Implementing the Managed Discovery Approach
What Worked, What Didn't Work

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Presented by
Ella M. Abele
Gary F. Norausky

Topics
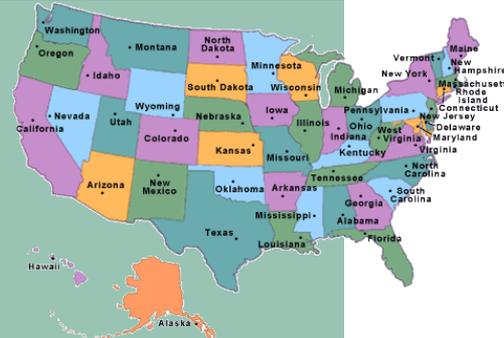
- Background

- Planning

- Executing

- Lessons Observed

- Results

Background

Initial Startup Issues

- **Dispersed campuses**

- **Dispersed team members**

- **Team availability**

- **Inexperienced team members**

- **Project choices**

Appraisal Demographics

Parameters	2006	2009	2012
Team Size	9 (two LA* as team members)	8	7
LA	1	⬤1	1
Projects	9 (6 primary)	12 (3 primary)	6 (3 primary)
Campuses	6	6	**3 Business Units**
Mini-teams	No	No	**Yes**
Readiness Reviews	Yes	Yes	Yes
Class C	Yes	Yes	**No**
Class B	Yes	Yes	Yes
Class A	Yes	Yes	Yes

*LA = Lead Appraiser

⬤ Different lead appraiser for each appraisal (C, B, A)

Past Lessons Observed

- **Large number of projects involved**

- **Gigabytes of data collected and not used**

- **Large number of readiness review actions**

- **Excessive representation in interviews**

- **Inconsistent model interpretation**

- **Schedule lag**

- **Project teams burdened with collecting and mapping**

- **Costly**

Planning

Objectives

Reduce Footprint

Reduce Duration

Reduce Stress

Manage data collection

Manage schedule

Manage process

Reduce Overall Cost

Appraisal Data Collection Approaches

- **Discovery**
  - **Limited objective evidence exists and appraisal team must probe/search for necessary evidence to obtain sufficient coverage of model practices with in scope**

- **Managed Discovery**
  - **Based upon a series of data calls starting with a key set of artifacts, e.g., project plans and supporting documentation**
  - **This approach was selected as a means to achieving the core appraisal objectives**

- **Verification**
  - **Based upon the assumption that all appraisal data has been identified and prepared by the organization in advance of the appraisal**
  - **Artifacts provided may not be applicable and/or never reviewed by the appraisal team leading to significant amount of time, effort and funding**

Application of Appraisal Approaches

Discovery 2006

Verification 2009

Managed Discovery 2012

- First appraisal for most campuses and projects

- Uncertainty in model interpretation

- Uncertainty in adequacy of data

- Assumed projects had the "right stuff"

- Extensive rework

- Defined data requirements

- Minimal rework

Managed Discovery (collect, review, map)

- Managed Discovery
  - Identify appraisal mini teams
    - Co-locate team members
    - Assign specific process areas (PAs)
  - Train data collectors
  - Create data lists
  - Plan data call schedule
  - Perform data calls
  - Review and map
  - Repeat to achieve 100% coverage of all maturity level 3 PA

Overall Process (1)

**Identify Team** → **Select Lead** → **Select Programs**

- **Experience - no experience**
- **Determine business unit coverage**
- **Break into mini-teams**

- **Understood chosen appraisal strategy**
- **Willing to work with team on new approach**
- **Flexible**

- **Develop sampling strategy**
- **Establish Sampling Factors**
- **Establish subgroups**
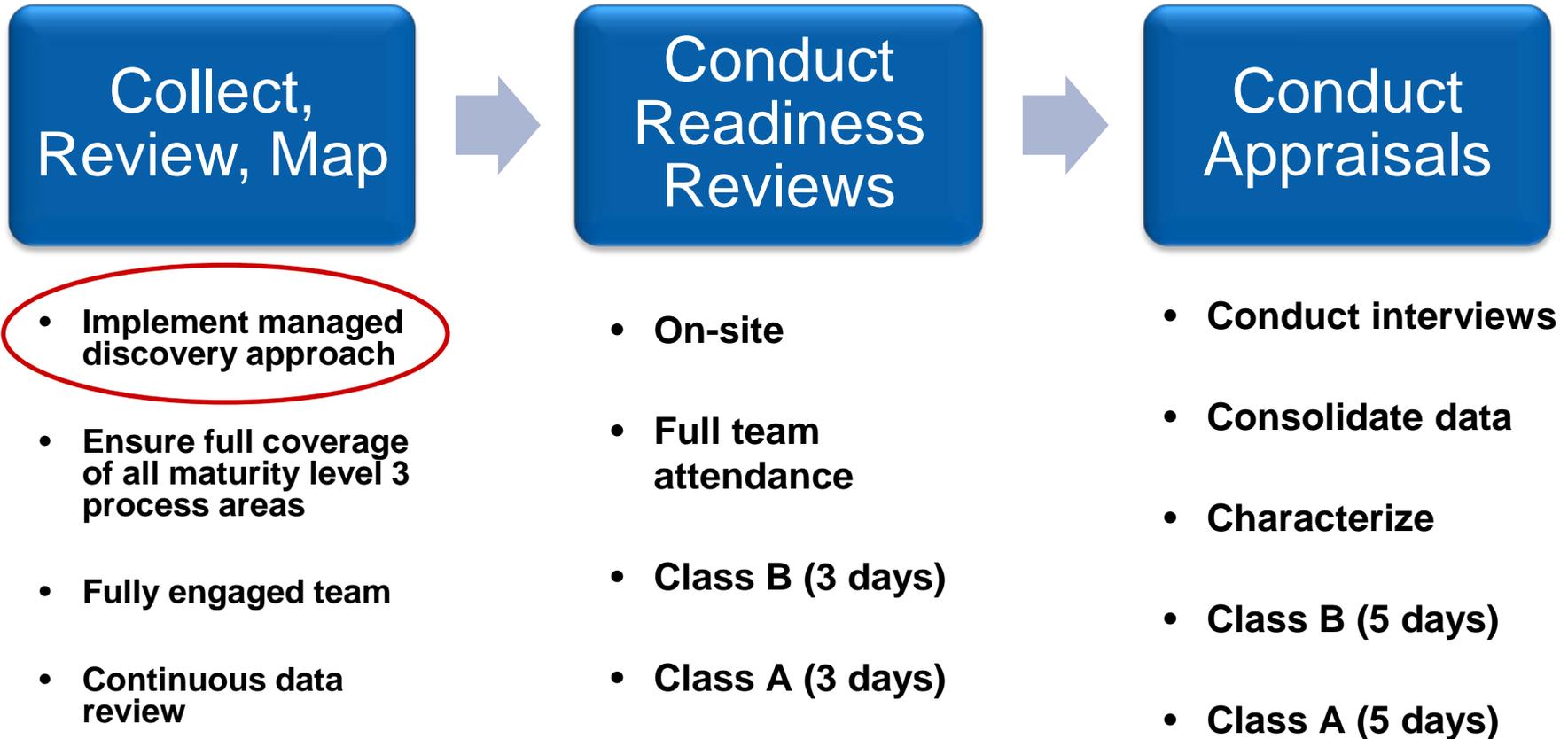- **Identify candidate projects**

Appraisal Candidate Program Selection

| Identify Sampling Factors | → | Identify Subgroups | → | Establish Reqts. | → | Select Candidates |
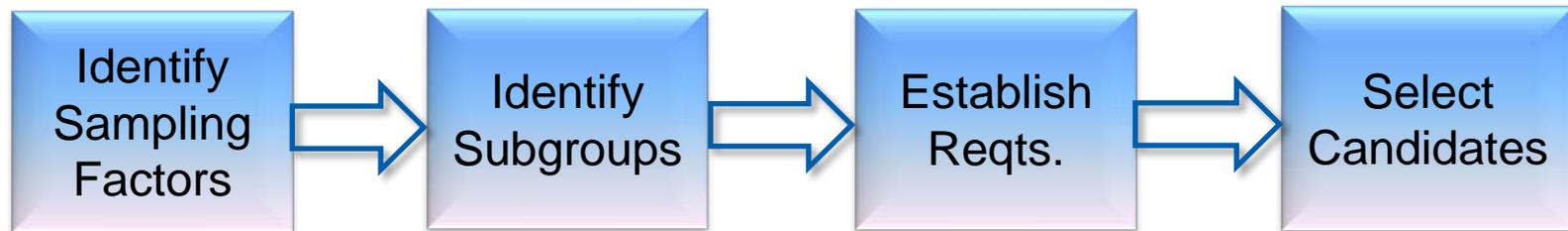
- Size
- Location
- **Customer**
- **Work type**
- Duration
- Other

- DoD
- Development
- Production

- One "primary" program per/BU
- One "support" program
- Small- Medium-Large spread

Overall Process (2)

Collect, Review, Map

- **Implement managed discovery approach**

- **Ensure full coverage of all maturity level 3 process areas**

- **Fully engaged team**

- **Continuous data review**

Conduct Readiness Reviews

- **On-site**

- **Full team attendance**

- **Class B (3 days)**

- **Class A (3 days)**

Conduct Appraisals

- **Conduct interviews**

- **Consolidate data**

- **Characterize**

- **Class B (5 days)**

- **Class A (5 days)**

Mini Team Assignment

Mini Teams	Process Areas					Total # of Practices	1st review period (50% complete) 7 wks	2nd review period (75% complete) 4 wks	3rd review period (100% complete) 3 wks	Required number of practices mapped per week		
MINI T1	**PP**	**PPQA**	**IPM**	**RSKM**						**Period 1**	**Period 2**	**Period 3**
Practice	78.00	48.00	88.00	57.00		271.00	135.50	203.25	271.00	19.29	17.50	22.67
MINI T2	**RD**	**TS**	**PI**	**VER**	**VAL**							
Practice	66.00	60.00	84.00	60.00	51.00	321.00	160.00	241.00	321.00	22.85	20.25	26.66
MINI T3	**REQM**	**CM**	**DAR**	**MA**	**PMC**							
Practice	51.00	57.00	54.00	60.00	66.00	288.00	144.00	216.00	288.00	20.57	18.00	24.00
ORG T3	**OPD**	**OPF**	**OT**	**SAM**								
Practice	19.00	21.00	19.00	18.00		77.00	38.50	57.75	77.00	5.57	5.00	6.67
Total practices						957.00	478.00	718.00	957.00			

Optimize Team Expertise

Executing

Plan Execution

- **Develop data lists – 12/11**
  - **Budget turned on 1/12**

- **Set up appraisal tool per project per mini team**

- **Perform 3 data calls (7, 4, 3 weeks apart)**
  - **Mini teams review and map data received**
  - **Refine next call list**
  - **Repeat process until all data is collected**

- **Assign cross-team PA reviews**

- **Develop interview list requirements**
  - **1 representative per process area per project**
  - **Interview candidates cover several process areas**

- **Track status**

Example Data List

High-Yield Work Products

The following table is intended to provide some examples of key work products that can provide one-to-many relationships to multiple practices in the CMMI-DEV v1.3 reference model in scope.

Category	Key Work Products	Products Identified
Organizational Assets	✓ Policies, Processes, Procedures, Templates ✓ Process Asset Library ✓ Process Improvement Plan ✓ Lifecycle Model Descriptions ✓ Tailoring Criteria and Guidelines ✓ Work Environment Standards ✓ Rules and Guidelines for Teams ✓ Organizational Training Plan ✓ Organizational Tactical Training Plan ✓ Train-the-Trainer process ✓ Training Waivers ✓ Training Records ✓ Training Effectiveness' Measures	
Planning Products	✓ Program Management Plan (PMP) ✓ Project Tailoring Matrix/Records ✓ Integrated Master Plan and Integrated Master Schedules (IMP, IMS) ✓ Risk Management Plan ✓ Decision Analysis and Resolution Records ✓ Configuration Management Plan (CMP) ✓ Systems Engineering Management Plan (SEMP) ✓ Software Development Plan (SDP)	

Readiness Review Status

Issues

- 3 teams making data calls overwhelmed POC
  - Teams developed a staggered call schedule

- Funding was not available until 1st quarter 2012

- Duplication of collected data
  - Teams used sandboxes for data collection
  - Failed to check for existing data

- AT members assigned tasks outside of appraisal
  - Add additional appraisal team member to compensate

- AT members added unnecessary interview candidates

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Lessons Observed

Team Perspective – The Positive

- High marks for managed discovery approach

- Early data calls reduced schedule lag

- Having data collector POC reduced confusion and saved time

- Managed discovery allowed plenty of time to conduct team reviews

- Early identification of best practices and recognized issues enabled efficient and successful readiness reviews

- Minimal rework resulted from all appraisal reviews

- Efficiencies gained using managed discovery accommodated late inclusion of one project

- Process flexible – added last minute project

Team Perspective – Improvements

- Hold appraisal team training prior to first data call

- At first data call request all program plans; review plans; develop next data request list
  - Missing or non-existent data will be apparent

- Coordinate data lists between teams
  - Use index list to eliminate duplication of data

- Refine interview process
  - Identify primary and backup interviewees

- Pattern data directory structure after program data structure

- Communicate and manage expectations with team, campus, program

Results

Results

- Reduced data footprint by several gigabytes (8Gb to 4Gb)

- Reduced number of projects (12 – 6)

- Reduced number of interviewed project personnel (139 – 58)

- Reduced appraisal team time on site (31 days – 16)
  - Reduced travel costs

- Reduced time spent collecting, sorting, and mapping (6 mo.- 3 mo.)

- Eliminated burden on projects
  - Minimal impact to schedule
  - No impact to budget

- Mini-teams became very knowledgeable in assigned PA

- 37% reduction in cost over 2009 appraisal (1 campus' numbers)
  - Total hours for all appraisal related activities = 4492 hours

Questions
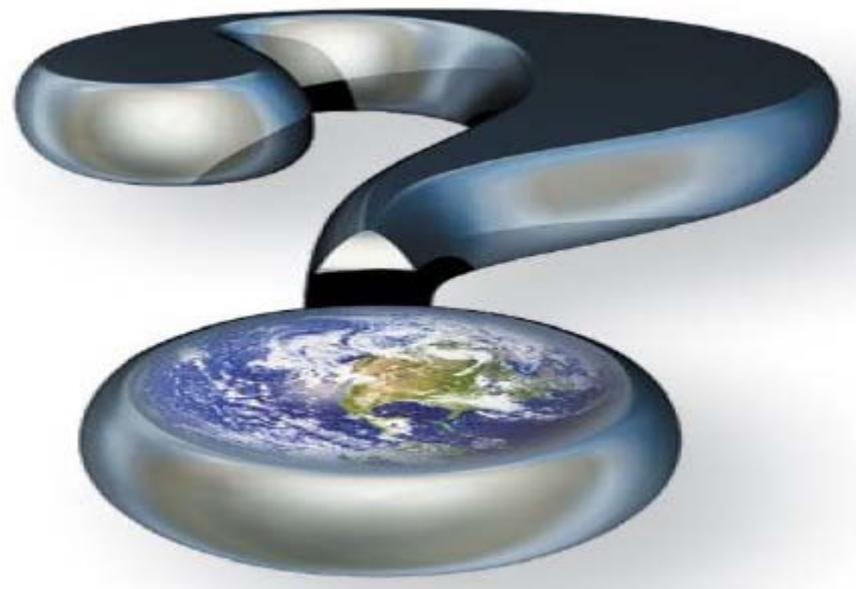
Contact Information

Ella M. Abele
Northrop Grumman
E-mail: ella.abele@ngc.com
434-974-2488

Gary F. Norausky
Norausky Process Solutions, Inc.
E-mail: norausky@norauskypsi.com
619-472-8810