

INITIAL LESSONS LEARNED FROM CONDUCTING SCAMPI-B APPRAISALS

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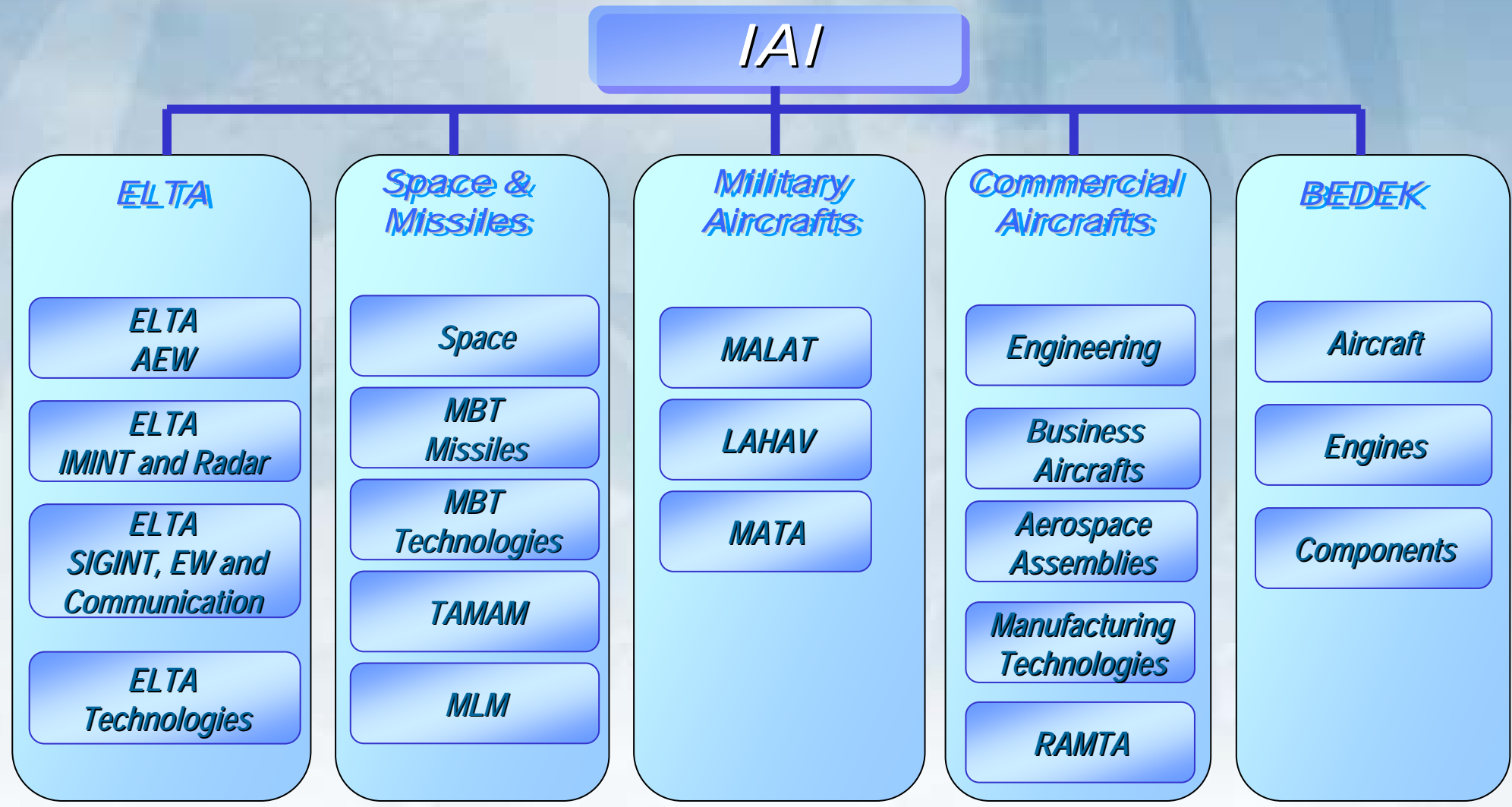
Topics

- Background
 - ◆ IAI Process Improvement Path
 - ◆ CMMI Implementation in IAI
- SCAMPI B&C Appraisals
- Performing SCAMPI-B Appraisals in IAI
- Lessons Learned and Recommendations

Israel Aircraft Industries (IAI)

- Largest industrial company in Israel
 - ◆ 15000 employees, 2.3 \$B annual sales
- Involved in Development, Production, Maintenance and Service of Aerospace Systems
- IAI divisions are ISO9000 and AS9100 certified
- Started SW-CMM based Software development process improvement efforts in 1992
- Started CMMI based process improvement efforts in 2002

Israel Aircraft Industries Groups and Divisions



Corporate Initiatives for Process Improvement

Competitiveness Ability Improvement (CAI)

- Production Process Improvement
- Acquisition Process Improvement

Project Management Process Improvement

- Project Planning and Control
- Risk Management

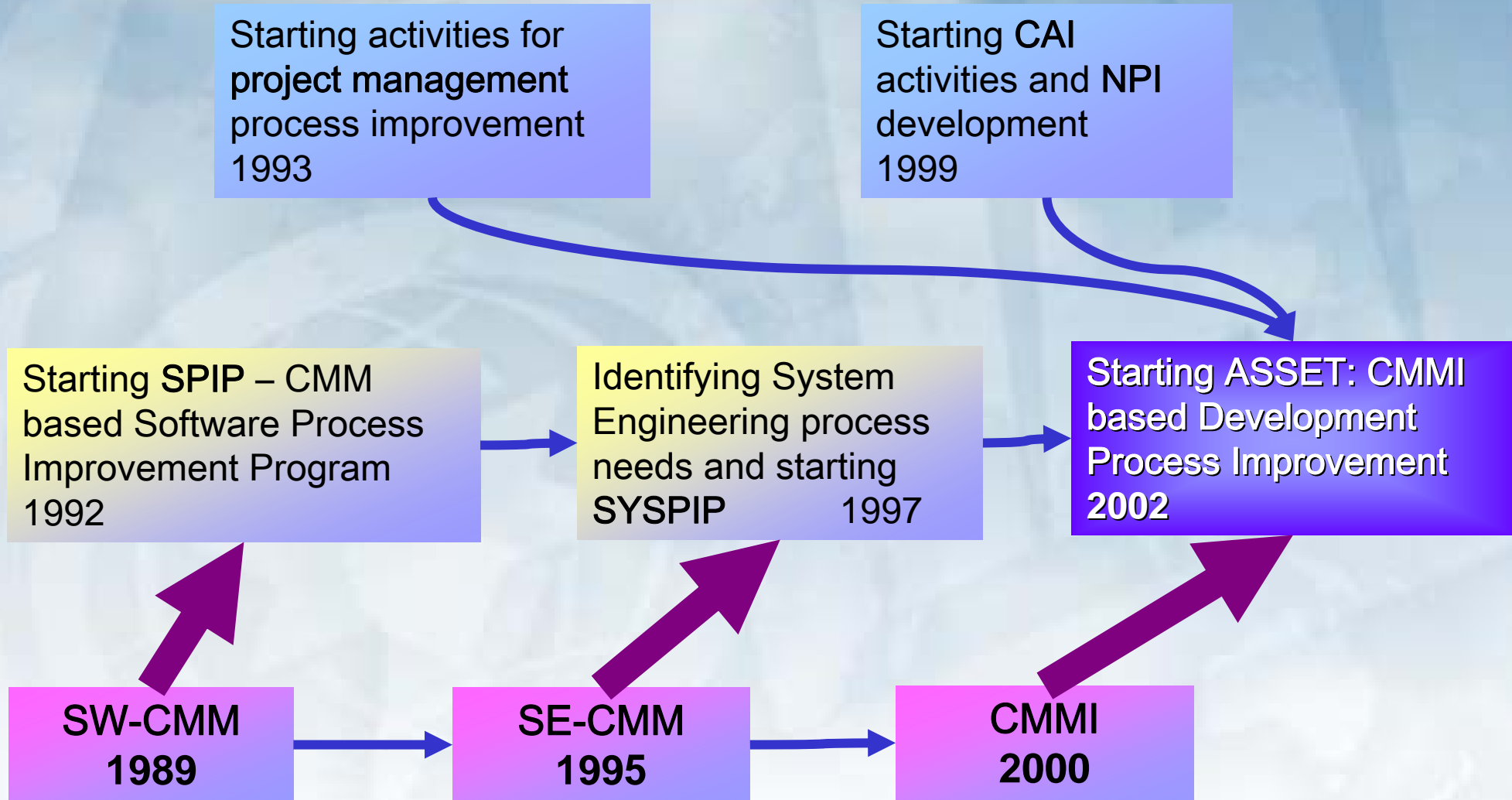
New Product Introduction (NPI)

IAI Uniform Project Process Framework

System & Software Engineering Development Processes and Methodologies

- Increase Quality
- Increase Sales
- Increase Profit

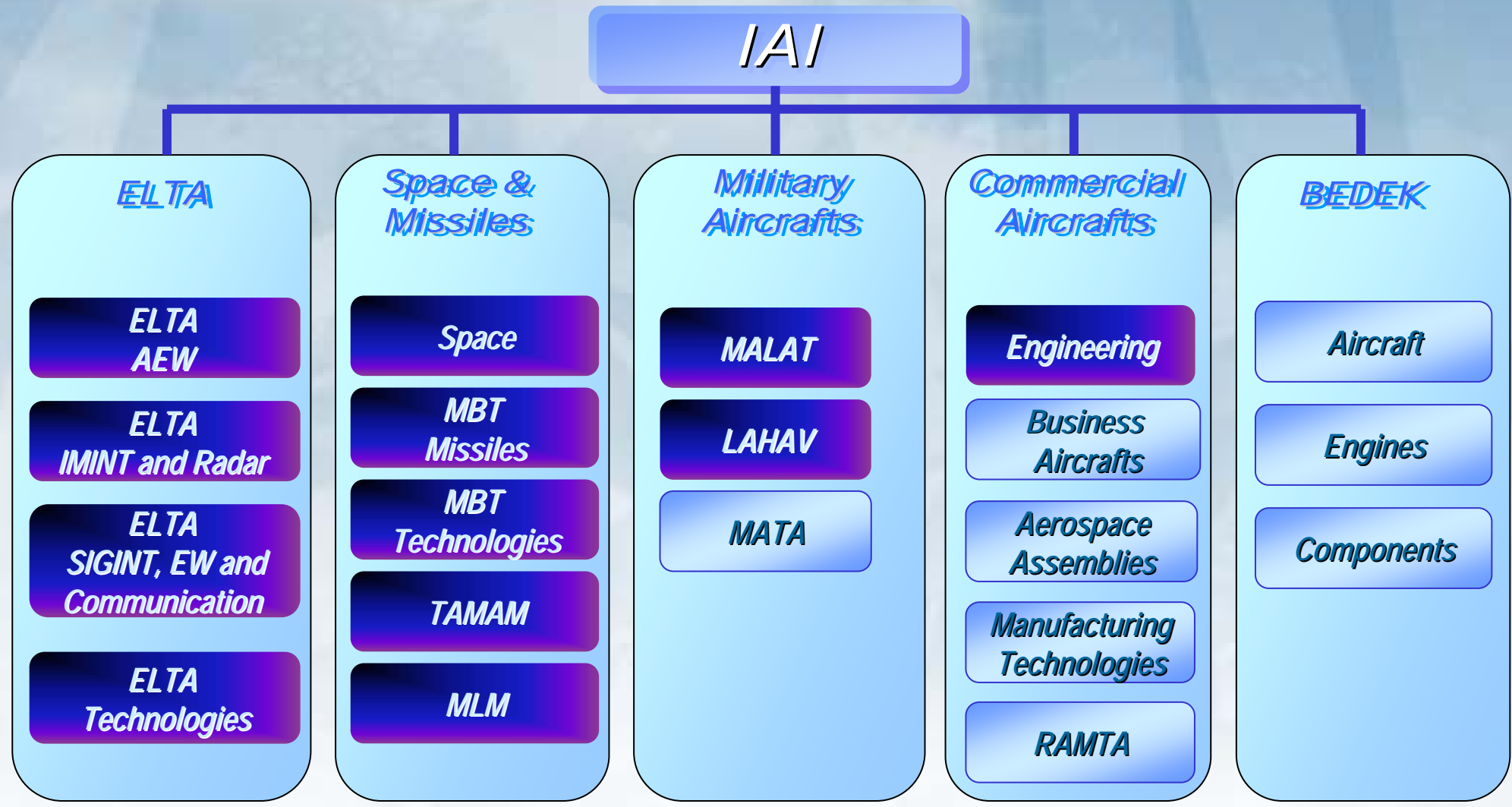
Israel Aircraft Industries Process Improvement Path -1



Israel Aircraft Industries process improvement path -2

- Process improvement efforts are coordinated at the corporate level and sponsored by the company VP of Operations
- Many infrastructure assets are developed at the corporate level and are adapted by the groups and divisions. Other assets are developed within the groups and divisions
- Process improvement implementation is conducted at the group and division level and sponsored by the group or division management

Israel Aircraft Industries Groups and Divisions



CMMI Based Process Improvement Activities

Initial Lessons learned from conducting SCAMPI-B appraisals

Appraisals in IAI

- Since the beginning of the CMMI implementation program in 2002, there have been many formal and informal process reviews and appraisals in IAI groups and divisions, with the CMMI as the reference model with the following objectives:
 - ◆ Identify strengths and weaknesses in the defined processes
 - ◆ Identify strengths and weaknesses in the way processes are actually performed
 - ◆ Provide the basis for process improvement activities
 - ◆ Determine CMMI maturity level

The need for a formal non SCAMPI-A appraisal

- While SCAMPI-A appraisals provide a reliable way to determine the CMMI maturity or capability levels, they are not as good for identifying strengths and weaknesses during the process improvement effort
- We needed a method that will be:
 - ◆ Well defined and documented
 - Can be applied consistently
 - ◆ Flexible and tailorable
 - Can be applied in many different situations
 - ◆ Less effort than SCAMPI-A
 - Can be applied more frequently
 - ◆ Will not provide rating
 - Will not create the stress usually associated with SCAMPI-A

SCAMPI-B Appraisal method

- Defined at the SEI in 2005 as ARC-B compliant appraisals method
- Purpose: To appraise a sample of the processes defined and implemented in the organization, and identify strengths and weaknesses, WITHOUT assigning maturity or capability level ratings
- Provides a higher level of flexibility than SCAMPI-A

SCAMPI-B Appraisals Concepts

- Define appraisal scope:
 - ◆ The organization parts to be appraised
 - ◆ The CMMI model scope to be considered
- Prepare formal Input and Plan documents
- Collect information from both direct artifacts and affirmations.
 - ◆ Indirect artifacts are usually not used in data sufficiency rules of SCAMPI-B
- Use data sufficiency rules and Draft Findings to verify and validate results
- Characterize practice implementation level as **Red**, **Yellow** or **Green** to provide easy understanding of the organization process status
- Appraisal team must consist of at least 2 members, in addition to the team leader
- Non Attribution

SCAMPI-C Appraisal method

- Defined at the SEI in 2005 as ARC-C compliant appraisals method
- Purpose: To appraise a sample of the processes defined or planned in the organization, and identify strengths and weaknesses, **WITHOUT** assigning maturity or capability level ratings
- Provides a higher level of flexibility than SCAMPI-B

SCAMPI-C Appraisals Concepts

- Define appraisal scope:
 - ◆ The organization parts to be appraised
 - ◆ The CMMI model scope to be considered
- Prepare formal Input and Plan documents
- Collect information from direct artifacts, indirect artifacts and/or affirmations
- Data sufficiency rules are less firm than in SCAMPI-B
- Non Attribution

IAI Goals in using SCAMPI-B

- Use a well defined, repeatable and flexible method for process appraisal
 - ◆ Obtain information about current processes
 - ◆ Identify good practices that should be repeated
 - ◆ Identify weaknesses as early as possible
 - ◆ Obtain information about the level of readiness for a SCAMPI-A appraisal
- Avoid the stress associated with SCAMPI-A
 - ◆ No rating

SCAMPI-B Appraisals Performed in IAI

- Two formal SCAMPI-B appraisals were conducted in IAI:
 - ◆ 1st SCAMPI-B appraisal performed in IAI LAHAV division in September 2005
 - ◆ 2nd SCAMPI-B appraisal performed in IAI ELTA group in December 2005
- In addition, three informal SCAMPI-B like appraisals were conducted in the same two organizations in 2006

Initial Lessons Learned -1

- Scope must be defined very carefully, especially when the time is very limited (5 to 7 days at the most)
 - ◆ Usually: 2-3 projects, 4-5 process areas
- Preparations for SCAMPI-B are similar to those for SCAMPI-A, e.g.:
 - ◆ PIIDs preparation
 - ◆ Appraisal team selection and training
 - ◆ Plan, Logistics, Schedule
 - ◆ Interview Scripts
- Draft Findings sessions may be less important than in SCAMPI-A
- For frequent PIIDs review SCAMPI-C may be more appropriate
- SCAMPI-B appraisals helped in focusing management attention and raising awareness of important process issues

Initial Lessons Learned -2

- Best results are obtained when the team consists of people from both the appraised organization and from outside
- SCAMPI-B may not be appropriate for initial process appraisal, because of the need to consider direct artifacts. SCAMPI-C may be better for this purpose
- SCAMPI-B may not provide enough information about readiness for SCAMPI-A because Indirect Artifacts might not be examined in a SCAMPI-B
- In some cases, SCAMPI-B method does not provide enough flexibility
 - ◆ Draft Findings Presentation contents
 - ◆ Combinations of project and CMMI scope

Combinations of Projects and CMMI Scope-1

	PP		PMC			REQM		CM		
Project 1			DA			DA		AF		
Project 2			DA			DA		AF		
Project 3			AF			DA		AF		
Project 4			AF			DA		AF		

DA = Direct Artifacts

AF=Affirmations

Sufficient Data ———
 Insufficient Data - - - -

Data Sufficiency rules require:

- At least one direct artifact or one affirmation for each instantiation in scope
- Both a direct artifact and an affirmation when considering all instantiations in scope

Combinations of Projects and CMMI Scope-2

Not considered in SCAMPI-B

	PP				PMC				REQM			CM			
Project 1	In scope	In scope	In scope	In scope	Out of scope	Out of scope	Out of scope	Out of scope	In scope	In scope	In scope	Out of scope	Out of scope	Out of scope	Out of scope
Project 2	Out of scope	Out of scope	Out of scope	Out of scope	Out of scope	Out of scope	Out of scope	Out of scope	In scope	In scope	In scope	In scope	In scope	In scope	In scope
Project 3	In scope	In scope	In scope	In scope	In scope	In scope	In scope	In scope	Out of scope	Out of scope	Out of scope	Out of scope	Out of scope	Out of scope	Out of scope
Project 4	Out of scope	Out of scope	Out of scope	Out of scope	In scope	In scope	In scope	In scope	Out of scope	Out of scope	Out of scope	In scope	In scope	In scope	In scope

In scope

Out of scope

Some process areas may intentionally not be covered in some projects to make better use of appraisal preparation and on-site time

Combinations of Projects and CMMI Scope-3

Not considered in SCAMPI-B

	PP			PMC				REQM		CM				
Project 1	In scope	Out of scope	Out of scope	In scope	In scope	In scope	In scope	In scope	Out of scope	Out of scope	In scope	Out of scope	Out of scope	In scope
Project 2	In scope	In scope	In scope	Out of scope	In scope	Out of scope	Out of scope	In scope	In scope	Out of scope	In scope	In scope	Out of scope	In scope
Project 3	Out of scope	Out of scope	Out of scope	In scope	In scope	In scope	In scope	Out of scope	In scope	Out of scope	In scope	In scope	Out of scope	In scope
Project 4	Out of scope	In scope	Out of scope	Out of scope	In scope	Out of scope	In scope	Out of scope	Out of scope	In scope	Out of scope	In scope	Out of scope	In scope

In scope

Out of scope

Some practices may intentionally not be covered in some projects to make better use of appraisal preparation and on-site time

Recommendations regarding usage of SCAMPI B&C

- Use SCAMPI-B appraisals systematically as one of the tools on the process improvement path
 - ◆ Perform once a year to check process status between SCAMPI-A appraisals
 - ◆ Limit the scope to one process area category (e.g.: Project Management PAs, Engineering PAs)
 - ◆ Plan SCAMPI-B appraisals in conjunction with other appraisals (such as SCAMPI-C) so that maximum information is obtained with a minimal effort
- Use SCAMPI-C appraisals for more frequent process and PIIDs preparation status review
- Make sure that the team consists of people both from the appraised organization and from outside
- Make sure that expectations from SCAMPI B & C are aligned with the methods' capabilities
 - ◆ SCAMPI B or C are not a cheap replacement for SCAMPI-A

Sample plan involving SCAMPI-B appraisals

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Periodic Formal Appraisals to determine Maturity or Capability Levels	▲												▲
Periodic Appraisals to identify Strengths and Weaknesses in Processes					▲				▲				
Interim evaluation of progress in process improvement and readiness for appraisals			▲				▲				▲	▲	

▲ SCAMPI-A

▲ SCAMPI-B

▲ SCAMPI-C

Recommendations regarding the SCAMPI-B Method

- ◆ Modify the SCAMPI-B method to enable more flexibility
 - Scope definition
 - Draft Findings presentation
- ◆ Find a way to consider indirect artifacts in SCAMPI-B data sufficiency rules, in addition to direct artifacts and affirmations

Thank You

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