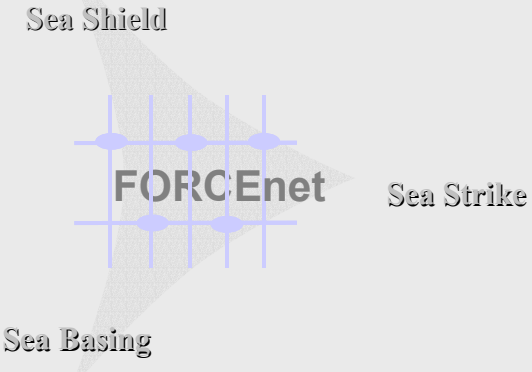
Composeable FORCEnet Command and Control



Composeable FORCEnet Command and Control:

The Key to Energizing the Global Information Grid to Enable Superior Decision Making

presented at

The Command & Control Research and Technology Symposium

June 15-17 2004

George Galdorisi

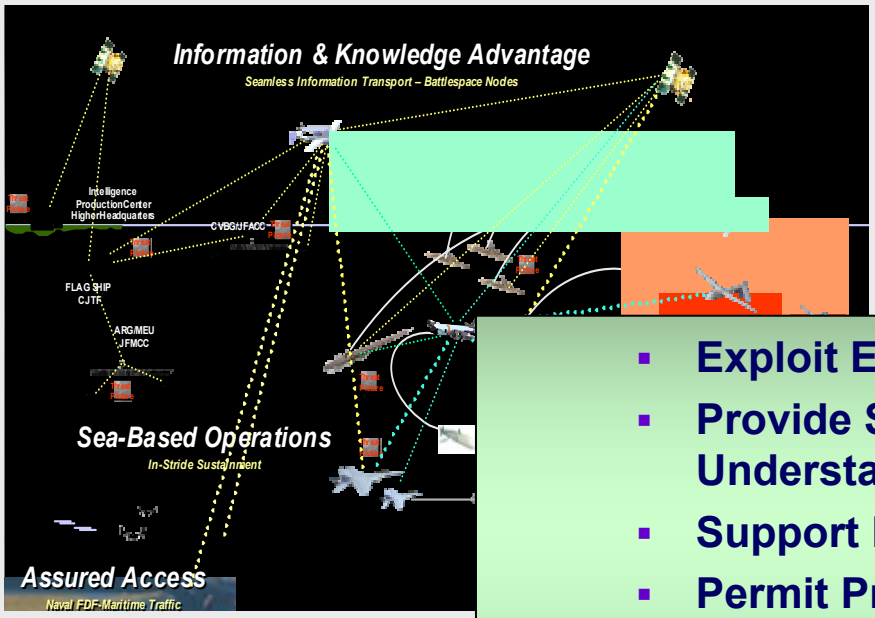
Jeff Grossman

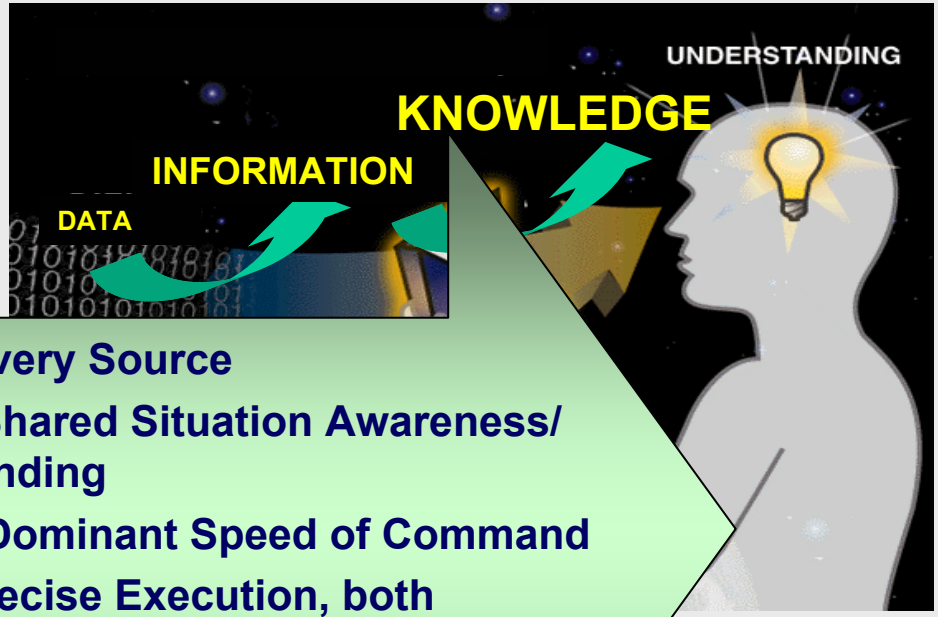
Mike Reilley

Jeff Clarkson

Space and Naval Warfare Systems Center San Diego

Warfighting in the 21st Century

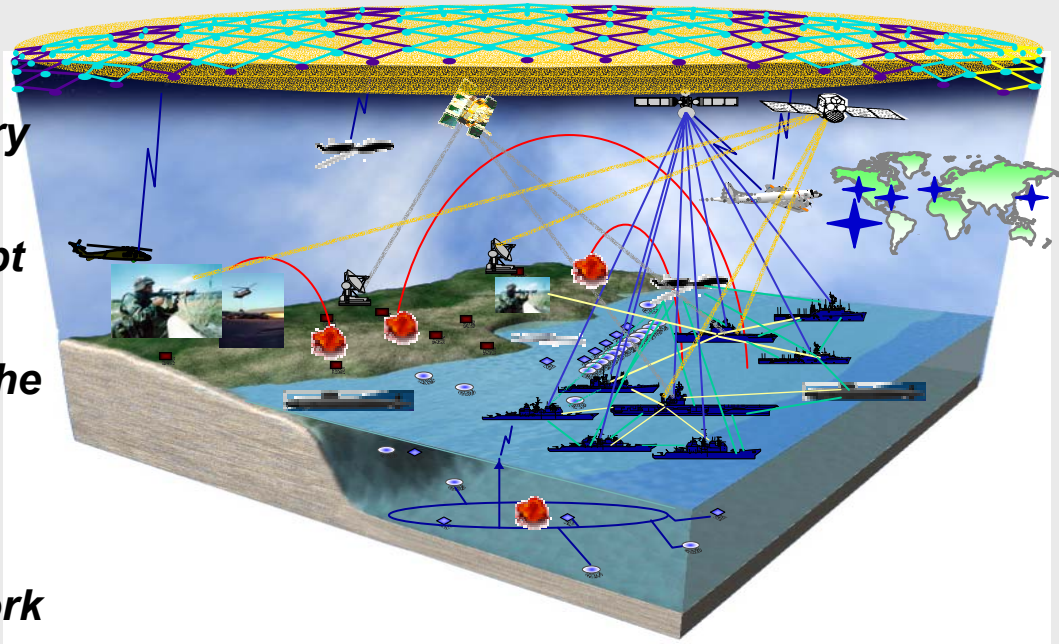




- Exploit Every Source
- Provide Shared Situation Awareness/ Understanding
- Support Dominant Speed of Command
- Permit Precise Execution, both Synchronous & Asynchronous
- Agility and Flexibility

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

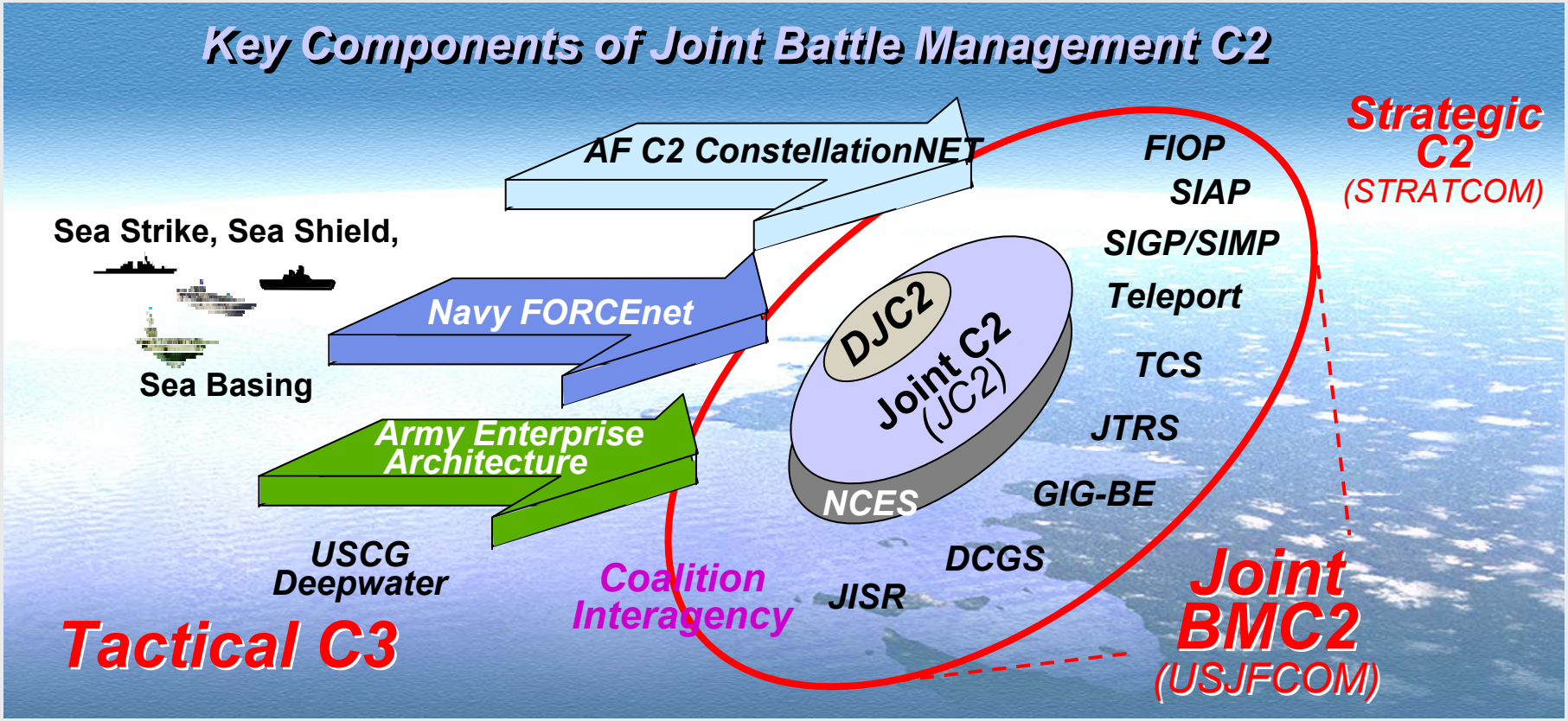
FORCEnet Is the Process of Making the Theory and Concept a Reality

"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

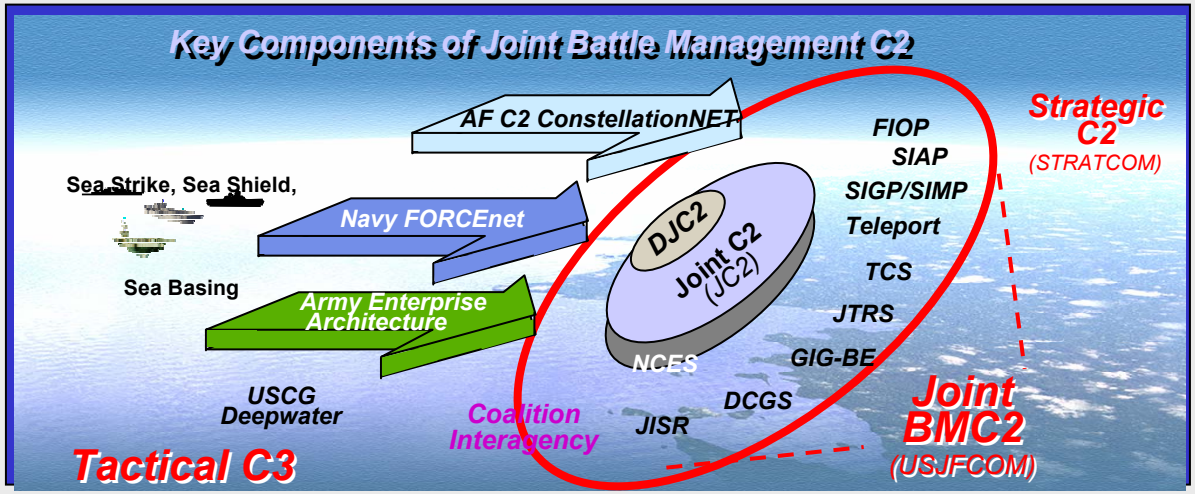
FORCEnet: Naval Component of the Global Information Grid (GIG)

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



FORCEnet

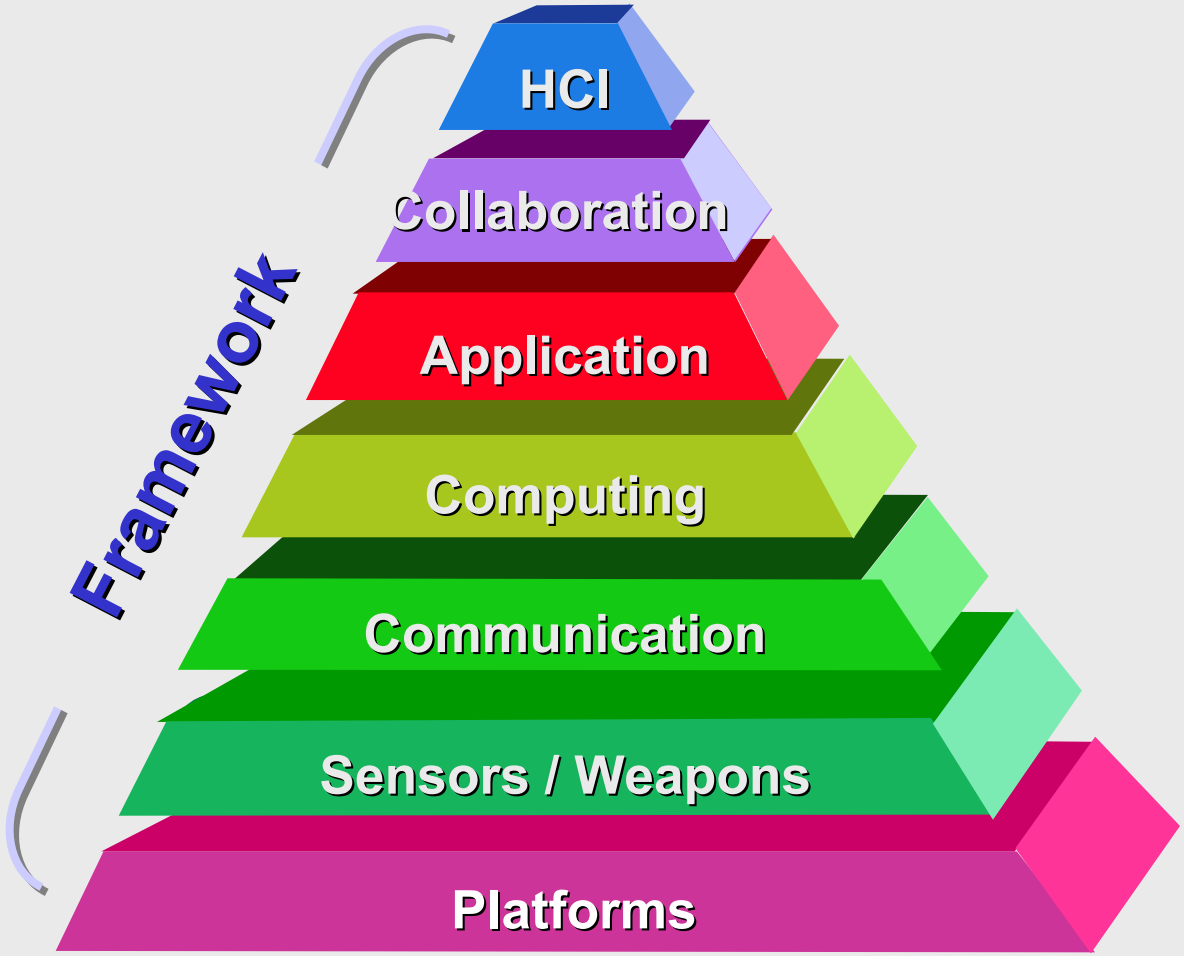
The *Naval* component of the Global Information Grid



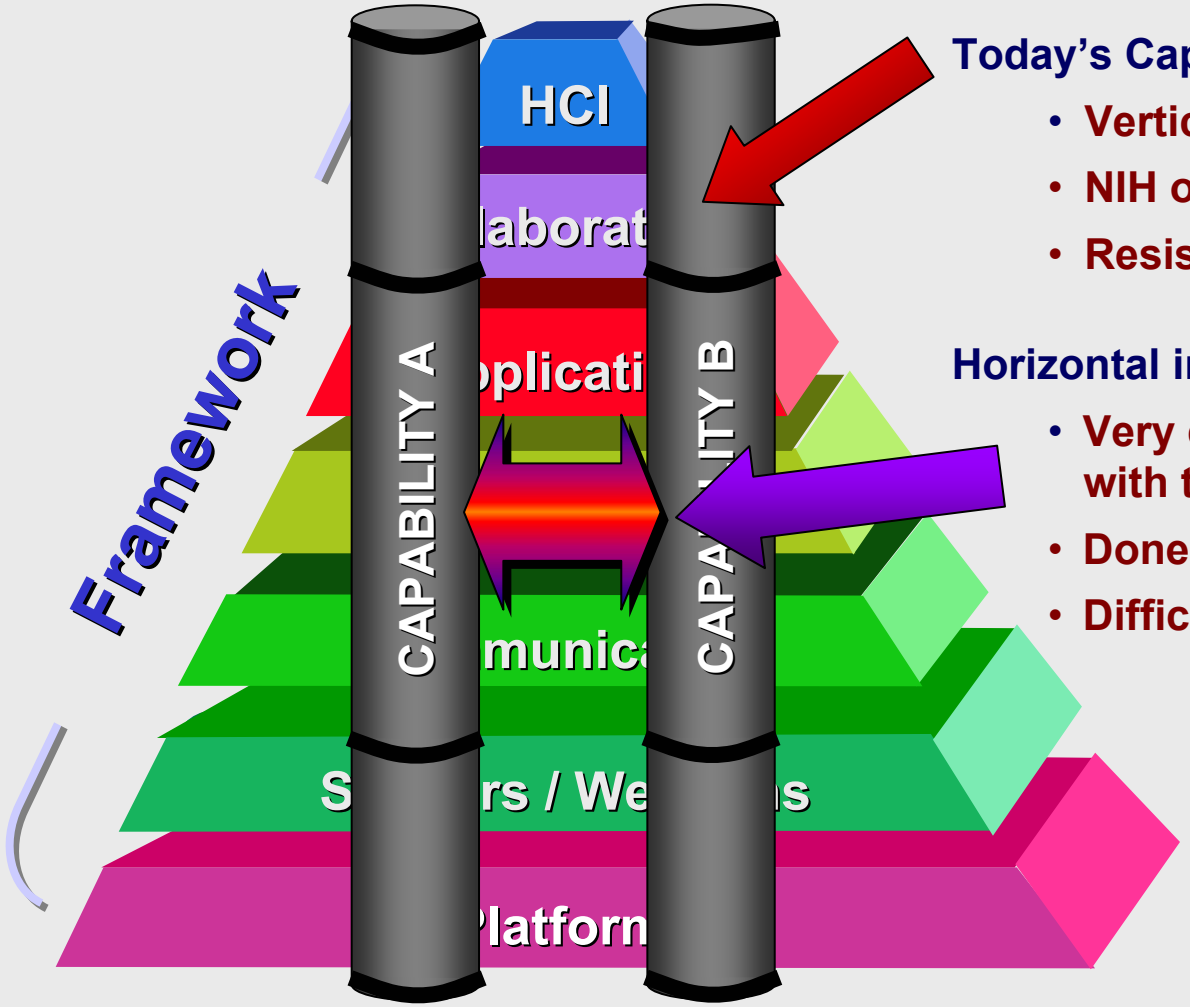
FORCEnet means:

- 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:

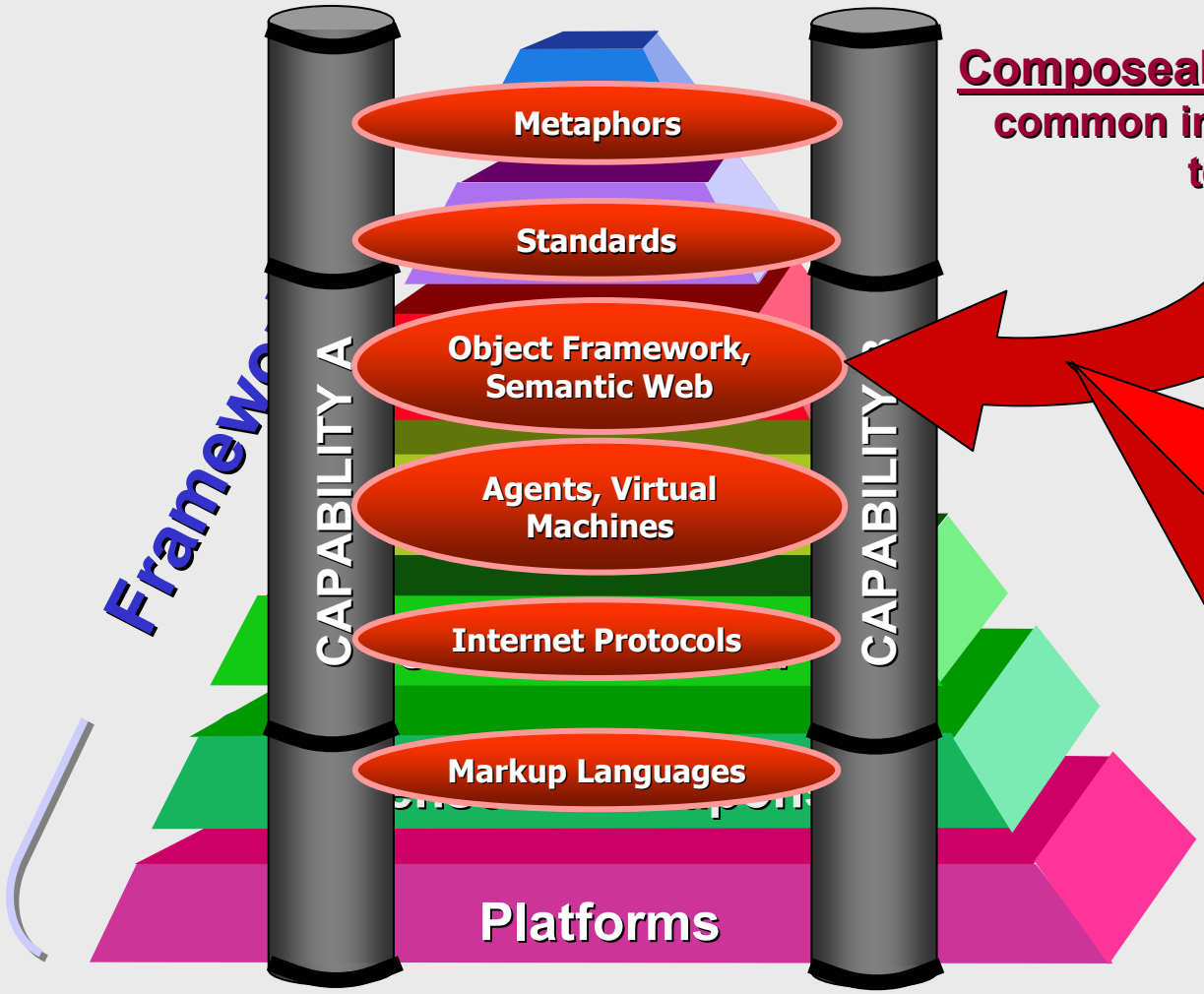
- Vertically Integrated Stovepipes
- NIH often suboptimizes capability
- Resistant to new technology

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 Composeablity



Composeable Web Services provide common interfaces across uncommon technical solutions

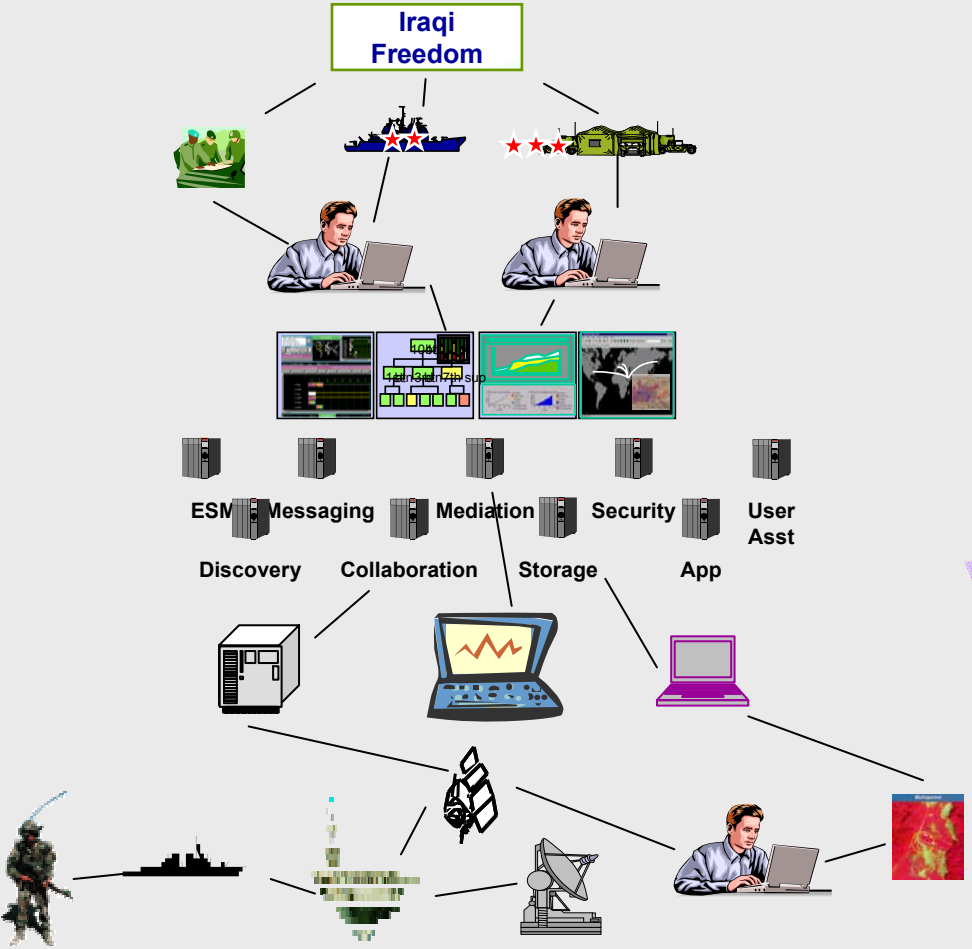
You use this approach at home and at the office every day

Composeable FORCEnet

Services-oriented Information Architecture

(residing on the GIG network)

Transformational Operations – Transformational Acquisition



Mission Requirements

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

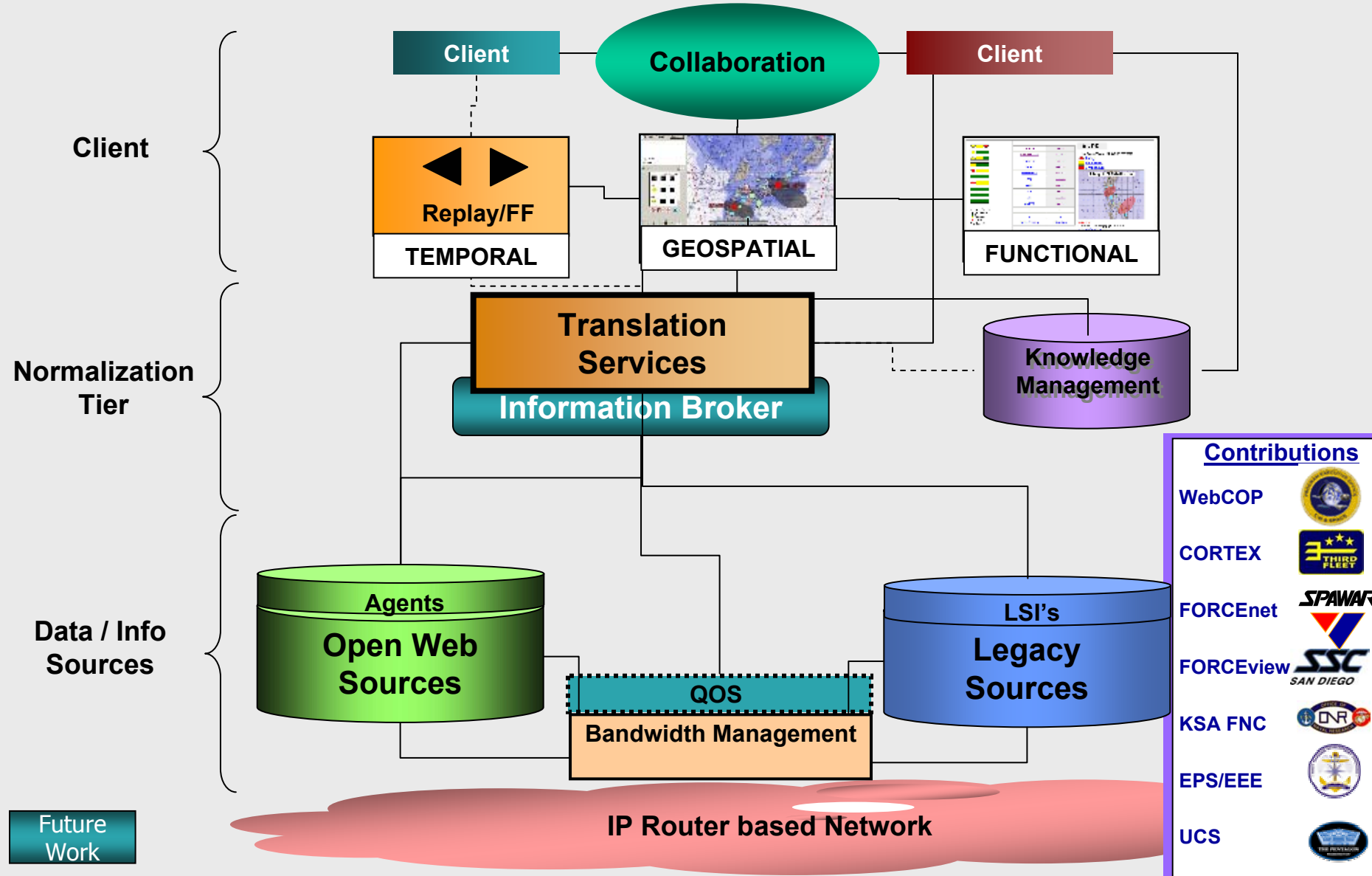
Technical Capabilities

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

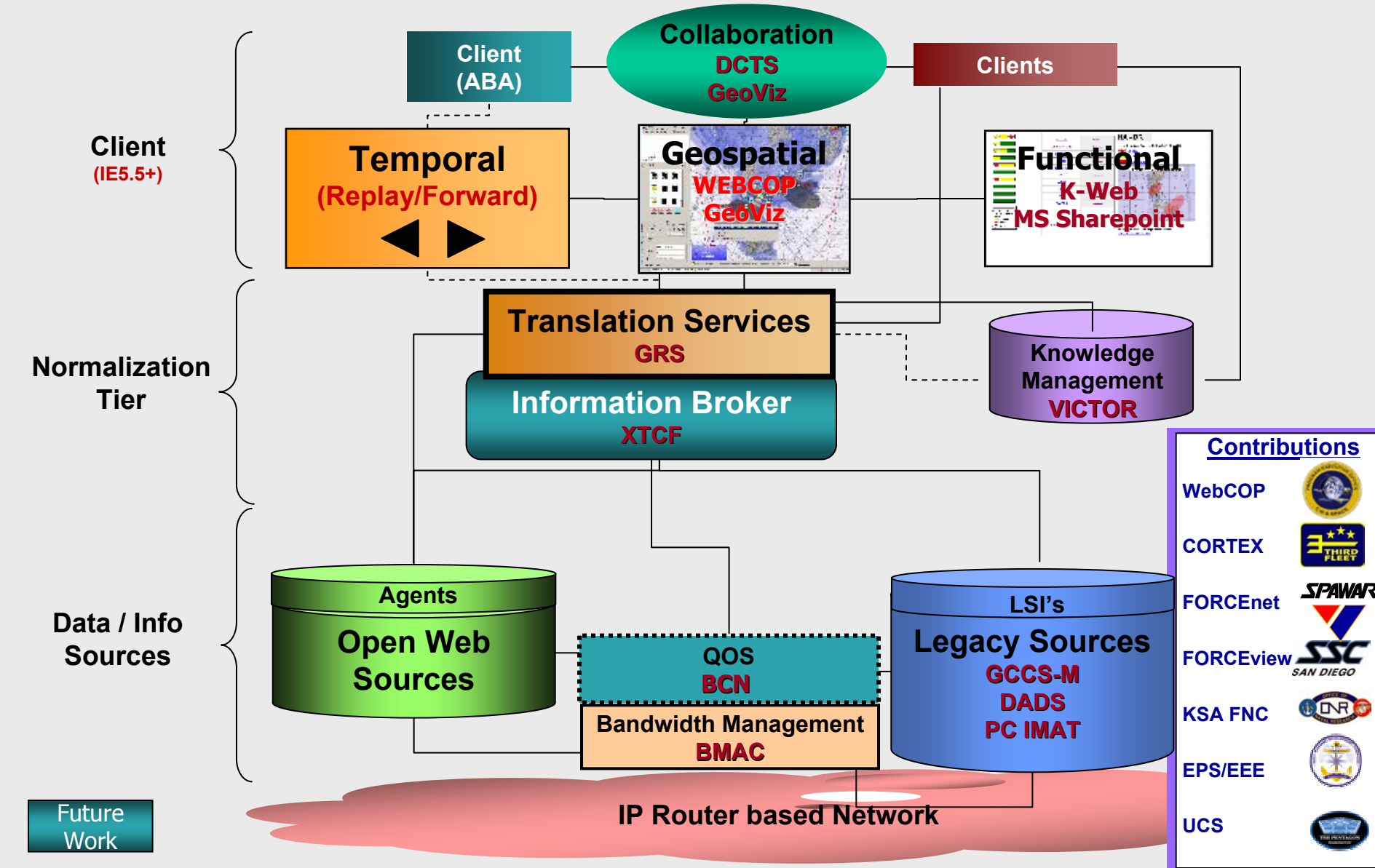
Demonstration Architecture

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

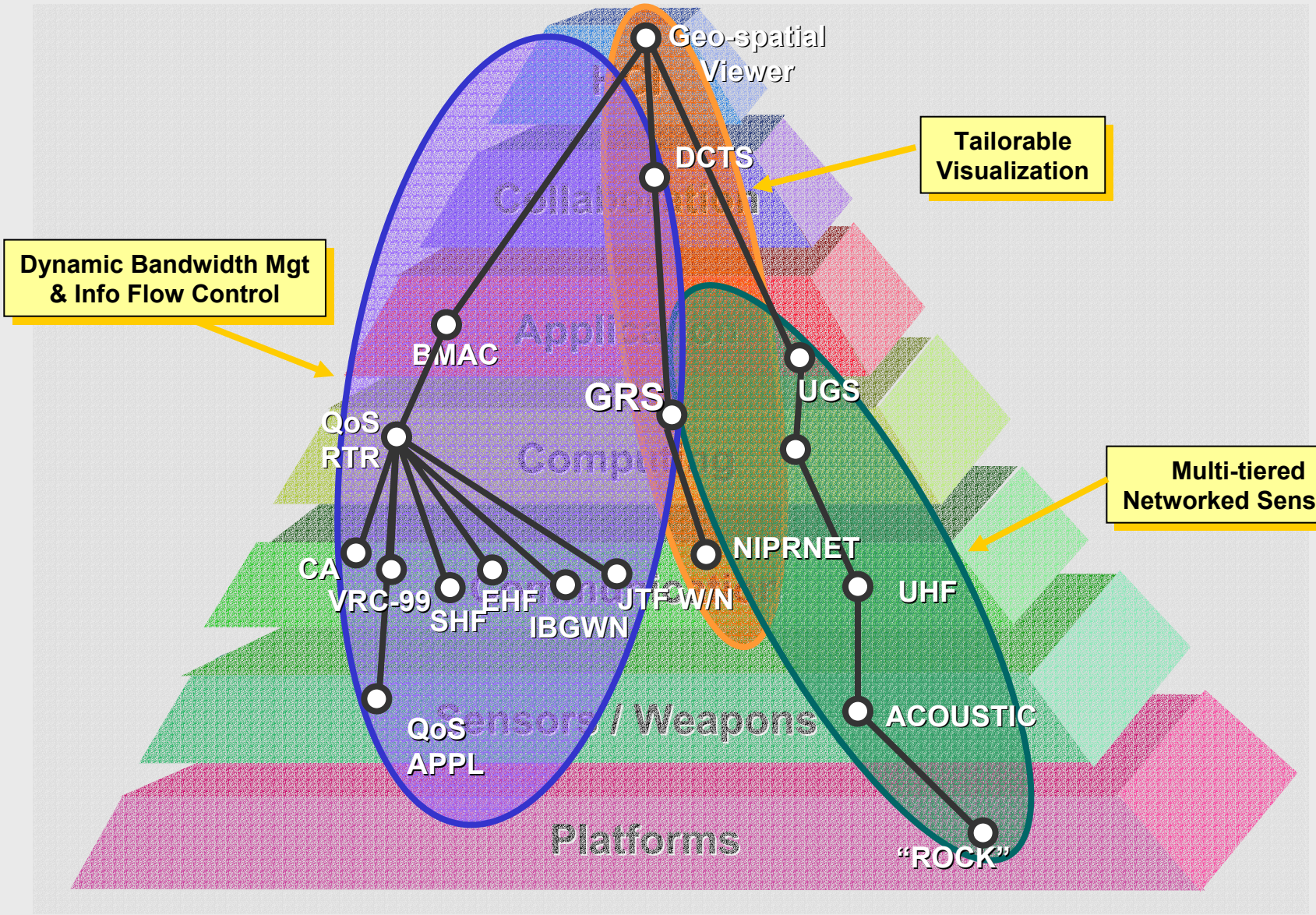


Demonstration Components

It's about Composeable Functionality – Not the Specific Components



The Goal
Composed Capabilities



Composeable FORCEnet Through Systematic Experimentation

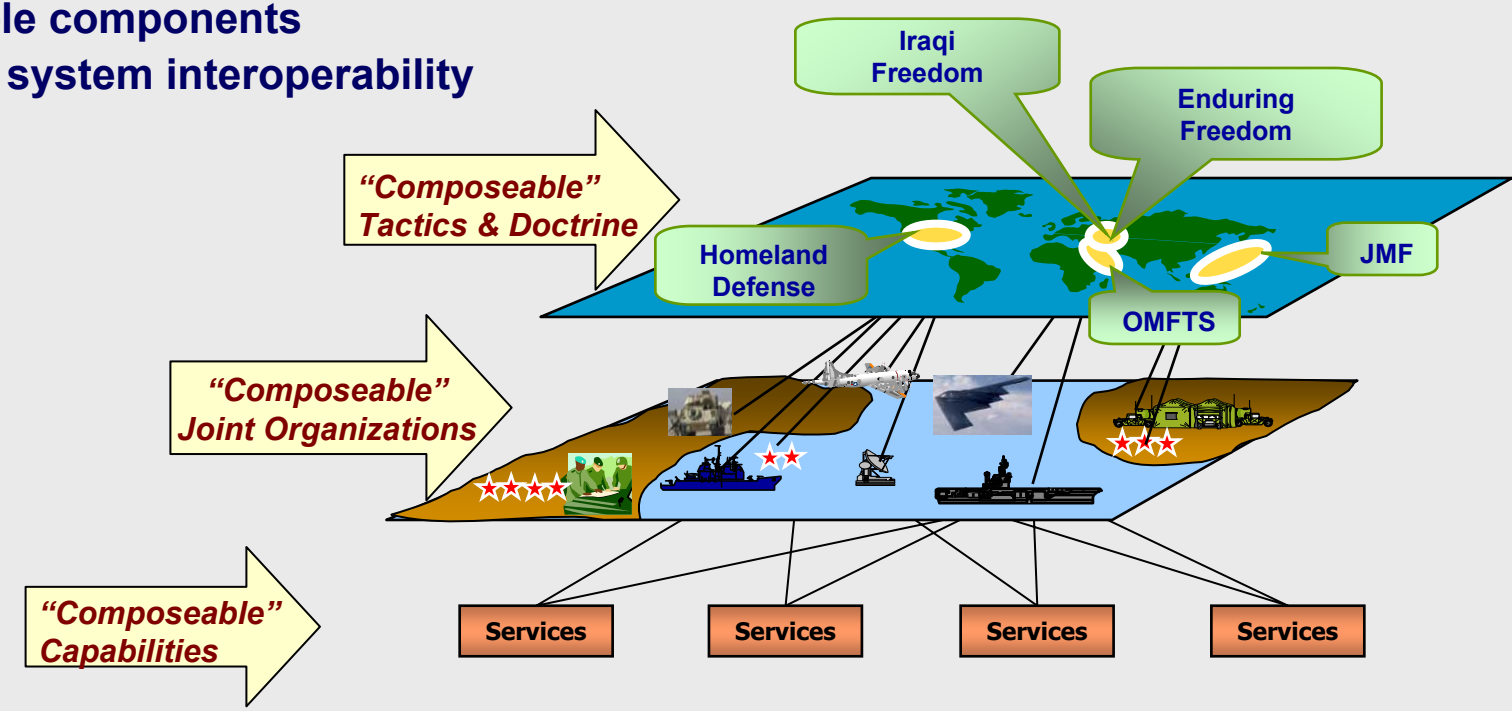
Transform Operations

- 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



SSC SAN DIEGO

Summary

SPAWAR Systems Center San Diego

- 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
(Continued)

- 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.

SSC SAN DIEGO

SPAWAR Systems Center San Diego

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 Hogg (Ret)	Dir. Strategic Studies Group

Composeable FORCEnet on the Road to DON & Industry

(Partial List to date)

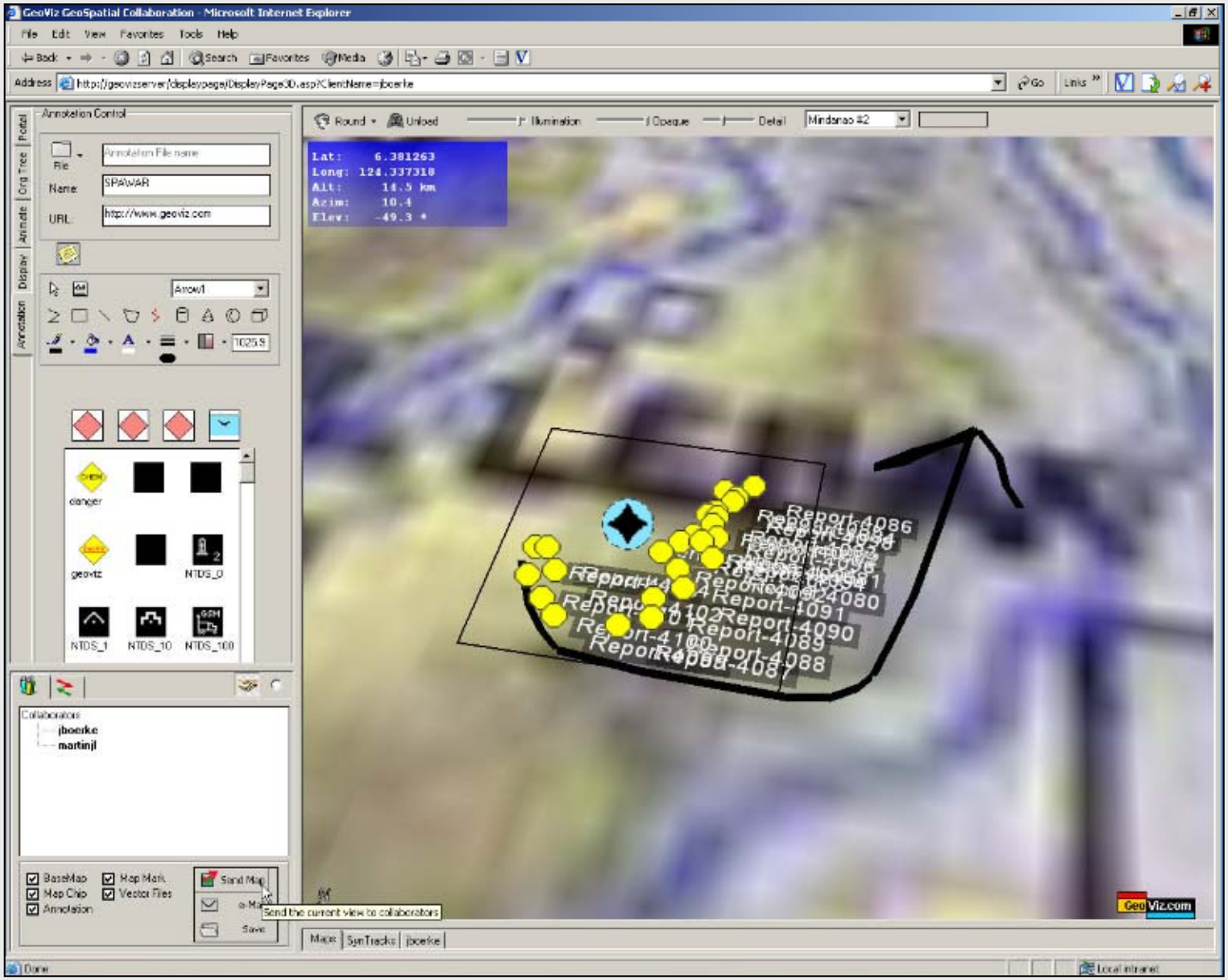
• LTGEN Robert Shea	Dir, C4 Systems, Joint Chiefs of Staff, J6
• RADM Steven Tomaszeski	Navigator of the Navy
• RADM Mark Edwards	Dir. Surface Warfare Division, N76
• RADM Joseph Sestak	Dir. Assessment Division, N81
• RADM (S) Anthony Winns	Dep. Dir. Air Warfare Division, N78B
• RADM (S) Nancy Brown	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 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

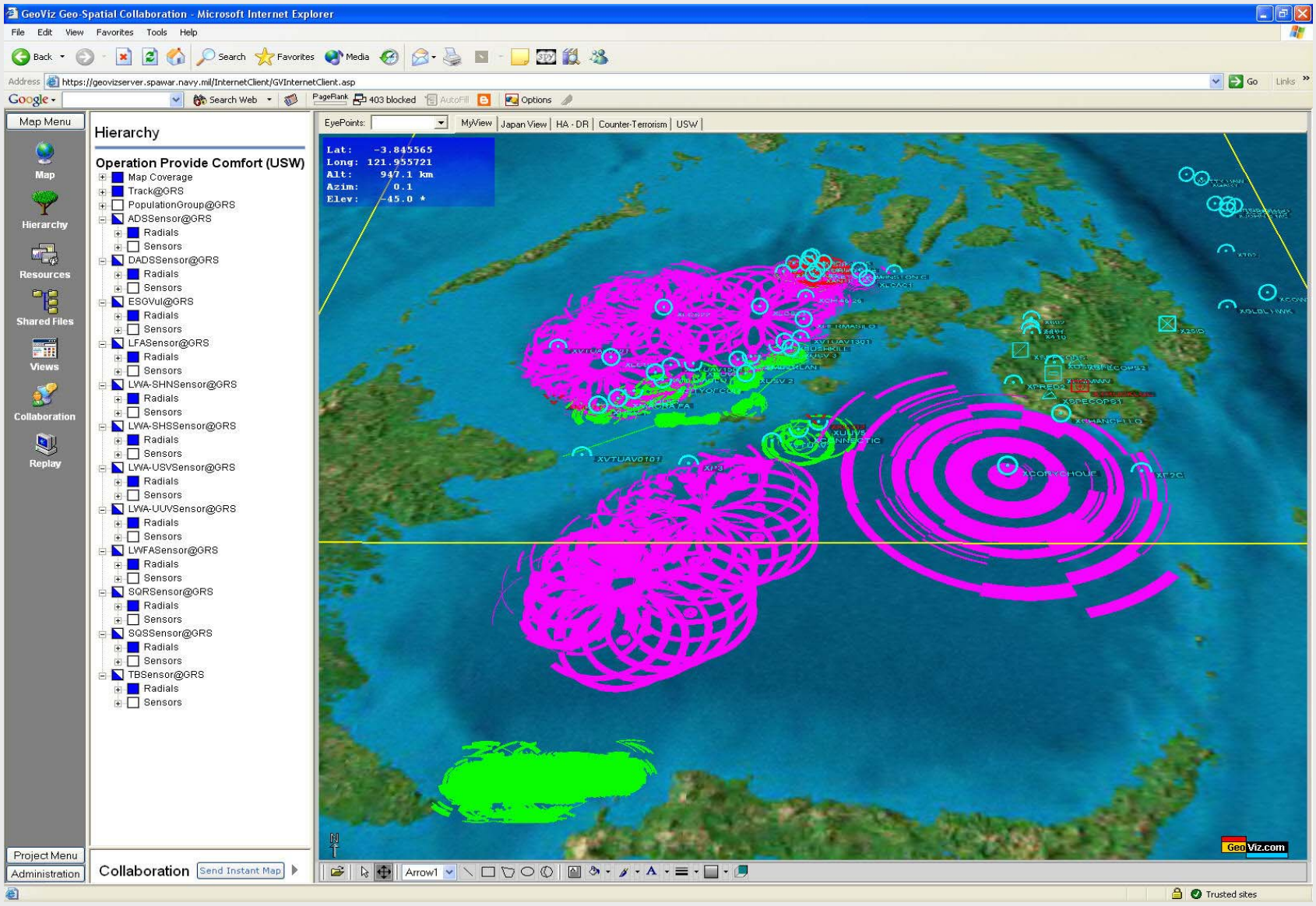
Sample Display

GeoViz subscribes to UGS data that was published to the GRS

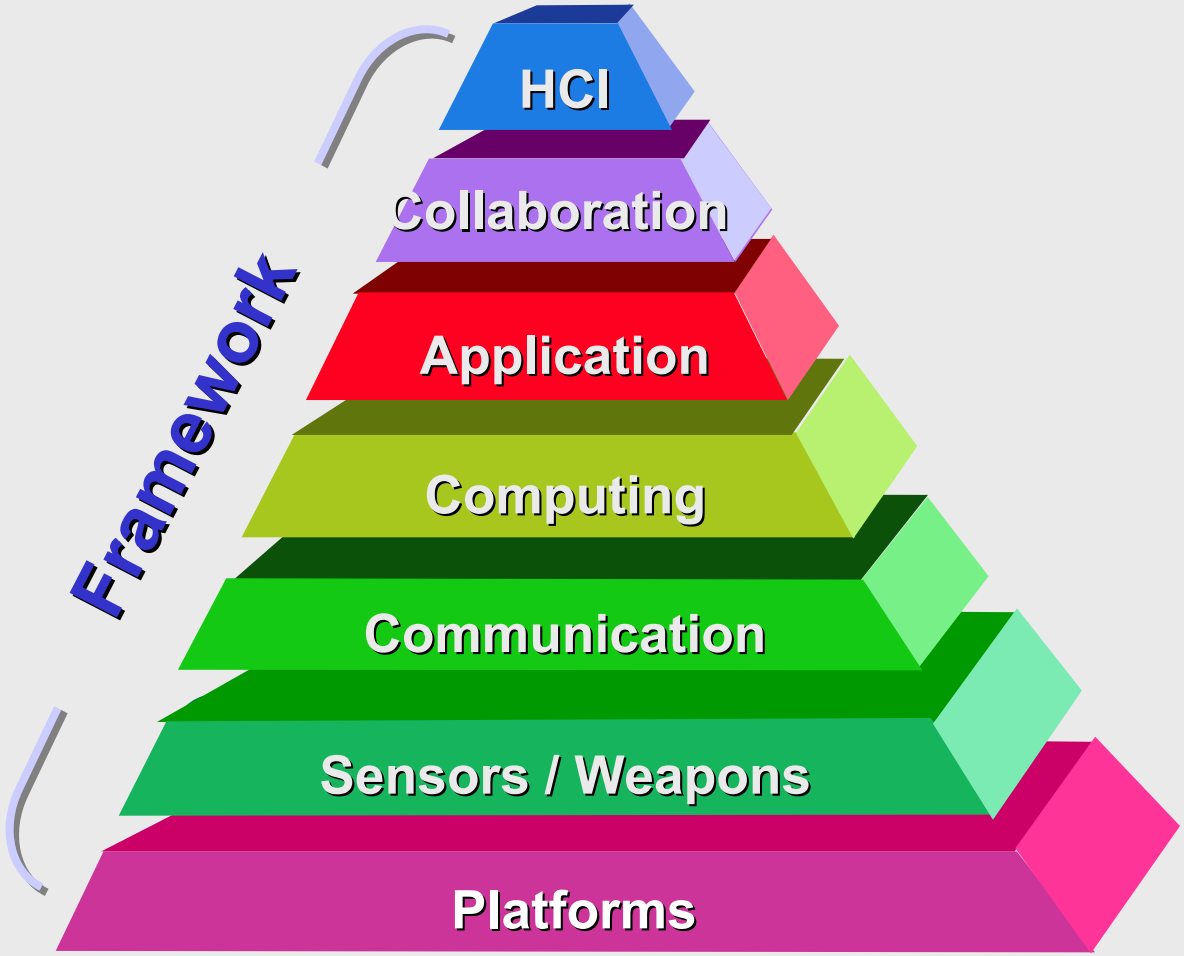


Sample Display

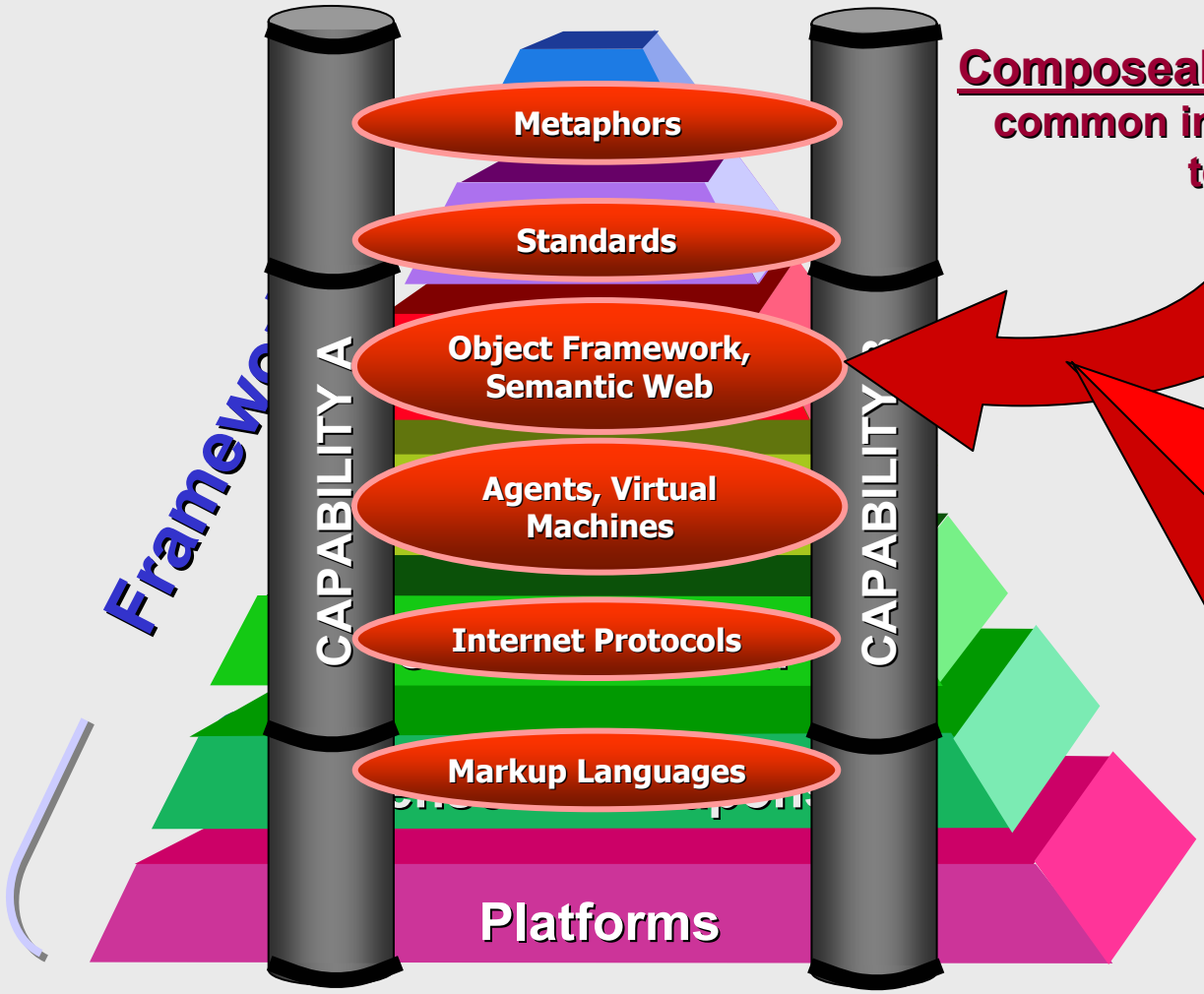
GeoViz subscribes to PC IMAT predictions



Technology Building Blocks of FORCEnet



Interoperability and Access Through Composeablity



Composeable Web Services provide common interfaces across uncommon technical solutions

You use this approach at home the office every day