SCAMPI A Appraisals - Preparation in 100 Hours; Execution in a Week

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Ron Ulrich

Manager, Appraisal Program
Mission Systems Sector
Northrop Grumman Corporation

What's ahead

- **You can save $$ and still be effective**

- **Prepare for the appraisal**
  - Artifacts
    - Optimize to save
  - Training
    - Consistency
  - Presentations
  - Lead Appraiser Selection
  - Appraisal Plan/Input
  - Schedule
    - Optimize to save
  - Measure & analyze
  - Deliver the results to the sponsor

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CMMI Background Message – 1/2

- **Northrop Grumman Corporation**
  - 7 Sectors (including Mission Systems)
  - 79 SCAMPI A's - 52 externally led
    - 28 Level 5 SCAMPI A Appraisals
  - 15 Authorized SCAMPI A Lead Appraisers
- **Northrop Grumman Mission Systems**
  - Started June 2002 - first SCAMPI A Appraisal
  - Common, tailored Policies & Plans for all of Mission Systems
  - Performed over 57 SCAMPI A Appraisals (37 externally led)
    - 20 Level 5 SCAMPI A Appraisals
  - Appraised over 164 Projects (92 unique projects – annual re-appraisal)
  - 12 Authorized SCAMPI A Lead Appraisers
  - 4 Authorized "Introduction to CMMI" instructors
- **Measurements were taken on all appraisals & analysis done using Six Sigma**
  - Time to review artifacts (average 2.0 hours per PA per Project)
  - Time to perform interviews (average 1.5-3.0 minutes per SP/GP with 3 projects or less)

- **Nice to work in an organization that supports CMMI, 6 Sigma and process improvement (as most of you can imagine)**
- **I have been on over 40 SCAMPI A Appraisals**

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CMMI Level 5 Appraisals Performed

(NOTE: Includes internally* led and "organizational repeats")

(* Internally led appraisals are led by SEI Authorized SCAMPI Lead Appraisers who work for NG)

Number	Organization	Level/Discipline	Date
28	IS - AGS & BMS	L5 SW/SE/IPPD/SS	2-Nov-05
27	MS - DMS	L5 SE/SW	14-Nov-05
26	MS - MDD/AFSPC-CLE	L5 SE/SW	2-Nov-05
25	MS - SRD/SDO	L5 SE/SW	2-Nov-05
24	MS - MDD/GFCC	L5 SE/SW	31-Oct-05
23	MS - IPIC	L5 SE/SW	12-Oct-05
22	MS - SRD/DSO	L5 SW L3 SE	9-Jun-05
21	MS - IPIC (internally led)	L5 SW	18-May-05
20	IS - AGS & BMS	L5 SW/SE	04 - 08 Apr 05
19	IT - DES (now Defense Group)	L5 SW/SE	14 - 24 Mar 05
18	MS - NSO/PDAS	L5 SW L3 SE	21-Feb-05
17	MS - MDD/CO	L5 SW L3 SE	10-Dec-04
16	MS - ITSD	L5 SW	10-Dec-04
15	MS - MDD/NM	L5 Serv	3-Dec-04
14	MS - C2ID/ISO	L5 SW/SE	12-Nov-04
13	MS - TSD	L5 SW/SE	11-Nov-04
12	MS - C2ID/ESL	L5 SW/SE	8-Oct-04
11	ST	L5 SW/SE	23 - 27 Feb 04
10	MS - GITD (now Civilian Agencies)	L5 SW	11-Dec-03
9	IT - TASC (now Intelligence Group)	L5 SW/SE	01 - 05 Dec 03
8	IT - DMS (now Mission Systems)	L5 SW/SE	09 - 13 Nov 03
7	MS - TSD/BC2	L5 SW	7-Nov-03
6	MS - C2ID/SDO	L5 SW	22-Oct-03
5	MS - MDD/HSVO	L5 SW/SE	29-Sep-03
4	ES/ASD	L5 SW	6-Jun-03
3	MS - C2ID/DSO	L5 SW/SE	24-Apr-03
2	MS - TSD/BD	L5 SW	14-Apr-03
1	IT - DES (now Defense Group)	L5 SW/SE	02 - 13 Dec 02

←Time line for Level 5 SCAMPI A's
1, 9, 7, 11, 6 (**2002-200**6)

- Each Organization MUST perform a SCAMPI appraisal ANNUALLY
  - Every other one MUST have an External Lead
  - All are tracked

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Are you ready to be appraised?

- **What do you need?**
  - Process Improvement?
  - Level 2 – or higher?
  - If Level 3/4/5 does your organization have policies/processes in place?
    - You need to create them (or get them somehow)
    - Takes time if you need to do it from scratch

- **Do you know the details of all your projects?**
  - You should have a memo or directive that specifies what projects apply to you business objectives (e.g., all projects over $500K, all projects with 10 or more personnel involved in CMMI processes)
  - You will need this to help your SCAMPI Appraisal Leader in selecting the appropriate projects for your organizational appraisal

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Move out to get it done right

- **Details for the Scope of the Appraisal**
    - How many Projects?
    - How many Appraisal Team Members?
        - Is everyone trained?
        - You should have at least 1 member (but no more than half) from your site

- **Need to do a "readiness review"**
    - Why?
        - SCAMPI requires it … and it makes you more likely to "pass" your goals
        - Alternate approach (details later)

- **Perform the Appraisal**
    - Select Lead Appraiser
    - Plan
    - Schedule

- **Follow on activities**
    - Correct deficiencies
    - Do it again (keep projects involved)

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Appraisal Process Flow
(Pre Onsite SEPG Lead/Site Coordinator& Lead Appraiser**)

Decision to assess organization
Decide on Assessment Date & Select LA
Select Project(s) & fill out PIID(s)

$1 Begin Evidence Collection

$2 Get Org Evidence Artifacts

$3 Evaluate Evidence for assessment readiness

Select Appraisal Interviewees

Prepare Interviewees (brief & mock interviews)

$4 Generate Appraisal Plan and Appraisal Input & Schedule

Meet with Sponsor to review Appraisal Plan and Input
Get Sponsor's signature on Appraisal Plan and Input
Develop Onsite Organization and Project Briefing
Select Site Coordinator
Select On Site Rooms (Main & 3 Interview Rooms)
Setup for Onsite Internet Connections
 Provide Interviewee list to Lead Appraiser
Get charge numbers for ATMs
Get PIID Interview Questions with PIID responses
Generate ATM Interview Notebooks
Generate ATM Interview Notebooks
Reproduce copies of Evidence Request Forms
Set up interview rooms with mini-team notebooks
Prepare Schedule and Submit to Site Coordinator (SC)
Select Appraisal Team Members (ATMs)
Prepare Team Briefing & Training
Set up SEI TPWEB site for Assessment

$5 Establish Mini-team Assignments

Send PAIS & other materials to SC for completion
Consider NetMeeting for Findings Presentations
Send out details of appraisal to ATMs
Get any missing experience data from ATMs
Modify any information in Schedule Templates and send to ATMs
Perform Onsite ATM Training

$6 Distribute Metrics Forms (collection times in worksheet)

$7 Perform Interviews

Lead consolidation activities
Prepare Draft Findings
Perform OU consolidation

$8 Deliver Draft Findings Presentation

Review Evidence as a result of Draft
Perform Ratings to Goal, PA, Maturity Level
Prepare Final Findings
Deliver Executive Briefing
Deliver Final Findings Briefing
ATM Lessons Learned
Gather metrics from team members
Clean Up and Leave site
Collect and destroy or maintain material
Collect and maintain Action Items
Prepare Process Improvement Plan
Act on Process Improvement Plan
Coordinate Actions of Process Improvement Plan

$9 LA Analyze Measurements & Send Appraisal results to SEI Steward

Get ready for Next Appraisal

$ Talking points (later)

**** Order of Pre Onsite activities may performed in parallel**

Two Approaches for Artifact Collection
(get ready & cut costs - **$1**, **$2**, **$3**)

Standard approach

1. Have projects and org gather artifacts
2. Place into folders with annotation describing why the artifact was selected (NOTE: annotation usually provides little insight)
3. Have qualified team review artifacts and specify which ones were wrong
4. Have projects and org gather replacement artifacts

About 400 hours per project

NGMS Approach

1. Specify Project "Book Bosses" for each Process Area (PA) (same person could do more than 1)
2. Hire a consultant (Authorized Lead Appraiser or qualified as such)
3. Spend an hour training "book bosses" on what to gather for the Generic Practices
4. Have consultant and each PA "book boss" meet for 2 hours to "gather, annotate, and capture" each artifact into folders

About 100 hours per project

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Some more savings 1/2

- **Lay out your schedule* based upon metrics** (take them too - **$4, $6**)
    - Don't forget
        - Team meetings
        - Training**
        - Appraisal team briefing
        - Site/org/project briefings
    - Plan for breaks (and don't work late)

- **Assign mini-teams to review artifacts by PA category**
  (e.g., engineering, support, process management, project management, L4/5 – **$5**)
    - Almost everyone follows this approach (e.g. PPQA+CM, RM+RD)
    - Only trained qualified personnel on L4/5 team
    - Plan for 2 hours per process area per project (on average)
    - Mini-team alternative approaches
        - Review Projects PA's as team (e.g. step thru each SP/GP)
        - GP's assigned across all Projects (e.g. GP 2.1+2.9+3.1)

***

* See Appendix A (typical schedule chart)

** See Hefner/Draper presentation - Applying CMMI Generic Practices with Good
Judgment, http://www.dtic.mil/ndia/2004cmmi/CMMIT2Tue/1116RickHefner.pdf (2
sample charts shown at end of this material)

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Some more savings 2/2

- **Form interview sessions in parallel** (i.e. mini-teams perform interviews concurrently - **$5,$7**)
    - Questions for each mini-team to use
    - Annotate/update questions based upon review of the artifacts
    - Most interview sessions can be performed in about 90 minutes BUT more projects (e.g. over 3) take more time
    - **Save about 1 day** (analyze the measurements – **$9**)
    - Optimize the interview sessions (based upon number of projects)
        - Specific Practices for ALL PA's then GPs - **$7** (30-45 mins/combo)

- **Draft Finding Presentation**
    - During the team consolidation process you may find (if the org and project(s) are performing at the Level being appraised) that:
        - All artifacts have been returned **(at least once)**
        - No significant weaknesses have been found
        - That the OU consolidation are all Fully or Largely Implemented
    - **Save another day -** **$8**

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The Results

- **You can save $$ and still be effective**

- **Prepare for the appraisal**
    - Artifacts
        - Optimize to save
    - Training
        - Consistency
    - Presentations
    - Lead Appraiser Selection
    - Appraisal Plan/Input
    - Schedule
        - Optimize to save
    - Measure & analyze (**$6, $9**)
    - Deliver the results to the sponsor

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APPENDIX A

Typical Appraisal Raw Data Collected During the Northrop Grumman Appraisal Process

Using the following data as collected from the pilots, estimates for interview times and for evidence evaluation times were calculated. Other factors (e.g. new person, Process Area, experience in PA, method of presentation) seem to influence the times. All are being investigated to further refine the NG SCAMPI Appraisal Process.

Interview Times

Project Mgmt MiniTeam	Minutes		Engineering MiniTeam	Minutes		Process Mgmt & Support MiniTeam	Minutes
I&T FAR	53		**RD+RM FAR**	112		**SEPG & OT FAR**	63
PI	28		RD	56		OPF	11
VE G1/G2	25		RM	20		OFD	9
						OT	13
GPs	38		GPs	30		GPs	20
Two Questions	5		Two Questions	6		Two Questions	10
Impl FAR	58		**Val FAR**	18		**CM & PPQA FAR**	33
TS	28		VA	18		CM	20
VE G1/G3	30					PPQA	13
GP	33		GPs	34		GPs	46
Two Questions	5		Two Questions	4		Two Questions	8
PL Proj 1	120		**Impl FAR**	58		**M&A + DAR FAR**	32
RskM	22		TS	28		M&A	16
PP	23		VE G1/G3	30		DAR	16
PMC	19						
IPM	11						
SAM	5						
GPs	25		GP	33		GPs	24
Two Questions	15		Two Questions	5		Two Questions	4

Data shown above is typical of collected data to support interview time spent during appraisals.

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Evidence Review Times

Evidence Checks (Bads=Number of evidence requests)			
Project	PA	Elapsed/min	Bads
A	CM	135	10
B	CM	120	14
C	CM	60	10
A/B/C	DAR	120	0
A/B/C	DAR	60	13
A/B/C	DAR	150	2
A	IPM	40	9
B	IPM	100	6
C	IPM	40	2
A	MA	80	2
B	MA	105	6
C	MA	143	3
D	OPD	71	2
D	OPF	185	7
D	OPF	15	
D	OPF/OPD	30	
D	OT	60	1
D	OT	135	5
A	PI	40	1
C	PI	150	14
A	PMC	70	8
B	PMC	90	11
A	PP	80	0
A	PP	105	11
B/C	PP	165	18
A/B/C	PPQA	70	
A/B/C	PPQA	30	6
A	RD	60	8
B/C	RD	160	18
A	RiskM	145	3
B/C	RiskM	185	8
A	RiskM	40	3
A	RM	120	5
B	RM	90	4
C	RM	90	4
A	SAM	145	9
A	TS	90	5
B	TS	60	5
C	TS	50	11
A/B/C	VE	155	29
	Average Time	95.975	

Data shown here is typical of collected data to support evidence review time spent during appraisals.

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A Typical Schedule
(SCAMPI A Level 5 with 3 Projects or less)

Time (CT)	Monday 11/13/2006	Tuesday 11/14/2006			Wednesday 15-Nov-06			Thursday 16-Nov-06	Friday 17-Nov-06	Time (CT)
0800	Team Assembles	Team Meeting			Team Meeting			Team Meeting	Team Meeting	0800
0815	Rm ####	RM ####			RM ####			RM ####	RM ####	0815
0830	On-Site Training	Evidence Review	Evidence Review	L4/5 Mini-Team QPM, CAR	ProjMgt Mini-Team SAM, IPM, Risk	Engr Mini-Team RD, RM	Support Mini-Team M&A, DAR	Review Prelim Findings as a Team	Collect/Review Evidence	0830
0845		Appraisal team only	Appraisal team only							0845
0900	RM ####			RM ####	RM ####	RM ####	RM ####			0900
0915				XXX-XXX-XXXX	XXX-XXX-XXXX	XXX-XXX-XXXX	XXX-XXX-XXXX		Draft Final Findings	0915
0930	Opening Briefing			Code: ####	Code: ####	Code: ####	Code: ####		in Mini-Teams	0930
0945	Interviewees/sponsor								(all evidence due	0945
1000	Main CR								Review Final	1000
1015	310-764-6338 Code: 5501#								as a Team	1015
1030	Evidence Review			Consolidation	Consolidation	Consolidation	Consolidation			1030
1045				Appraisal team only	Appraisal team only	Appraisal team only	Appraisal team only			1045
1100	Appraisal team									1100
1115										1115
1130									Working Lunch	1130
1145									Appraisal Wrap-Up	1145
1200	Working Lunch	Working Lunch			Working Lunch			Working Lunch	Exec Review	1200
1215	only	Appraisal team only			Appraisal team only			only	Main CR	1215
1230	RM ####	RM ####			RM ####			RM ####	Final Findings	1230
1245									All	1245
1300	Evidence Review	ProjMgt Mini-Team PP, PMC	Engr Mini-Team PI, Val, Ver (testing)	L4/5 Mini-Team OPP, OID	Consolidation Appraisal team only	Engr Mini-Team TS, Ver (Peer Reviews)	Support Mini-Team PPQA, CM	Review Prelim Findings as a Team	Main CR	1300
1315									XXX-XXX-XXXX Code: ####	1315
1330	Appraisal team								Appraisal Team	1330
1345		RM ####	RM ####	RM ####		RM ####	RM ####		Wrap-Up	1345
1400		XXX-XXX-XXXX	XXX-XXX-XXXX	XXX-XXX-XXXX		XXX-XXX-XXXX	XXX-XXX-XXXX	Draft Findings		1400
1415		Code: ####	Code: ####	Code: ####		Code: ####	Code: ####	Presentation		1415
1430	Whole Team							All		1430
1445	OPF							Main CR		1445
1500	Rm ####	Consolidation Appraisal team	Consolidation Appraisal team only	Consolidation Appraisal team only	Consolidation Appraisal team only	Consolidation Appraisal team only	Consolidation Appraisal team only	XXX-XXX-XXXX		1500
1515	XXX-XXX-XXXX Code: ####							Code: ####		1515
1530	Support Mini-Team									1530
1545										1545
1600	OPD, OT							Collect/Review		1600
1615	RM ####							Evidence		1615
1630	XXX-XXX-XXXX	Evidence Review	Evidence Review	Evidence Review	Consolidate Findings					1630
1645	Code: ####				Draft Prelim Findings in Mini-Teams			Draft Final		1645
1700	Consolidation	Appraisal team only	Appraisal team only	Appraisal team only	Appraisal team only			in Mini-Teams		1700
1715	Appraisal team									1715
1730		(as needed)	(as needed)	(as needed)						1730
1745										1745

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GP 2.6 – Manage Configurations

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Place designated work products of the process under appropriate levels of configuration management.

Implementation Guidance

- Must identify which work products are to be controlled and how they will be controlled (level of formality)
  - It is NOT necessary to designate and control every work product; omission implies "not controlled"

Appraisal Guidance

- A list of what is being controlled (e.g., a DM master document list) is not sufficient
  - Must understand what is planned to be controlled

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GP 2.8 – Monitor and Control the Process

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Monitor and control the process against the plan for performing the process and take appropriate corrective action.

Implementation Guidance

- Activities must be reviewed against plan, budget, and schedule
  - Typically performed in staff meetings, cost/schedule reviews, variance reports
  - Detailed review of the process performed against the process description is performed in the QA audits

Appraisal Guidance

- Must establish appraiser consensus
  - Frequency, formality of review
  - Budgets need not be tracked to individual process areas, but each process area must be covered in some budget
- Often difficult to find direct evidence that something is tracked
  - E.g., tracking of Project Management PAs

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Questions ? & Answers !

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