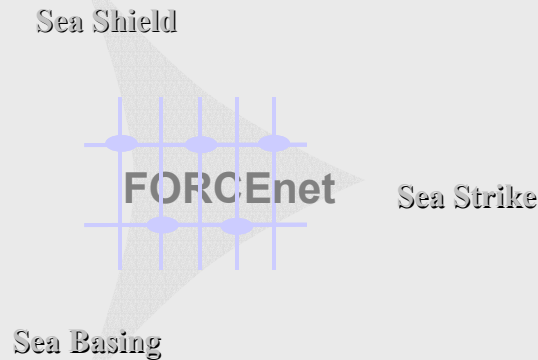


Composeable FORCEnet Command and Control



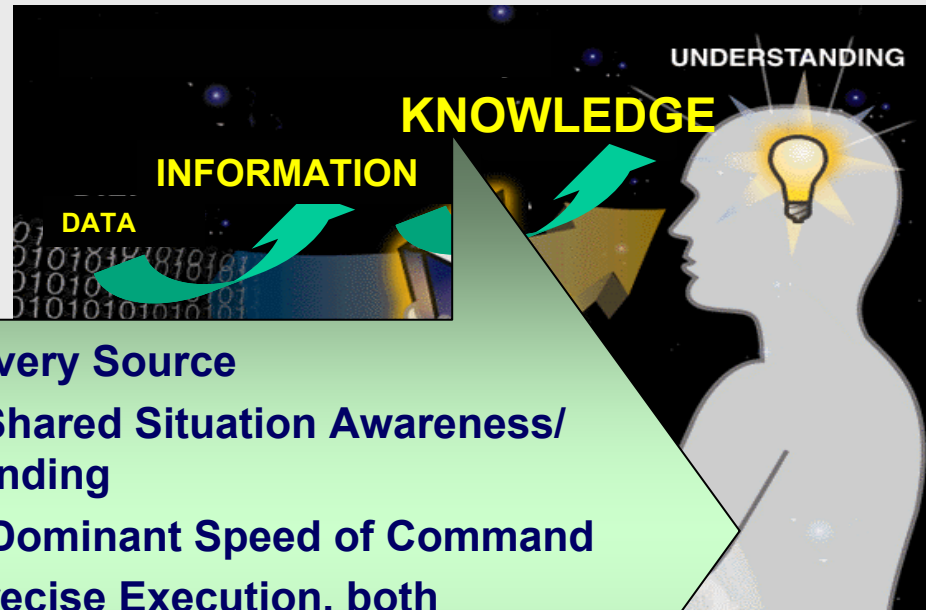
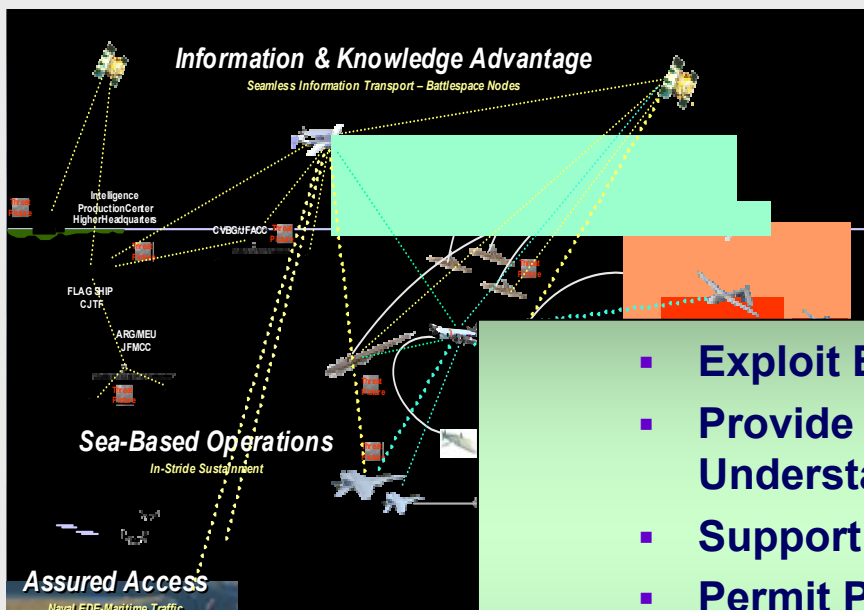
**The Ninth International Command and Control
Research and Technology Symposium
Copenhagen, Denmark
September 14-16, 2004**

George Galdorisi

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

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2004		2. REPORT TYPE		3. DATES COVERED 00-00-2004 to 00-00-2004	
4. TITLE AND SUBTITLE Composeable FORCEnet Command and Control				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Space and Naval Warfare Systems Center, San Diego,53560 Hull Street,San Diego,CA,92152-5001				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 24	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

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 -**

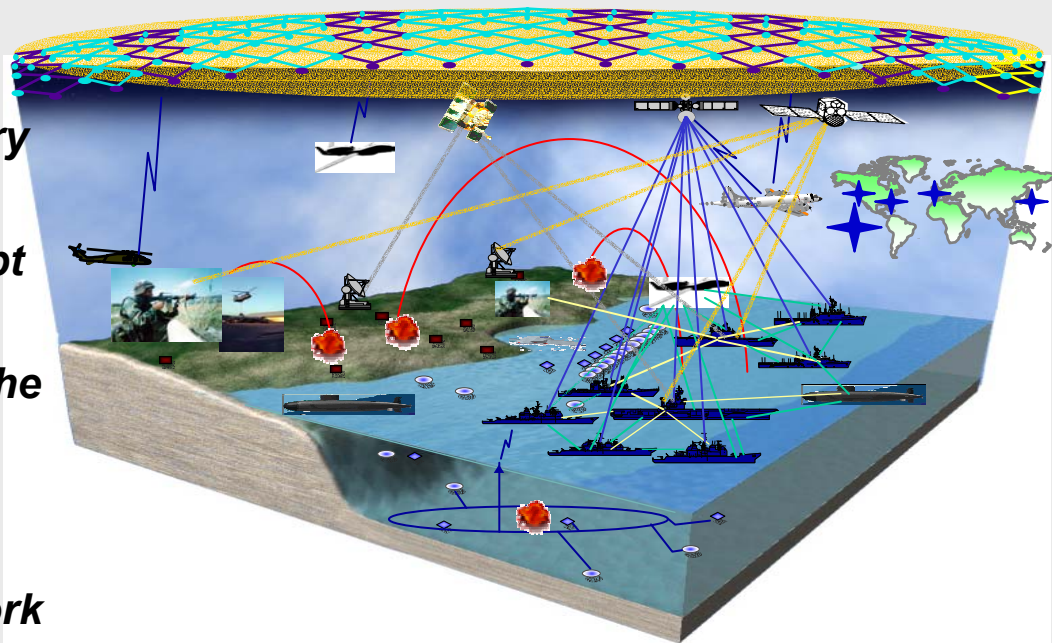
What Is FORCEnet?

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.”

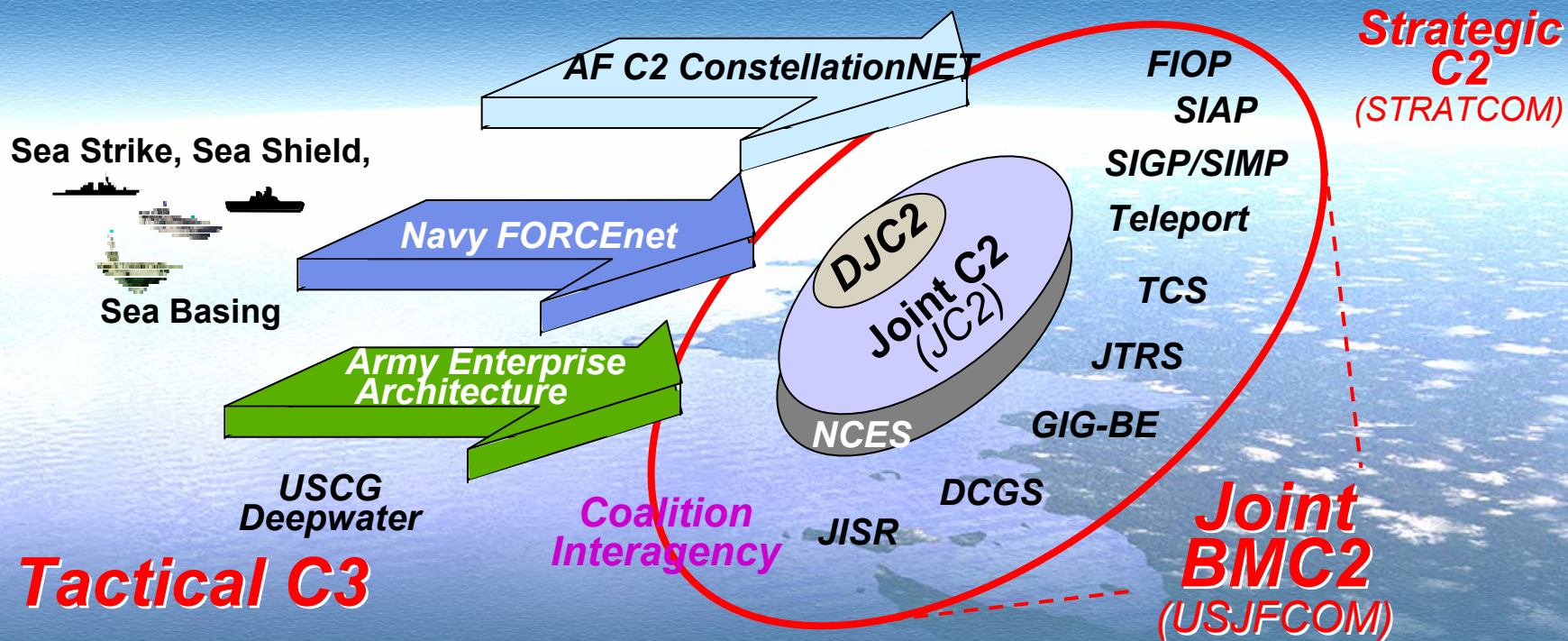


- FORCEnet Is Not
 - A Program of Record
 - A Redundant Effort
 - A Box or System
 - Just a Network

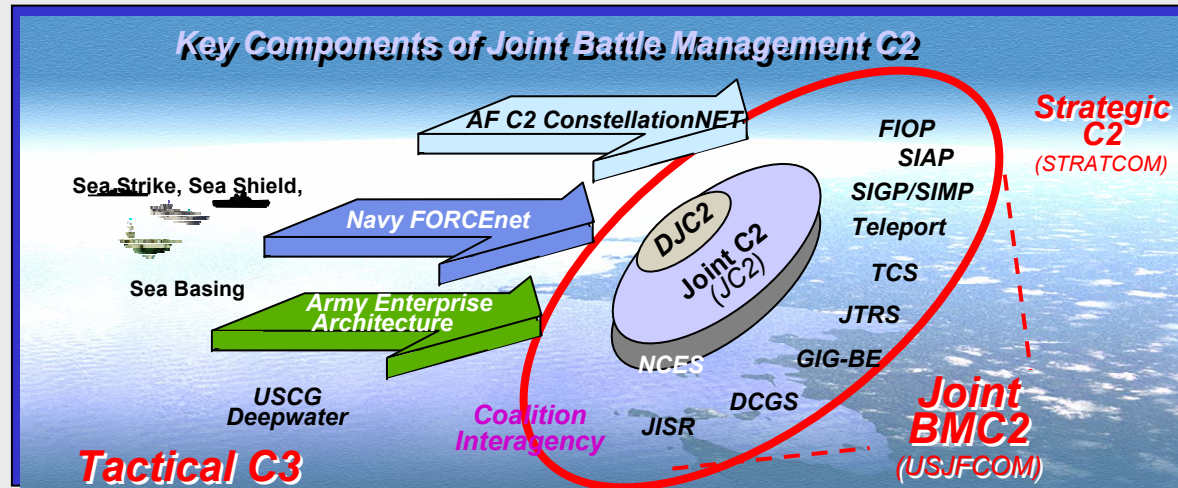
FORCEnet: Naval Component of the Global Information Grid (GIG)

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



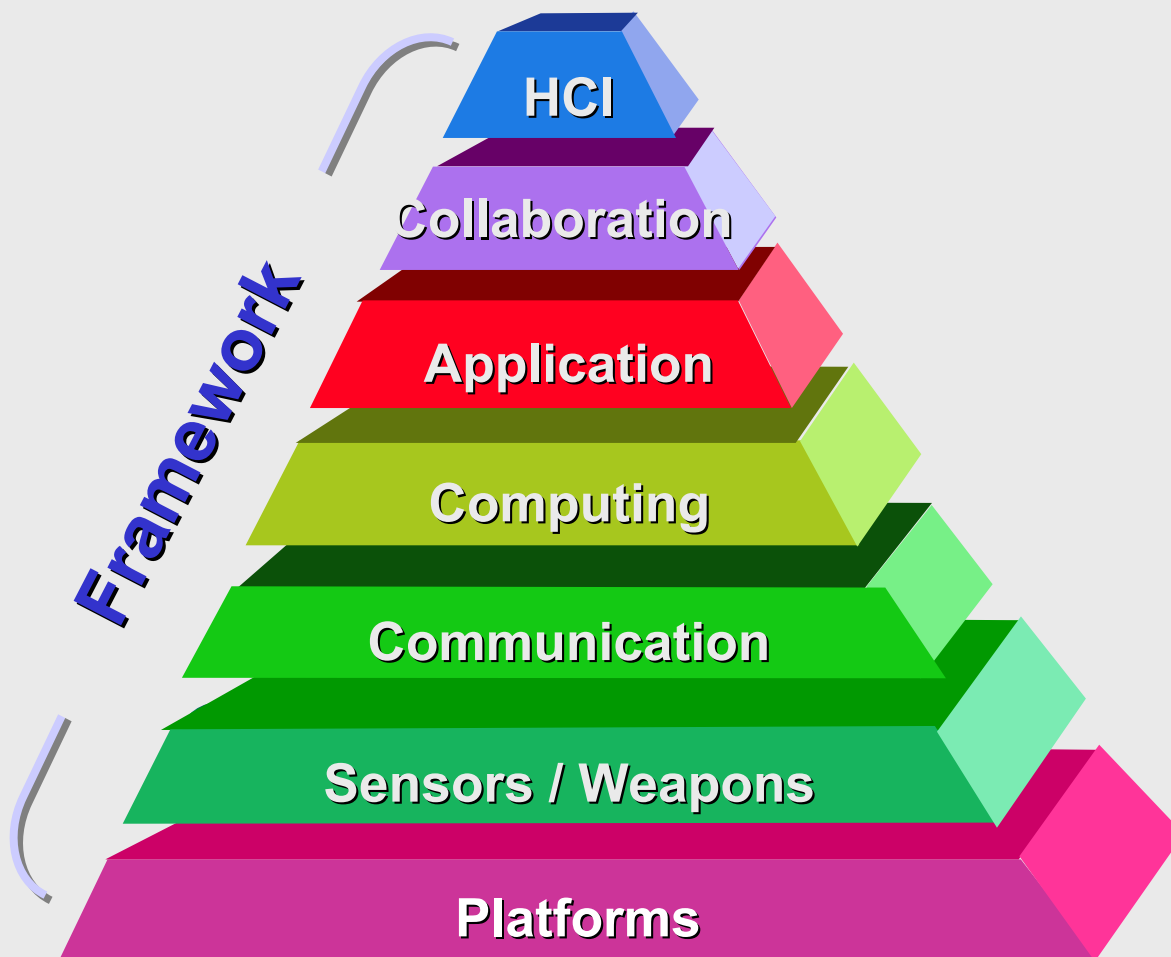
The *Naval* component of the Global Information Grid



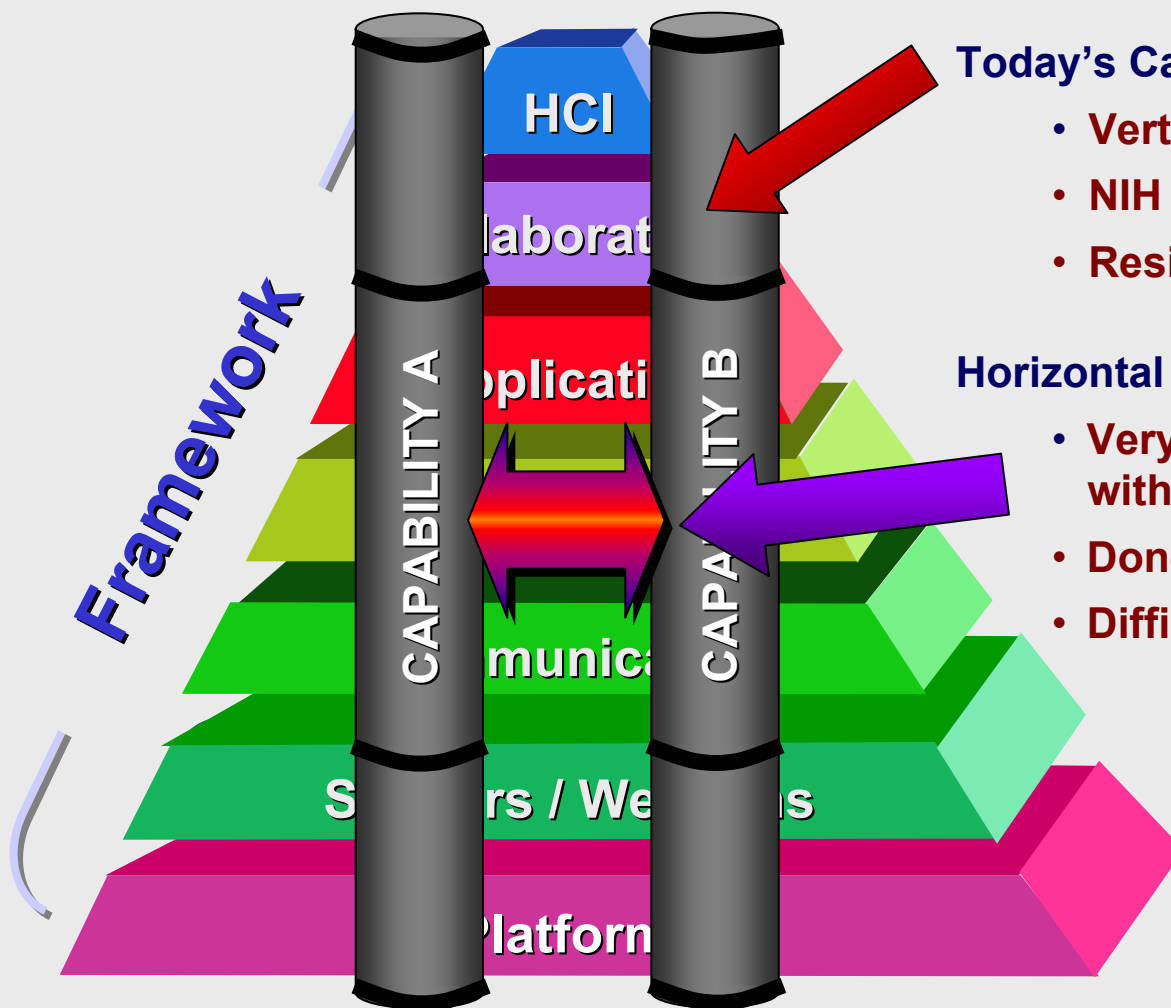
FORCEnet means:

- 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:

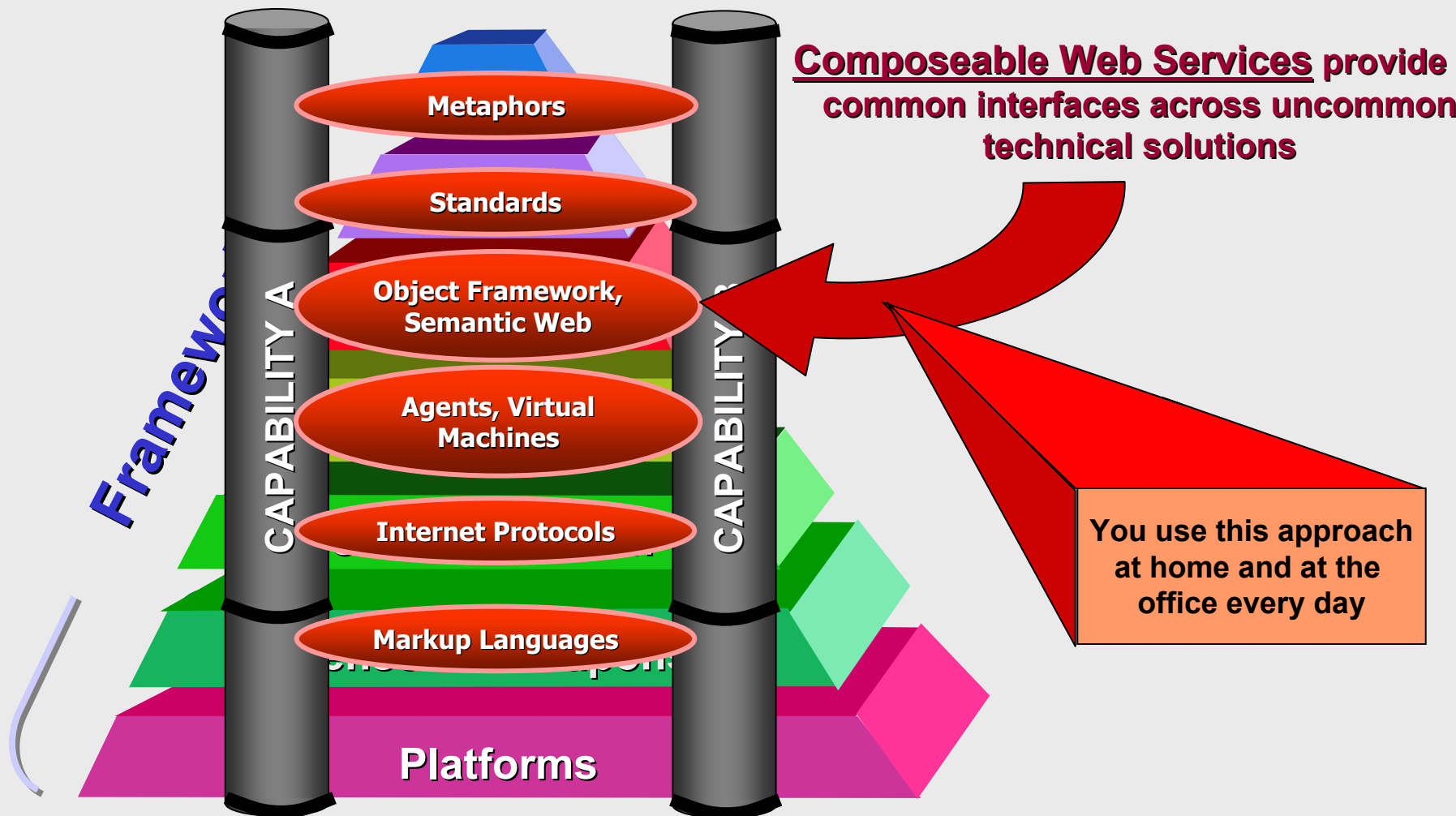
- Vertically Integrated Stovepipes
- NIH often suboptimizes capability
- Resistant to new technology

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

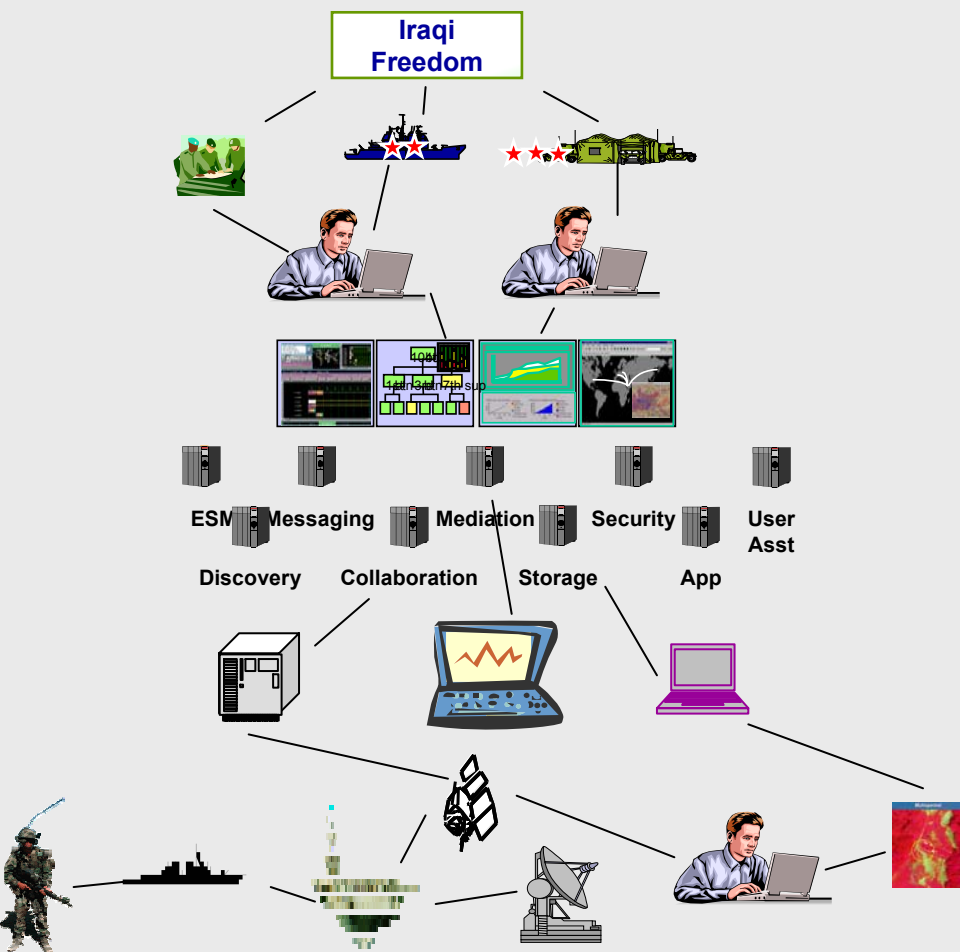


Composeable FORCEnet

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

Mission Requirements

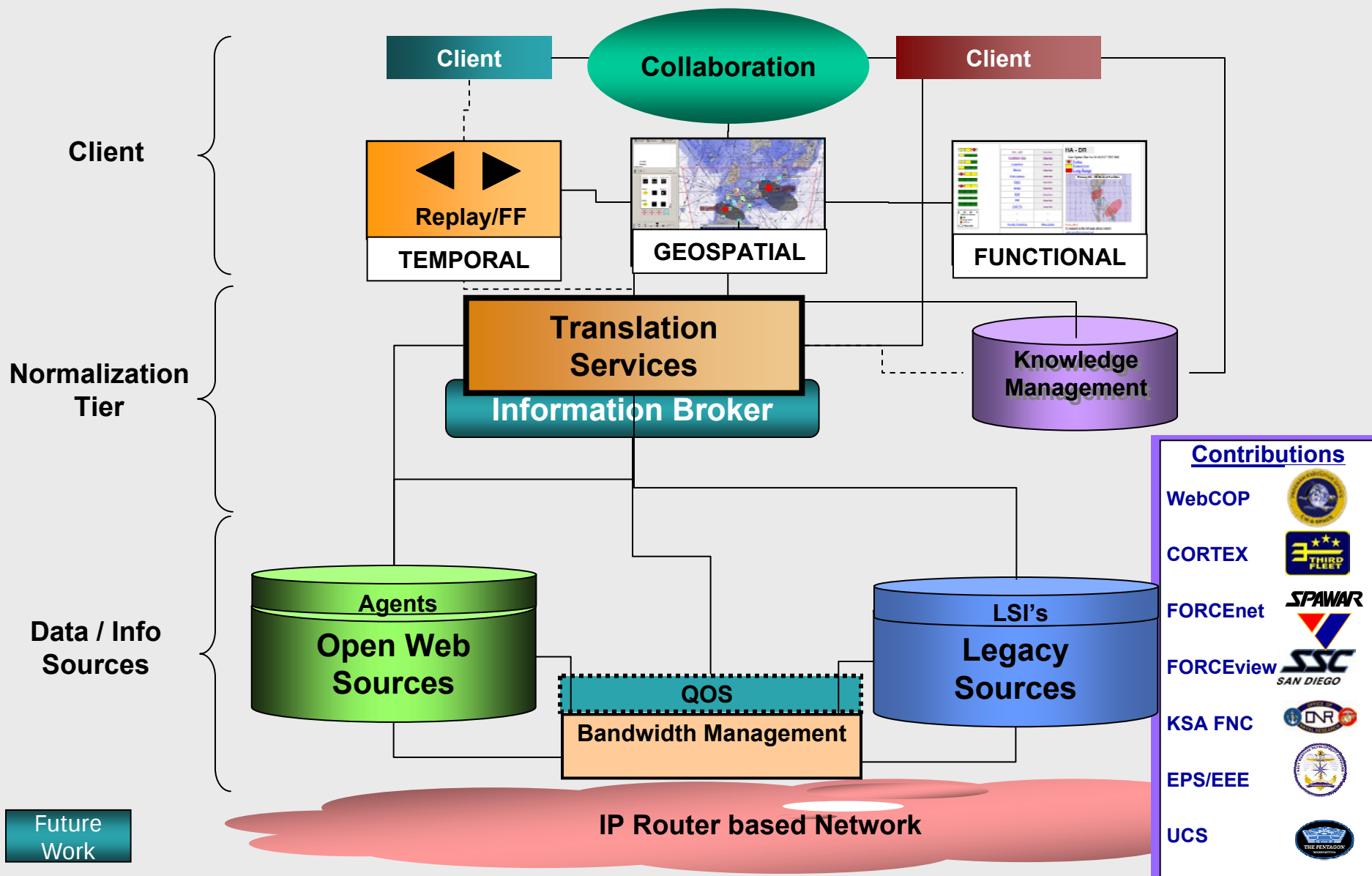
Technical Capabilities

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

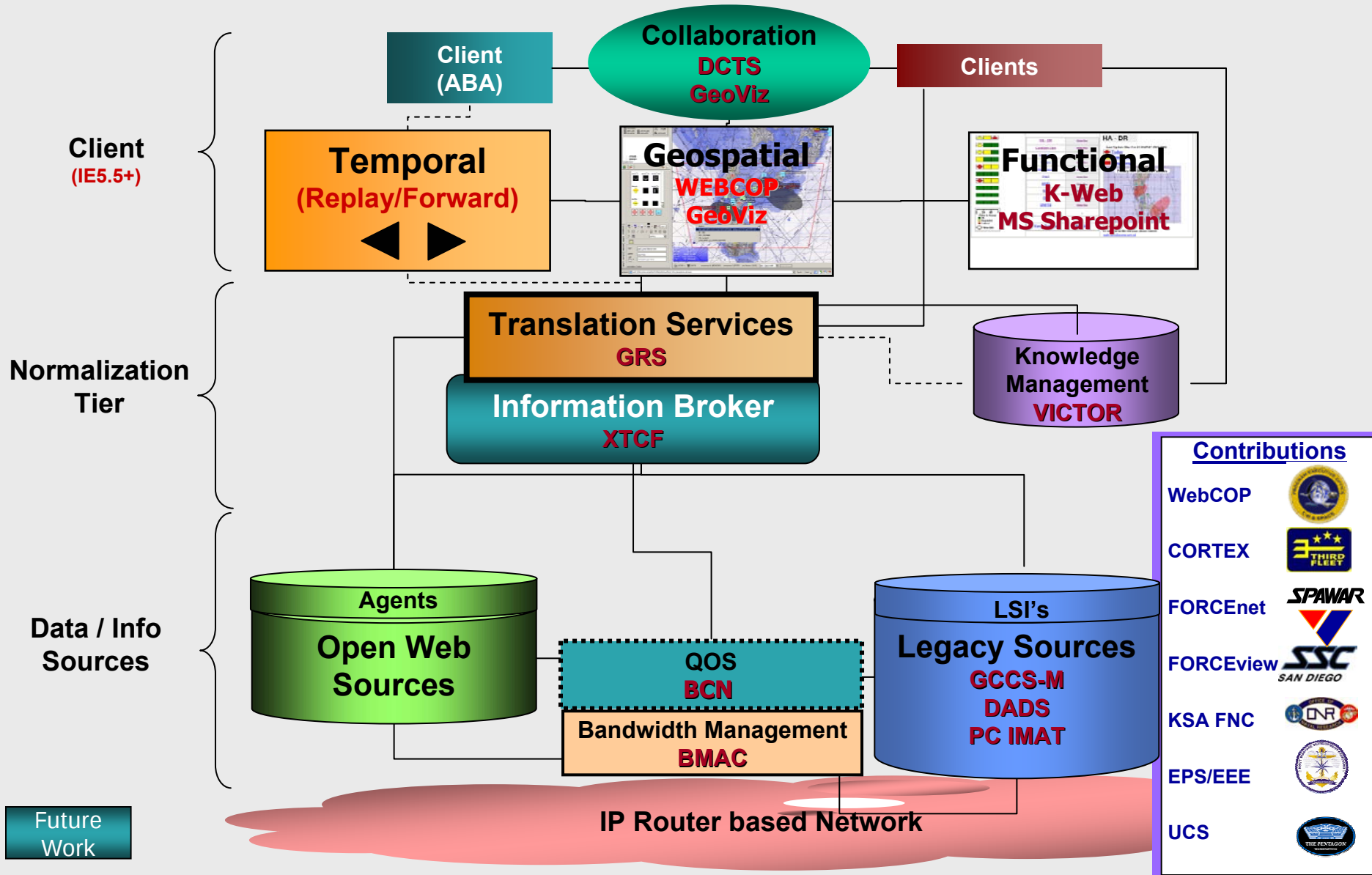
Demonstration Architecture

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

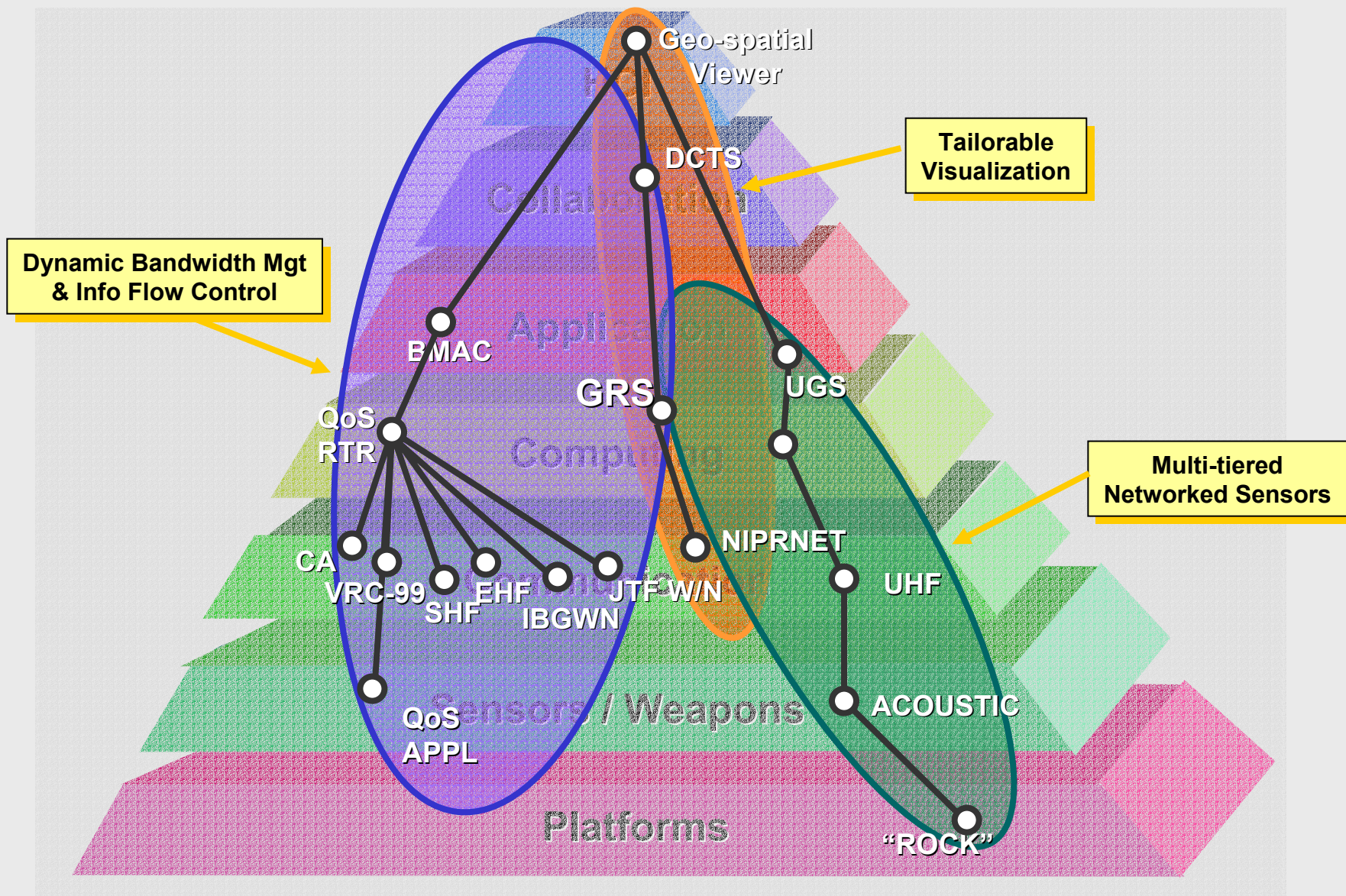


Demonstration Components

It's about Composeable Functionality – Not the Specific Components



The Goal Composed Capabilities



Composeable FORCEnet Through Systematic Experimentation

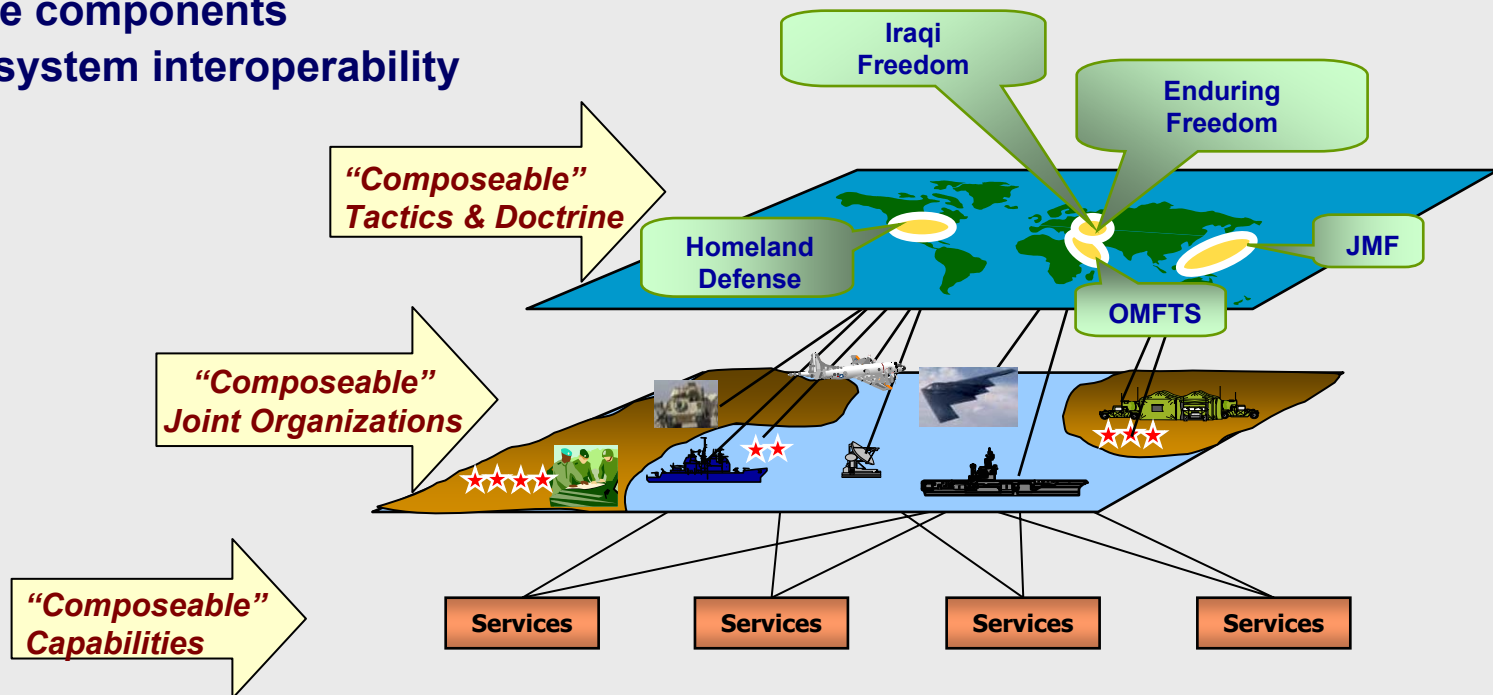
Transform Operations

- 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

Composeable FORCEnet on the Road to DON & Industry

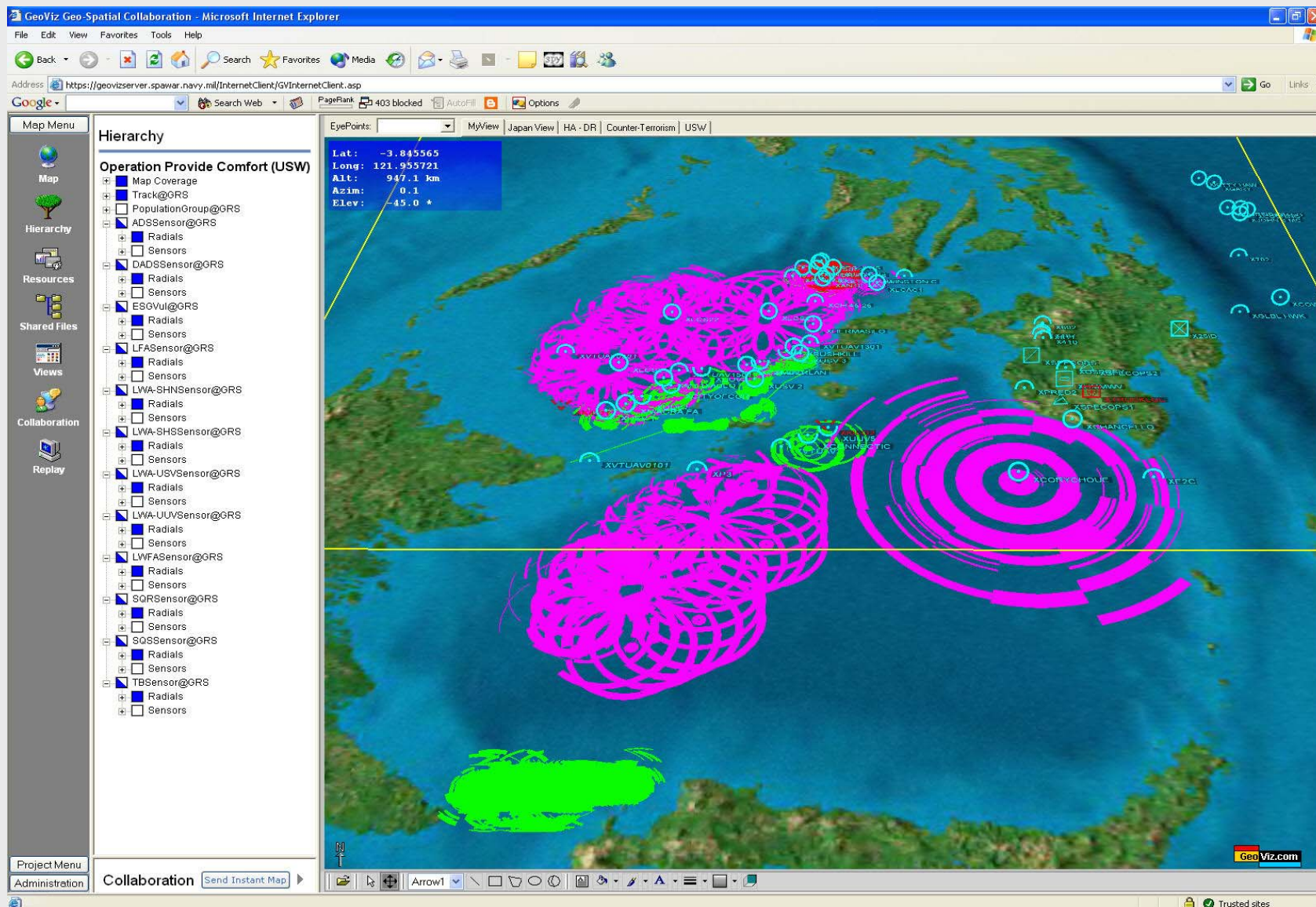
(Partial List to date)

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

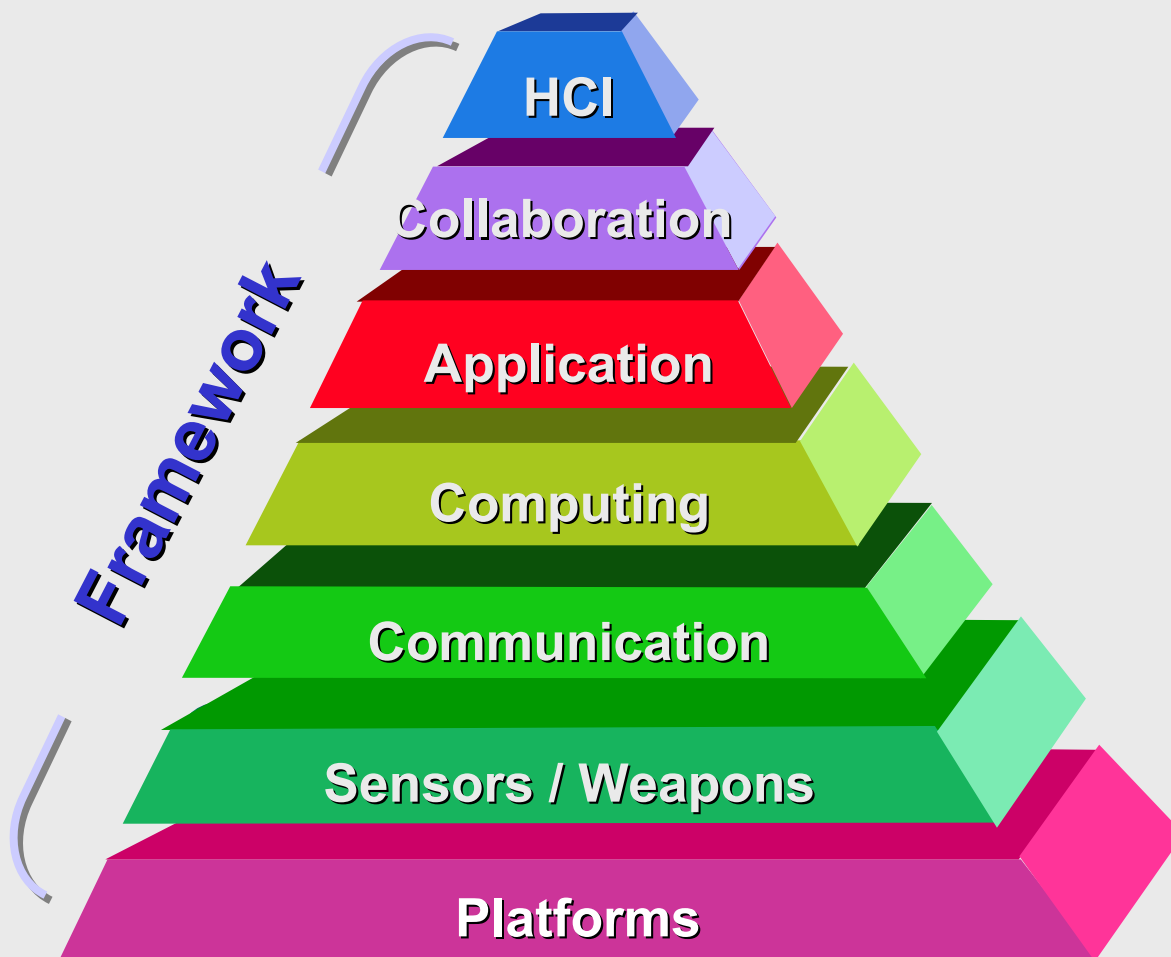


Sample Display

GeoViz subscribes to PC IMAT predictions



Technology Building Blocks of FORCEnet



Interoperability and Access Through Composeability

