17th Annual ICCRTS
A Structured, Yet Agile Approach to Designing C2 Operating Environments

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Command and Operations Center Sub-Portfolio
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Introductions

- About SPAWAR
- About the Presenter
- Past Performance
Attributes of Command and Operations (COMOPS) Centers:

- Planned, designed, and built around Mission
- Nerve Center for Command and Control:
  - Direct operations, control forces, coordinate operational activities
  - Gather, process, analyze, dispatch, and disseminate planning and operational data
- Complex, technologically advanced, and costly investments
- Convergence of Operations, Technology, and Facility
- Includes: Ops Centers, Coordination Centers, Emergency Ops Centers, Public Safety Ops Centers, Security Ops Centers, Intelligence Ops Centers, Network Ops Centers, Info Fusion Centers, etc..

“I need to be prepared to run operations in any condition from using the latest technology all the way to a radio, flashlight, and a map board” - Senior Watch Officer; USCG Seventh District Command Center
Background – System of Systems

COMOPS Centers as System of Systems:
- Social Architecture – people, processes, context/communications/collaboration
- Knowledge Architecture – data and information
- Technical Architecture – systems and services
- Physical Architecture – facility and physical infrastructure

For all complex problems, the level of thinking required to solve a problem is inversely proportional to the budget allocated for its solution. -Dr. John D. Burrow, Executive Director, Marine Corps Systems Command
Challenge

- Dynamics of mission change, technology advancement, and fiscal realities
- Traditional Delivery through long, rigorous acquisition cycles
- Inability to identify and baseline operationally based, multi-discipline requirements early in capability acquisition lifecycle
- Failure to forecast future needs
- Lack of full context considerations in planning
- Lack of standardization in the definition, design, and delivery of capabilities
- Failure to plan for flexibility and adaptability in environments
- Fragmented delivery models

“...the joint force will operate in an uncertain, complex, and changing future characterized by persistent conflict.” Capstone Concept for Joint Operations; Joint Chiefs of Staff; 15 January 2009
Agility in designing COMOPS Center Operating Environments leads to the imperative need for an innovative, standardized methodology that:

- Forecasts future COMOPS needs
- Accounts for the full COMOPS Center context in planning
- Develops “accurate” requirements as early in the acquisition planning lifecycle as possible
- Compresses the define/design/build lifecycle thereby reducing acquisition costs and leveraging a highly rapid deployment to meet dynamic needs and mission changes with a high degree of flexibility
Advent of Change - Requirements

Speed and Quality of Requirements

- Most value can be gained in Acquisition Lifecycle
- Based on all anticipated missions ("As-Is" and "To-Be")
- Integrated with all disciplines
- Build consensus amongst multiple project stakeholders
- Iteratively developed
- Lead to reduced schedule/cost and increase performance and service life
Advent of Change: Structured, yet Agile Analysis and Planning

Approach done in a “DODAF-Lite” fashion

- Focus on mission and operations as the basis and address capability across all COMOPS Center Layers
Advent of Change: Standardization

- COMOPS Center Standards quick and accurate development of requirements, architectures, and budgets
Advent of Change: Integrating Define/Design/Delivery Cycle

Fragmenting of Operations, Systems, and Facilities leads to cost over runs, project delays, and decreased capabilities.
Capability Definition and Delivery

**TODAY**

**DEFINE**
- Requirements Analysis & Refinement
- Design Analysis, Trade-Off Studies & Prototyping
- Preliminary Design
- Critical Design
- Final Design
- Design Validation

**DESIGN**
- Procurement
- Pre-Installation Testing
- Staging & Installation
- Testing & Evaluation
- Training & Turnover

**BUILD**
- Screen & Train
- Perform Operations
- System Health Check
- System Maintenance
- Operations Metrics
- Operations Improvements

**DISCOVERY**
- Objectives
- Research
- Interviews
- Surveys

**ANALYSIS**
- Develop Models
- Scenario Based Validation (Initial)
- Objectives & Alternatives Analysis

**DESIGN INTENT**
- Validation (Baseline)
- Develop Discipline-Specific Plans:
  - Operations
  - Information
  - Technology
  - Security
  - Facility
  - Infrastructure

*15% design concept, not suitable for construction*
Approach to Define

Dynamic and Agile Integrated Systems Engineering Approach

Mission and Operational Analysis

Capability Definition and Assessment

Capability Requirements

Integrated Operations, Facility & Systems Design and Deployment

Operations & Sustainment Support

Streamlined Requirements Gathering → Design → Implementation Process

Current and future mission operational requirements are evaluated through doctrine, mandates, key stakeholder inputs.

Capabilities are traced back to operational requirements and assessed for impact on mission execution.

Detailed system requirements are developed against identified and prioritized capability improvements.

Detailed system requirements drive a holistic design and deployment process that integrates both facilities and systems to reduce project risk and ensure delivery of a complete and justified capability.

Deployed capabilities are maintained to ensure continued efficacy and assessed against performance metrics.
Operationalizing the COMOPS Center

Need to move COMOPS Centers from “Watch” Centers and back to Operations and C2
- Integrate principles and techniques of “Knowledge Management” by doing Operational Analysis
- Develop Concepts of Employments (CONEMPS) that support CONOPS
  - Integrate Technology Priorities with Operational Priorities
- Design COMOPS Centers that are truly flexible to meet Operational needs
  - Deploy technology that enables/enhances Operations and Decision Superiority

End Goal is to develop COMOPS Center that is able to flex to an Operation or several simultaneously

“We will attain increased capability and decision superiority for our commanders and operating forces. The goal is assuring the warfighter get the right information at the right time to effectively perceive, understand, reason, decide, and command.” The US Navy’s Vision for Information Dominance; May 2010
COMOPS Center Example: Theater Missile Defense
COMOPS Center Example: Non Combatant Evacuation
COMOPS Center Example: Combined NEO and TMD
Conclusion

- Agility through an Improved SoS Design Process
- Speed to Project Justification and Speed to COMOPS Center Capability
- Effective and Efficient Delivery of the Right COMOPS Center
- COMOPS Centers that Enable the Mission through the Life
- Ability to Absorb Unforeseen Mission Dynamics
Operations Center/Command Center
Recent (4 Years) and Ongoing Projects

➤ Naval Ashore Command Center Major Projects
  ▪ NAVCENT OPCON Center (P-927)
  ▪ MARFORRES HQ (IV MEF)
  ▪ MOC-Training (Naval War College)
  ▪ MOC-Experimental (Norfolk)
  ▪ HQMC RSAC (3)
  ▪ 2nd Fleet MOC
  ▪ 4th Fleet MOC **
  ▪ 5th Fleet MOC
  ▪ 6th Fleet MOC **
  ▪ 10th Fleet MOC **
  ▪ Cyber Team Relocation (L-Creek to Suffolk) **
  ▪ 2nd Fleet/USFFC Consolidation (Norfolk) **
  ▪ AEGIS Training Center (Earle, NJ – P-237 MILCON)

➤ Joint & other Component Command Centers Major Projects
  • USCENTCOM Forward Headquarters – Qatar
  • USCENTCOM Rear Headquarters – Tampa **
  • ISAF HQ SAR (Afghanistan)
  • SCC-J – Jacksonville
  • SETAF JOC (Italy)
  • AFRICOM HQ (Germany)** - TCI
  • SOCAFRICA HQ (Germany) - TCI
  • JNCC-A (Afghanistan) **
  • EUCOM JOC (Germany) **

➤ State Department Projects
  • Iraq/Afghan TOC and TTOC **

USCENTCOM Fwd HQ (Qatar)
IOC October 2009

DOS TOC – In-progress

** Ongoing Project
Other “Last 4 Year” Projects Include:

- All USN Aircraft Carrier based classified A/V systems**
- All USN Large Deck Surface based classified A/V systems**
- All USN VIXS/JWICS VTC **
- CNO Conference Room (Pentagon)
- FBI Enterprise Operations Center, J. Edger Hoover Bldg DC
- SW Regional Operations Center, San Diego, CA
- Mid Atlantic Regional Operations Center Norfolk, VA
- SE Regional Operations Center, Jacksonville FL
- USAFE AOC (Germany) - TCI
- Chief Naval Installation Command, Washington DC
- USAF 27th Intell Squadron DPOC-East, Langley AFB
- Navy METOC-LANT Watchfloor, Norfolk, VA**
- Navy METOC-PAC Watchfloor, San Diego, CA
- Joint Strike Fighter Program Office (6 FTEs)**
- National Police Coord Ctr – CSTC-A (Afghanistan)
- CSTC-A -JOC (Afghanistan)**
- COMSPAWAR, WIP Facility Relocations, San Diego, CA**
- All TEAM SPAWAR VTC support**
- SSC-PAC E2C Conference Center, San Diego, CA**
- BRAC support, Pensacola, Tidewater, National Capital Region **
- 2nd Marine Aircraft Wing, MCAS Cherry Point, NC
- US Sixth Fleet, USS Mount Whitney LCC-20, Joint Operations Center
- US Seventh Fleet, USS Blue Ridge LCC-19, Joint Operations Center
- Spruance Auditorium – Naval War College

March 2011, General Patraeus thanks SPAWAR ISAF HQ SAR PM (Gerald Cruz) for efforts on ISAF SAR project