Lessons Learned Conducting a Level 5 SCAMPI

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Principal and CTO

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CMMI Technology Conference
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Topics

- Appraisal background
- What results from doing a set of appraisals?
- Lessons Learned and Implemented
- Questions and answers

- *This presentation is based in part on material presented by Mr. Byrnes at the 2003 CMMI Technology Conference, the 2004 ESEPG Conference, and the 2004 ISD Brazil Customer's Conference.*

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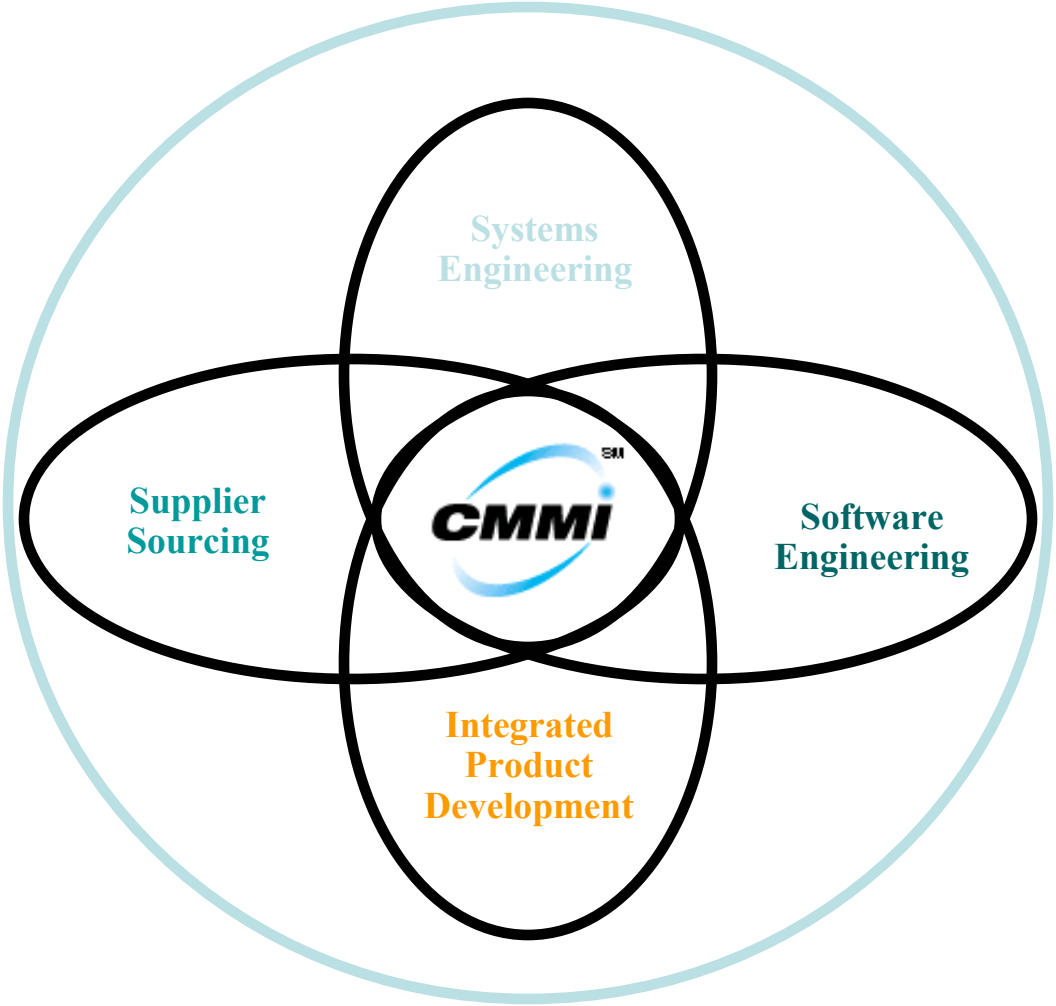
Scope of Events Discussed

- 4 Level 4-5 SCAMPI appraisals in last 12 months
- SE/SW (integrated)
- SE/SW (separate ratings)
- SE/SW/SS
- SE/SW/IPPD/SS
- All achieved their desired target. One exceeded their target.



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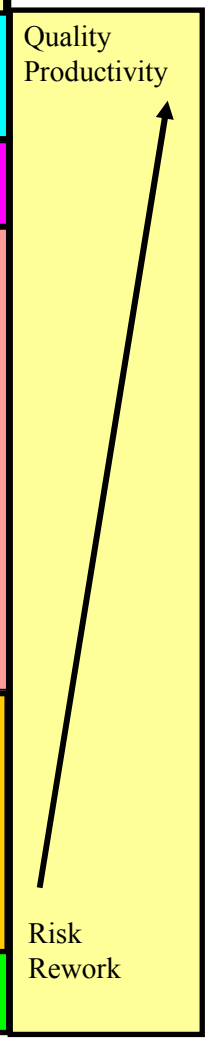
CMMI Process Areas by Maturity Level

4 added PAs at Levels 4-5 doesn't mean only 20% more effort!!

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



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Appraisal Characteristics

Appraisal Type	Appraisal Application	Characteristics
Class A	Benchmarking Supplier Selection	A SCAMPI is an example of a Class A benchmarking A formal maturity rating can be issued Most costly and disruptive to an organization Requires an extensive amount of preparation
Class B	Internal Improvement Process Monitoring Supplier Selection	A “middle” approach compared to the Class A. Focus typically is on process improvement Identifies issues, risks, and gaps No maturity rating can be issued Moderately costly and disruptive Requires a moderate to extensive preparation.
Class C	Internal Improvement Process Monitoring	Scaled down to minimize cost and disruption Used as a self-diagnostic status check Typically one project and/or a few process areas Performed by an appraisal specialist or a small team No maturity rating can be issued Least costly and disruptive; least preparation

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Key Decision Making Parameters

Method > Attribute	Class C	Class B	Class A
Cost	Least costly due to extensive tailoring Less external cost due to internal resource usage	Variable costs depending on ◈ tailoring options ◈ team composition	Most costly due to ◈ model scope ◈ org scope ◈ verification rules ◈ team composition
Schedule	Generally least disruptive (due to focus on processes and limited interviews)	Disruptive on appraised entity (due to sampling approach selection of projects)	Highly disruptive
Performance	Least rigorous. Generally focuses on org processes	Flexible. Can be rigorous. Most process improvement information gained	Most Rigorous. Highest confidence (as documented)

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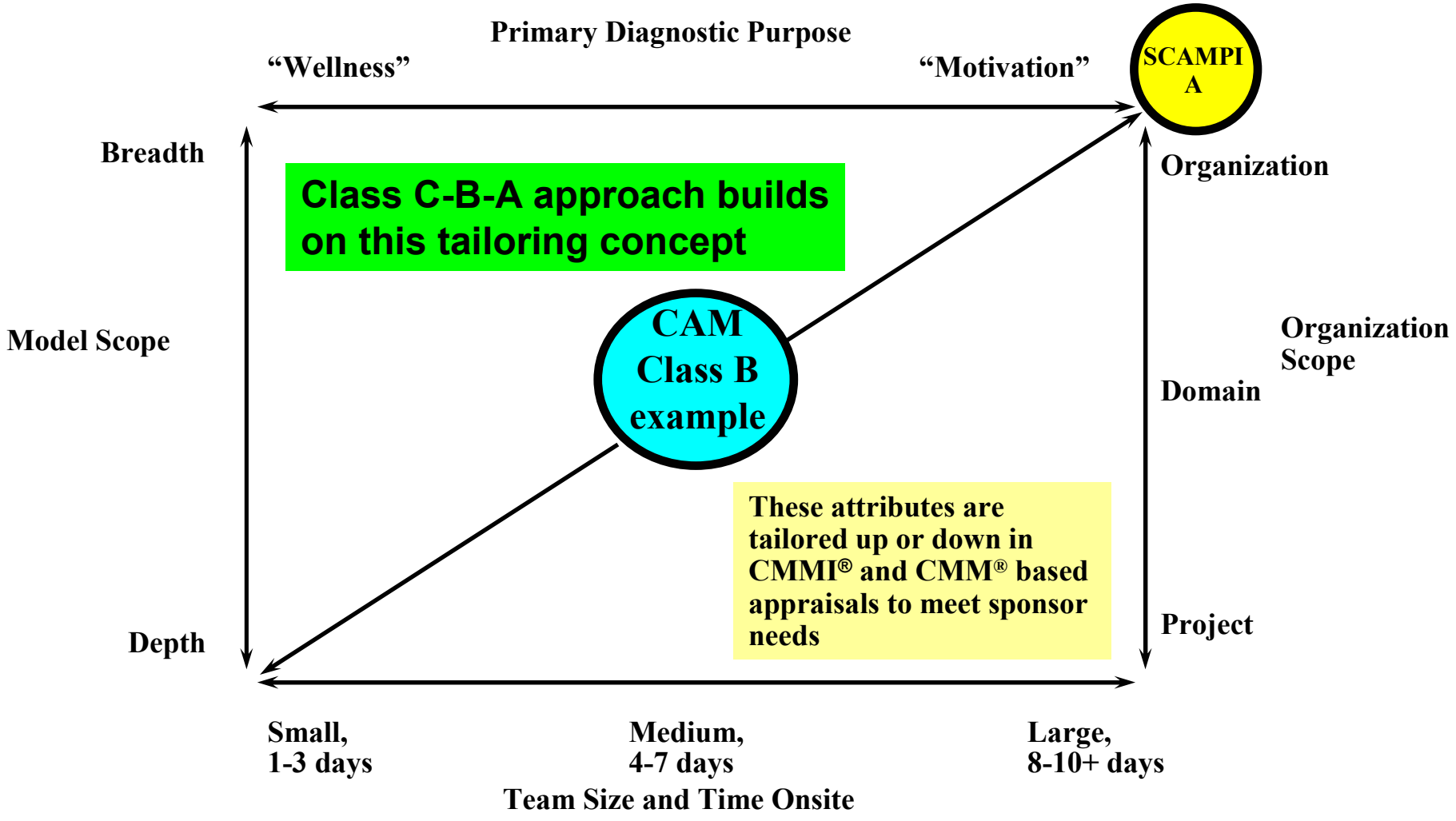
The Appraisal "Tool Kit"



What Results from the C-B-A set of Appraisals?

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Desired C-B-A Timeline

- Class C: T-12 months from Class A event
  - Time to fix processes and re-deploy
- Class B: T-6 months from class A event
  - Time to update processes, correct issues, and re-deploy
- Readiness Review: T-2 months from Class A event
  - Time to organize unit for conducting the event and closing final gaps

- Organizations can't always meet this timeline due to
  - Calendar management
  - Business goals
  - Fiscal calendars
  - Resource availability and continuity
  - Project cycle time
- Risk profiles are ***always*** impacted

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Typical Class A Appraisal Goals

- Perform an ARC Class A compliant appraisal against the CMMI V1.1 SE/SW/IPPD/SS Staged Representation
- Use an externally led team with a majority external team members to ensure objectivity;
- Baseline the organization's capability against the reference model; provide a maturity level rating outcome;
- Minimize disruption of on-going projects;
- Report results in a manner that facilitates delivery of results to end customers and the CMMI Steward (SEI).

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Typical Class B Appraisal Goals

- Perform an ARC Class B compliant appraisal;
- Rate the risks in the organization's process implementation;
- Baseline the organization's capability against the reference model;
- Minimize disruption of on-going projects;
- Report findings at a sufficient granularity to minimize risk and maximize action planning;
- Provide recommendations to facilitate management decision making;

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A Real Example of Appraisal Goals

- Provide an independent rating of the organization using an externally led team, including a SEI authorized Lead Appraiser.
- Obtain individual process maturity ratings for systems and software engineering.
- Obtain an accurate picture of the organization's current process capability to provide data for subsequent improvement cycles.
- Provide data to support program-specific, customer driven process capability requirements.

These are paraphrased from one of ISD's CMMI customers, as reported in 2003 in a public forum

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Specific Example of Class B Goals

- Conduct CMMI Class B Level 5 Appraisal
  - Externally Led Appraisal – Lead Appraiser Paul Byrnes
- Interview participants as we would in a Class A
- Re-review updated and new Objective Evidence provided based on Class C findings
  - Rigorous review – Class A Thoroughness
  - Projects participated fully
- Rate Risk for a Class A CMMI Level 5 Appraisal as as scheduled for <specific date>

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Key Points About Findings

- Findings types include
  - strengths/best practices (superior implementation)
  - compliance (satisfactory implementation)
  - alternate practices (satisfactory implementation)
  - weaknesses (gaps against the model)
    - significant, standard, and minor (severity designator)
  - improvement activities (not institutionalized)
    - “filling gaps” [IA-W] and “improving standard practice” [IA-C]
  - recommendations

- Several of these findings types are extensions to the methods to add specificity for these clients

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Example Improvement Activities

improvement activity in an implementation practice	One project is using a new, organizationally approved developmental baseline procedure as a pilot test prior to roll out to the entire organization.
improvement activity in an institutionalization practice	An engineering improvement team chartered by the division has a draft peer review policy and procedure ready for implementation.

Note: These "improvement activities" are a valid finding in a CAM. It is currently not a finding type in a SCAMPI.

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Key Points About Ratings

- Ratings for C and B events were ***informal***. Only Class A was formal. Each practice was characterized as either
  - Fully implemented
  - Largely implemented
  - Partially implemented
  - Not implemented
  - Not applicable [an ISD method extension]
  - “Not there yet” [an ISD method extension]

- For Class C and B events, practices were ***“rated”*** relative to ***risk*** in achieving a successful <scope> SCAMPI by <schedule>. Risk is relative to
  - Quantity of issues to resolve
  - Difficulty of actions to implement
  - Resource availability
  - Time available before the Class A

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Class C Risk Rating Profile – High Risk

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

Risk Rating Legend

NAME	COLOR
High	
Medium	

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Class B Risk Rating Profile - Medium

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

Risk Rating Legend

NAME	COLOR
High	
Medium	

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Class B Practice Rating Grid

NAME	COLOR
1 FI Fully Implemented	
2 LI Largely Implemented	
3 PI Partially Implemented	
4 NI Not Implemented	
5 NTY Not There Yet	

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

Practice Characterization Legend

NAME	COLOR
1 FI Fully Implemented	

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NAME	COLOR
Full	
Partial	
None	

Class B Practice Coverage Grid

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

OU Coverage Legend

NAME	COLOR
Full	
Partial	

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Readiness Review Risk Rating Profile

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

Risk Rating Legend

NAME	COLOR
High	
Medium	

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NAME	COLOR
1 FI Fully Implemented	
2 LI Largely Implemented	
3 PI Partially Implemented	
4 NI Not Implemented	
5 NTY Not There Yet	

Readiness Review Practice Rating Grid

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

Practice Characterization Legend

NAME	COLOR
1 FI Fully Implemented	

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Readiness Review Practice Coverage Grid

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

OU Coverage Legend

NAME	COLOR
Full	
Partial	

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Specialized Findings

Finding Type	Class C	Class B	Readiness Review
Missing Documents	188	72	44
Link Issues	69	30	24
Evidence Type Issues	139	41	39
Recommendations	29	31	27
Compliant	536	807	943
Minor Weakness	50	49	35
Weakness	95	19	9
Improvement Activities	18	25	39
Total Records Approved	1132	1086	1169

Note specialized findings types in bold, italics – these are specific to the "build up" of the objective evidence in the appraisal database.

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NAME	COLOR
1 FI Fully Implemented	
2 LI Largely Implemented	
3 PI Partially Implemented	
4 NI Not Implemented	
5 NTY Not There Yet	

Class A Practice Rating Grid

	CO	AB					DI				VE		SP													
PA	1	1	2	3	4	5	1	2	3	4	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14
REQM													1.1	1.2	1.3	1.4	1.5									
PP													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3
PMC													1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.1	2.2	2.3				
SAM													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
M&A													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
PPQA													1.1	1.2	2.1	2.2										
CM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
RD													1.1	1.2	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5				
TS													1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2					
PI													1.1	1.2	1.3	2.1	2.2	3.1	3.2	3.3	3.4					
VER													1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2						
VAL													1.1	1.2	1.3	2.1	2.2									
OPF													1.1	1.2	1.3	2.1	2.2	2.3	2.4							
OPD													1.1	1.2	1.3	1.4	1.5									
OT													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
IPM													1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	
RSKM													1.1	1.2	1.3	2.1	2.2	3.1	3.2							
IT													1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5						
ISM													1.1	1.2	2.1	2.2	2.3									
DAR													1.1	1.2	1.3	1.4	1.5	1.6								
OEI													1.1	1.2	1.3	2.1	2.2	2.3								
OPP													1.1	1.2	1.3	1.4	1.5									
QPM													1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4						
OID													1.1	1.2	1.3	1.4	2.1	2.2	2.3							
CAR													1.1	1.2	2.1	2.2	2.3									

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Relative Costs Across the Set

- Planning
- Conducting
- Reporting
- Follow-Up

- Other Key Costs
  - Training
  - Participant time
  - Evidence collection
  - Equipment/Tools
  - Travel

Appraisal Class	Time on Site	Average Effort
Class A	10-15 work days	100 hours per team member
Class B	5-10 work days	60 hours per team member
Class C	3-7 work days	40 hours per team member

This table only reflects the Conducting period

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Class A Level 4-5 Compositions Vary

Team Size	Days on site for A	External-Internal Comp	Effort hours /Team Member
10	15	4 and 6	134
9	10	(1 and 2) and 6	93
8	10	(2 and 1 and 1) and 4	96
8	10	(1 and 2 and 2) and 3	95

Lessons Learned and Implemented

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An Example of a Large Organization's Successful Implementation Strategy

- Spend time up front defining the organization scope
- Take an integrated approach to process deployment
- Target a model scope that makes sense for your current state, business goals, and business environment
- Minimize impact on programs
- Conduct informal interim appraisals (Class C, Class B) as a risk reduction technique

These lessons are paraphrased from one of ISD's CMMI customers, as reported in 2003 in a public forum

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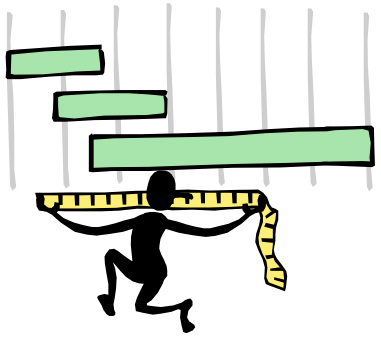
Lessons Implemented - Management

- Implement classic program management
  - Plan, plan, plan: Manage the effort like a project. Track progress, identify and mitigate risks, and escalate unresolved issues immediately
  - Start early (earlier than for CMM, single discipline events)

- Prioritize activities and focus on weaker areas with higher risk
  - Manage risks (technical, logistical, and appraisal risks)
  - Develop contingency plans



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Management Support for Improvement Efforts

- Commitment - Management commitment is more than funding.
- Strategic - integrate process into the business model
- Direction - business unit goals and objectives
- Communication - staff meetings, newsletters, process advocates
- Leadership (“this is important to the business...”)
- Tracking - Measurement and reporting (walk the talk)

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Keep Them Motivated!

- Keep management in the forefront.
- Monitor status frequently.
- Provide incentives for jobs well done.
- Share process improvement progress (or lack of it).
- Share successful results based on CMMI implementation.
- Sponsor quality contests.

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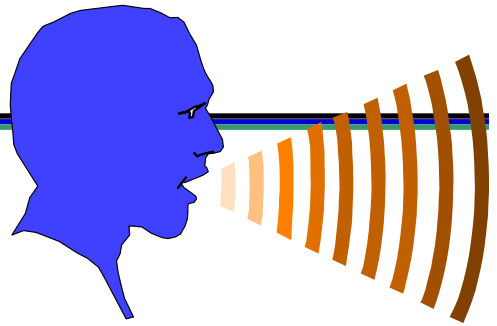
Communicate!



- Communication should be a top priority.
- Without credible communication employees will not buy into the change.
- Effective communication explains:
  - Reasons for the change.
  - What is involved.
  - What is expected of people.
  - How people's behavior helps or undermines the vision.
- Walking the talk is the most powerful means of communicating the message:
  - Becoming a living symbol of the new culture.

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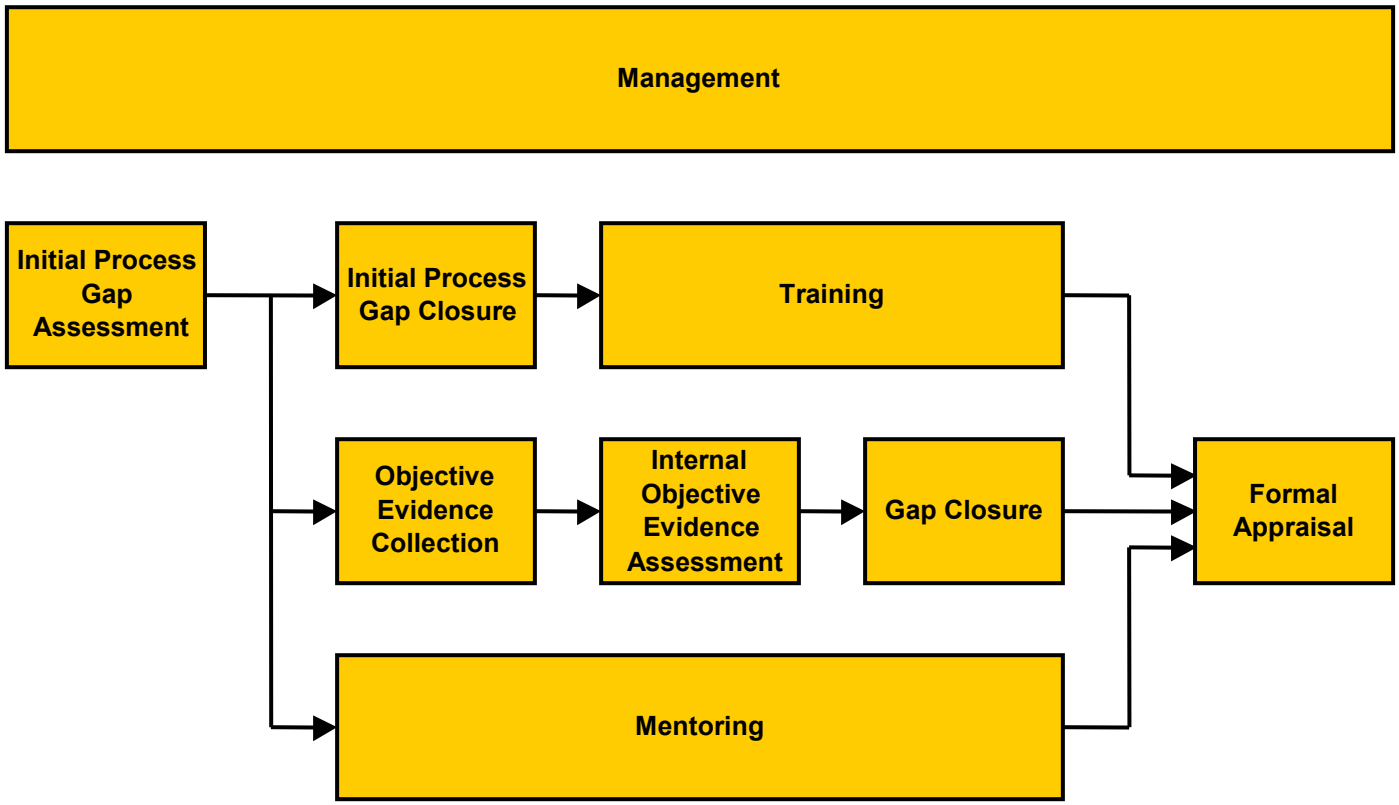
A Mechanism to Organize CMMI Activities



This approach is from one of ISD's CMMI customers, as reported in 2003 in a public forum

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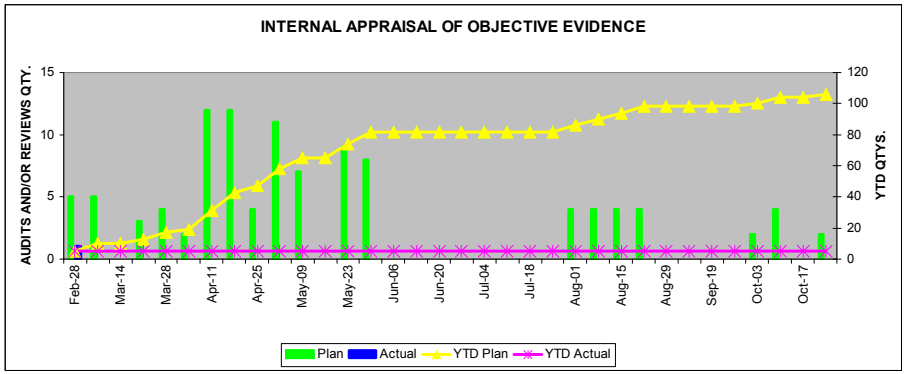
Mechanisms to Manage CMMI Activities

Schedule

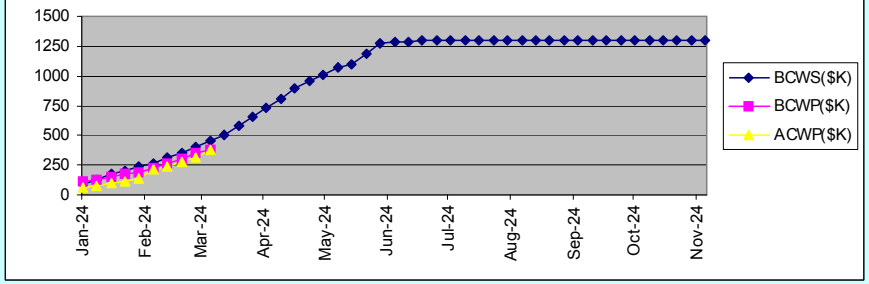
Task Name	2002 Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2003 Jan	Feb	Mar	Apr	May	Jun
Self Assessment															
Process Gap Assessment															
Program Gap Assessment															
Gap Closure															
Process Gap Closure															
Post Appraisal Gap Closure															
Process Document Release															
Prgm Gap Closure (Mentoring)															
Deployment															
Program Mentoring															
Training															
Mock Interviews															
Internal Audits															
Appraisals															
Quick Look															
Risk															
SCAMPI															

Baseline Date: 2003-01-23
Status Date: 2003-02-20

Rate Charts



Earned Value



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Lessons Implemented – Appraisal Life Cycle

- Assemble a well balanced team
  - Select an external Lead Appraiser familiar with the work environment
  - Ensure adequate external representation
- Use external consultation services and interim appraisals to identify gaps and recommend ways to reduce appraisal risk
- Address each finding in Process Improvement Plans after each interim appraisal
- Prepare a thorough In-Brief explaining the organization environment and its approach to process implementation

These lessons are paraphrased from one of ISD's CMMI customers, as reported in 2003 in a public forum

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Lessons Learned – Process Development

- As soon as possible, identify processes & process architecture to meet business needs (vs. just satisfying CMMI compliance)
- Build upon existing proven processes and process architecture
- Know the CMMI requirements
- Process improvement lessons learned in one discipline supported rapid implementation in another

These lessons are paraphrased from two of ISD's CMMI customers, as reported in 2003 in public forums

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Appraisal Planning Challenges

- Tie appraisal life cycle applications to business needs and objectives
  - Who are the real recipients of the results?
  - What is the real goal of the event?
- Right-sizing the set of appraisal events
  - not everyone needs the same set of C-B-A or
  - the same kind of C and B events
  - each of the examples used in this presentation had different approaches to this implementation challenge

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Project Selection Challenges

- Organization Coverage: large units have a real challenge of showing institutionalization across the entity when only reviewing a small set of projects in a Class A
- Model Coverage: projects with institutionalized practices which reflect model requirements: In high maturity events, the need to bring in additional data from “non-target” projects increases
- Life Cycle Coverage : This effects all appraisals, but is exacerbated in level 4-5 events due to natural life cycle implementation durations for these kind of processes
- Functional Coverage: no different issues than in a typical appraisal

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Lessons Implemented – Tailoring

- Some key SCAMPI tailoring and variations from the standard process commonly used in the recent past
  - more time allocated to the entire event (if attempting full coverage and ratings and multi-discipline events)
  - more time allocated to designing appropriate interview sessions (size, scope, type, etc.)
  - organization preparation starts sooner – more effort on site
  - team selection and composition critical
  - specialized training needed
  - longer, integrated organization in-brief needed
  - need for automated tools increased
  - need for different approaches to recording data

Slide adapted from pdb SEPG 2001 presentation

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Objective Evidence Challenges

- High maturity processes demand more instantiations than just a “one direct, one indirect” approach
- Example: in OID, seeing one example of a systems engineering tool being deployed is woefully incomplete for judging organization institutionalization
  - What about software?
  - What about a major process change?
  - What about supplier management?
  - What about large programs that maintain their own baselines?
  - What about IR&D and CR&D projects?

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Lessons Implemented - Evidence

- Organize objective evidence in a user-friendly manner
  - Provide guidance for interpreting objective evidence
  - Store evidence electronically – Use automated tooling.
  - Review the evidence for consistency

- Develop “threads” to follow Level 4-5 concepts in a more natural and flowing manner – present evidence by “topic rather than CMMI practice buckets

- Use interim (C and B) appraisals to incrementally “build” the appraisal database

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Using Appraisal Wizard®

- Establish a strategy on how the different fields available in the tool will be used prio to and during the assessment.
- Document your process for how to use Wizard during a SCAMPI. (e.g., how to "promote" findings, how to produce intervie scripts, how to generate reports
- Link the applicable documents from the document list representing the expected direct and indirect evidence to the records.

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Some Key Benefits of the Tooling

- "Reused" data from each appraisal
- Incrementally "built" the SCAMPI Class A database
- Appraisal data could be merged from various events
- Easy to generate reports and graphs and show comparative data and metrics

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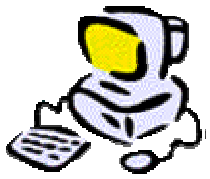
Lessons Implemented - Conduct (1)

- Interviews and Document Review
  - Ensure a “mix” of tasks during each day - too much focus on either interviewing or document review affects productivity
- Infrastructure and tool support
  - The high dependency on tools and the infrastructure requires experts on all tools at both locations
  - Need dedicated IT support prior to and during the appraisal
  - Test automated elements, even those in general use, to ensure all parts work together



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Interviewee Challenges

- High Maturity events require different, additional types of participants to be interviewed
  - Example: for OID, Internal Research and Development (IR&D) project are likely to be reviewed
- "Over-prepping" interviewees should be avoided
- Scripts should be focused on "natural language" and threads

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Lessons Implemented - Conduct (2)

- Mini-teams generally had “inside-outside” membership
  - Ensures objectivity while benefiting from “insider” knowledge
- Parallel interview sessions for some sessions worked well
  - Split mini-teams according to topics
  - Perform parallel splits for topics that are generally self-contained (e.g., SAM), or easy to parse between org an projects (e.g., OPF)
- For Mini-Team assignments, leverage “overlaps” and “dependencies” in the model to ensure most team members get insight in to the high maturity practices
  - Facilitates the final consolidation process

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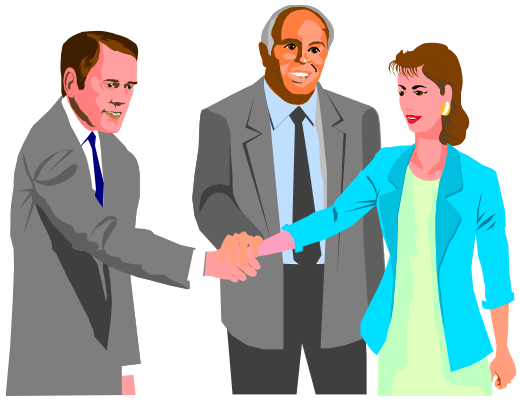
Lessons Implemented - Conduct (3)

- Appraisal Team - Identify backup internal and external team members and train them with the rest of the team

- Build teamwork among the appraisal team members before the Class A event
  - Review plan in advance
  - Perform “refresher” training no matter what
  - Ensure team norms and operating rules are defined, well understood, and followed



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Lessons Implemented - Conduct (4)

- Preliminary findings – use consolidation metrics to accurately project time required to reach consensus
- Rating - Ensure Lead plans adequate time to performing rating tasks
  - Requires advance discussions about “expected” outcomes based on prior results and how the projected findings profile may impact team decisions
  - Requires routine “status” checking with the team to ensure key issues and concerns are raised throughout the process, not just at the end

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Summary Reminders

- Model integration and scope expansion increases the need for experienced team members and automated tooling.
- Experience in conducting appraisals is an invaluable asset.
- A team with experience in the legacy discipline models will improve the appraisal conduct.
- Time (i.e., cost) is a significant constraint that is a conflicting requirement with increasing the rigor and robustness of the method technically.

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Summary

- Automated tooling that increases the appraisal efficiency works wonders for team time management and stress reduction
- An integrated “appraisal tool kit” including SCAMPI V1.1 and CAM V1.0 meets multiple sponsor needs
- CAM Class B and C usage facilitated risk management efforts and significantly reduced risks of failure in the SCAMPI Class A
- SCAMPI application specific guidance and training modules are needed and Vastly improved tailoring guidance is required
- Model interpretation issues even bigger today than in prior models.
- You are likely to see a greater push for external team membership and higher percentages of organization coverage

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Questions and Answers

Q

&

A