Policy, Governance and Performance Management in a Services Oriented Architecture
**Policy, Governance and Performance Management in a Services Oriented Architecture**

**NPS’s 6th Annual Acquisition Research Symposium, Monterey CA, 13-14 May 2009**
The Maritime Strategy is about Security, Stability and Seapower

- Expanded Core Capabilities Of Maritime Power
  - Forward Presence
  - Deterrence
  - Sea Control
  - Power Projection
  - Maritime Security
  - Humanitarian Assistance and Disaster Response
Unique Maritime Challenges

• Expansive Physical Environment
  ➢ From the ocean floor to outer space and everything in between

• High Volume of Data
  ➢ Linking Vessel, People, Cargo, Infrastructure data from multiple and disparate sources,
  ➢ Then getting it to the tactical edge in a relevant format

• New Partners
  ➢ Traditional: Coalition Partners and Interagency organizations drive Cross Domain and Releasable Solutions
  ➢ Non-Traditional: new International and Interagency partners drive Non-classified solutions

“The area the ship was taken in, is not where the focus of our ships has been...The area we're patrolling is more than a million miles in size. Our ships cannot be everywhere at every time.”
— LT Nathan Christensen, 5th Fleet spokesperson, describing the challenge of anticipating pirate attacks after a US-flagged vessel was seized on 8 April 2009
Acquisition Challenges

- Demand For Jointness and Interoperability
  - Driven by national defense strategy
  - Driven by operations in the maritime environment
- Demand for Faster Delivery
  - Driven by operations
  - Driven by commercial innovation
- Demand to Deliver More “Bang For The Buck”
  - Driven by tighter budgets
  - Drive by increased accountability
Current State of Navy C4I

- **Avg. time to market:** 2-3 years for new C4I capabilities
- **Avg. server age:** 3+ years ISNS, 7+ years GCCS-M
- **Avg. network age:** 6.7 years
- **Network FOC Timeline:** 4-9 years (some w/no refresh)
- **642** legacy systems aboard 300-plus ships
- **297** Integrated Shipboard Network System (ISNS) versions
- **151** Combined Enterprise Regional Information Exchange Systems
- **144** Sensitive Compartmented Information Network systems
- **50** SubLAN systems
- **15** legacy facilities support those networks
  - Three help desks - seven training sites - two supply-support units to handle spares – and three engineering sites
Challenge: Creating policy that can be realistically implemented

Law begets Policy, Directives, and Guidance

Law

(Titles 10, 40, 44, …)

Policy

Development, complexity, and interpretation of Policy is overwhelming

Are we providing too much “help”?

Is he managing the Program, or the paperwork?
PEO C4I Strategy for Meeting the Challenges

**ACQUISITION GOALS**
- Streamline processes by doing accelerated acquisition and RDCs
- More interaction with user communities
- Partnering for Cost, Schedule and Performance

**PROGRAM / TECHNICAL GOALS**
- Reduce applications
- Reduce servers, but increase utilization
- Transform application programs into community of interest service providers
- Increase bandwidth utilization and capacity

**OPERATIONAL BENEFITS**
- More responsive to Fleet readiness requirements
- Increased supportability and standardization
- Increased system interoperability & network security
- Increased joint alignment

- Jointness / Interoperability
- Faster Delivery
- Bang For The Buck
Innovative Acquisition: Addressing Faster Delivery

**OOMA**
- Client-Server
- Multiple Tests/Certs
- ACAT I Program

**GCCS-M 4.0**
- Client-Server
- Multiple Tests/Certs
- Interdependencies

**AIS**
- RDC Approach
- Reused CNR Software
- Initial Delivery < 2 Years

**MDA Spiral 1**
- 8 Physical sites
- 8 Web Access sites
- 4 NCE Web Access sites

**Windows OS**
- NT
- Windows 2K
- XP
- Vista
- Windows 7
- CPU: 486, Pentium, Pentium II, Pentium 4, Core 2, Quad Core, Medfield

Need innovative acquisition to keep pace with technology
"Service oriented architecture (SOA) is a software design discipline in which application and infrastructure functionality are implemented as shared, reusable services."

or

“A collection of core and enterprise services and an associated framework that enable Community of Interest (COI) services to be accessed via open standards, independently of their underlying platform implementation.”

Burton Group
A New System Architecture

**Client Server Architectures**
- Each link is a tightly engineered pair
- Typical $n^2$ problem – More connections means much more time/money
- Programs are the centers of gravity, and all data is stored within them
- You have to test/accredit every link

**Service Oriented Architectures**
- Less connections; Each program connects to a central “bus”
- Much less connections, much less cost
- Data Sources are the centers of gravity, all data is stored within data enclaves
- Focus is task or operational function

- 3 separate engines: Data, Logic, visual Presentation
Vision

- Deliver components rather than systems
- Components are provided as information services
- Components can be arranged in any way to provide overall composite application
- Component design provides flexibility, higher re-use, and better manageability
Consolidated Afloat Network Enabled Services (CANES)

**Overarching Concept**
- Consolidating networks by providing a Common Computing Environment (CCE), and Cross Domain Solution (CDS) with integrated Voice, Video, and Data.

**Today**
- Application unique hardware

**FY11**
- CANES CCE+ACS
- Application testing, onboard workstation installation and installation verification and testing
- Application easily loaded on CCE
ISR Then and Now
from "nice to have" to "mission critical"

“I think there is a world market for maybe five computers.”
Thomas Watson, Chairman of IBM, 1943

“The war was won by chat.”
Admiral Vern Clark, 2003

“640K ought to be enough for anybody.”
Bill Gates. 1981

“I never, ever want to see a Sailor or a Marine in a fair fight. I always want them to have the advantage.”
Admiral Gary Roughead, 2008
We get it.
We also integrate it, install it and support it. For today and tomorrow.