SCAMPI[SM] Class B Appraisals in the Software Engineering Division At WR-ALC

17 November 2004

Topics of Discussion

Who We Are

Process Improvement History

Objectives for Performing Class B Appraisals
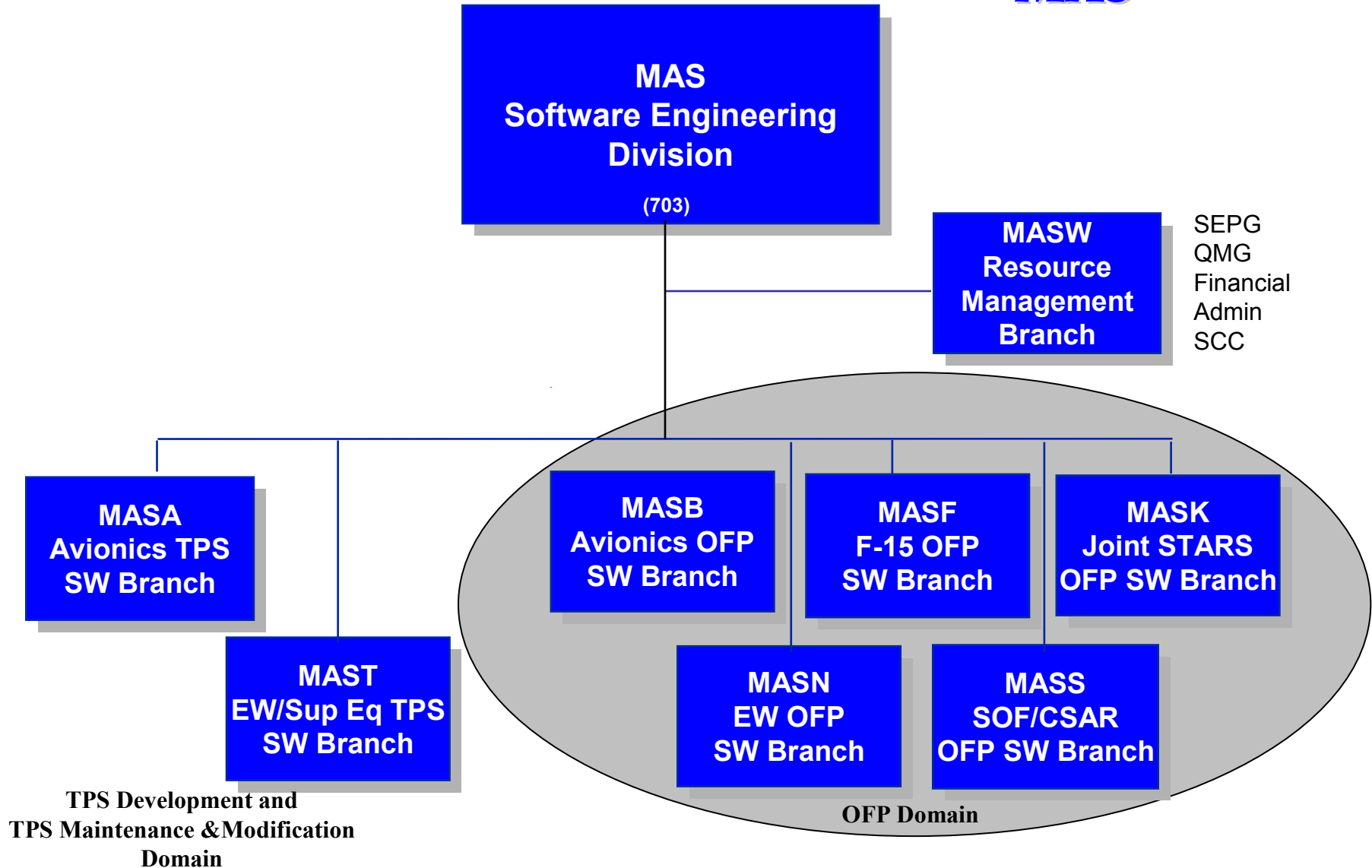
What We Did

Benefits for MAS

Lessons Learned by MAS

Next Steps

Who We Are

**MAS
Software Engineering
Division**

(703)

**MASW
Resource
Management
Branch**

SEPG
QMG
Financial
Admin
SCC

**MASA
Avionics TPS
SW Branch**

**MAST
EW/Sup Eq TPS
SW Branch**

**MASB
Avionics OFP
SW Branch**

**MASF
F-15 OFP
SW Branch**

**MASK
Joint STARS
OFP SW Branch**

**MASN
EW OFP
SW Branch**

**MASS
SOF/CSAR
OFP SW Branch**

**TPS Development and
TPS Maintenance &Modification
Domain**

OFP Domain

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Process Improvement History

Assessed at SW-CMM® Level 3 in Apr 00

Participated in WR-ALC Pilot of CMMI® in Jun 00

Decided to transition to CMMI® in Jul 01

Performed Gap Analysis from Sep 01 - Jun 02

Rolled Out Revised Software Engineering Process in Dec 02

Performed SCAMPI℠ Class B Pilot Appraisals (Sep 03 – Dec 03)

Developed Action Plans to Address Findings

Assessed at CMMI®-SW Maturity Level 5 in Oct 04

® CMM and CMMI are registered in the U.S. Patent and Trademark Office by Carnegie Mellon University.

Objectives for Performing Class B Appraisals

Required quick internal method for determining strengths and weaknesses of organizational and project processes

Needed mechanism to determine organizational readiness for Class A appraisal

Desired an approach that provided confidence that findings would be consistent with those found during a Class A appraisal

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Scope of appraisals
- 4 Class B (Sep 03 – Dec 03)
- 7 Focus Projects

Preparation prior to appraisals
- SEPG conducted workshops on Process Areas (PAs)
- Focus projects prepared notebooks with direct and indirect artifacts for each PA
- Focus projects completed CMMI® Cross-Reference Matrix linking artifacts to specific and generic practices

Typically 4 mini-teams per appraisal consisting of:
- Authorized Lead Appraiser (LA)
- SEPG member
- Project Software Manager (PSM)

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Reviewed 22 PAs and 425 practices

Reviewed artifacts contained in 982 documents

Average time required to review PAs
- Class B#1 => 4.5 hrs/PA
- Class B#2 => 4 hrs/PA
- Class B#3 => 3.5 hrs/PA
- Class B#4 => 3 hrs/PA

Benefits for MAS

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Determined specific areas where improvements were needed

Project specific details were provided to each project through
<u>CMMI® Cross-Reference Matrix</u> and <u>Project Rating Matrix</u>

Organizational holes became visible through <u>Organizational
Rating Matrix</u>

PSMs and SEPG members became extremely knowledgeable of
CMMI® PAs

Model interpretation issues were addressed prior to the Class A
appraisal

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CMMI Cross Reference Matrix

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CMMI® PA: Requirements Management							
CMMI® Feature	**Description**	**Direct Artifact**	**A/N**	**Indirect Artifact**	**A/N**	**Comments**	**Risk Rating**
RM SG 1	Requirements are managed and inconsistencies with project plans and work products are identified.						
RM SP 1.1	Develop an understanding with the requirements providers on the meaning of the requirements.	55 SRR Rev 1 Package (All)	55A	6 SRR Minutes (All)	6A	(55) The SRR Package includes proposed requirement changes. (6) Proposed requirement changes are discussed with the customer at the SRR.	L
RM SP 1.2	Obtain commitment to the requirements from the project participants.	7 Requirements Review Walkthrough Package (All)	7A	8 Requirements Review Walkthrough Minutes (All)	8A	(7) The Requirements Review Walkthrough Package is provided for an internal review of the requirements. (8) The Requirements Review Walkthrough Minutes include action items.	L
RM SP 1.3	Manage changes to the requirements as they evolve during the project	55 SRR Rev 1 Package (All)	55A			(55) Any time that changes are made to the requirements, the package is revised to reflect changes. This is Rev 1 of the package.	L

Project Rating Matrix

	RM	PP	PMC	SAM	M&A	PPQA	CM
Specific Goal 1	L	L	L	L	L	L	L
SP 1.1	L	L	L	L	L	L	L
SP 1.2	L	L	L	L	L	L	L
SP 1.3	L	L	L	L	L		L
SP 1.4	L	L	L		L		
SP 1.5	L		L				
SP 1.6			L				
SP 1.7			L				
Specific Goal 2		L	L	M	L	M	L
SP 2.1		L	L	M	L	M	L
SP 2.2		L	L	M	L	M	L
SP 2.3		L	L	L	L		
SP 2.4		L		L	L		
SP 2.5		L					
SP 2.6		L					
SP 2.7		L					
SP 2.8							
Specfic Goal 3		L					L
SP 3.1		L					L
SP 3.2		L					L
SP 3.3		L					
SP 3.4		L					
SP 3.5							
Generic Goal 2	L	M	L	H	L	H	L
GP 2.1	L	L	L	L	L	L	L
GP 2.2	L	M	L	H	L	M	L
GP 2.3	L	L	L	L	L	L	L
GP 2.4	L	L	L	L	L	L	L
GP 2.5	L	L	L	H	L	H	L
GP 2.6	L	L	L	L	L	L	L
GP 2.7	L	L	L	L	L	L	L
GP 2.8	L	M	L	L	L	L	L
GP 2.9	L	L	L	L	L	L	L
GP 2.10	L	L	L	L	L	L	L
Generic Goal 3	L	L	L	L	L	L	L
GP 3.1	L	L	L	L	L	L	L
GP 3.2	L	L	L	L	L	L	L

Organizational Rating Matrix

Lessons Learned by MAS

Class B appraisals need to be conducted in preparation for Class A appraisals in order to identify possible problem areas early.

Detailed comments are essential for practices rated medium and high risk. These comments helped focus improvement initiatives.

Use of in-house spreadsheets (CMMI® Cross-Reference Matrix and Rating Matrix) made data collection and analysis easier. For future appraisals automated tools will be investigated.

Need method for documenting practices that were performed outside the project or that have not yet occurred (NR or NY).

For future appraisals, a list of typical MAS artifacts by practice will be provided to projects to reduce the amount of time required to map appropriate artifacts.

Next Steps

Address Findings from SCAMPI^{SM} Class A Appraisal

Plan for SCAMPI^{SM} Class B Appraisals in 12-18 Months

Schedule SCAMPI^{SM} Class A 6 Months Later