

Leveraging CMMI®-ACQ and CMMI®-DEV to Improve Supplier Performance

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Agenda

Background

The Approach

Results

Lessons Learned and Critical Success Factors

What is Team SPAWAR?



- ▶ **Navy's Information Dominance Systems Command**
- ▶ **Navy's Technical Authority and acquisition command for C4ISR*, business IT, and space systems**
- ▶ **Provides advanced communications and information capabilities to Navy, joint and coalition forces**
- ▶ **More than 8,000 employees deployed globally and near the fleet**

*Command, Control, Communications, Computers, Intelligence, Surveillance & Reconnaissance



► **Mission**

Booz Allen Hamilton partners with clients to solve their most important and complex problems, making their mission our mission and delivering results that endure

► **What We Bring**

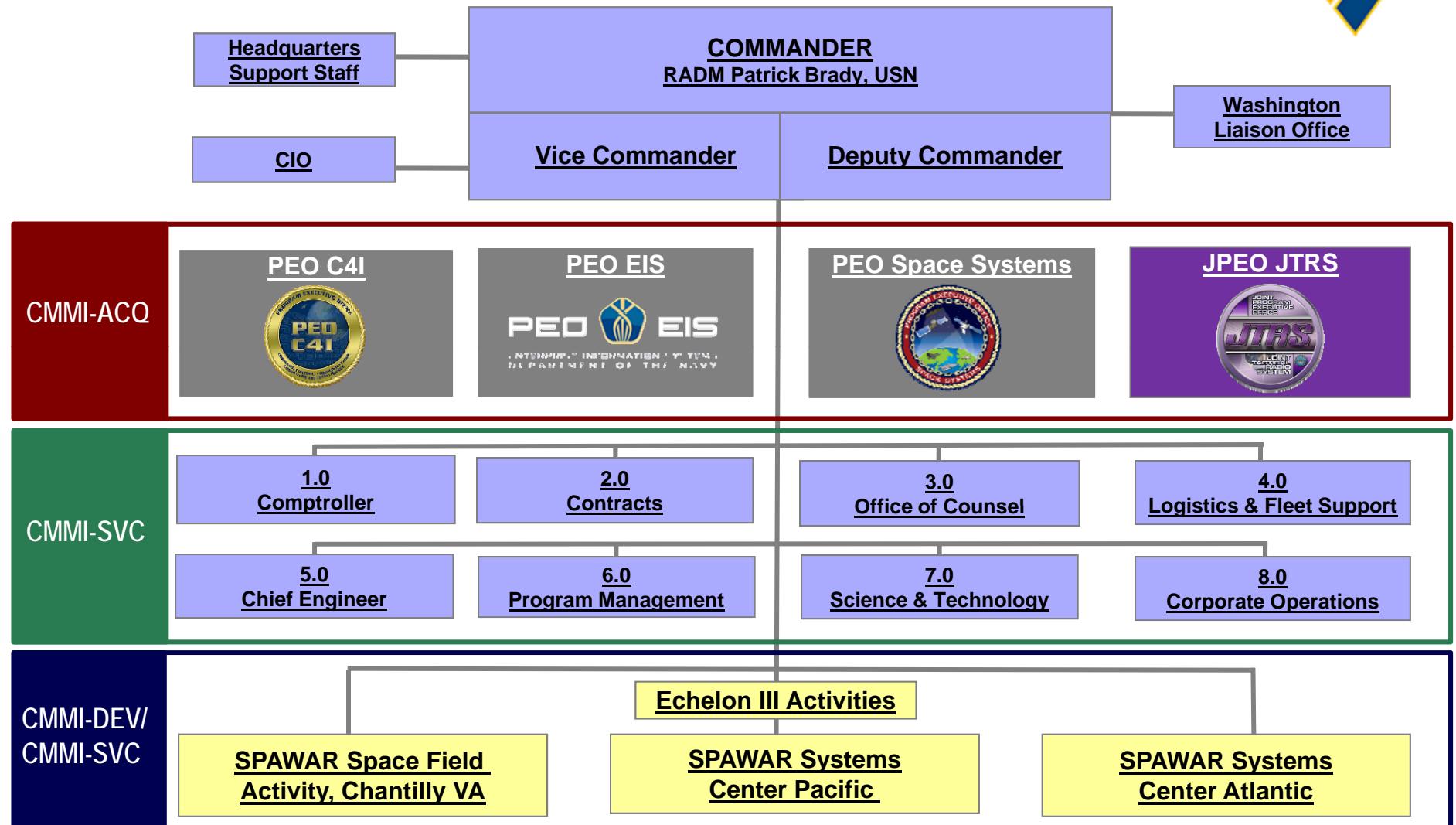
Expertise, objectivity, and the capabilities of exceptional people—combined with the institutional experience of helping clients succeed for more than 90 years

► **What Distinguishes Us**

Booz Allen ...

- ... combines a consultant's unique problem-solving orientation
- ... with deep technical knowledge and strong execution
- ... to help clients achieve success in their critical missions

CMMI Implementations Across Team SPAWAR



The Problem – Program Management Office Perspective

- ▶ Supplier documents are delivered on time, but are not quality products
- ▶ PMO spends weeks reviewing and commenting on supplier deliverables
- ▶ Typically 900+ comments are returned to supplier on a single deliverable (e.g., System Requirements Specification)

With all these quality issues, how can the supplier's processes be compliant with Capability Maturity Model Integration for Development (CMMI-DEV) Maturity Level 3, per the contract requirement?

The Players

- ▶ **Program Manager, Warfare (PMW)**

A reference to the organizational construct of Program Management Offices (PMO) within PEO C4I. Each PMW is responsible for either platform integration or product acquisition and sustainment.

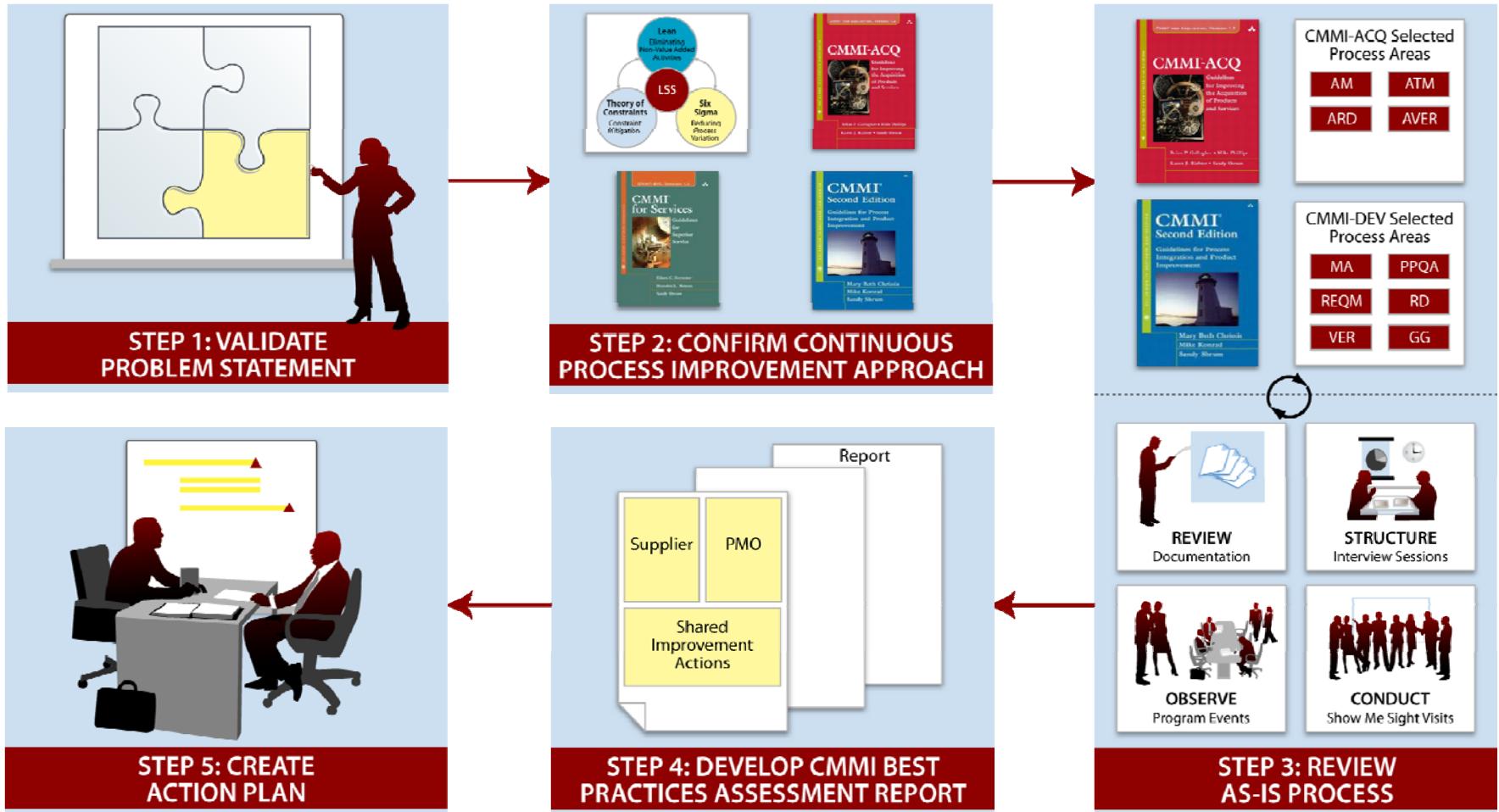
- ▶ **Supplier**

Contractor group responsible for developing and delivering a product specified by the PMW.

- ▶ **Organizational Process Management Office (OPMO)**

Internal organization responsible for providing continuous process improvement tools and methodologies to support Team SPAWAR. The PMW engaged OPMO for support in addressing supplier performance issues.

The Approach



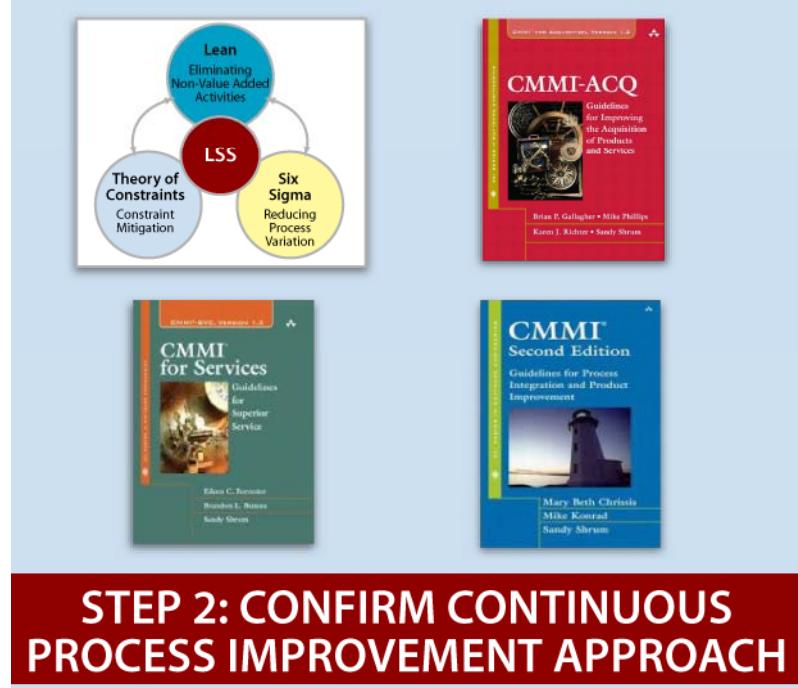
Step 1: Validate Problem Statement

- ▶ **Conducted initial interviews**
- ▶ **Defined scope to focus on the deliverable preparation and review process**
- ▶ **PMO confirmed the desire to assess supplier processes against CMMI-DEV Maturity Level 3**



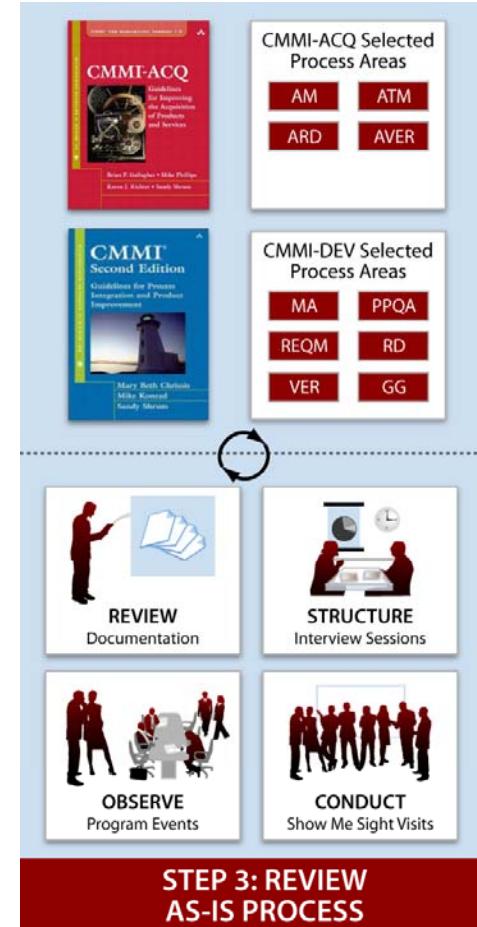
Step 2: Confirm Continuous Process Improvement Approach

- ▶ Identified utilization of multi-model approach
- ▶ CMMI-DEV to address the supplier's software documentation challenges
- ▶ CMMI-ACQ to address the program management and acquisition challenges



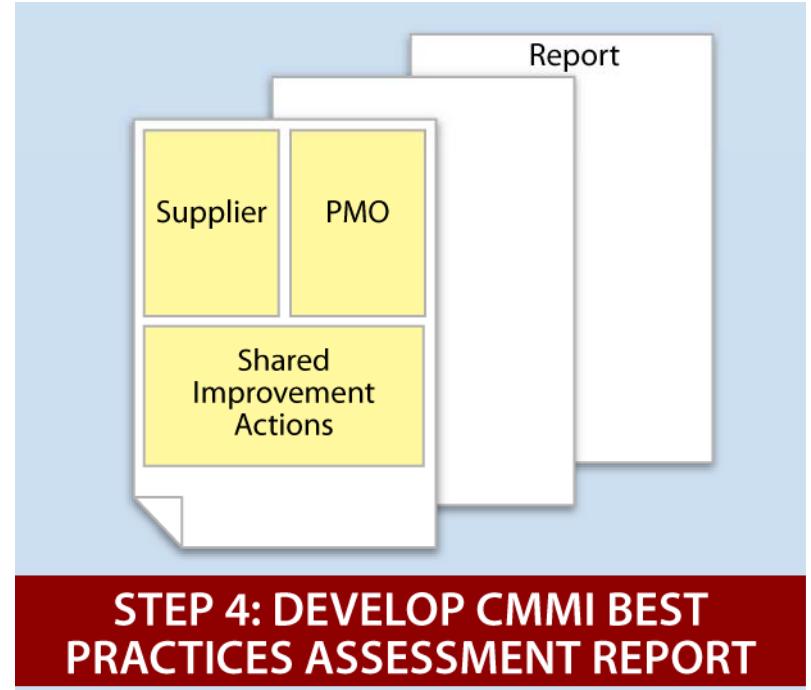
Step 3: Review As-Is Processes

- ▶ Selected applicable process areas from CMMI-DEV and CMMI-ACQ
- ▶ Observed real-time project activities
- ▶ Reviewed available and relevant documentation
- ▶ Conducted in-depth interviews with key resources
- ▶ Participated in “show me” site visits



Step 4: Develop CMMI Best Practices Assessment Report

- ▶ **Conducted gap analysis against identified process areas from CMMI-DEV and CMMI-ACQ**
- ▶ **Documented opportunities for improvement, recommendations, and benefits in detailed Assessment Report**



CMMI Best Practices Report: High Level Examples

SUPPLIER			PMO		SHARED	
Process Area X			Process Area Y		Process Area Z	
Opportunity for Improvement	Recommended Action	Benefit	Recommended Action	Benefit	Recommended Action	Benefit
•	•	•	•	•	•	•
•	•	•	•	•	•	•
•	•	•	•	•	•	•
•	•	•	•	•	•	•

Step 5: Create Action Plan

- ▶ Prioritized opportunities for improvement
- ▶ Created Plan of Action & Milestones (POA&M)



Analytical Hierarchy Process: Prioritization Example

- ▶ Identified individual criterion that aligned with business objectives
- ▶ Compared criteria using AHP, a pair-wise comparison method
- ▶ Identified weights for each criterion based on the outcome of comparison

Criteria	LOE	Risk	Direct Impact	Value Add	Client Satisfaction
LOE	1	0.2	0.2	5	0.2
Risk	5	1	10	10	1
Direct Impact	5	0.1	1	10	1
Value Add	0.2	0.1	0.1	1	0.2
Client Satisfaction	5	1	1	5	1
COL. TOTAL	16.2	2.4	12.3	31	3.4

Values	
Much More Important	10
More Important	5
Equal Importance	1
Less Importance	0.2
Much Less Importance	0.1

LOE	0.0617284	0.08333333	0.016260163	0.1612903	0.058823529	0.381435743	7.62871486
Risk	0.30864198	0.41666667	0.81300813	0.3225806	0.294117647	2.155015064	43.10030129
Direct Impact	0.30864198	0.04166667	0.081300813	0.3225806	0.294117647	1.048307747	20.96615494
Value Add	0.01234568	0.04166667	0.008130081	0.0322581	0.058823529	0.153224021	3.064480418
Client Satisfaction	0.30864198	0.41666667	0.081300813	0.1612903	0.294117647	1.262017425	25.24034849
COL. TOTAL	1	1	1	1	1	5	

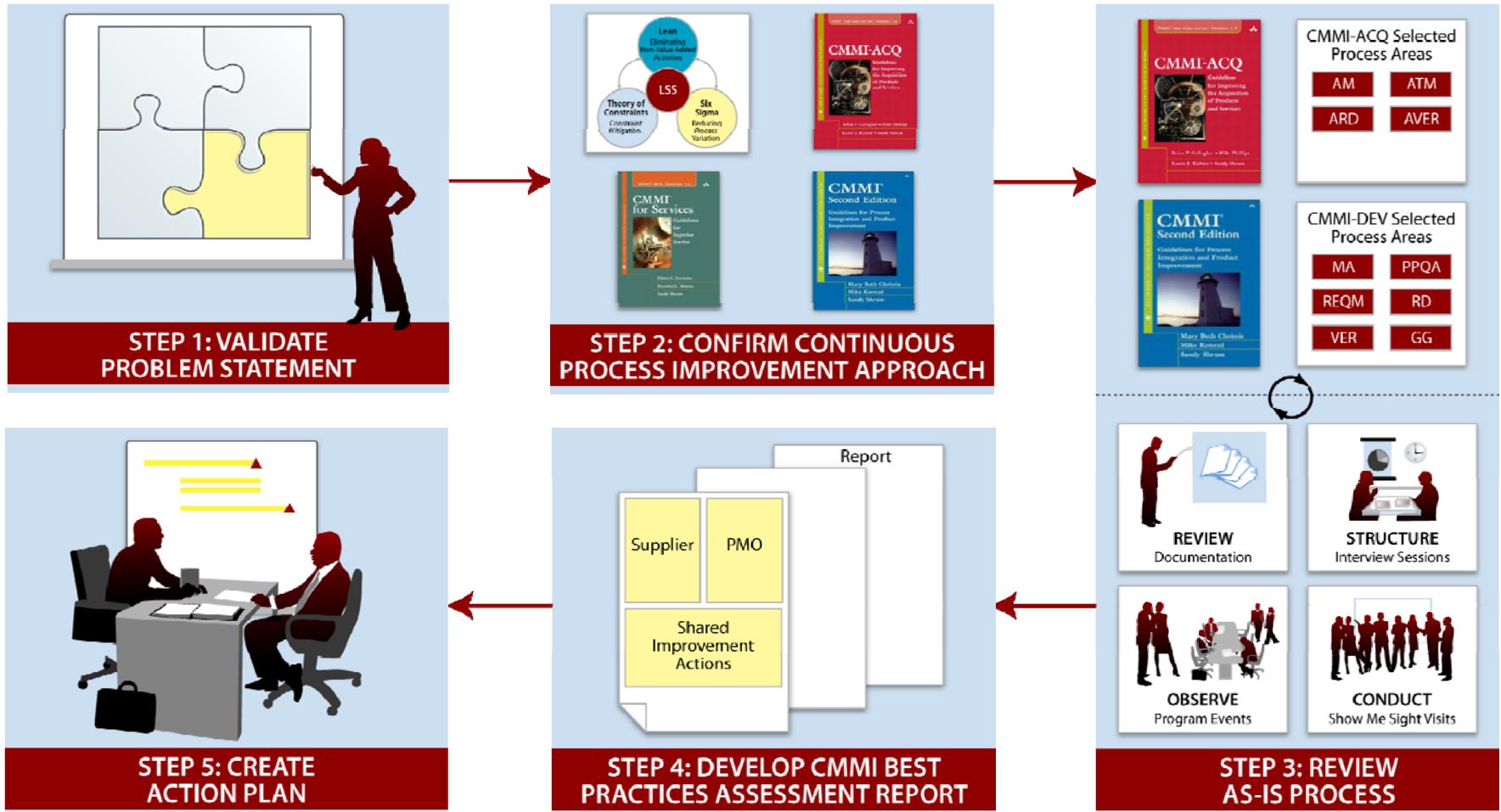
These are the weight percentages for each scoring criterion

Scoring Matrix: Prioritization Example (continued)

- ▶ Scored improvement areas
- ▶ Prioritized improvement areas objectively based on total score
- ▶ Reviewed priorities to confirm consistency of scoring approach

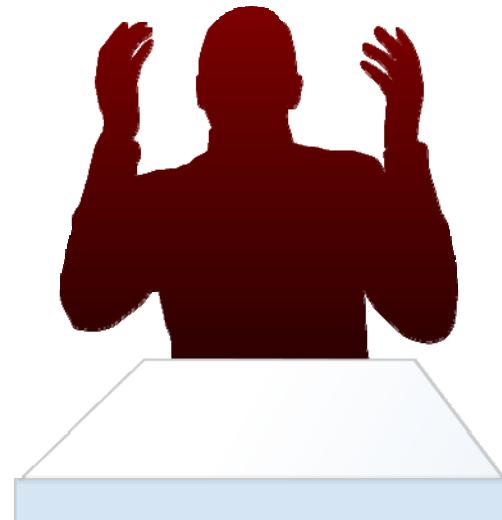
Improvement Area	Level of Effort	Risk	Direct Impact	Value Add	Client Satisfaction	Total
	Level of effort to implement the recommended change due to constraining factors such as: - Resource or other constraints - Perceived complexity based on known factors	Degree to which improvement area presents a risk to L8UUCS Program if not implemented	Degree to which making improvements will directly enhance the deliverable preparation process	Refers to the additional value that implementing improvements from a particular process area will have in relation to the current lifecycle phase (e.g., design)	Degree to which making the improvement will satisfy client's concerns and contractual requirements (examples may include concerns with schedule, budget, quality)	
	1 = High level of effort 3 = Medium level of effort 9 = Low level of effort	1 = low risk 3 = medium risk 9 = high risk	1 = Improvement action may improve alternate area, but will not directly improve the deliverable preparation process 3 = Improvement action will partially impact deliverable preparation process 9 = Improvement action will directly improve the deliverable preparation process	1 = Improvement action will not impact current lifecycle or downstream phases 3 = Improvement action will impact either current phase or future, but not all phases will be impacted 9 = Improvement action will impact current and future lifecycle phases	1 = Implementing improvement will not contribute to meeting client requirements 3 = Implementing improvement will partially contribute to meeting client requirements 9 = Implementing improvement will contribute to meeting client requirements	
Weight	7.63	43.10	20.97	3.06	25.24	100.00
REQM3. Manage Change	9.00	9.00	9.00	9.00	9.00	900.00
GG3. Training REQM1. Obtain Understanding and Commitment	3.00	9.00	9.00	9.00	9.00	854.23
VER2. Analyze Results	3.00	9.00	9.00	9.00	9.00	854.23
SHARE1. Deliverable Review Process	1.00	9.00	9.00	9.00	9.00	838.97
SHARE2. Meeting Conduct	3.00	9.00	9.00	9.00	3.00	702.79
VER1. Conduct Verification SHARE3. Decision Analysis and Resolution	9.00	3.00	9.00	9.00	9.00	641.40
MAT1. Collect Measures and Analyze Data	1.00	9.00	3.00	9.00	3.00	561.73
PPQA1. Objective Evaluation	1.00	9.00	3.00	3.00	3.00	543.34
	9.00	3.00	9.00	9.00	3.00	489.96

The Approach



The Challenges

- ▶ Issues had been building over time with key items escalated to Senior Management
- ▶ Frustrations between the supplier and PMO were mounting
- ▶ Multiple layers of stakeholders with varying perspectives
- ▶ Environment in which the teams were not always forthcoming with information



Critical Success Factors

- ▶ **Multi-model approach**
- ▶ **Independent assessment team promoted objectivity**
- ▶ **Assessment activities were a catalyst for behavior change**
- ▶ **Strategic information gathering techniques (e.g., “show me” site visits and real-time event observation)**
- ▶ **Impartial assessment report**
- ▶ **Collaborative approach to prioritizing improvement actions**



The Results

- ▶ Decrease in the average number of PMO comments per deliverable, by approximately 50%
- ▶ Supplier deliverable quality improved
- ▶ Re-evaluated supplier Quality Assurance approach
- ▶ Updated supplier process documentation (e.g., SEMP)
- ▶ Established decision log and lessons learned repository
- ▶ Supplier increased focus on internal process training
- ▶ PMO and supplier coordination improvements
- ▶ Co-located PMO technical SME on supplier site
- ▶ PMO implemented comment consolidation process
- ▶ Improved collaboration between PMO and supplier

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