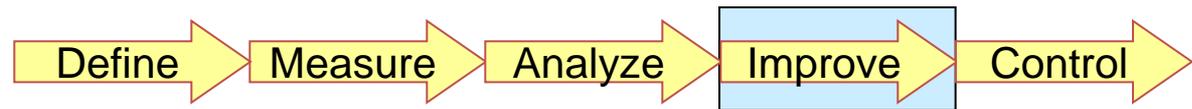
Work Product Priority

- Analyzed the number of CMMI[®] practices affected by PCM default work products to prioritize

Work Products vs. CMMI Practices

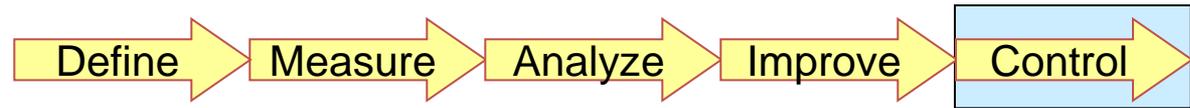


Sample to Establish Measureable Improvement



- PCM to CMMI[®] conversion for projects work products
 - Reduced to a one time event
 - Alternative communication used for corrective actions
- Establish a work product priority
 - Focus on the items that typically have issues and minimize the amount of effort appraising
- Find the correct work products the first time
 - Utilized process experts to data mining based upon standard organizational tools and standard program directory structure
 - Eliminated “bring me a rock”

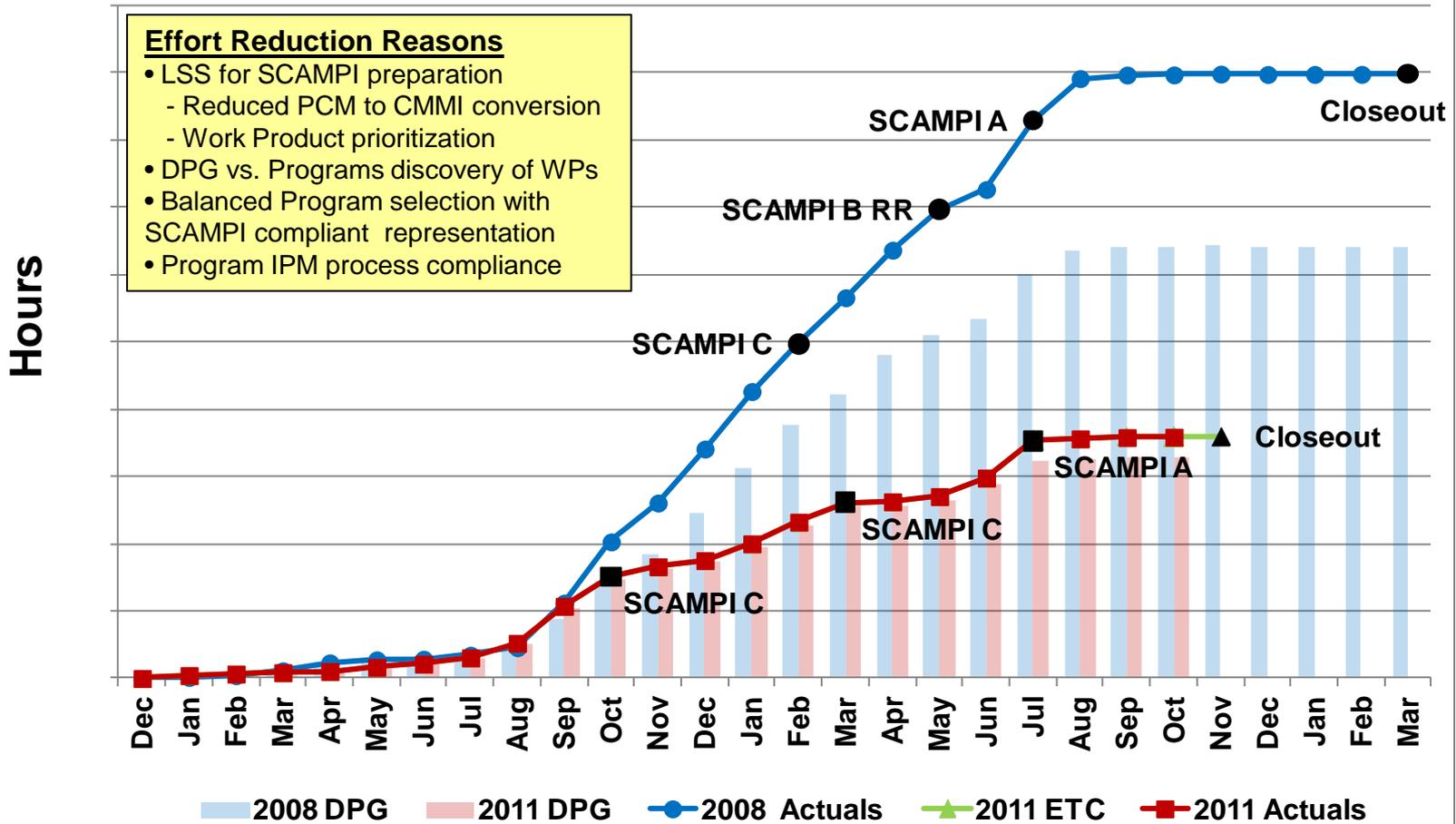
Piloted on Next SCAMPISM Event



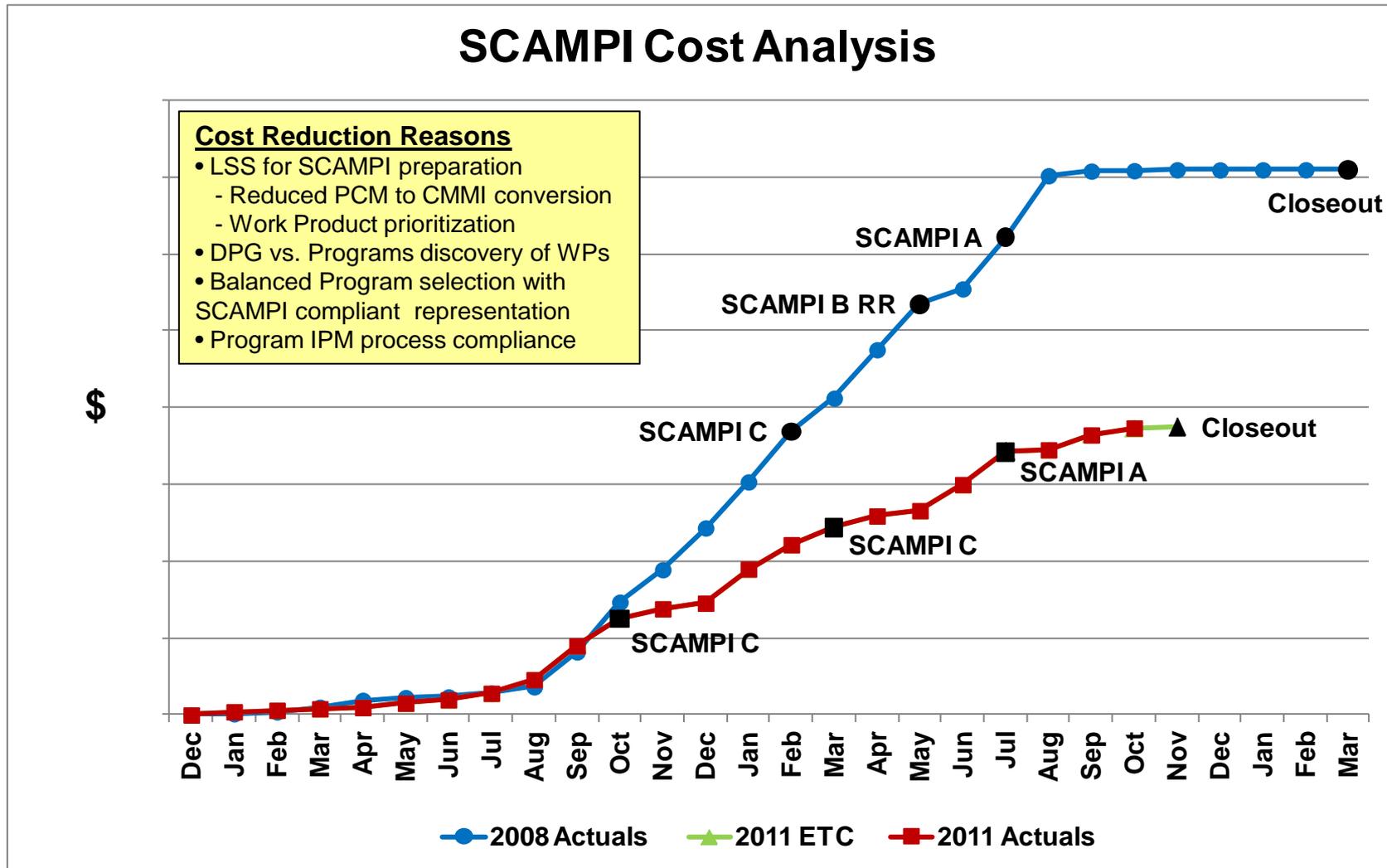
- Let's Not Do This Again
 - One time event for PCM to CMMI[®] conversion of projects work products
 - Establish a work product priority
 - Utilized process experts to data mining
- Setup work codes to measure SCAMPISM activities for future improvements:
 - Planning
 - Preparation
 - Program Support
 - Reviews (Readiness & On-Site)
 - Closeout

Continuous Process Improvement

SCAMPI Labor Analysis



Labor Savings = 60%
Program Staff Hours = difference between Actuals and DPG.



Cost Savings = 47%

- Streamlined the organizational processes resulting in reduced:
 - Number of process requirements
 - Amount of appraisal evidence
 - Effort required by programs
- Established a product-centric view to complement the existing process-centric view providing:
 - Efficient and focused project data collection
 - Improved support for projects and the organization
 - Integrity of the appraisal method and achievement of sponsor objectives
- Maximized the re-use of unique work products
- Minimized the impact of changes to the programs
- Simplified the preparation and conduct of appraisals
- Maintained the process compliance requirements:
 - Relevant and adequate evidence
 - Organizational processes
 - CMMI® processes

Harris Corporation
P.O. Box 37
Melbourne, Florida 32902-0037

<http://www.harris.com/>
SEI Partner

Gary Natwick

gnatwick@harris.com

- **SEI-Certified Introduction to CMMI® Instructor**
- **Harris SEI Partner Business & Technical Point of Contact**

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