Composeable FORCEnet
Command and Control

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Warfighting in the 21st Century

- Exploit Every Source
- Provide Shared Situation Awareness/Understanding
- Support Dominant Speed of Command
- Permit Precise Execution, both Synchronous & Asynchronous
- Agility and Flexibility

In An Information Dense World
- FORCEnet Provides Knowledge to the Edge -
Network Centric Warfare Is the Theory

Net-centric Operations Is the Concept

FORCEnet Is the Process of Making the Theory and Concept a Reality

“What FORCEnet Is the Operational Construct and Architectural Framework for Naval Warfare in the Information Age Which Integrates Warriors, Sensors, Networks, Command and Control, Platforms and Weapons Into a Networked, Distributed Combat Force, Scalable Across the Spectrum of Conflict From Seabed to Space and Sea to Land.”

• FORCEnet Is Not
  – A Program of Record
  – A Redundant Effort
  – A Box or System
  – Just a Network
FORCEnet: Naval Component of the Global Information Grid (GIG)

FORCEnet Is an Inherently Joint/Coalition Concept, Both Relying on and Providing Essential Capabilities to the Joint/Coalition Community and Other Services and Agencies

Key Components of Joint Battle Management C2

Tactical C3

Sea Strike, Sea Shield, Sea Basing

Navy FORCEnet

Army Enterprise Architecture

USCG Deepwater

Coalition Interagency

Strategic C2

(DJC2)

Joint C2 (JC2)

FIOP
SIAP
SIGP/SIMP
Teleport
TCS
JTRS
GIG-BE
DCGS
JISR
NCES

Joint BMC2
(USJFCOM)
FORCEnet means:

- A warfighter, or organization, can collaborate with anyone, anywhere, anytime
- Warfighters can allocate bandwidth and priorities for applications and individuals and define their own QOS
- Warfighters can get sensor coverage when and where they need it
- Warfighters can tailor their information requirements and presentations to support their missions
- Warfighters can put the right weapon on the right target
Technology Building Blocks of FORCEnet

1. Platforms
2. Sensors / Weapons
3. Communication
4. Computing
5. Application
6. Collaboration
7. HCI
FORCEnet Capabilities Are “Composed” of Technologies

Today’s Capabilities:
- Vertically Integrated Stovepipes
- NIH often suboptimizes capability
- Resistant to new technology

Horizontal integration is:
- Very costly, increases exponentially with the number of systems
- Done case by case by experts
- Difficult, at best, to sustain

Systems-of-Systems increase non-interoperability over time
Interoperability and Access Through Composeability

**Composeable Web Services** provide common interfaces across uncommon technical solutions.

You use this approach at home and at the office every day.
Composeable FORCEnet
Services-oriented Information Architecture
(residing on the GIG network)

Transformational Operations – Transformational Acquisition

Composeable Doctrine
Composeable Organizations
Composeable COI’s
Composeable (UD) Pictures
Composeable Services
Composeable Hardware
Composeable Sources

Technical Capabilities
Mission Requirements
Mandated Services-Oriented Architecture Implies a Mandate for Composeability

- **DoD Integrated Interoperability Plan**
  - ASD (NII) will establish open architecture design guidance for C2 systems using a distributed services and publish-subscribe framework
  - DISA and Services submit plans and investment strategy to complete transition of GCCS variants & TBMCS to the JC2/UDOP NCES architecture by FY08
  - JFCOM coordinate with Air Force/Army to redirect funding after FY04 from integrating legacy systems to building, integrating NCES-compliant joint mission applications for JC2
  - Navy provide plan and investment strategy to migrate Mission Planning & Rehearsal (MP&R) systems to JC2 by FY08

- **USJFCOM Joint Transformation Roadmap**
  - USJFCOM, in its JBMC2 development role assigned by MID 912, will be responsible for guiding and overseeing the development of operational and tactical level C2 capabilities. (JBMC2 Roadmap currently under development)
  - USJFCOM recommends that the Joint C2 Functional Capabilities Board use JC2/GIG-ES as the single, common foundation

- **CNO/N61 032243Z DEC 03**
  - Once GIG CES is implemented, all existing programs of record must transition to the GIG CES or risk losing funding
  - The consequence for not fully engaging in this DOD initiative could be detrimental to DON’s future warfighting capability
Demonstration Architecture
“Yeah, that’s what I’m talking about”

Contributions
WebCOP
CORTEX
FORCEnet
FORCEview
KSA FNC
EPS/EEE
UCS

Future Work

Client

Normalization Tier

Client

Data / Info Sources

Open Web Sources

Agents

QOS

Bandwidth Management

IP Router based Network

LSI’s Legacy Sources

Knowledge Management

Information Broker

Translation Services

Replay/FF

TEMPORAL

GEOSPATIAL

FUNCTIONAL

Collaboration

Client
Demonstration Components

It's about Composeable Functionality – Not the Specific Components

Client (IE5.5+)

Temporal (Replay/Forward)

Collaboration DCTS GeoViz

Clients

Functional K-Web MS Sharepoint

Knowledge Management VICTOR

Translation Services GRS

Information Broker XTCF

Data / Info Sources

Normalization Tier

Client (ABA)

Temporal (Replay/Forward)

Translation Services GRS

Information Broker XTCF

Agents

Open Web Sources

QOS BCN

Bandwidth Management BMAC

Legacy Sources GCCS-M DADS PC IMAT

IP Router based Network

Contributions

WebCOP CORTEX FORCEnet

FORCEnet FORCEview KSA FNC

EPS/EEE UCS
The Goal

Composed Capabilities

- Collaboration
- Communication
- Computing
- Application
- Sensors / Weapons
- Platforms
- HCI

Tailorable Visualization

Dynamic Bandwidth Mgt & Info Flow Control

Multi-tiered Networked Sensors

Geo-spatial Viewer

DCTS

Tailorable Visualization
Composeable FORCEnet
Through Systematic Experimentation

Transform **Operations**
- Assemble components on the fly
- Joint - Agile - Tailorable
- Geospatial –based shared collaboration
- Intuitive linkage to information

Transform **Acquisition**
- Increase Speed-to-Capability
- Reusable components
- Legacy system interoperability

**Plug-n-Fight!**
Summary

- Composeability
  - Components rather than systems of systems
- Composeable FORCEnet
  - Knowledge is the Warrior’s Edge
- Composeable FORCEnet demonstrates the tactical and operational advantages of enabling joint warfighting
Summary

• Ultimately, the naval and Joint warfighter – and not the engineers - will use the capabilities needed for the immediate operational and tactical problem.

• Warfighters operating in a Composeable FORCEnet-enabled environment will soon be able to compose the C4ISR components developed by the engineering community to ensure superior decision-making.

• This capability has the potential to enable the Joint Force Commander to achieve the maximum degree of operational effectiveness across the spectrum of warfighting and to do it faster than ever before.
Backups
**Composeable FORCEnet** (Partial list to date)

- Honorable Hansford T. Johnson  
  SECNAV
- ADM Vern Clark  
  CNO
- The Honorable Michael Wynn  
  USD AT&L
- ADM Edmund Giambastiani  
  COMUSJFCOM
- The Honorable John Young  
  ASN RD&A
- VADM John Nathman  
  DCNO, Warfare Rqmts & Programs, N7
- VADM Timothy LaFleur  
  COMSURFPAC
- Dr. Michael McGrath  
  DASN for RDT&E
- Ms. Lorraine Wilson  
  DASN for Integrated Warfare
- RADM Kevin Cosgriff  
  Director, Warfare Integration and Assessment, N70
- RADM Thomas Zelibor  
  Director, Space, IW and C2, N61
- RADM David Architzel  
  COMOPTEVFOR
- RADM Henry Ulrich  
  Dir, Surface Warfare Division, N76
- MGEN Robert Kehler  
  Dir, Nav Sec Space Integ, OUS AF
- MGEN Jan Huly, USMC  
  Dep Commandant Plans, Policies & Ops
- RDML Dennis Morral  
  PEO, Littoral & Mine Warfare
- Mr. Jay Parness  
  Dep Dir, Nav Sec Space Integ, OUS AF
- Mr. Don Diggs  
  Dir C2 Policy & Guidance, OASD NII
- BGEN Richard Geraci, USA  
  Dir, National Security Space Architect
- Ms. Uyen Dinh  
  Counsel House Armed Services Comm
- RDML Stephen Johnson  
  Dir, Undersea Warfare Tech, NAVSEA
- ADM Archie Clemins (Ret)  
  Naval Studies Board
- VADM Herb Brown (Ret)  
  President, AFCEA
- VADM Jerry O. Tuttle (Ret)  
  President & CEO, JOT Enterprises
- MAJGEN Tommy Crawford, USAF  
  Director, USAF C4ISR Center
- Ms. Monica Shepard  
  Director, C4 Systems, CFFC
- VADM Christopher Ritchie, RAN  
  Chief of Navy
- ADM William Fallon  
  Commander, Combined Fleet Forces Command
- ADM James Fallon (Ret)  
  Dir. Strategic Studies Group
Composeable FORCEnet on the Road
to DON & Industry

(Partial List to date)

- LTGEN Robert Shea  Dir, C4 Systems, Joint Chiefs of Staff, J6
- RADM Steven Tomaszeski  Navigator of the Navy
- RADM Mark Edwards  Dir. Surface Warfare Division, N76
- RADM Joseph Sestak  Dir. Assessment Division, N81
- RADM (S) Anthony Winns  Dep. Dir. Air Warfare Division, N78B
- RADM (S) Nancy Brown  Vice Dir. C4 Systems, Joint Chiefs of Staff, J6
- RDML Charles Bush  PEO (IWS)
- RDML Andrew Singer  Dep. Commander, Naval Network Warfare Command
- RDML (S) Raymond Spicer  Dep. For Surface Ships, N76E
- Mr. Tom Laux  Dep. PEO AIR
- RDML Stephen Johnson  Dir. Undersea Technology, NAVSEA
- VADM Gary Roughhead  COMSECONDFLT

- SPAWAR 2003 Industry Conference, Bahia Hotel
- FORCEnet Operational Advisory Group (OAG), MCTSSA, Camp Pendleton
- MG ROBERT G.F. LEE, NG, State of Hawaii National Guard, Hawaii
- NDIA Strike Land Attack and Air Defense Division (SLAADD), NISC, San Diego
- AFCEA West 2004 Conference
Sample Display: GeoViz
Sample Display

GeoViz subscribes to UGS data that was published to the GRS
Sample Display
GeoViz subscribes to PC IMAT predictions
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