DoD Cost Management

ASMC PDI

April 2017
Executive Summary

In the face of continued national security and resource challenges, paramount need to understand and efficiently apply financial resources for better mission effectiveness

• Work to date has been multi-year journey towards audit-readiness and improved investment mgmt.
• Next step is to apply more mature cost practices and innovations to further understand DoD Cost

The Deputy Chief Management Officer (DCMO) and the Comptroller have been directed to co-lead a project, in concert with commercial sector cost experts, to:

• Devise innovation and improved methods of identifying all-in costs in a simple but holistic manner
• Apply a modern commercial lens to DoD operational costs
• Implement best practices for decision support across all lines of business

The fundamental goal of this effort is three-fold:

• Ensure that we have transparency into how our current funds are deployed
• Capture costs using a common source of information and common definitions across the enterprise
• Help the DoD articulate and justify further investments to support the Warfighter
Partnering with the Services, DCMO, & OSD Comptroller, DoD is on a path to enhance DoD cost management

- The cost initiative implements an Enterprise-wide Managerial Cost Accounting (EMCA) framework that includes the various lines of business (e.g., real property, acquisition, finance, IT, medical, etc.) that make up the Department’s operations

- Real Property was the first line of business, launching in June 2016, followed by Medical and IT in December 2016

- Each line of business will involve:
  - Identifying **priority data needs** (i.e., which activities require reliable cost estimates to maximize effective decision-making)
  - Determining the **best path for reliably capturing priority data**, from system and accounting enhancements to innovative methods of predictive modeling
  - Developing a **series of use cases** for how enhanced cost information can improve budgeting, cost control, performance measurement, reimbursement and fee setting, program evaluation, and resource management decision making capabilities
  - Updating the Department's **governance structure** to ensure enterprise view of cost data and coordinating system and accounting improvements in a manner that aligns closely with audit readiness activities
The cost transparency journey is delivered in three phases:

1. Define the Cost Decision Framework (CODE)
2. Create and populate CODE
3. Manage cost performance
The CODE is an enhanced framework to organize DoD cost information.
Real Property Cost Decision (CODE) framework

CODE focuses first on product segments:

<table>
<thead>
<tr>
<th>Level of Materiality, Variance, and Actionability</th>
<th>Real Estate</th>
<th>Maintenance</th>
<th>Operations</th>
<th>Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly material, variable, and actionable</td>
<td>• Construction / development</td>
<td>• Preventative maintenance • Repair maintenance</td>
<td>• Pavement clearance – Snow removal – Street sweeping – Dirt and sand</td>
<td>• Electricity</td>
</tr>
<tr>
<td>Highly material or variable or actionable</td>
<td>• Planning / management • Leasing</td>
<td>• Restoration &amp; Modernization</td>
<td>• Janitorial / custodial • Landscaping</td>
<td>• Natural gas • Water • Sewer</td>
</tr>
<tr>
<td>Moderately material or variable or actionable</td>
<td>• Divestment / demolition • New land / property • Environmental</td>
<td></td>
<td>• Trash and garbage collection</td>
<td>• Steam</td>
</tr>
<tr>
<td>Neither material nor variable nor actionable</td>
<td>• Other</td>
<td>• Other</td>
<td>• Pest control • Other</td>
<td>• Other</td>
</tr>
</tbody>
</table>

CODE covers additional key segments of geography, footprint, facility type and OC

| Geography (Service) | • Army • Air Force • Navy, Marine Corps • 4th Estate (DLA, WHS, DCMA, DECA) |
| Site / Footprint (Installation) | • All installations (U.S. and overseas) |
| Facility profile | • Facility class (e.g. Administrative, Hospital & medical, Troop housing & mess, etc.) • Age • Condition • Other |
| Object class | • Personnel cost • Contractor cost • Supplies • Travel • Communications • Other |

Note: Additional segmentations such as vendor view, asset view, manufacturing view not deemed business relevant
IT Cost Decision (CODE) framework

CODE is categorized into six IT capabilities

<table>
<thead>
<tr>
<th>Capability</th>
<th>Mission Systems</th>
<th>Enterprise Systems &amp; Applications</th>
<th>Cybersecurity</th>
<th>IT Management</th>
<th>End-User Device</th>
<th>Network Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Operations &amp; Maintenance • Hosting</td>
<td>Operations &amp; Maintenance • Hosting</td>
<td>Cybersecurity personnel • Cybersecurity managed services</td>
<td>Portfolio &amp; project mgmt • CIO staff • Asset &amp; Commodity mgmt</td>
<td>Laptops, tablets, desktops • Helpdesk/Service desk</td>
<td>WAN / gateway • Operations &amp; maintenance (NOC)</td>
</tr>
<tr>
<td>High</td>
<td>Development • Backup &amp; DR infrastructure</td>
<td>Development • Backup &amp; DR infrastructure</td>
<td>Network intrusion monitoring / security information and event mgmt</td>
<td>Enterprise architecture • X86/Mainframe mgmt • Storage mgmt • DC O&amp;M</td>
<td>Print services • Mobile devices</td>
<td>LAN • Satellite communications</td>
</tr>
<tr>
<td>Moderate</td>
<td>Information Assurance Training • STIGs mgmt</td>
<td></td>
<td></td>
<td></td>
<td>Virtual desktop infrastructure</td>
<td>DODN (Internet service provider)</td>
</tr>
</tbody>
</table>

CODE can be further segmented to provide greater utility to decision makers

<table>
<thead>
<tr>
<th>Service or DoD Agency</th>
<th>Organization</th>
<th>Cost Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Army • Navy / USMC • Air Force</td>
<td>MAJCOM / BSO • Installation</td>
<td>Hardware</td>
</tr>
<tr>
<td>DISA • DLA • DHA</td>
<td></td>
<td>Software</td>
</tr>
<tr>
<td>Other DoD Agencies (delineated when warranted by materiality)</td>
<td>CONUS / OCONUS</td>
<td>Personnel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outsourced</td>
</tr>
</tbody>
</table>
## Medical Cost Decision (CODE) framework

### Level of Materiality, Variance, and Actionability

<table>
<thead>
<tr>
<th>Level of Materiality, Variance, and Actionability</th>
<th>Purchased Care</th>
<th>Direct Care²</th>
<th>Operational Care &amp; Services</th>
<th>Other Health Services</th>
<th>Training &amp; Education</th>
<th>Future Med. Capabilities</th>
<th>Command &amp; Headquarters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly material, variable and actionable</td>
<td>Purchased professional services Pharmaceuticals</td>
<td>Med. personnel pay &amp; benefits³</td>
<td>Medical personnel pay and benefits³ Pharmaceuticals Mgmt activities &amp; admin costs</td>
<td></td>
<td></td>
<td></td>
<td>Command &amp; cross-cutting administrative functions</td>
</tr>
<tr>
<td>Highly material or variable or actionable</td>
<td>Administrative costs</td>
<td>Durable medical equipment</td>
<td>Medical supplies⁴ Medical equip. Admin costs</td>
<td>Public / occupational health</td>
<td>Health and training programs</td>
<td>Med. research, development, testing &amp; evaluation</td>
<td>Human resources</td>
</tr>
<tr>
<td>Moderately material or variable or actionable</td>
<td>Contractor fees</td>
<td>Other</td>
<td>Aeromedical evacuations Other</td>
<td>Other non-MTF, non-operational health services</td>
<td>Scholarships, grants, etc. Other</td>
<td>Congressionally mandated research Other</td>
<td></td>
</tr>
<tr>
<td><strong>High</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Depts
- IP, OP, & other departments⁶
- Metric: Cost per RVU/RWP⁶

### Medical code frequency
- Number of instances (e.g. of CPT 66920, Extraction of Lens)
- Number of prescriptions (e.g. brand vs. generic)

### Service
- Air Force
- Army
- Navy
- Reserve for each service
- National Guard for each service
- DHA

### Facility type
- Specialty clinic
- Non-GME hospital
- GME hospital
- Etc.

### Benefit plan
- Prime
- TFL
- Standard/Extra
- Etc.

---

1. Readiness is a fundamental tenant of MHS’ mission; cost of readiness will be captured using a shared definition. 2. Direct care shall utilize the MEPRS A & B codes and their associated definitions as codified in Medical Expense and Performance Reporting System for Fixed Military Medical and Dental Treatment Facilities Manual, DoD 6010.13-M (April 7, 2008, incorporating change 2, effective April 15, 2014). 3. Data model will use manpower * composite rates for actual personnel (“faces”) rather than budgeted personnel (“spaces”). 4. Medical supplies include supplies procured to equip incoming medical personnel. 5. Inpatient departments include Primary Care & Family Practice, Surgical, Mental Health, OB/GYN, Pediatrics, Orthopedics, Internal Medicine, Cardiology, Gastroenterology, Pulmonary, Neurology, Hematology & Oncology, and Other Inpatient. Outpatient departments include the same departments plus the addition of Emergency & Ophthalmology, and the replacement of Other Inpatient for Other Outpatient. In addition, there are cross-cutting departments, which include Pathology & Radiology, Cross-Departmental Services, Pharmacy, and Other. 6. Normalizing metric also includes APCs, MHBDS, and DWVs as appropriate.
Gathered data sources and mapped to CODE products

Plugged gaps with internal & external benchmarks

Is-cost finalized after data validation and cleaning

Gathered DoD obligation and expenditure data
  • Utilized financial ERPs and other data systems

Mapped DoD financial codes onto CODE products
  • Initial mapping was performed based on financial guidance
  • Mapping validated by key functional and FM contacts in Services

Estimated missing or anomalous data using statistical methods
  • E.g., Used internal average cost per sq. ft. to impute cost for installations without reliable data

Where no reliable Actuals exist, use commercial reference points
  • E.g., Allocated costs from installation to facility using index based on commercial $/sq.ft. data that accounts for variations in geography and asset class

Data quality validated with Service contacts
  • Apparent outliers investigated to distinguish data quality issues from true outliers

Final Is-cost color coded to indicate data treatment
  • Data classified as actual or estimated based on outlier status
Dashboard views show potential to unlock managerial insight

**Identification of internal best practices**
- Custodial $ / sq. ft., Installation A vs. Installation B

**Budgeting / opportunity sizing**
- Electricity $ / sq. ft., All installations

**Assessing total cost of ownership**
- Maintenance & repair $ / sq. ft., DoD vs. commercial reference

**Questions to consider**
- **Q:** What is driving disparity in custodial cost at similar installations?
- **Q:** Is there an opportunity to establish budget parameters on electricity spend that normalizes portfolio performance?
- **Q:** Is underinvestment in replacement relative to commercial reference driving up unscheduled maintenance?
Three key stakeholder groups play a role in implementation

Using the Model
(End Users)
Examples: Services, Real Property Functions, MAJCOMs, E&E, CAPE, DCFO, etc.

Maintaining the Model
(CODE Data Model team)
Comptroller

Data Capture
(Data Stewards)
Examples: Service Systems, Data Star, RPAD, etc.

Key Roles and Responsibilities
• Use standard set of reports, dashboards and visualizations in support of performance management and data quality improvement
• Utilize self-service portal to access the cost data within the model for use in ad-hoc reporting and analytics
• Collaborate with the CODE Data Model team on a regular basis to evolve the model utility

• Ensure the data model is accurate, updated and accessible to relevant users
• Improve data quality, completeness and utility of the model over time
• Manage and update documentation as needed (e.g., business rules, SOPs)
• Maintain and improve a set of standard reports, dashboards and visualizations (in collaboration with the end user community)
• Engage end users to increase the demand for the CODE Data Model
• Align with data stewards to understand changes in source data
• Collaborate on system improvement and data aggregation initiatives

• Support validation efforts of new data uploads, assist in managing issue resolution, solving exceptions, etc.
• Understand CODE Data Model and how source data is being used within the model; collaborate with CODE Data Model team when source data environment has had a material change (e.g., changes to coding, system replacement, etc.)
• Provide subject matter expertise for respective area

Demand Management & End User Alignment

Liaison to Data Sources & Change Control
Governance structure will be put in place to embed cost management tool within the organization.

Establishing governance of the CODE Data Model across all LOBs fosters a cohesive, functioning process. This requires engaged and vested leadership across Comptroller, DCMO and the relevant functional LOB (e.g., Real Property).
Team combines actual costs and estimates to populate the CODE

1. Define the CODE
2. Create and populate CODE
   a. Gather "Actuals"
   b. Close data gaps
3. Manage cost performance

**Implement "Actuals" data call**
- Provides best DoD data cost view available (obligations, expenditures)

**Develop process to obtain Actuals on ongoing basis**
- Define level of specificity for Actuals data call – driven by CODE
- Continue to refine data request and define where data comes from
- Align with current improvement initiatives
- Determine data reliability

**Develop a methodology to close data gaps**
- Prioritize list of identified data issues where investing to improve or pursue Actuals provides higher utility than using estimates
- Where Actuals unavailable or unreliable, use estimates to impute missing values
- Use Commercial Reference Model (CORE) to allocation cost from installation to facility

**Validate reliability of installation-level calculations**
- Compare at installation by product level
- Compare to inventory of facility level data
- Sample additional facility level data as needed
"Is-cost" built in stages to ensure quality of data and provide transparent methodology

**Gathered data sources and mapped to CODE products**
- Gathered FY15 obligation and expenditure data
  - Utilized financial ERPs and other data systems
- Mapped DoD financial codes onto CODE products
  - Initial mapping was performed based on financial guidance
  - Mapping validated by key functional and FM contacts in Services

**Generated raw cost by installation**
- Cost data consolidated and tied to installations
  - Data mapped directly to installation where possible
  - Headquarters overhead allocated across installations
  - Used CORE to allocate installation costs to facility level
- Cost per square foot by product used to identify outliers
  - Relevant square footage by product pulled from RPAD

**Is-cost finalized after data validation and cleaning**
- Data quality validated with Service contacts
  - Apparent outliers investigated to distinguish data quality issues from true outliers
- Final Is-cost color coded to indicate data treatment
  - Data classified as actual or based on outlier status
  - Missing and anomalous data estimated using statistical methods
CORE OpEx Factbase provides like-to-like commercial reference points

Gathered $/sq ft for commercial references

- Costs per sq ft gathered from commercial sources
  - Costs are differentiated geographically and by facility type

Statistically imputed costs for missing locations

- Utilized factors to account for regional variation in costs (e.g., Basic Housing Allowance, construction cost index)

Used RPAD to build costs for "virtual installations"

- Utilized real property asset database (RPAD) to identify square footage relevant to each product per installations
  - Evaluated each facility type by FAC code

Calculated commercial reference costs for "virtual installation"

- Combined commercial reference cost per sq ft with relevant sq ft from RPAD

Results adjusted to account for DoD unique cost factors

- Identified unique cost factors resulting in higher DoD costs
  - Attempted to quantify cost impact of DoD-specific constraints (e.g., Davis Bacon)

Scaled up commercial values to account for DoD uniqueness

- Resulting commercial reference points provide direct comparison with associated installation
Customized dashboards to support managerial cost decision making and performance improvement

Executive Level Overview

Performance Summary

Illustrative

Developed in consultation with stakeholder groups from all echelons of the enterprise

Use Case Dashboards

Portfolio Variance

Is-cost Navigator

Comparative Analysis

Trend Analysis

Outlier Identification

KPI Analysis
Example view: Comparison of multiple locations

### Comparative Analysis

<table>
<thead>
<tr>
<th>Product</th>
<th>Installation A</th>
<th>Installation B</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custodial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grounds</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Natural Gas</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Pest Control</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>R&amp;M</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Refuse</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Road Clearance</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Sewer</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Sustainment</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td>Average</td>
</tr>
</tbody>
</table>

**Explanation:**

Use filters to build custom comparisons by installation and product. The vertical line through the bar charts reflects the product average.
Example view: Comparison of multiple locations

Each dot represents an installation
Example view: Scenario analysis
Example view: Outliers by product

Data Quality - Outliers in Raw Data

Explanation:
Each circle represents an installation. Its size corresponds to the installation's cost by square foot. Its coloring corresponds to its outlier status.

Outlier costs are identified through a statistical method, relative to other Service installations. They are defined as costs more than 1.5 Interquartile Ranges (IQR) above the third quartile value or more than 1.5 IQR below the first quartile value.

For each outlier, the key questions are: Is this a data issue? If no, is there a mission-related reason for the cost to be so high?

CODE Product
Custodial

Service
(AI)

Major Command
(AI)

Legend (Outlier Status)
- No
- Yes
- Zero


Example view: Comparison of actual spend by segment to commercial distribution
Backup Slides