



[Session P2]
Streamlining the Transition from CMM to CMMI

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**Streamlining the Transition
from CMM[®] to CMMI[®]**

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Who are we ?

■ **GRafP Technologies**

- *Established in 1995*
- *Product development for risk management applications*
- *Process and risk appraisal services*
 - Includes CBA IPIs and SCAMPIs
- *Process engineering and process modeling*





Myths

- **Transitioning from the CMM to the CMMI is a formality**
- **Early adopters have had an easier time than late adopters**
- **Additional Process Areas are all that differentiates the CMM from the CMMI**



Reality

- **Myth – Transitioning from the CMM to the CMMI is a formality**
- **Reality**
 - *The CMMI is an improvement over the CMM, but it is also more generic and requires more interpretation and tailoring*
 - *Measurements, which were distributed throughout Key Process Areas in the CMM, have been consolidated and expanded under one Process Area in the CMMI*

One of the most significant improvements of the CMMI over the CMM but ...

... measurements have been the Achilles' heel in software



Reality

- **Myth – Early adopters have had an easier time than late adopters**
- **Reality**
 - *As in any other industry, early adopters have gained experience but have paid the price for it*
 - *The higher the maturity level reached with the CMM, the easier the transition to the CMMI will be*
 - *Once CMM level 4 has been reached, the transition to the CMMI is relatively smooth*



Reality

- **Myth – Additional Process Areas are all that differentiates the CMMI from the CMMI**
- **Reality**
 - *The SCAMPI (Standard CMMI Appraisal Method for Process Improvement) approach is significantly more rigorous than the CBA IPI (CMM-Based Appraisal for Internal Process Improvement) approach*
 - *This makes the implementation of additional PAs in preparation for a formal appraisal that much more difficult*



Observations in vivo

- Many organizations still favor starting with the CMM even if the model will no longer be supported after December 2005
- Some organizations that started their process improvement with the CMMI have had a rude awakening
 - *Some now wish they had started earlier and with the CMM*
- Organizations that had already started with the CMM tend to delay the transition to the CMMI until they have reached at least maturity level 3
 - *Resistance to change prevails, and SPI is no exception*



But ...

- **By and large, organizations recognize that the CMMI is a better model and intend to transition**
- **The main questions are**
 - *How?*
 - *When?*
 - *What challenges can be expected?*
 - *How much will it cost?*
 - *What are the benefits?*



Mapping between CMM and CMMI

■ CMM

➤ 18 Key Process Areas

- 6 at Level 2
- 7 at Level 3
- 2 at Level 4
- 3 at Level 5

➤ 316 key practices

■ CMMI (SE/SW version)

➤ 22 Process Areas

- 7 at Level 2
- 11 at Level 3
- 2 at Level 4
- 2 at Level 5

➤ 425 practices

Level	Focus	Key Process Areas
5 Optimizing	Continuous Process Improvement	Defect Prevention Technology Change Mgt. Process Change Mgt.
4 Managed	Product and Process Quality	Quantitative Process Mgt. Software Quality Mgt.
3 Defined	Engineering and Management Process	Organization Process Focus Organization Process Defn. Peer Reviews Training Program Intergroup Coordination Software Product Engineering Integrated Software Mgt.
2 Repeatable	Project Management	Requirements Mgt. Software Project Planning Software Project Tracking Software Subcontract Mgt. Software Quality Assurance Software Configuration Mgt.
1 Initial		

Level	Focus	Process Areas
5 Optimizing	<i>Continuous Process Improvement</i>	Organizational Innovation and Deployment Causal Analysis and Resolution
4 Quantitatively Managed	<i>Quantitative Management</i>	Organizational Process Performance Quantitative Project Management
3 Defined	<i>Process Standardization</i>	Requirements Development Technical Solution Product Integration Verification Validation Organizational Process Focus Organizational Process Definition Organizational Training Integrated Project Management Risk Management Decision Analysis and Resolution
2 Managed	<i>Basic Project Management</i>	Requirements Management Project Planning Project Monitoring and Control Supplier Agreement Management Measurement and Analysis Process and Product Quality Assurance Configuration Management
1 Initial		



Mapping between CMM and CMMI (Cont'd)

- **For an organization having implemented the CMM**
 - *Between 55% and 65% of the CMMI practices will be directly satisfied by currently implemented CMM key practices*
 - *Actual percentage depends on the CMM key practices implementation details*



Evolution of Appraisal Approaches

- SCAMPI (2002 – foreseeable future)

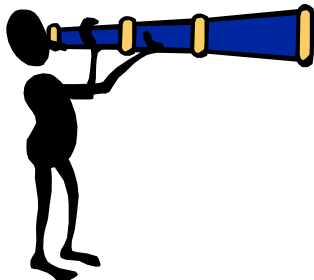
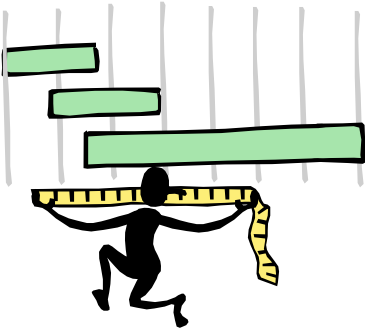
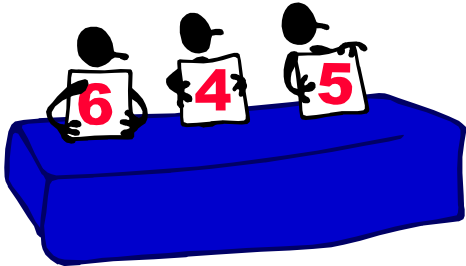
- *Audit-oriented with verification that process is implemented in practice in each instance (project, enhancement, work package) making up the appraisal sample*
- *Corroboration in the form of affirmations not sufficient*

- CBA IPI (1995 – 2005)

- *Collaborative appraisal with reasonable verification that practices are generally implemented in the sample making up the appraisal*
- *Corroboration in the form of affirmations sufficient in many cases*

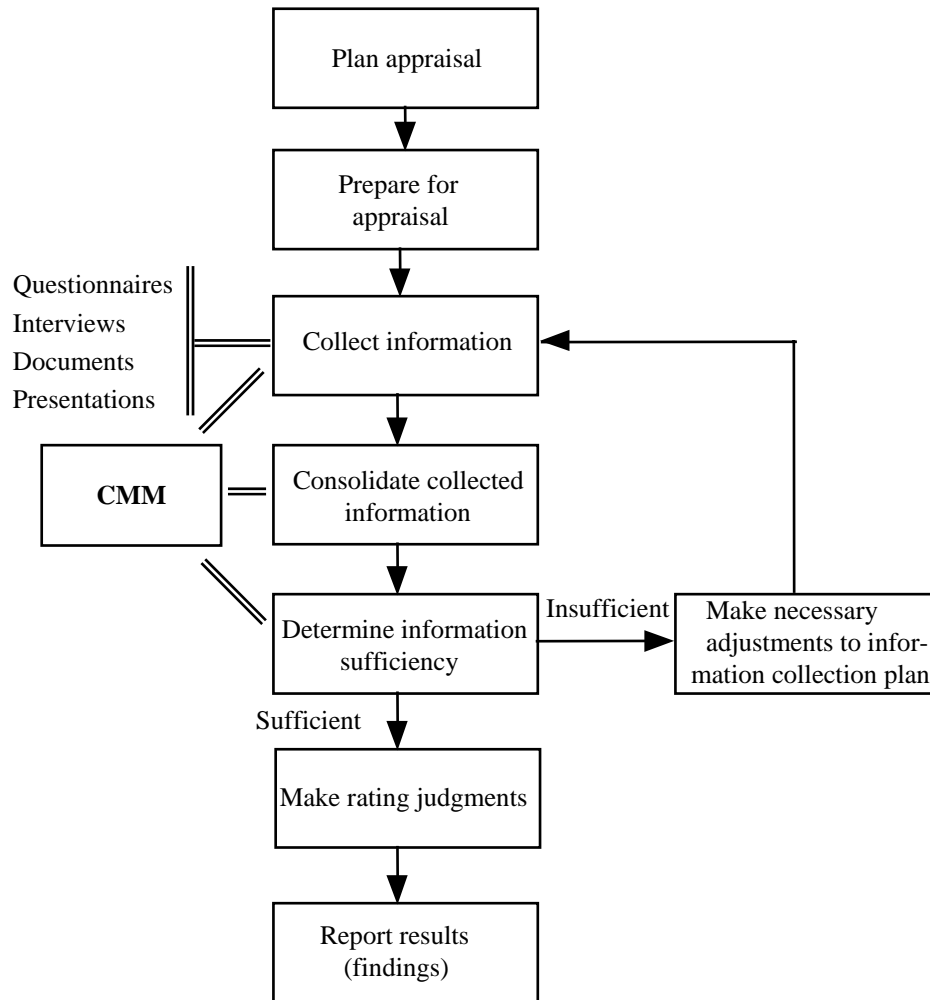
- SPA (Software Process Assessment 1987 – 1995)

- *Loosely based on the CMM*
- *Corroboration in the form of affirmations sufficient in most cases*





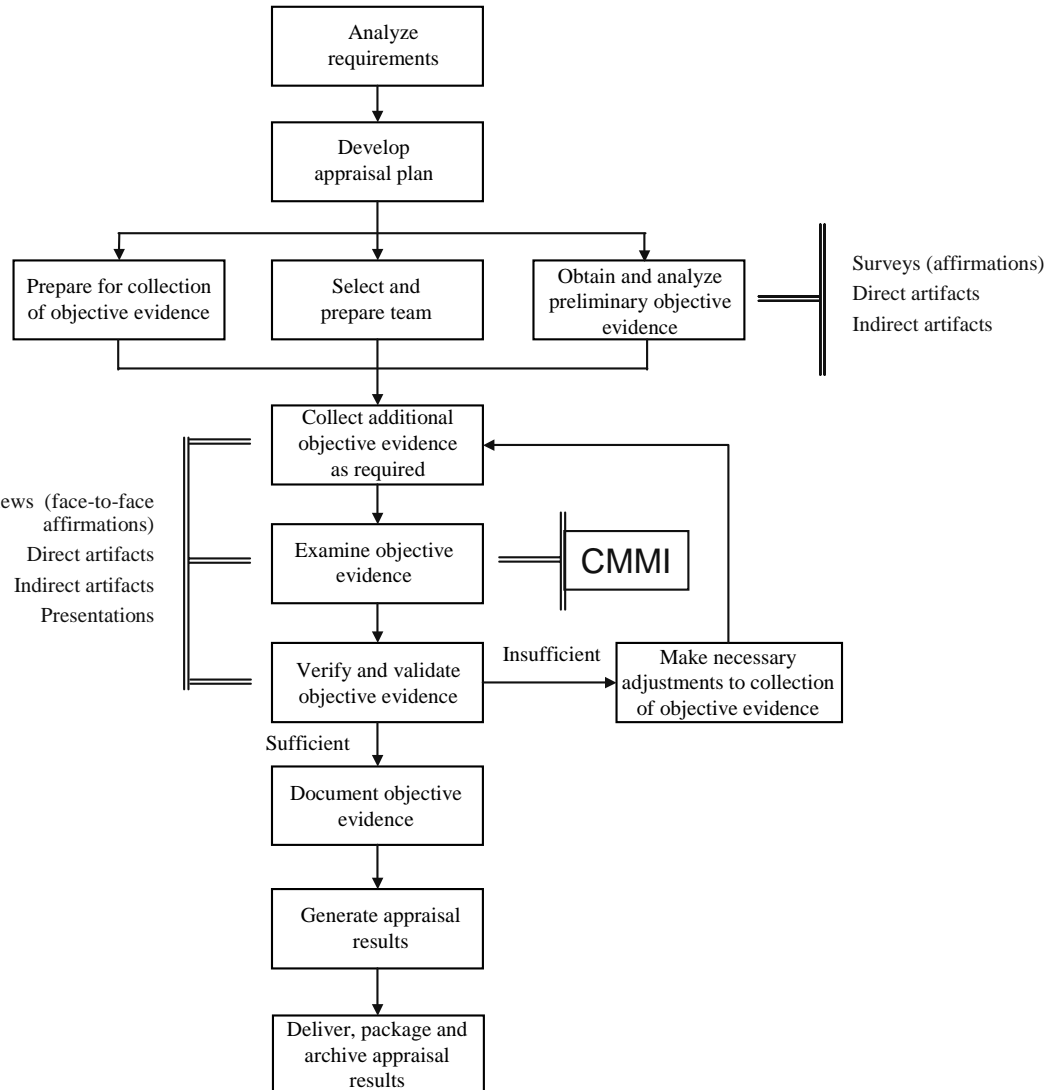
CBA IPI



- Pre-appraisal frequently conducted to identify significant gaps before CBA IPI is initiated
- Information collected on instances making up sample, and sufficiency of information assessed by team
- Interviews constitute one of the mechanisms use to collect and to corroborate information
- Rating performed for the organization, based on collected information



SCAMPI



- Readiness review performed to verify that organization is ready for a formal appraisal
- Exhaustive verification that practices are implemented
- Practice implementation is expected to leave a trace in the form of a direct artifact
- Interviews are held to verify that the process is known and used
- Rating performed for each practice, for each instance, and for the organization as a whole



Transition Roadmap

■ Assumes that

- *CMM training has been initiated*
- *The CMM has been used and at least partially implemented*
- *A formal CMM-based appraisal has been performed or is being contemplated in the short term (< 1 year)*

■ Goals

- *Maximize transition's business value*
- *Minimize risk*
- *Build on each preceding iteration to save time and money*



Transition Roadmap (Cont'd)

- **Step 1 – Assess readiness to undergo formal CMM-based appraisal**
- **Step 2 – Perform CMM-Based appraisal with modifications to help transition**
- **Step 3 – Conduct detailed CMM-CMMI gap analysis**
- **Step 4 – Provide CMMI training**
- **Step 5 – Conduct SCAMPI Class A appraisal**



Step 1

- **Ensure CMM training has been adequate**
 - *Poor understanding of CMM key practices is by far the biggest obstacle to successful CMM implementation*
- **Identify business objectives**
 - *Determine which has higher priority*
 - Obtaining a formal CMM maturity level
 - Transitioning to CMMI as early as possible
- **Determine most desirable type of appraisal, taking into account business objectives**
 - *CBA IPI if no formal CMM appraisal has ever been conducted*
 - *If a CBA IPI has been performed in the past, a CMM-Based SCAMPI will likely facilitate transition to CMMI, but it will also be more challenging*



Step 1 (Cont'd)

- **Have the appraisal team conduct an extensive survey with directives to respondents to provide links to direct artifacts**
 - *Comments also provide information in the form of Affirmations*
 - *Ensure detailed survey results are properly archived, as they will be used in subsequent steps*



Step 2

- **If a CBA IPI is conducted**
 - ***Have the team start with survey results***
 - Focus will be on verifying that these results are accurate and sufficient
 - ***During the on-site period, have the team focus on***
 - Verifying the adequacy of the tangible outputs resulting from the implementation of each key practice (Direct Artifacts)
 - Corroborating Direct Artifacts with Indirect Artifacts and Affirmations
 - ***Have the team use interviews to corroborate that the process is known and applied***
 - Let participants explain how they generate and use direct artifacts with the help of a multimedia projector
 - ***Use as a dry-run for upcoming SCAMPI appraisal***



Step 2 (Cont'd)

- **Ensure detailed appraisal results are generated, as they will be used in subsequent steps**



Step 3

- **Identify sample that will constitute the basis for a SCAMPI Class A**
- **If CBA IPI was conducted, have the SEPG**
 - *Verify that findings (strengths) also apply to the sample that will constitute the basis for a SCAMPI Class A*
 - *Map evidence collected for CBA IPI to CMMI practices*
 - *Prepare action plan to implement CMMI practices not covered by CMM*
 - **Ask SEPG how CMMI practices can be implemented to maximize their usefulness, in a way that satisfies their intent, instead of blindly mandating them**



Step 3 (Cont'd)

- **If CMM-Based SCAMPI was conducted**
 - *Have the SEPG verify that collected evidence applies to the sample that will constitute the basis for a SCAMPI Class A*
- **Kill two birds with one stone**
 - *Have the Lead Appraiser use this step as one of the Readiness Reviews required by the SCAMPI approach*



Step 4

- **Provide Introduction to CMMI training to a pool of potential appraisal team members**
 - *Typically, a pool of 10 individuals is sufficient for a large organization (250-1,000 people in software)*
- **For remaining personnel, provide a one-day orientation on the CMMI**
 - *Two days if they have not been exposed to the CMM*
- **Have those who attended training hold internal awareness sessions for those who cannot attend**



Step 5

- **Have Lead Appraiser conduct a quick Readiness Review to ascertain that**
 - *Weaknesses identified in CMM-based appraisal have been corrected*
 - *Gaps between CMM and CMMI have been resolved*
- **Have the team conduct SCAMPI appraisal on the basis of information collected in Step 3**
 - *Appraisal should be focusing on verifying deltas between CMM and CMMI*
- **Unless collected information warrants it, target a transition from CMM Level N to CMMI Level N (as opposed to N+1)**



Recommendations

- **Maximize the use of surveys**
 - *Very inexpensive and efficient way of getting information*
 - *The more information you have, the better informed you will be about your readiness to transition and remedial actions to implement*
- **Ask yourself why you are transitioning**
 - *Marketing advantage?*
 - *Getting better at what you're doing?*
 - *Benefiting from outsourcing opportunities?*
 - *Fighting off outsourcing threats?*
- **Verify that the adopted strategy is the right one**
- **Plan according to your strategy**
 - *Keep Murphy's Law in mind at all times*
- **Make it happen**



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- **“Reducing Risk with Software Process Improvement”**
 - *To be published by Auerbach Publications this coming Spring*
 - *Identifies process deficiencies that contribute the most to problems experienced by IT organizations*