



# Integrated Program Management (IPM)

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For Service Contracts

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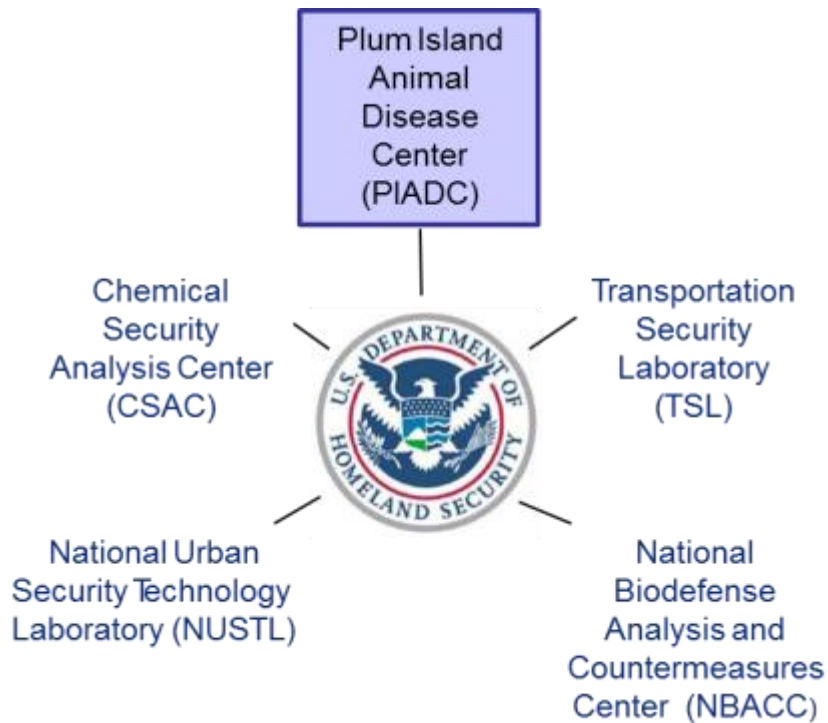
Plum Island Animal Disease Center  
Science and Technology Directorate



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# PIADC At A Glance



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# What is PIADC?

- Mission is to protect US livestock from foreign animal diseases
- Perform diagnostics in the case of suspected outbreaks
- Collaborative on-site mission with the US Department of Agriculture
- Approximately 350 full-time employees

We consider the intellectual capacity of our staff to be our most valuable asset.



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# Why is PIADC Important

- Agriculture and the food industry contributes more than \$1 trillion to the economy per year and one-sixth of the our gross national product
- 22% of all U.S. jobs
- Over 500,000 farms
- Over 90 million cattle and 70 million pigs
- Over 60,000 food processors
- Over 6,000 meat, poultry, egg and milk processors
- Over 1.2 million retail facilities



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# Service Contracts

- Operations and Maintenance at Plum Island
  - Currently over \$40 million per year
  - The science budget is approximately \$20 Million per year
- The bigger picture: How many billions spent each year government wide on service contracts? In the private industry?
- How are the Contractors rated and rewarded?
  - Cost Plus Award Fee (CPAF)



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# Why Pursue IPM at Plum Island?

- IPM is the use of industry standards to manage cost, schedule, and quality
- Plum Island O&M services include traditional project oriented work and level of effort
- EVM (EIA-748-C), Quality (ISO 9001), and Project Management (PMI/PMBOK) principles are the foundation for IPM. We adapted the principles to service contracts



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# The Paradigm Shift for Earned Value Management in Service Environments

- Projects defined by “period of performance (POP)” rather than defined scope; one year.
- Annual performance baseline for each POP
- Level of effort performance becomes signal, not noise
- Monetization of quality for level of effort work



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# Our Solution: Integration

- Combine elements of:
  - Earned Value Management (EVM)
    - CPI
    - SPI
  - Project Management
    - Projectize the operation to the highest extent possible
    - Defined start and end dates (contract period of performance)
  - Quality Management
    - ISO 9001 Registration in critical areas
    - Clear proven processes



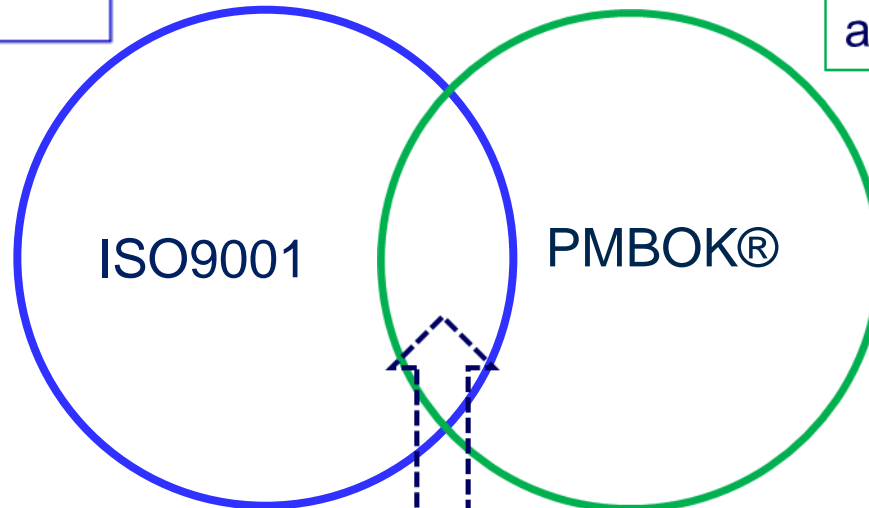
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# PIADC Process

Procedural Infrastructure  
Audits  
Records  
Competencies  
Training

Planning (scope, work  
breakdown, schedule,  
resources, costs ), risk  
and opportunity  
assessment



Metrics  
Analysis  
Reporting (incident, NCR, cost and schedule variance)  
Corrective Action Management



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Source: Doug Ports (DHS), Presentation to College of Performance Management (CPM), October 2012

# Key Earned Value Management Practices\*

- Establish a Performance Measurement Baseline (PMB)
  - Decompose work scope to a manageable level
  - Assign unambiguous management responsibility
  - Develop a time-phased budget for each work task
  - Select earned value (EV) measurement techniques for all tasks
  - Maintain integrity of PMB throughout the project
- Measure and analyze performance against the baseline
  - Record resource usage during project execution
  - Objectively measure the physical work progress
  - Credit earned value according to EV techniques
  - Analyze and forecast cost/schedule performance
  - Report performance problems and/or take action



# Setting the Baseline to Promote Operational Excellence

- Early scope determination
- Communication of planning guidance and award fee plan
- Integrating quality measures to determine value earned on LOE
- Setting a high standard for operations using Project Management, EVM and Quality Standards (e.g. ISO9001)



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# Award Fee Alignment

- The bulk of the baseline (Operations and Projectized LOE) is the same every year. We measure “Core Services” with CPI/SPI
- Discrete projects in the baseline every year: upgrades, major repairs, etc.
- Strategic “lifts” in management areas where critical improvement is necessary



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# Award Fee Metrics

- CPI and SPI for “Core Services” translate into AF scores
- CPI weighted greater than SPI to drive “cost efficiencies” early

**Goal 1: Outstanding Project Management Performance (Weight: 40%)**

**Measure 1.1 Cost and Schedule Performance for “Core Services” (Sub-weight: 40%)**

Following the availability and validation of the Cost Performance Index (CPI) and Schedule Performance Index (SPI) on a cumulative (contract year) basis, the fee for cost and schedule performance will be determined in accordance with the scales below.

Score  $\frac{2(CPI)+SPI}{2}$

0	<2.30
1	2.30
2	2.50
2.5	2.55
3.0	2.65
3.5	2.80
3.8	2.95
4	3.10

		Schedule Performance Index (SPI) = EV / PV								
		CPI \ SPI	0.7	0.75	0.8	0.85	0.9	0.95	1	1.05
Cost Performance Index (CPI) = EV / AC	0.7	1.4	2.1	2.15	2.2	2.25	2.3	2.35	2.4	2.45
	0.75	1.5	2.2	2.25	2.3	2.35	2.4	2.45	2.5	2.55
	0.8	1.6	2.3	2.35	2.4	2.45	2.5	2.55	2.6	2.65
	0.85	1.7	2.4	2.45	2.5	2.55	2.6	2.65	2.7	2.75
	0.9	1.8	2.5	2.55	2.6	2.65	2.7	2.75	2.8	2.85
	0.95	1.9	2.6	2.65	2.7	2.75	2.8	2.85	2.9	2.95
	1	2	2.7	2.75	2.8	2.85	2.9	2.95	3	3.05
	1.05	2.1	2.8	2.85	2.9	2.95	3	3.05	3.1	3.15



# Award Fee Metrics

- LOE
  - Metrics measured monthly; If metric is met then SPI = 1
  - If they miss a metric then SPI lowers. How much less is based on the risk associated with the metric and how many times they missed it
  - SPI can never be >1, some cannot be made up (PM's)
- Projects
  - Typical; cost and schedule with minimum quality standards



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# Examples of Failed Metrics

- Example of Initial Metrics and Lessons Learned
  - Issues arise, no variance: are we measuring the right things?  
Someone left the company. There was no schedule variance and no cost variance.
  - *Perform IT backups once a month and transport off site to designated storage site.*  
Full credit if done, no credit if not done (Critical to inventory). Back ups were done.
  - *“Water tower filled to capacity every day make “X” gallons of water 95% of time” will get full credit.*



# Using EVM to Award Fee

- Overall weighting of measures are geared towards “Core Services”, but also strategically target “lifts” to drive process improvements in other key areas

<b>Goal 1: Outstanding Project Management Performance (40%)</b>
Measure 1.1 Cost and Schedule Performance for “Core Services”
Measure 1.2 Cost and Schedule Performance for “Special Projects”
Measure 1.3 Maturation and Improvement of Project Management

<b>Goal 2: Outstanding Quality Management (40%)</b>
Measure 2.1 Achieve and Sustain ISO9001 Registration
Measure 2.2 Continuous Improvement
Measure 2.3 Configuration Management Definition and Implementation
Measure 2.4 Corporate Involvement and Assurance

<b>Goal 3: Sustainability (5%)</b>
Measure 3.1 Energy/Fuel Consumption, Conservation and Waste Management
Measure 3.1.1 Baseline Energy & Petroleum Use and Waste Streams
Measure 3.1.2 Complete Heat Energy (Piping Insulation) Conservation Work

<b>Goal 4: Resiliency (15%)</b>
Measure 4.1 Response and Recovery
Measure 4.2 Emergency Management Procedures and Training
Measure 4.2.1 Develop Procedures for High-Consequence Events/Emergencies
Measure 4.2.2 Conduct Training for Emergency Procedures

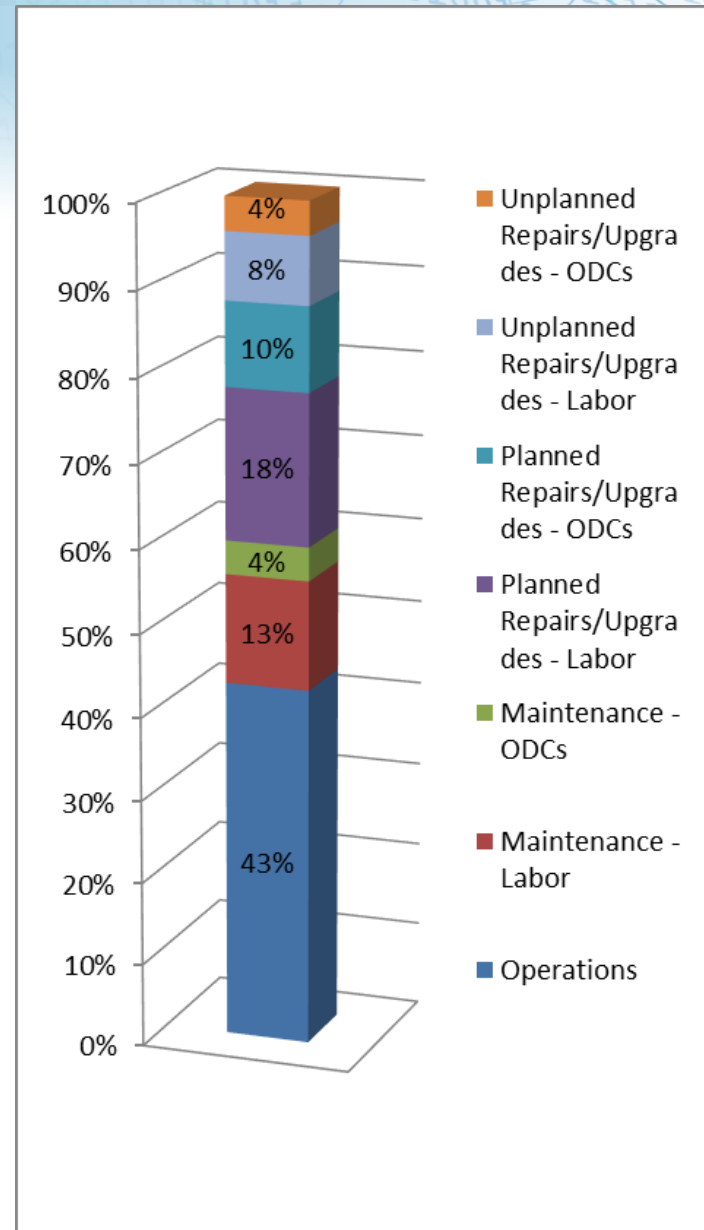


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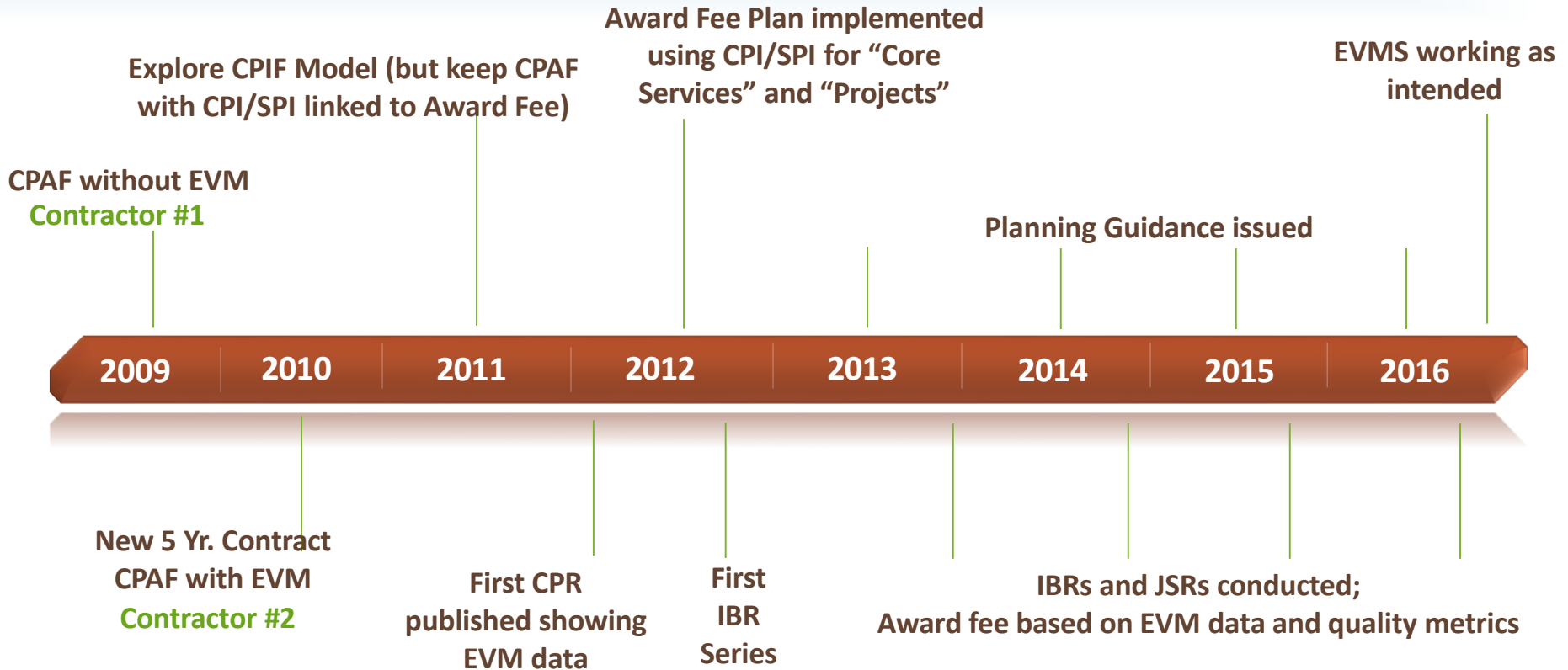
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# Minimizing LOE

- Minimizing LOE work is key to effective EVM
- “Stack Charts” used to assess relative costs (effort) across the operation
- Objectives:
  - Minimize “Unplanned” work
  - Move towards a “Reliability Centered Maintenance” (RCM) model
  - Define scope of work, deliverables and results so that more area is covered by performance based measures
  - Minimize “Operations” that are LOE (target these areas for using “metrics”)



# Evolution of EVM – “Touchpoints” Timeline



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# Evolution of EVM at PIADC

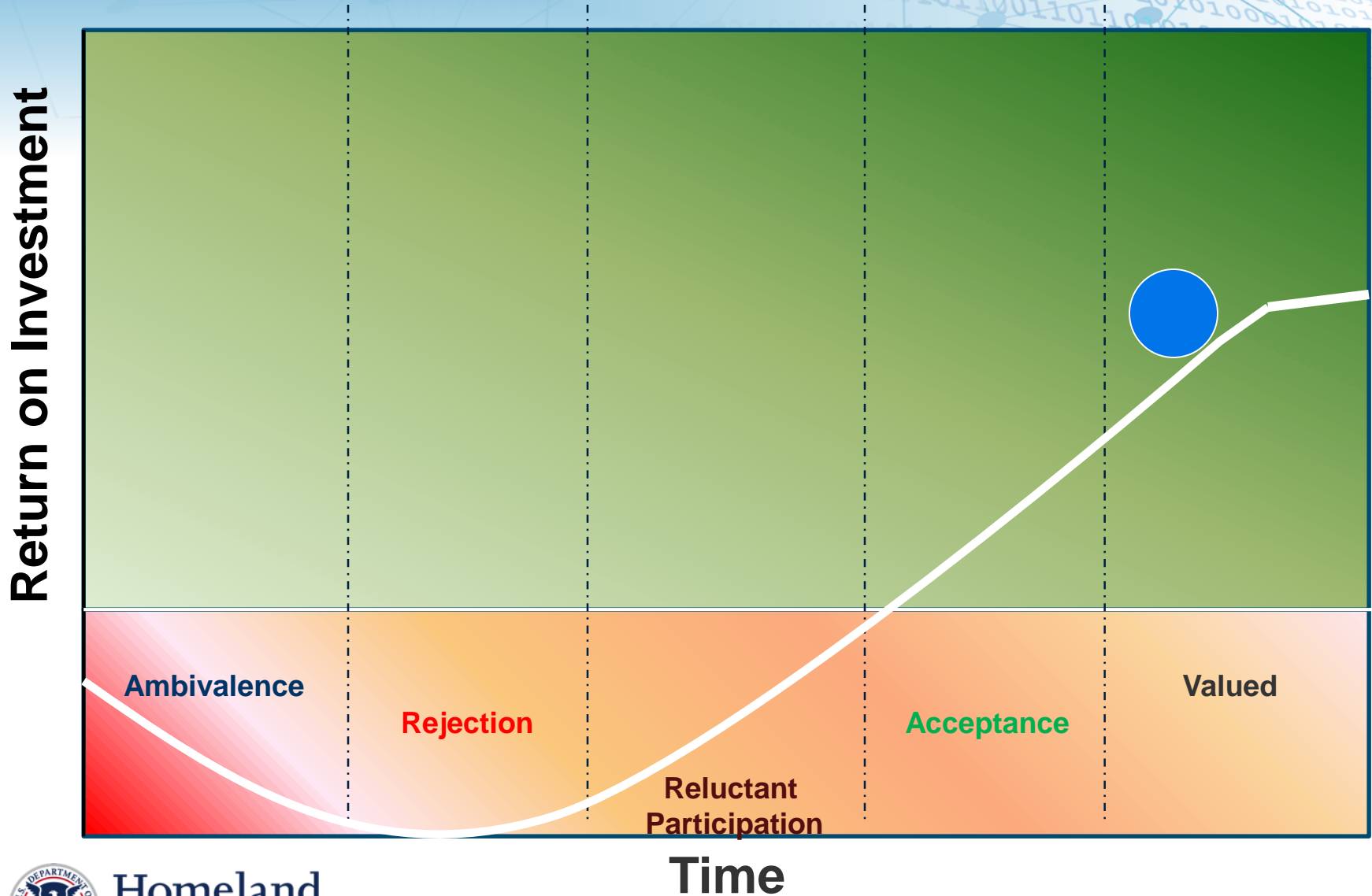
- EVM system requirements resulted in increased quantitative data over time = better visibility
  - Prior to EVM, this data was virtually non-existent
- EVM data used to drive improvements
  - Linking CPI and SPI to incentive based rewards drives the “right behaviors”
- Each successive IBR resulted in:
  - Greater visibility into cost and schedule basis / assumptions (and their flaws)
  - Better understanding of performance gaps that needed to be closed
  - Awareness of where the program should be headed (data driven, RCM-oriented operation)



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# Phases of Culture Change



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Source: Doug Ports (DHS), Presentation to College of Performance Management (CPM), October 2012

# Successes

- Clarity into where the costs are
- Contractor focus on successful metrics rather than waiting to respond to issues
- We found there was a lot of labor going to a relatively unimportant area. We found efficiencies
- Greater awareness with managers in respect to budgets and schedules
- Increased quality and non conformance reporting
- Budgets and resources realigned when excess is identified



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# Lessons Learned

- Difficult to maintain 12 month cycle (continuing resolutions, Government shutdowns, etc.)
- Difficult to validate baseline, current staff not trained
- EVM does not show you where all of your problems are as not all problems show up as performance issues
- Problems: You should not have too many metrics, it can be involved and expensive to track. We pay for what we want the contractor to do
- ISO 9001 great for processes. However, there is a need for more “meat on the bone.”



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# Next Steps

- Goals → Critical Outcomes → Metrics
- To complement ISO 9001 we are incorporating elements of NQA-1 (ANSI approved ASME standard)
- Re-competing the O&M contract - a new Contractor may mean new growing pains... But it also could mean new ideas and improvements
- PIADC is already benefitting from work that has been done



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# NEW Critical Outcomes

- Science and Technology Goals
- PIADC goals: Critical Outcomes
- Contractor metrics to measure success toward goals
- CPI and SPI affect a portion of the Award Fee



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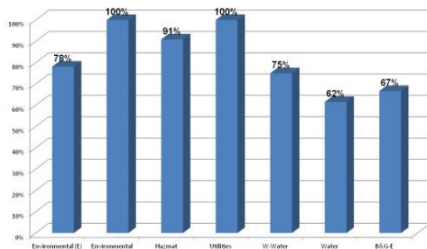
# A Model for Sustainable Performance Management in a Services Environment

Procedural Infrastructure  
Audits, Inspections  
Records  
Competencies  
Training

Planning (scope, work breakdown, schedule, resources, costs)

Quality  
ISO9001  
NQA1

PMI/PMBOK



Metrics (earned value, etc.)  
Analysis  
Reporting (incident, NCR, cost and schedule variance)  
Corrective Action Management  
Risk Management  
Human Resources

Task ID	Task Name	Start	Finish	Duration	Resources	Cost
10	Environmental	2/5/09	Sun 9/29/13	256.0 days		\$280
11	Environmental - Planned	2/5/09	Sun 9/29/13	256.0 days		\$280
12	Environmental - Planned	2/5/09	Sun 9/29/13	256.0 days		\$280
13	Environmental Coordination	2/5/09	Sun 9/29/13	256.0 days	MFO ENV HEALTH	\$40
14	Editor	2/5/09	Sun 9/29/13	256.0 days	MFO ENV HEALTH	\$40
15	Subcontract	2/5/09	Sun 9/29/13	256.0 days	NEIS-000 -SUBCON	\$40
16	Environmental, Chemical Management activities in Lab 101	2/5/09	Sun 9/29/13	256.0 days	MFO ENV HEALTH - SAFETY TRNG - 2009-2010	\$91.28 hrs
17	Required Environmental Training	2/5/09	Sun 9/29/13	256.0 days	MFO ENV HEALTH - SAFETY TRNG	25.27 hrs
18	Practice Application	2/5/09	Sun 9/29/13	256.0 days	NEIS-000 -SUBCON	8 hrs
19	Achievements Sampling	2/5/09	Sun 9/29/13	256.0 days	NEIS-000 -SUBCON	8 hrs
20	Controlled Substances	2/5/09	Sun 9/29/13	256.0 days		8 hrs
21	Environmental Management System	2/5/09	Sun 9/29/13	256.0 days		8 hrs
22	Reporting Obligations	2/5/09	Sun 9/29/13	256.0 days		96.27 hrs
23	Waste Management	2/5/09	Sun 9/29/13	256.0 days		\$276.00 hrs
24	MFO 101, 102 Activities	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	376.0 hrs
25	RFID	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	56.0 hrs
26	Shielding	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	113.83 hrs
27	Immunization	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	188.0 hrs
28	Asbestos	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	202.23 hrs
29	Fire & Internal Activities	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	113.83 hrs
30	APE & TSP Activities	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	188.0 hrs
31	RFID Activities	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	208.0 hrs
32	Electronic Equipment Activities	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	18.83 hrs
33	Reports	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	25.27 hrs
34	Required Environmental Training	2/5/09	Sun 9/29/13	256.0 days	HAC - MAAT TECHNIC	27.88 hrs



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