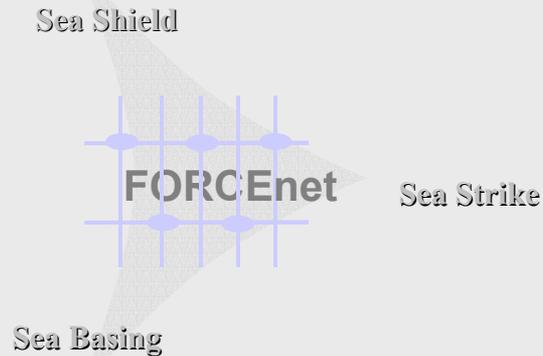


# Composeable FORCEnet Command and Control



**The Ninth International Command and Control  
Research and Technology Symposium  
Copenhagen, Denmark  
September 14-16, 2004**

**George Galdorisi**

**Director, Decision Support Group  
Space and Naval Warfare Systems Center, San Diego**



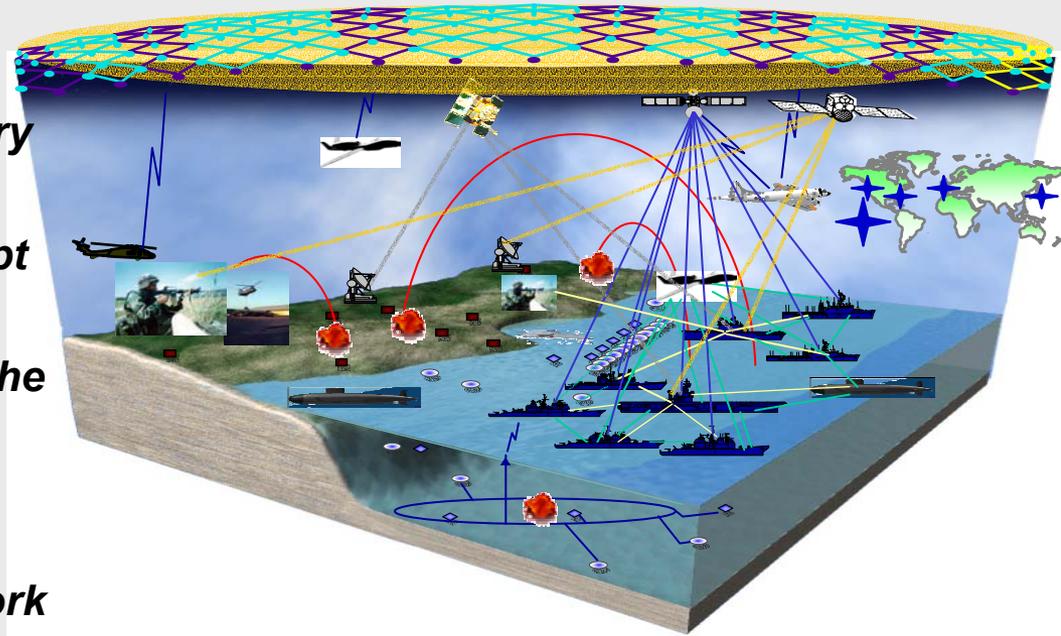
# What Is FORCEnet?

***Network Centric Warfare Is the Theory***

***Net-centric Operations Is the Concept***

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

***“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.”***

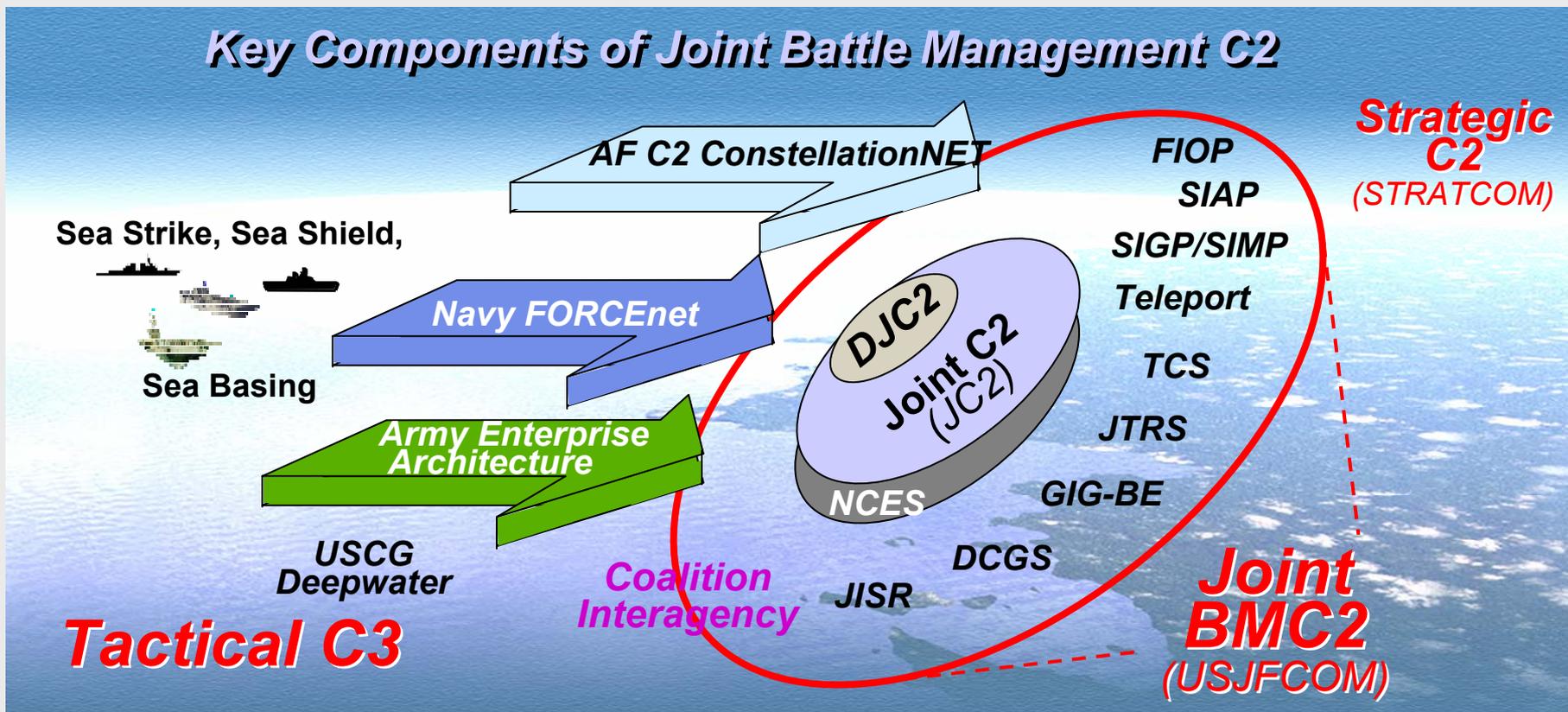


- FORCEnet Is Not
  - A Program of Record
  - A Redundant Effort
  - A Box or System
  - Just a Network

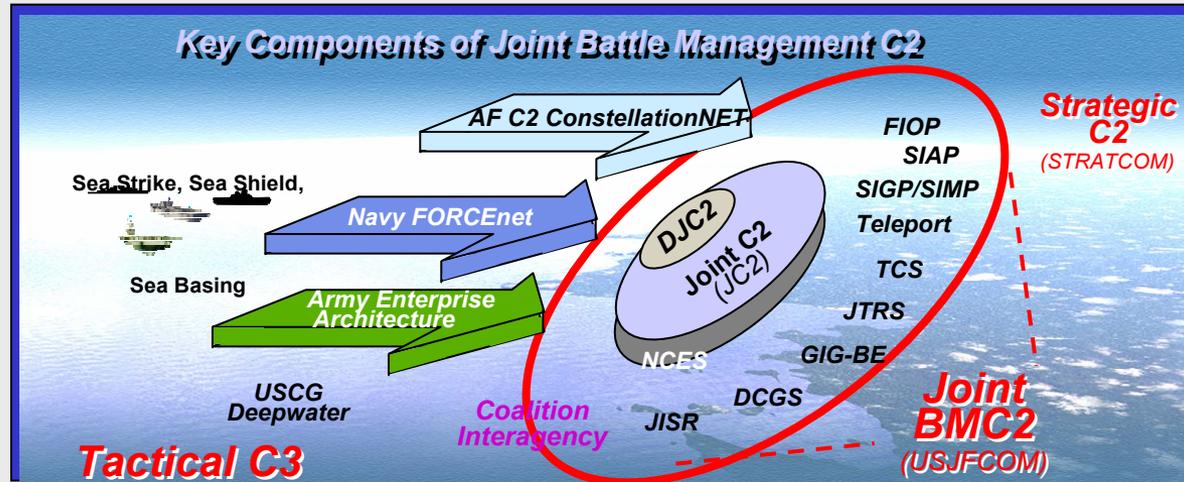
# FORCEnet: Naval Component of the Global Information Grid (GIG)

**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



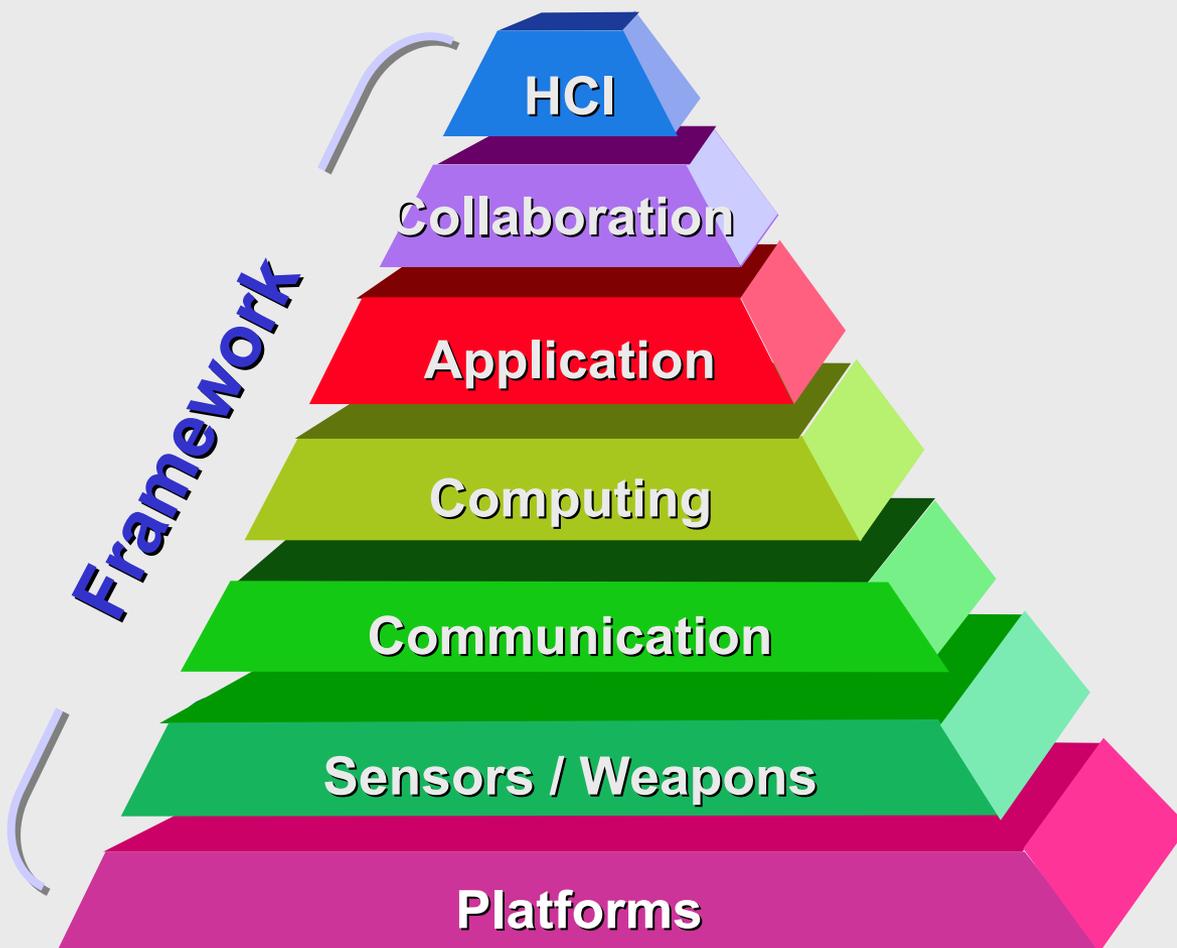
## The *Naval* component of the Global Information Grid



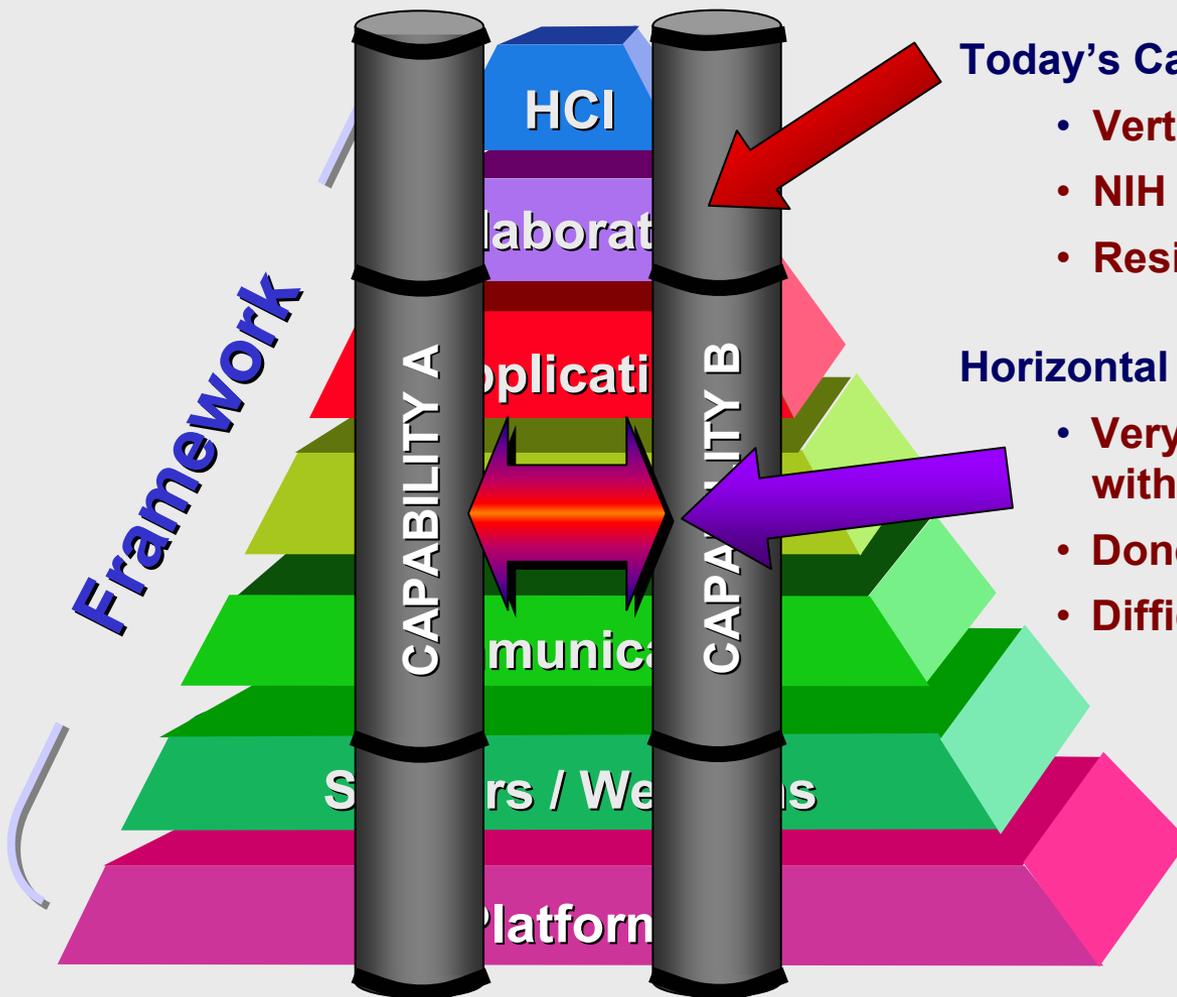
### FORCEnet means:

- 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



# FORCEnet Capabilities Are “Composed” of Technologies



## Today's Capabilities:

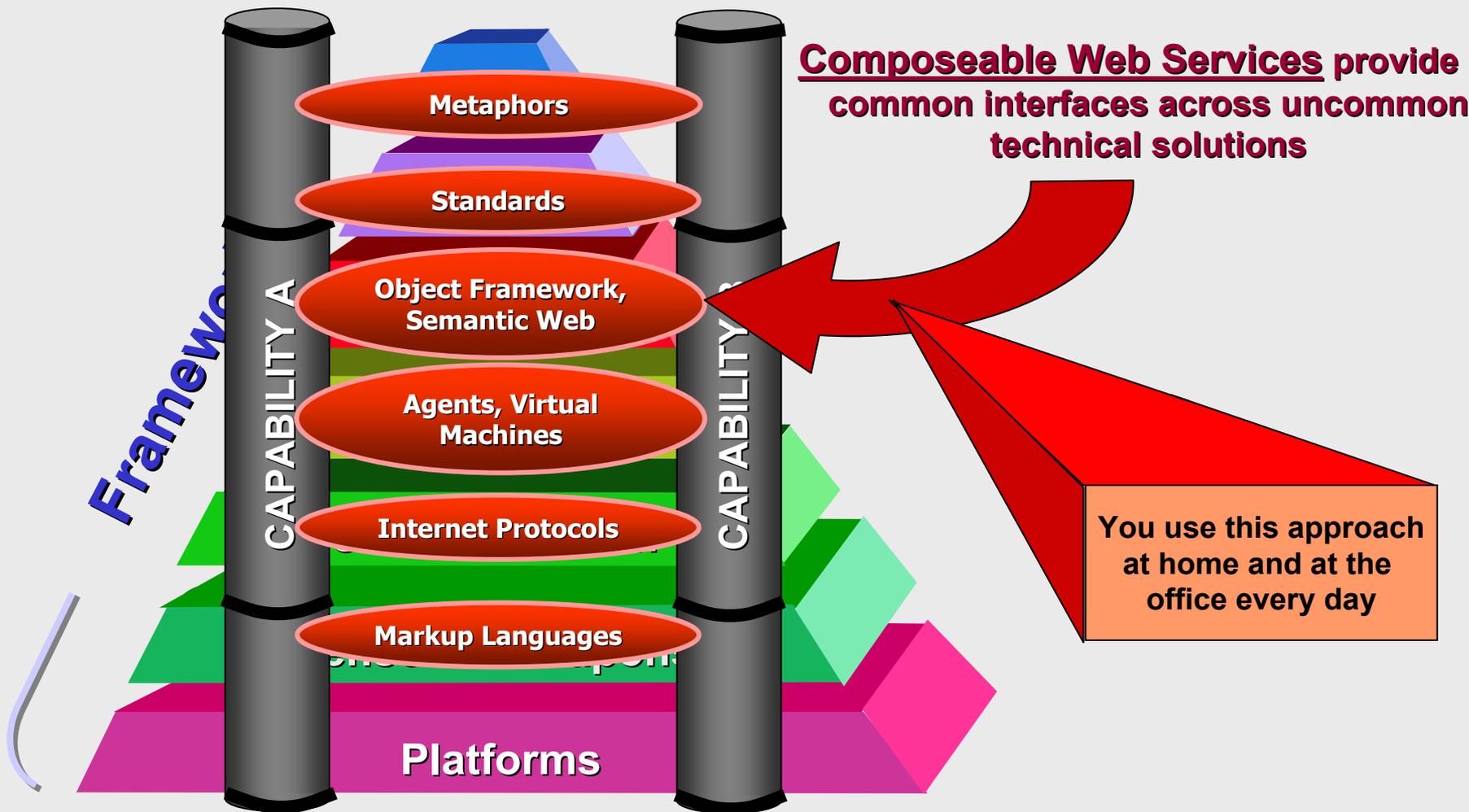
- **Vertically Integrated Stovepipes**
- **NIH often suboptimizes capability**
- **Resistant to new technology**

## 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

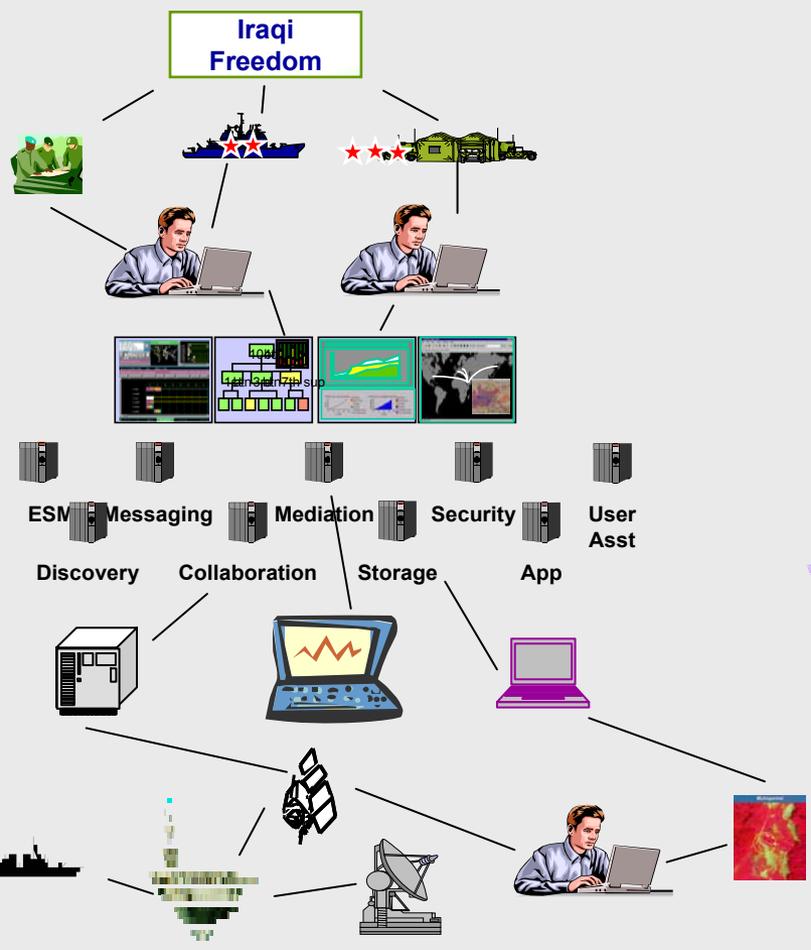


# Composable FORCEnet

## Services-oriented Information Architecture

*(residing on the GIG network)*

### Transformational Operations – Transformational Acquisition



Mission Requirements

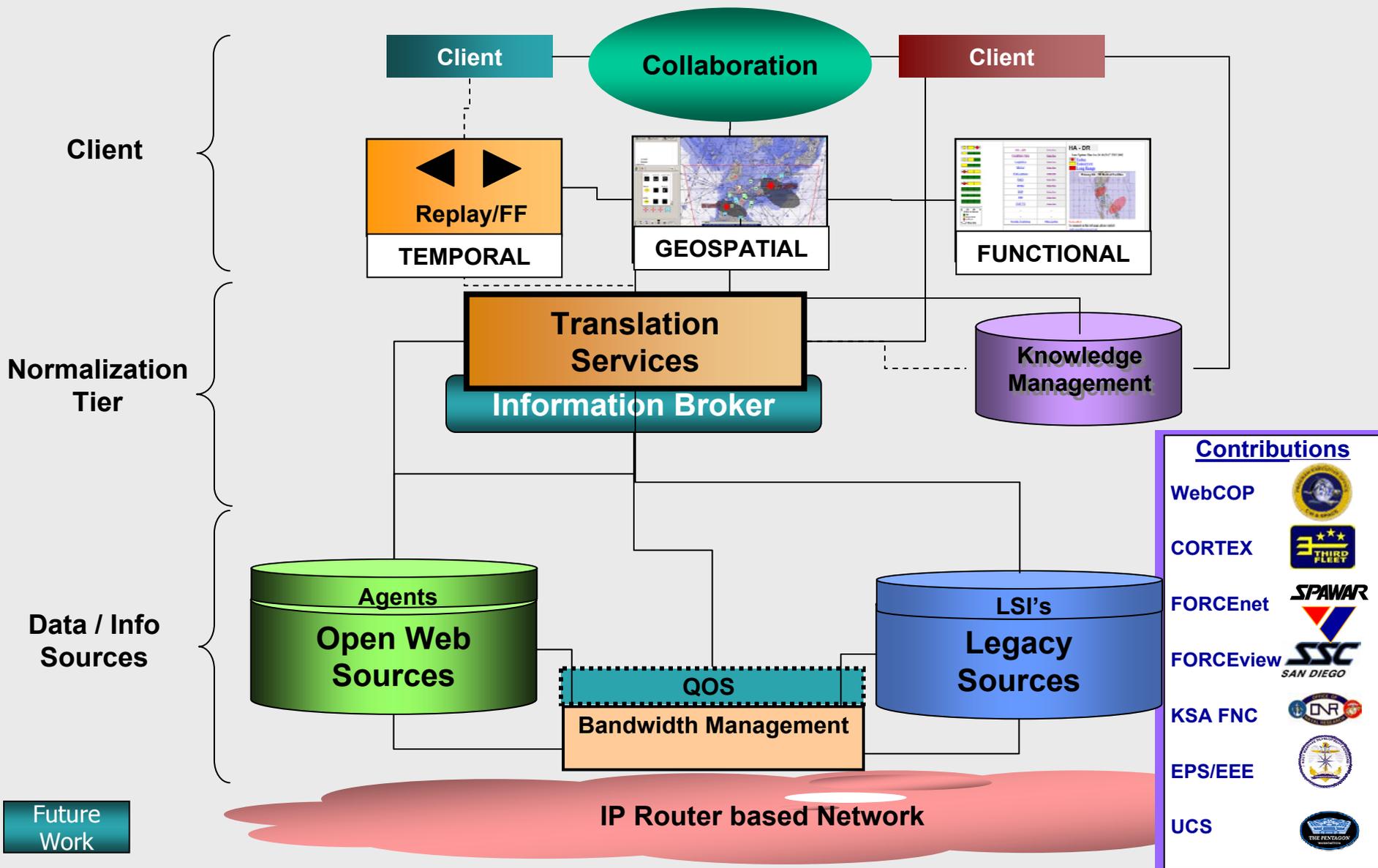
- Composable Doctrine
- Composable Organizations
- Composable COI's
- Composable (UD) Pictures
- Composable Services
- Composable Hardware
- Composable Sources

Technical Capabilities

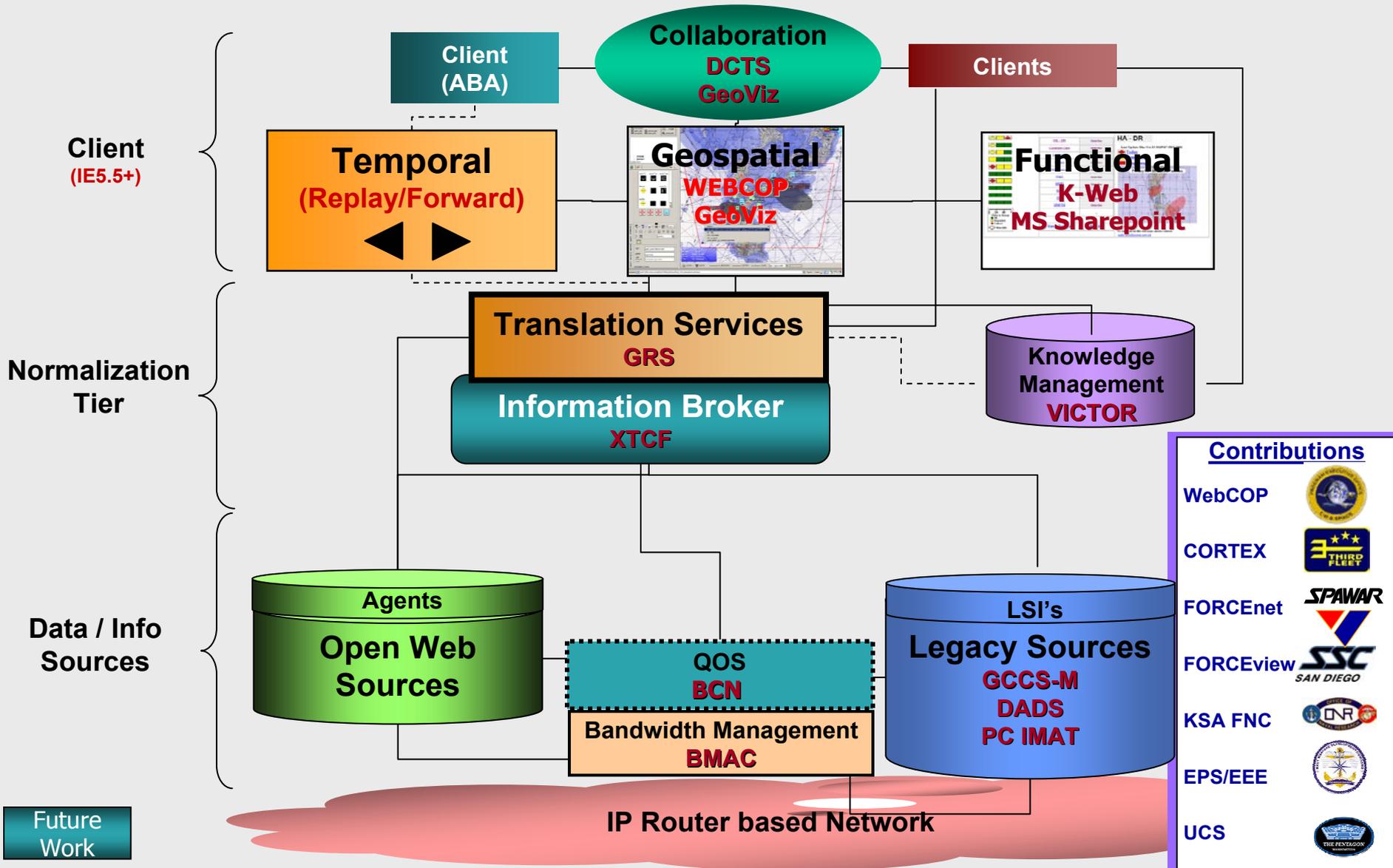
- **DoD Integrated Interoperability Plan**
  - ASD (NII) will establish open architecture design guidance for C2 systems using a distributed services and publish-subscribe framework
  - DISA and Services submit plans and investment strategy to complete transition of GCCS variants & TBMCS to the JC2/UDOP 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

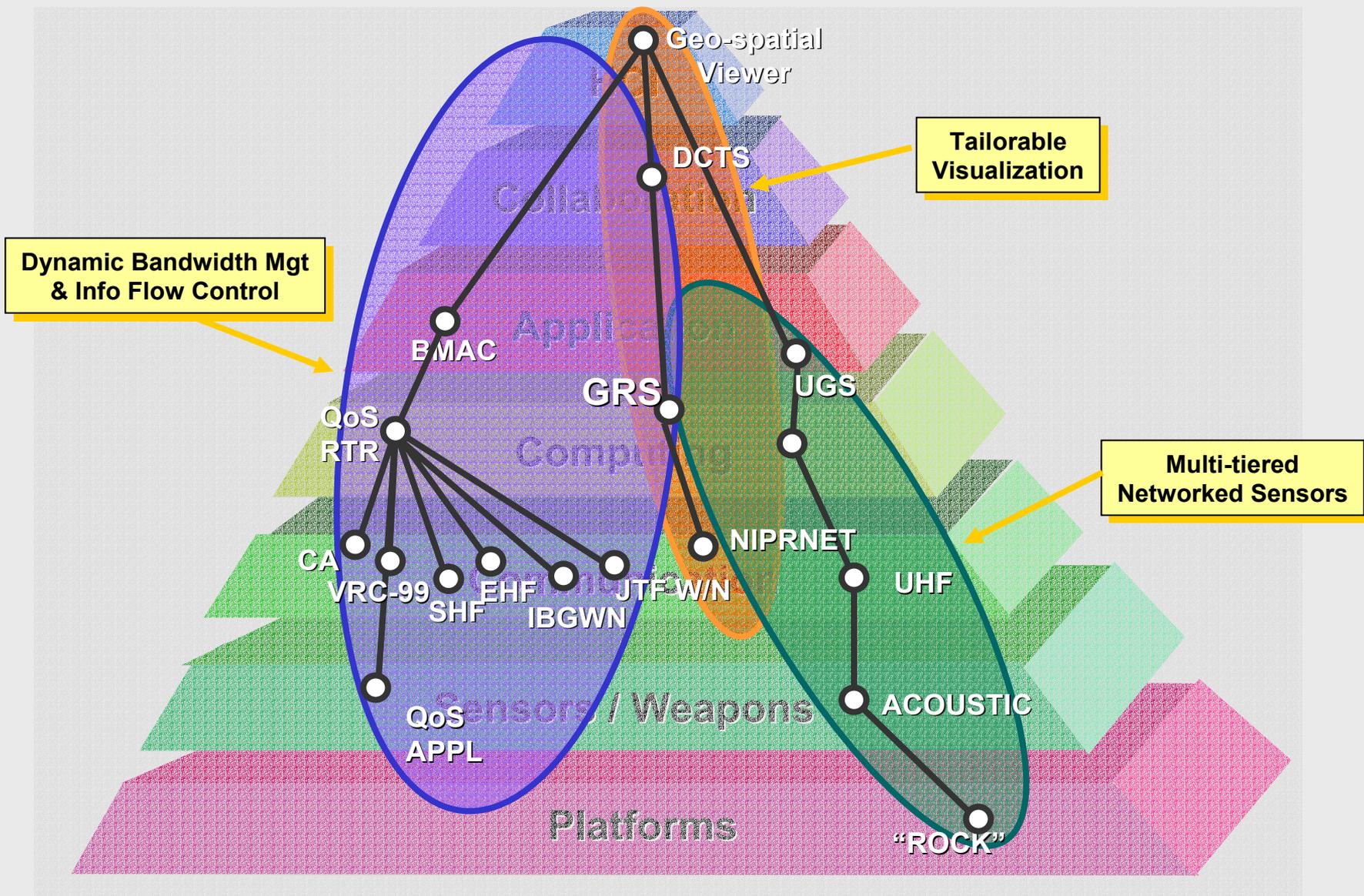
*"Yeah, that's what I'm talking about"*



**It's about Composeable Functionality – Not the Specific Components**



# The Goal Composed Capabilities



# Composeable FORCEnet Through Systematic Experimentation

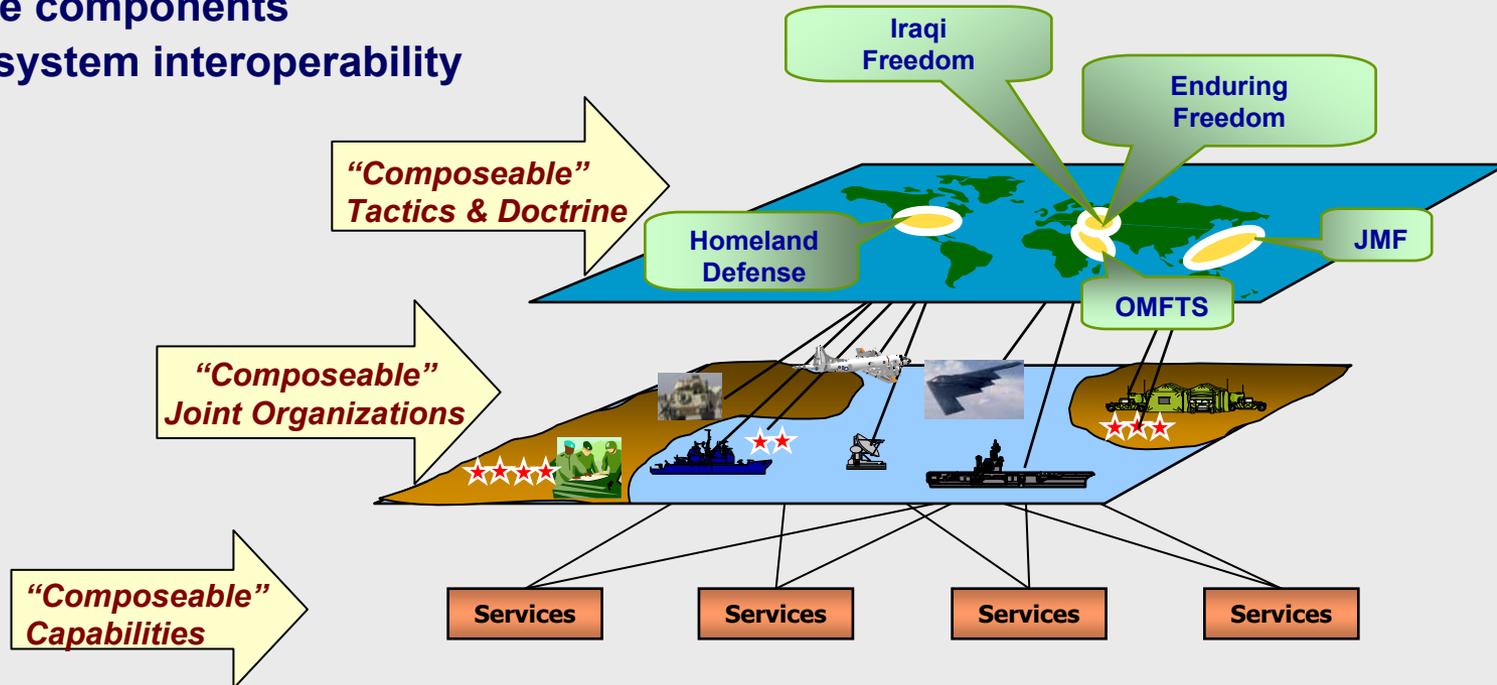
## Transform Operations

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

**Plug-n-Fight!**

## Transform Acquisition

- Increase Speed-to-Capability
- Reusable components
- Legacy system interoperability



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



# Composable 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 Roughead  
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 subscribes to PC IMAT predictions

GeoViz Geo-Spatial Collaboration - Microsoft Internet Explorer

Address: https://geovizserver.spawar.navy.mil/InternetClient/GVInternetClient.asp

Google Search Web PageFlank 403 blocked AutoFill Options

Map Menu: Map, Hierarchy, Resources, Shared Files, Views, Collaboration, Replay

**Hierarchy**

**Operation Provide Comfort (USW)**

- Map Coverage
- Track@GRS
- PopulationGroup@GRS
- ADSSensor@GRS
  - Radials
  - Sensors
- DADSSensor@GRS
  - Radials
  - Sensors
- ESCVui@GRS
  - Radials
  - Sensors
- LFASensor@GRS
  - Radials
  - Sensors
- LWA-SHNSensor@GRS
  - Radials
  - Sensors
- LWA-SHSSSensor@GRS
  - Radials
  - Sensors
- LWA-USVSensor@GRS
  - Radials
  - Sensors
- LWA-UUVSensor@GRS
  - Radials
  - Sensors
- LWFASensor@GRS
  - Radials
  - Sensors
- SQRSensor@GRS
  - Radials
  - Sensors
- SQSSensor@GRS
  - Radials
  - Sensors
- TBSensor@GRS
  - Radials
  - Sensors

EyePoints: MyView Japan View HA - DR Counter-Terrorism USW

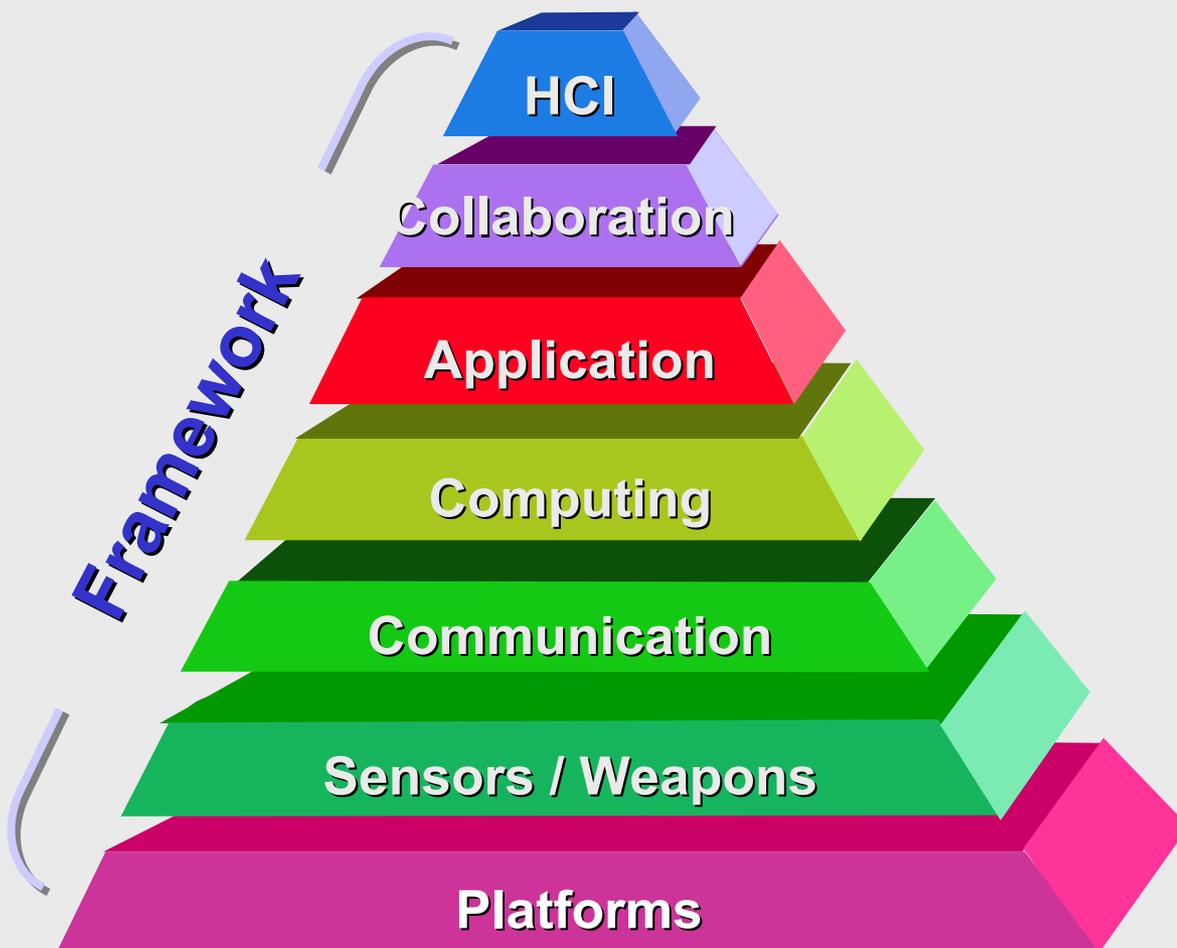
Lat: -3.845565  
 Long: 121.955721  
 Alt: 947.1 km  
 Azim: 0.1  
 Elev: -45.0 \*

Project Menu Administration Collaboration Send Instant Map

GeoViz.com

Trusted sites

# Technology Building Blocks of FORCEnet



# Interoperability and Access Through Composeability

