



**CMMI** Institute

# PREPARING AND SUPPORTING THE MEASUREMENT ANALYST FOR ALL LEVELS OF CMMI MATURITY

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**BOOZ ALLEN HAMILTON**

# AGENDA

- **Background**
- **Business Challenge**
- **Preparing the Measurement Analyst & Supporting the Measurement Analyst**
- **Tying the Pieces Together**
- **Questions**

# BACKGROUND

## *Booz Allen Hamilton*

- **Founded in 1914**
- **Headquarters: McLean, Virginia**
- **22,000+ employees**
- **Leading provider of management and technology services to the US government**
- **Internal process improvement program & Corporate Quality Office (integrated teams)**
  - Systems Delivery Execution organization: CMMI-DEV Maturity Level 5 (ML5), June 2016
  - Corporate Quality Office: CMMI-SVC Maturity Level 3 (ML3), November 2016
  - ISO 9001:2015, and related standards registration since 1997 for multiple sites/business units
- **Website: [www.boozallen.com](http://www.boozallen.com)**

## **BUSINESS CHALLENGE**

Our example: We were given a business mandate to move to high maturity in record time. We embarked on our High Maturity journey with two key change management principles: Sense of Urgency and a Guiding Coalition.

- Developed an initial plan to arrive at High Maturity in 17 months
- Challenges were a mix of People, Process/Tools, Training, Culture
- Most Measurement Analysts were filling dual roles on the projects (technical role, plus Measurement Analyst) and did not have a statistical background
- Measurement Analysts operating at ML3 needed to move beyond reporting the data to using the data quantitatively and predictively

# PREPARING AND SUPPORTING THE MEASUREMENT ANALYST

## Preparing the Measurement Analyst

### TRAINING:

- CMMI training (Intro CMMI, AHM)
- Basic Measurement Training
- High Maturity Training

### PROCESS/TOOLS:

- Standard Process Set
- Technical Reference Guide
- Analytical Techniques Workbook

## Supporting the Measurement Analyst

### MENTORING:

- Collaboration
- One-on-one discussion
- Measurement Workshops
- Bimonthly Measurement Information Meetings

### CONTINUOUS IMPROVEMENT:

- Measurement Analyst Learning Plans
- Individualized Support, including just-in-time Job Aids, discussions
- Lessons Learned

# TRAINING THE MEASUREMENT ANALYST

- CMMI training from CMMI Institute (Intro CMMI, AHM)
- Organizational Measurement Training (part of overall training for all maturity levels)
- High Maturity Course (4 hour training course developed in house)
  - ✓ High Maturity Overview
  - ✓ Case Study component applying ML 4 and 5 concepts

# PROCESSES AND TOOLS FOR THE MEASUREMENT ANALYST

- Existing Organizational Standard Processes (OSP) in place for more than 10 years
  - ✓ ML3-based processes were revised for move to Maturity Level 5 (e.g., causal analysis, measurement analysis)
  - ✓ High Maturity processes are distinguished as “advanced” project and process management and new format for “advanced processes” created
- Updated Responsibility matrix (RASCI)
- Technical Reference Guide for Measurement and Analysis
- Analytical Techniques Workbook

# MENTORING THE MEASUREMENT ANALYST

- Collaboration on measurement plans and documents
- Mentoring for Monthly Team Measurement Meetings
- Collaborative sessions
  - Weekly project quantitative meetings
  - Bi-weekly/Monthly Advanced Measurement Meeting (collaborative learning/training/discussion)
  - In-person working sessions with Measurement Analysts
- Created friendly competition with games, “Face-offs,” and “Jeopardy,” to reinforce learning and improve team’s comfort level with statistical concepts and techniques



# CONTINUOUS IMPROVEMENT FOR THE MEASUREMENT ANALYST

- Measurement Analysts requested a mechanism to identify additional training needed to increase their knowledge and comfort level with the material
  - The need for a learning path for the Measurement Analyst at any maturity level
  - Developed Measurement Analyst Learning Plan concept
- Individualized support for the Measurement Analyst based on current knowledge
- Larger group touch points at planned intervals

# TYING THE PIECES TOGETHER: MEASUREMENT ANALYST LEARNING PLAN - THE PROCESS

Developed an assessment to assist new and legacy analysts at any maturity level

- Initially created as a result of the need for retraining and continued learning for the analysts
- A list of questions related to a set of topic areas was developed based on a RASCI Matrix
- Measurement Analysts were asked what training would help them to be more comfortable in their role
- Measurement Analysts and SMEs discuss the questions and, based on the responses, the SMEs recommend next level training for the analysts beyond the core set of training

Topic	Questions to evaluate your comfort level with the measurement and analysis activities
Excel: Using to perform analysis of your data	Perform the following in Excel: Create a bar chart Create a scatter chart Add a trendline to a scatter chart Use the Analytic Techniques Workbook to analyze your data
Measurement constructs understand: Base measures, derived measures, indicators	What is the definition of a base measure? What is the definition of a derived measure? What is the definition of an indicator? How do you use your CDD? What information can you find in your CDD?
Measurement constructs use: Working knowledge of Base measures, derived measures, indicators (SME)	What base measures are defined for this project? What derived measures are defined for this project? What indicators are defined for this project? Where is each documented/ managed/ reported?
Data Quality and your project	How do you define Data Quality? What does it mean to your project? How is Data Quality applied to this project? How is data quality is assessed and reported for this project? How does the organization assess Data Quality?
Data Analysis and your role within this project	How is Data Analysis conducted for this project? What techniques/tools are used for Data Analysis? What resources are available to assist the project? How are results of Data Analysis communicated/ reported?
Data Analysis and daily use	How and in what areas are results of Data Analysis applied on this project? Please provide an example of using data analysis.

# TYING THE PIECES TOGETHER: MEASUREMENT ANALYST LEARNING PLAN -THE OUTCOMES

## The Learning Plan provided:

- Learning opportunities (e.g., self-paced, internal, external) mapped to resources available via our learning & development group, online, or via external sources
- Training recommendations based on multiple levels of skill building for the Measurement Analyst (i.e., introductory, growing, advanced)

Applies to any level of Measurement Analyst.

		Overarching Goal (broad, general statements on what should be learned)	Desired Learning Outcome (narrow, specific statements about concrete measurable skill or content to be gained)	Learning Materials (training options aimed at building desired knowledge or skill)	Learning Plan Recommended courses for individual
Skill	Level				
Data Quality	Core	Understand and use basic concepts related to data quality	Ability to identify issues related to data quality without prompting. Ability to explain data quality measures.	Job Aid: Data Quality (from Org Data Quality ACA)	
	Operational	Understand, use, and comfortably work with concepts related to data quality	Ability to assess and explain the project's status as it relates to data quality. Ability to identify, resolve, and develop action planning related to data quality.	A Data Quality Measurement Information Model based on ISO/IEC 15939 (PDF)	
Data Analysis	Core	Understand and use basic concepts related to data analysis	Ability to understand and perform basic statistical calculations related to measurement data. Ability to document analysis of data and communicate to team.	Udacity: Introduction to Descriptive Statistics Basic Stats course from Penn State (link) Analytics & Change Keys to Building Buy In (PDF) <i>Job Aid: Approaches for Analysis</i>	
	Operational	Understand, use, and comfortably work with concepts related to data analysis	Ability to understand and perform more advanced statistical calculations related to measurement data.	Udacity: Introduction to Statistics Udacity: Introduction to Inferential Statistics More advanced Stats course from Penn State (link) Learn Self Paced: Process Capability for Six Sigma Learn Self Paced: Six Sigma Data Analysis and Root Cause Analysis	
QPPOs	Core	Understand and use basic concepts related to QPPOs		Booz Allen HM Training <i>Job Aid: QPPOs - Understanding how they are</i>	

# QUESTIONS?

# CONTACT

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