NORTHROP GRUMMAN DEFINING THE FUTURE

Mission Systems

A Project's Tale: Transitioning From SW-CMM to CMMI-SE/SW

CMMI Technology Conference & User Group
17-20 November 2003

Transitioning to CMMI Track

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Topics

- The Challenge
- Our Strategy
- Initial Steps
- Lessons Learned

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The Challenge: Bring an Existing Project up to CMMI Level 3

- **The entire organization was transitioning from CMM Level 3 to CMMI Level 3**
  - New command media
  - Periodic redirection
  - Fluctuating success criteria
- **The project had other concerns**
  - Performance
  - Shrinking delivery schedules

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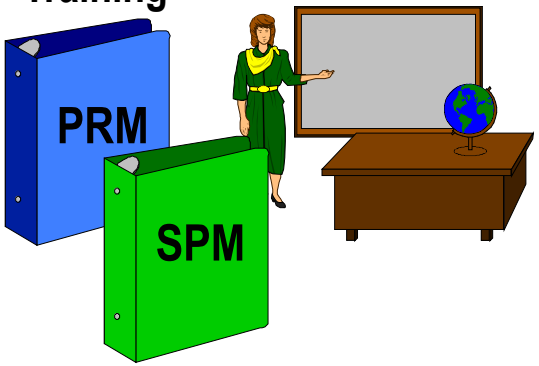
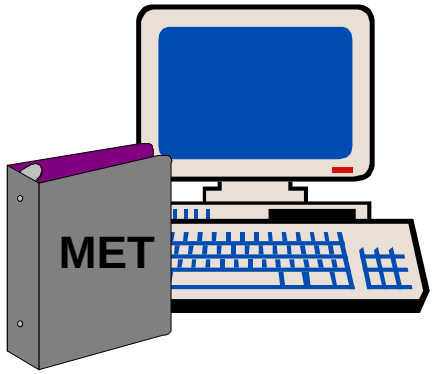
The Organizational Environment

Enterprise-Wide Institutionalization
- Policy & Requirements Manual
- Standard Process Manual
- Training



Quantitatively Measured
- Metrics Manual
- Measurement repository



Projects

Six Sigma Teams
- DMAIC / DFSS
- Tools & methods

CMMI/Six Sigma Synergy
- Project Reviews/Summits
- Integrated strategies

CMMI Assessments
- Self-Assessment Tool
- Internal / external formal assessments

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Our Strategy

- **Map the Path from CMM to CMMI**
- **Build on Proven Project Management Practices**
- **Use Change Management Tools**
- **Extend Software Development Activities to include Systems Engineering**
- **Keep Score**

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Map the Path from CMM to CMMI

	Organization process focus	Organization process focus
LEVEL 3 *DEFINED*	Organization process definition Training program Integrated software mgmt Software product engineering Intergroup coordination Peer reviews	Organization process definition Organizational training Integrated project management **Risk management** **Requirements development** Technical solution Product integration Verification **Validation** **Decision analysis and resolution**
LEVEL 2 *REPEATABLE*	Requirements management	Requirements management
	Software project planning Software project tracking & oversight	Project planning Project Monitoring and Control
	Software subcontract mgmt Software quality assurance Software configuration mgmt	Supplier Agreement Management Product & Process Quality Assurance Configuration Management **Measurement and Analysis**

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Build on Proven Project Management Practices

- **Establish and maintain a plan**
  - If you don't know where you are going, you will probably end up where you don't want to be
- **Engage relevant stakeholders**
  - Instituted weekly coordination working group
- **Track progress**
  - Schedule, task list tracked to closure
- **Integrated Management**
  - Software Quality Assurance is your friend
- **Risk Management**

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Use Change Management Tools

- Maintain senior management sponsorships
- Work with early adopters
- Use staff and all hands meetings as training opportunities
- Let group leaders be your change agents
- Show constant progress
- Celebrate small victories

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Extend Software Development Activities to include Systems Engineering

- **Emphasize and build interfaces to Program and Software Systems Engineering groups**
  - Program Systems Engineering acknowledged responsibility for requirements allocation and acceptance of software baselines
  - Software Systems Engineering maintained requirements evidence books
  - Project documented transfer of artifacts and completion of milestones
- **Encourage all trade studies to use the DAR methodology**
- **View the project as a system, not a collection of components**

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Keep Score

Microsoft Excel - C2ID_SDO_P4171_SAT_V4_3a_030326.xls

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A8 = Level 2 – Managed

Date:	26-Mar-03		© 2003 Northrop Grumman Corp. All Rights Reserved.		Software POCs	
Project:	P4171 Software		SAT Version 4.3a		Project Manage	
Division:	C3ntel - Systems Development Operations (SDO)		CMMI_SAT_V4_3a.xls		Project SAT POC	
Tool Controls	Levels: Level2, Level3, Level4, Level5		LOE: Hide, Show			
	Scope: All, Plan, No Plan, My Ana's Area		ORG: Lock, Unlock			
CMMI & ISO Ref	Export	Maturity Level	Import	Typical Evidence	Baseline Status	Current Status
		Level 2 – Managed				
		Requirements Management				
	SG 1	G	Requirements are managed and inconsistencies with project plans and work products are identified.			
ReqM	SP 1.1	P	Does the project develop an understanding with the requirements providers on the meaning of the requirements?	meeting records, review records, an agreed to set of written requirements	Yes	Yes
ReqM	SP 1.2	P	Does the project obtain commitment to the requirements from the project participants?	sign off	Yes	Yes
Re	SP 1.3	P	Does the project manage changes to the requirements as they evolve during the project?	CM records, change requests, CCB records, sign off	Yes	Yes

Overview / Questions / SW Results / SE Results / Glossary / User's Guide

Microsoft Excel - C2ID_SDO_P4171_SAT_V4_3a_030326.xls

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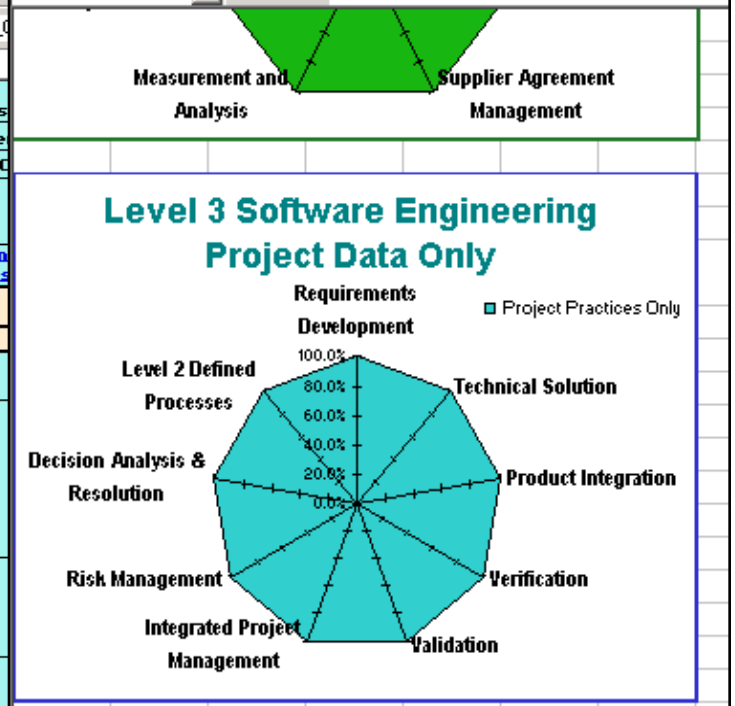
A1 = CMMI Self Assessment Overview



Overview / Questions / SW Results / SE Results / Gloss

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Initial Steps

- Identified points of contact for all CMMI process areas
- Developed a schedule with a simple format
- Held weekly coordination meeting
- Started the hard stuff first (requirements, project planning)
- Defined project product development life cycle model
- Released initial updated program plans/processes

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Lessons Learned - 1

- **Process group cannot do it all**
  - Flow down of information and training essential to implementation
- **Take full advantage of Organizational resources**
  - Presentations by Process Assessment Organization lead clarified principles and showed top management commitment
- **Dig Early and Often**
  - Appeal to project people to save evidence - especially emails
  - Need to document verbal orders
- **Training is Essential**

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Lessons Learned - 2

- **Timelines are appropriate for communicating expectations of urgency, but they must be realistic**
  - Identifying the gaps and adjust for changing strategy
  - Allow adequate time to create, review and update documents, evidence notebooks, train participants, audit products and processes
  - Do peer reviews, including an informal appraisal
- **Address resistance to change**
  - "I thought the organization did that."
  - "Our customer won't let us do that."
  - "Why aren't these projects included in the appraisal?"
  - "I want to do CMMI – I just don't want to change our process."

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Questions?