BIM: Agency-wide Actions
A Mission Centric Look at Portfolio and Asset Management

National Academy of Sciences
Government / Industry Forum
Engineering, Construction, and Facilities Asset Management: A Cultural Revolution

October 31, 2006

Presenter
David M. Hammond, RLA
Office of Civil Engineering
U. S. Coast Guard

United States Coast Guard
Federal Facility Council

31 Oct 2006
Overview

Standards based Building Information Modeling

Experiences of a Government Owner-Operator with new business practices and technologies:

• What we intended to achieve

• What we did differently to achieve it

• How we will measured success
What we intended to achieve

Organizational Transformation

• Move from a locally focused sub-optimized facility engineering perspective…

• To an enterprise-wide asset and portfolio management organization focused on managing $7.5B PRV for CG-wide Strategic Outcomes.

• Link Facilities to Mission Outcomes.

• Achieve 17% to 33% recurring savings in how we deliver services.

• Achieve CFO Act Audit Certification (Sarbanes/Oxley).
What we did differently

• Reengineered Processes

• Identified Enabling IT

• Instituted Organizational Change
Be an Info-Centric Organization
Framework for Integrated Decision-Making

Essence of this *IT-Enabled* Enterprise Framework:

- Moving away from building-centric and project focus
- Moving to a portfolio-based, business process linked to strategic outcomes
- Integration of individual asset portfolios; i.e., Buildings, Cutters, Aircraft, Logistics, IT and HR
- Continuous horizontal flow across the organization
- Break down of the traditional structure of professional and trade disciplines and traditional stove piped software development
- IAI-IFCs and IFGs important because they enable the horizontal process flow through an open architecture and international standards
Cross-Functional Mgmt Recognizes that:

- *Process*, or *how we get things done* must be treated as a strategic corporate priority.

- Competition is won by treating all parts of the organization as a single unified whole.

- Critical cross-functional shore infrastructure processes managed by process managers.

Dimancesu
Process Reengineering

Vertical Value Chain Alignment

**Process Alignment**
- Link and align daily tactical activities to agency-wide strategic outcomes.

**Value Chain**
- Link facility capabilities to operational requirements: our customers;
- Link operational capabilities to mission requirements;
- Link mission capabilities to public demand for goods/services: our customer's customer.
Left Shift in Decision Support
Simultaneous Life Cycle-Spanning Business Case

![Diagram showing the left shift in decision support and the simultaneous life cycle-spanning business case.](image)

- Business Case Decision Phase
- Effort/Effect over Time
- Ability to Impact Cost and Functional Capabilities
- Preferred Design Process
- Cost of Design Change
- Traditional Design Process

TIME:
- CD
- SD
- DD
- CD
- (PR)
- CA
- OP

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Combined BIM and GIS Strategy
Capital Assets are Part of the Common Operational Picture

Managing Operational Req’mts, Infrastructure Capability, and Organizational Needs.
Capital Asset Management Portal
Access to Aggregated Database and Graphics

CAMP combines and displays portal tools and data views supporting Portfolio Management and Integrated Decision-Making and Value Chain.

- Portfolio Management Links Supply and Demand Side of Scenario Based Mission Planning:
  - Real Time Mission Readiness
  - Scenario Based Business Case Development
  - Automated Planning Documentation and Web-enabled Approval Process
  - Value Chain as Web-enabled Workflow
Combined BIM and GIS Workflows
Multiple Data Sources Accessed through CAMP
Combined BIM and GIS Workflows
Multiple Data Sources Accessed through CAMP

Onuma Planning System

ArchiCAD / XML

Google Earth

Sketch Up
Rapid Planning Tools Fit Into BIM

Integrated Planning & Business Case Decisions
Rapid Design Tools Fit Into BIM
Rapid Project Execution of Chosen Business Case
Inefficient Workflows
“Stove-Piped” Data Collection Diagram

Efficient Integration of Numerous Data Points is Required
Efficient Workflows
Integrated and Interoperable Data Collection

Leveraging BIMs to Integrate Disparate Data Points
BIM Levels of Information
Stepped Strategy of Data Collection and Modeling

Minimal level of data modeling necessary to integrate BIMs with other data?

Surprising little is needed to get the highest value from the BIMs.

Value comes over time in a logical stepped sequence of data collection.

All of the levels can reference data that exists in other levels of detail.
How we will measure success

• Organizational Performance

• HPO Contract Performance

• Asset and Portfolio Performance

• Continuous Performance over Time
Quality Control Plan (QCP)

Quality control processes

- Balanced Score Card (BSC)
- Operational Metrics
- Performance Requirement Summary (PRS)
- Continuous Performance over Time
Balanced Score Card
Organizational Performance

- **CUSTOMER**
  - Integrated solutions
  - Provide one voice, seamless infrastructure support
  - Link shore infrastructure to mission requirements

- **INTERNAL PROCESSES**
  - Provide full-service management
  - Provide best value products
  - Anticipate & advocate customer needs

- **EMPLOYEE GROWTH & LEARNING**
  - Develop tools & processes
  - Develop & sustain knowledge management systems
  - Value the work we do

- **FINANCIAL**
  - Minimize shore TOC
  - Maximize mission

Deliver shore facility asset management services to enable CG operations
## BSC and Operational Metrics

### HPO Contract Performance

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<th>BSC Objective</th>
<th>Operational Metrics</th>
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<td><strong>Customer</strong></td>
<td>C1 - Provide timely, integrated solutions</td>
<td>Customer Survey</td>
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<td>C2 - Provide full service facility management</td>
<td>Customer Survey</td>
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<td><strong>P1</strong> - Produce Best Value Infrastructure Product</td>
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<td>P2 - Provide one voice, seamless infrastructure support</td>
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<td>P3 - Develop innovative tools and processes</td>
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<td>P4 - Improve Shore Infrastructure Asset Management</td>
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<td>P5 - Link shore infrastructure to mission requirements</td>
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<td>P6 - Anticipate and advocate customer needs</td>
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<td><strong>Internal Business Processes</strong></td>
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<td>Learning &amp; Growth</td>
<td>L1 - Human Capital, Expand core competencies and operational knowledge</td>
<td>Personnel Fit</td>
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<td>L2 - Information Capital, Develop and sustain knowledge management system</td>
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<td>L3 - Climate for Action, Value the Work We Do</td>
<td>Personnel Fit</td>
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<td><strong>F1</strong> - Minimize shore infrastructure TOC</td>
<td>Life Cycle Cost Analysis</td>
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<td><strong>F2</strong> - Maximize return on mission</td>
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Operational Metrics
Asset and Portfolio Performance

Most Important Mission

Mission Readiness Index

Mission Dependency Index

Faculty Condition Index

Space Utilization Index

Systems Criticality Index

Additional Assessments

Most Important Building

Most Important System
Mission Driven Decisions
Linking Facilities to Missions

SCI Says
Roofs and Electric.....

MRI says
deficiency and Highest priority

MDI Score of 91 makes LT001 the Highest Priority

Building LT005 is Lowest priority

Now Electricity and Roofing with greatest deficiency versus Performance Requirement take Priority
Mission Dependency (MDI)
Linking Facilities to Missions

This critical Facility Assessment links facilities to mission from an Operational Risk Management perspective.

Created by Naval Facilities Engineering Service Center, Port Hueneme CA and co-developed with the USCG.
Linking Facilities to Missions
Missions to Public Outcomes