

A network diagram with a blue background and white lines connecting nodes. Several circular icons are placed along the network lines, including a globe, a padlock, a biohazard symbol, a building, and a recycling symbol.

Earned Value Management

For Service Contracts

July 23, 2015



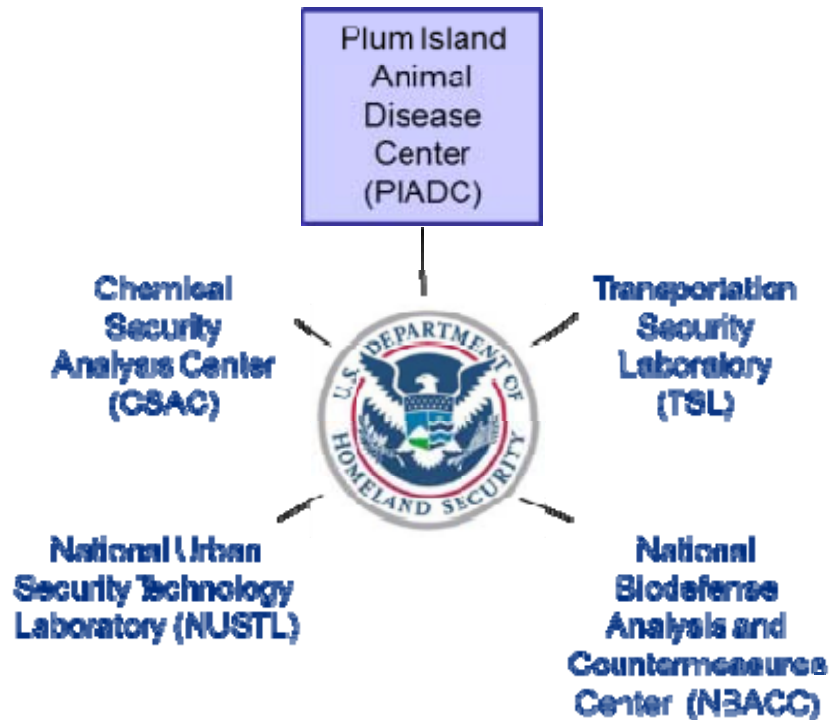
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PIADC At A Glance



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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 our most valuable asset.

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

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)

Why Pursue EVM at Plum Island?

- Increasing expectations for managing cost, schedule, and quality
- Lifetime costs for O&M services warrant high degree of rigor
- Plum Island O&M services include a fairly high degree of traditional project oriented work
- EVM is an excellent tool. Need to adapt the principles to service contracts.

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

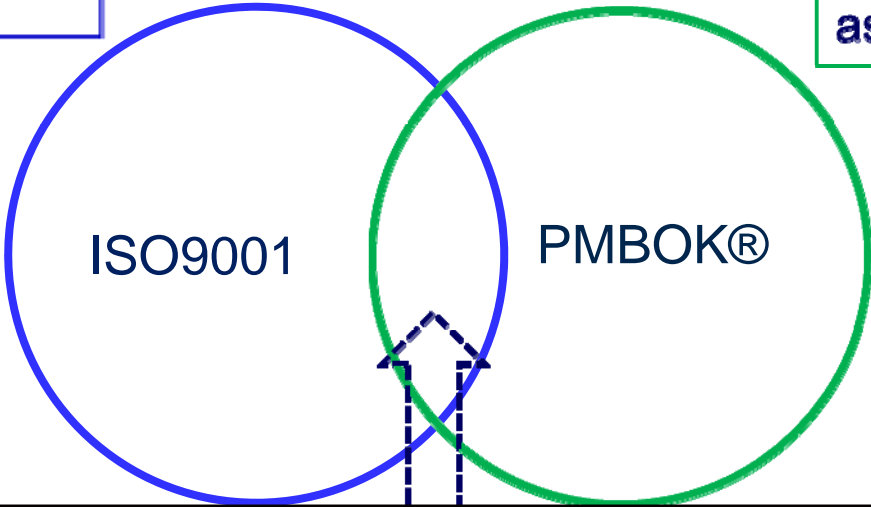
Our Solution

- 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)
 - ISO 9001
 - Registration in critical areas.
 - Clear proven processes

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



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**As defined in the PMBOK® Guide for use in EVM practices*

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 the Project Management, EVM and ISO9001 operations.

Award Fee Alignment

- The bulk of the baseline (Operations and Projectized LOE) is the same every year
- Two sections for CPI/SPI; Core Services and Projects
- Towards strategic “lifts” where critical improvement is necessary

Award Fee

- 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 $\frac{2(CPI)+SPI}{AC}$

| | |
|-----|-------|
| 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 |



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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.

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.*



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Award Fee EVM

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

| |
|--|
| Goal 1: Outstanding Project Management Performance (40%) |
| 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 |

| |
|--|
| Goal 2: Outstanding Quality Management (40%) |
| 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 |

| |
|--|
| Goal 3: Sustainability (5%) |
| 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 |

| |
|--|
| Goal 4: Resiliency (15%) |
| 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 |

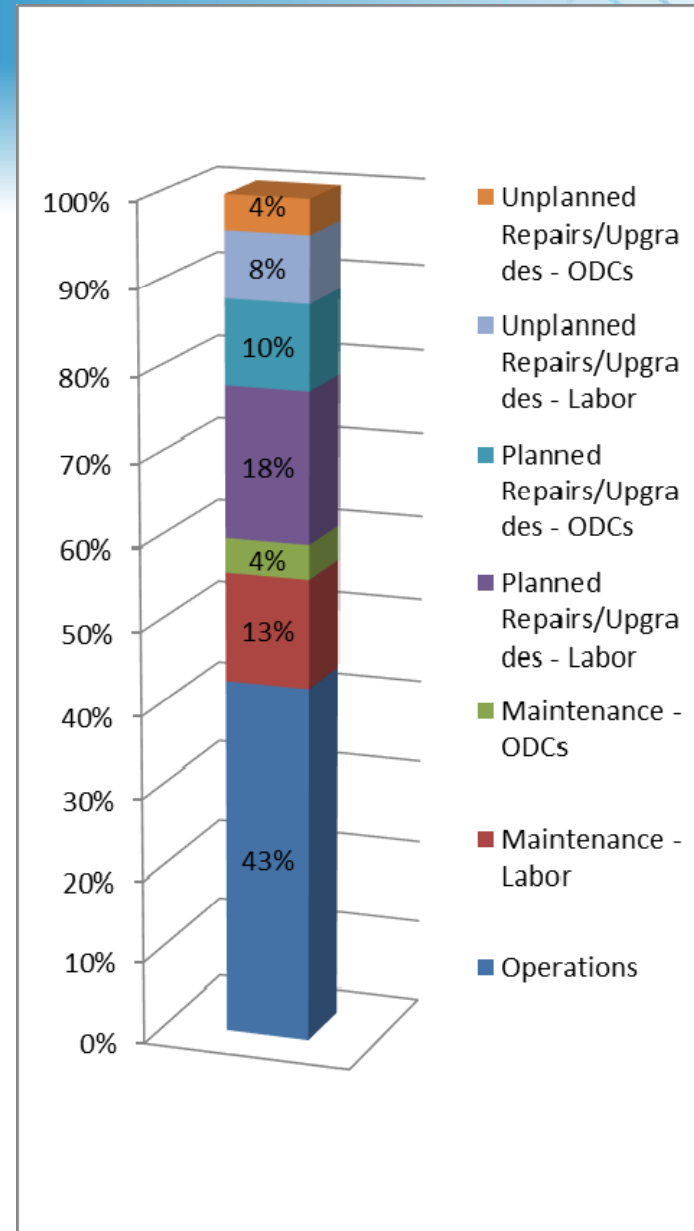


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Minimizing LOE

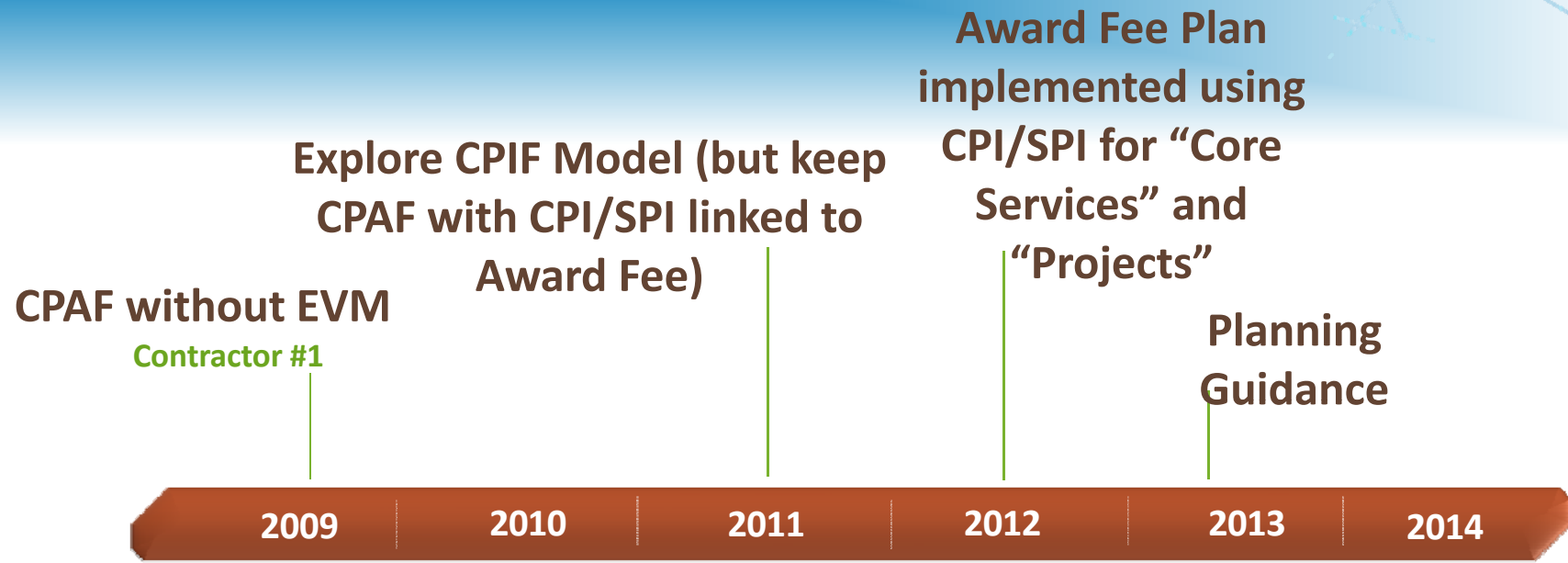
- Minimizing LOE work is key to effective EVM
- “Stack Charts” used to assess relative costs (effort) across the operation
- Objectives:
 - Minimize “Unplanned” work
 - Move towards a “Reliability Centered Maintenance” (RCM) model
 - Define scope of work, deliverables and results so that more area is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



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Evolution of EVM – “Touchpoints” Timeline



New 5 Yr. Contract
CPAF with EVM
Contractor #2

First CPR
published
showing
EVM data

First IBR



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