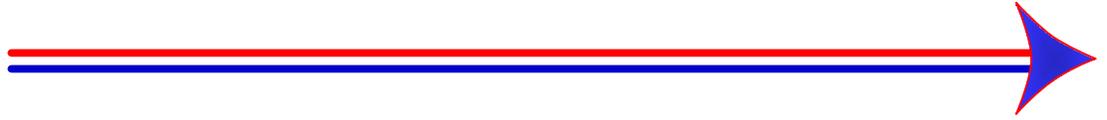


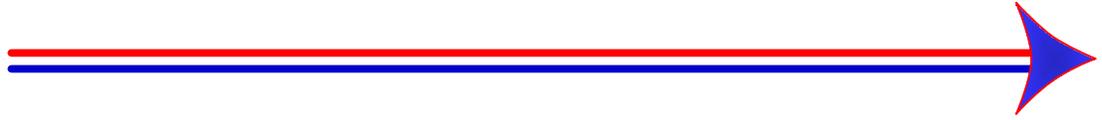


Netting the FORCE for transformational combat capability



What is FORCEnet?





Why is describing FORCEnet so hard????



30,000 foot Definition

“FORCEnet is the environment for the entire spectrum of military operations”



Mount Everest



FORCEnet

FORCEnet = $\int f(\text{many inter-related variables})$

Netting the FORCE for transformational combat capability



Combat Effectiveness₁ = $f(\text{Weapons, Sensors, Command \& Control})$

Combat Effectiveness₂ = $f(\text{Information, Networks})$

Combat Effectiveness₃ = $f(\text{Human Cognition, Tactics, Doctrine})$

Combat Effectiveness₄ = $f(\text{Sustainment, Logistics, Personnel, Training})$

Combat Effectiveness₅ = $f(\text{Threats, Adversaries Reaction})$

Combat Effectiveness₆ = $f(\text{Effects Based Operations})$

Combat Capabilities = $\int f(\text{CE}_1, \text{CE}_2, \text{CE}_3, \text{CE}_4, \text{CE}_5, \text{CE}_6)$

National Objectives = $\int f(\text{CE}_1, \text{CE}_2, \text{CE}_3, \text{CE}_4, \text{CE}_5, \text{CE}_6)$

Business Case = $f(\text{Combat Capabilities, National Objectives, $$$, Re-capitalization})$

FORCEnet

perspectives

Naval

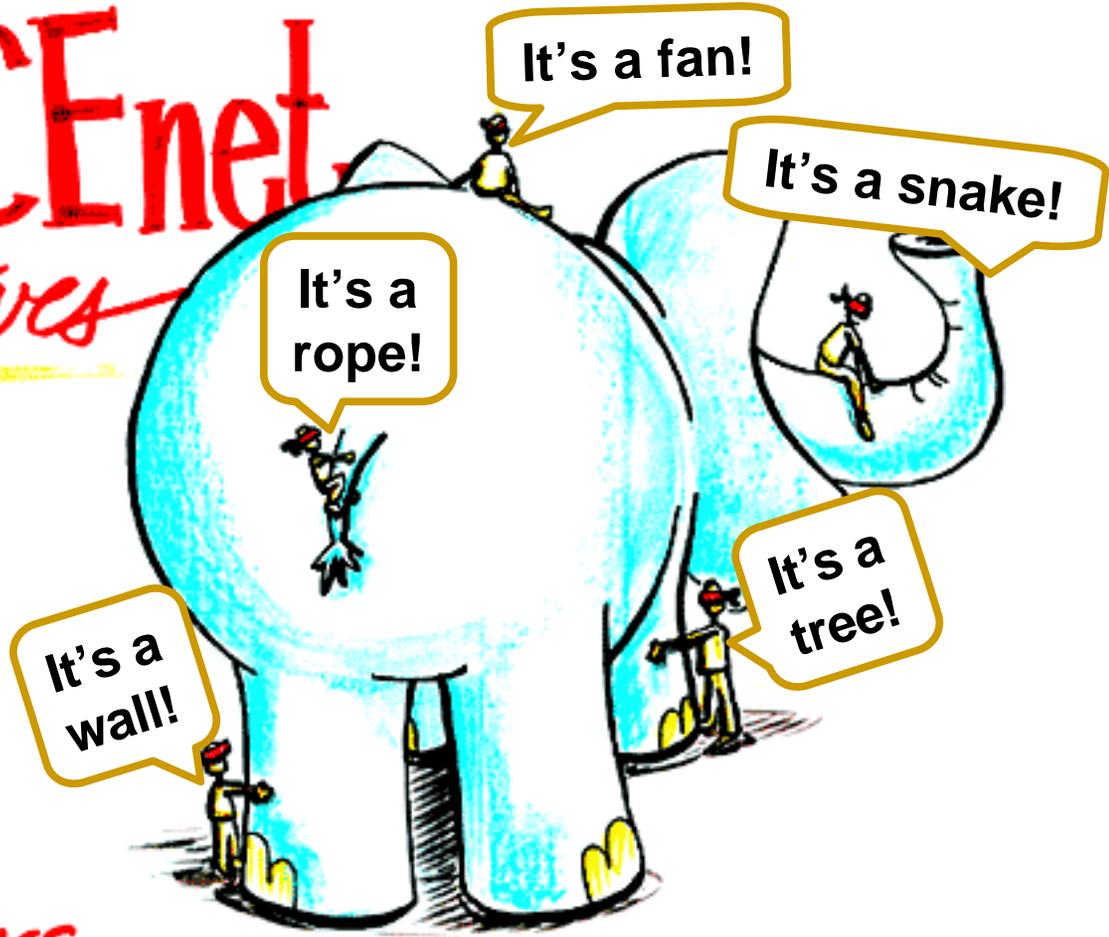
Concepts

Warfighters

Organization

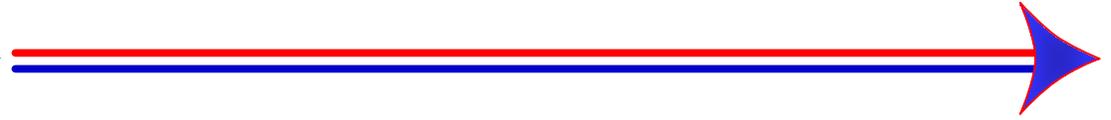
Portfolio

Capabilities





Netting the FORCE for transformational combat capability



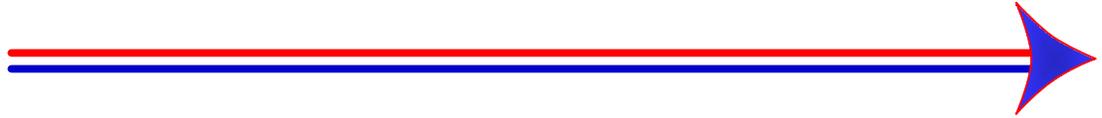
NAVAL

- FORCEnet enables
Seapower 21.



FORCEnet: Sea Power 21's Foundation

Netting the FORCE for transformational combat capability



- FORCEnet has been moving out smartly, focused on Fleet priorities and needs
 - Architecture, Innovation, Requirements well underway
 - Marketing and Acquisition gaining steam
 - Beginning to deliver “Products of the Plan”
- Working to capture Sea Strike, Sea Shield, and Sea Basing requirements

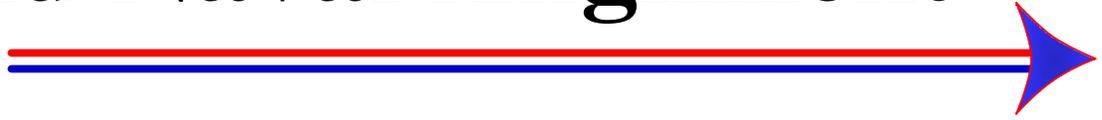


FORCEnet is all about capability to the FORCE



Joint and Naval Alignment

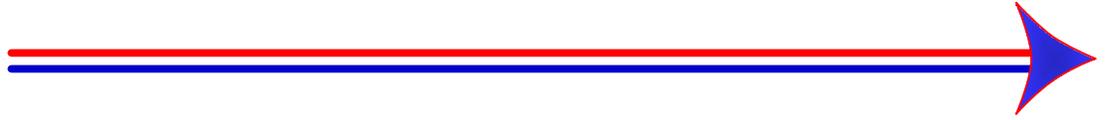
Netting the FORCE for transformational combat capability



- NETWARCOM – MCCDC
 - Unified capability structure and architecture efforts
 - Unified operational requirements integration process
 - Unified FORCEnet experimentation
- NETWARCOM – AFC2ISRC
 - ISR Strategy
 - FORCEnet-Constellation
 - Navy-AF Interoperability FOGO Panel
- NETWARCOM – JFCOM
 - Navy rep at JBMC2 roadmap & BOD efforts
 - Participate in numerous SJFHQ and DJC2 IPTs / WGs
 - Tidewater Joint C2 Transformation Steering Group



FORCEnet = Navy - Naval - Joint



CONCEPTS

- FORCEnet is the 'how' of network centric warfare. It is not a platform or a technology, but rather the overall enabler of military operations from space to seabed & small tactical to large scale strategic activity.

Systems Migration is Key

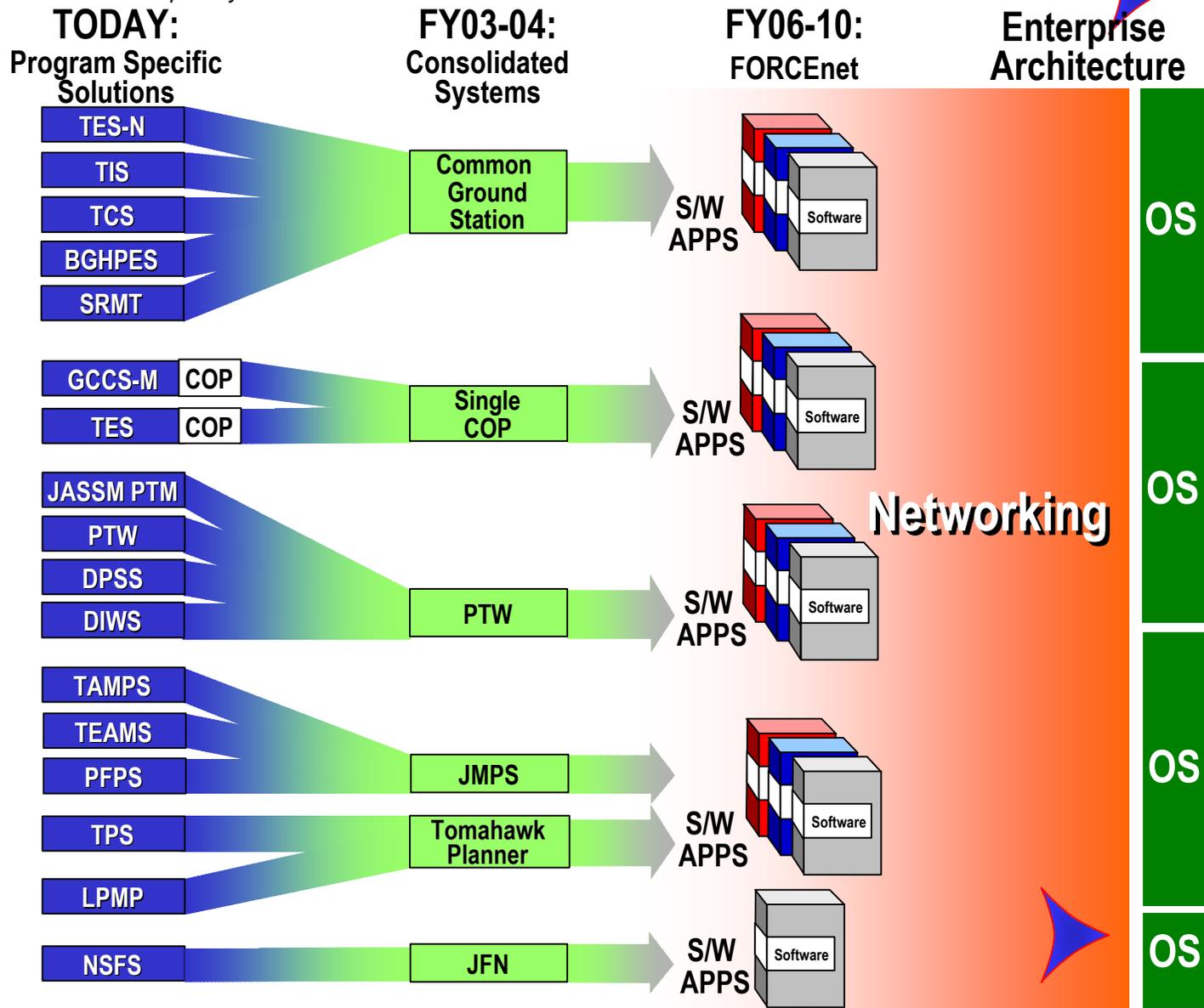
ISR Management

INTEL Exploitation

Commander's Decision / Force Assignment

Mission Planning And Targeting

Deconfliction + Weapons pairing





Netting the FORCE for transformational combat capability



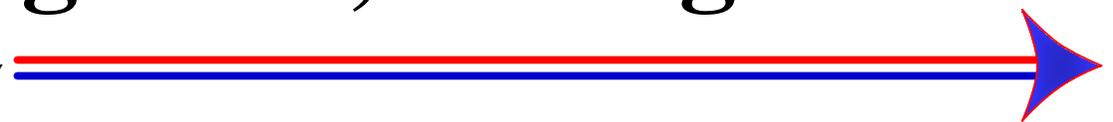
WARFIGHTERS

- FORCEnet enables the warfighter to fight fast, smart & connected.



“Knowing First, Acting First”

Netting the FORCE for transformational combat capability



**Knowledge management,
Information visualization,
Human factors...**
the “cognitive” part – the
FORCE and the Warrior

**LCS presents a unique
opportunity to demonstrate
FORCEnet as a true enabler for
Sea Power 21**



**Information Operations
capability and techniques
within FORCEnet bring decisive
Information Advantage**

**Pervasive Knowledge
&
Decisive Action**

Imagine...

Operationally Relevant, Enhanced Combat Power



PORTFOLIO

• FORCEnet is a portfolio of initiatives that unfold over time. FORCEnet pertains to today as well as tomorrow & the long term. FORCEnet has a current reality. OIF showed the power of FORCEnet.



FORCEnet Operational Advisory Group

Netting the FORCE for transformational combat capability

- Established in collaboration w/ MCCDC
 - Developed first substantive set of Fleet/MARFOR-vetted operational requirements
- OAG output influences
 - Execution Year (FORCEnet Matrix) Impact
 - Innovation Continuum (i.e. Sea Trial)
 - POM/PR Investment Strategy
 - FORCEnet Architecture / System-of-Systems Engineering
 - Joint Bi/Multi-Lat Collaboration (AFC2ISRC, TRADOC, MCCDC)
 - Joint Architecture (JFCOM JBMC2)
 - S&T prioritization

Validated Naval Requirements



Netting the FORCE for transformational combat capability

Building on OIF Experience



- Initiated OIF Lessons Learned Collection Effort
 - May-Jun03 visits to every returning battle group to include FDNF / I MEF and other key C2 sites world-wide
- Top 10 Focus Areas
 - Network Management, COP/Link, Force Control, Collaborative Tools, Allied/Coalition Interoperability, Targeting, ISR, Joint Interoperability, CIP, TTP/Processes
- Findings
 - Basis of follow-on FORCEnet Fleet Requirements OAG
 - Integrated into JFCOM JLLCT and Deep Blue L/L products
- NETWARCOM deeply involved in current CWC / CFFC OIF L/L issue resolution
 - Chair CFFC's Afloat BW Limitation WG
 - Crafting Comprehensive BW Management Strategy
 - Chair CFFC's Coalition C3 WG
 - Participating in most others



TRIDENT WARRIOR 03



Netting the FORCE for transformational combat capability

- **OAG – Reliable, secure, 100% available comms network services**

- ADNS upgrade provides automatic failover capability (e.g. when primary link fails, traffic automatically routed over alternate paths)

- LOS & BLOS (via airborne relay) provides additional comms path that ADNS will automatically route to when available

- QoS ensures mission critical traffic given high priority

- **OAG - Dynamic BW management tool for Force/Unit Level Ships**

- ADNS upgrade provides dynamic re-allocation of BW (e.g. unused BW no longer “nailed up”)

- ADNS Bandwidth Mgt and Control prototype provides dynamic user interface to reassign network priorities (note 1)

- **OAG - Constant world wide data throughput (25-50 Mbps)**

- CA throughput increase to 4 Mbps (removes baseband bottle neck) (note 1)

- **OAG - Develop NRT automated entry of Blue force ships into COP**

- GCCS-M 3.1.2.1 P1 provides Blue Force Tracking capability in the COP

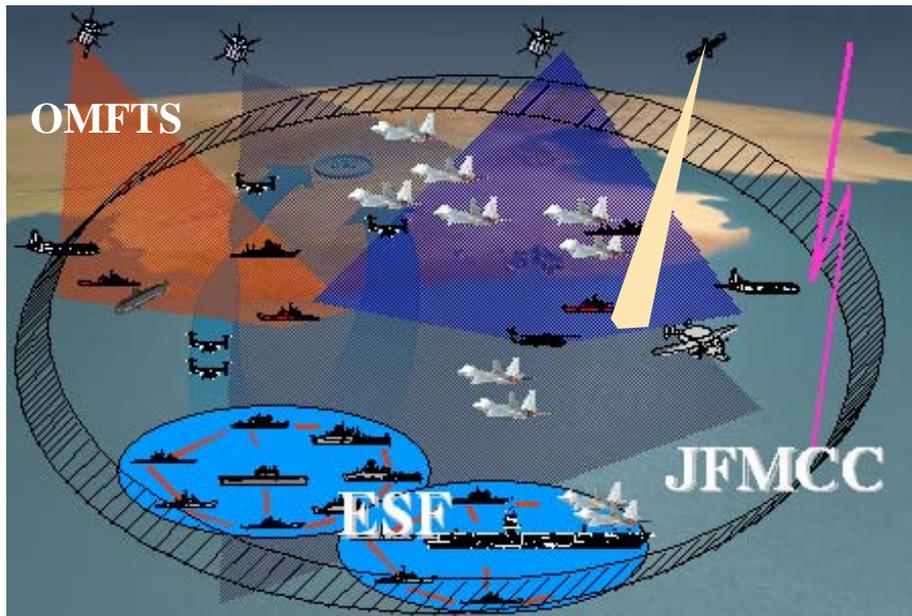
- IPD Capability represents one possible DOTMLPF solution to OAG requirement

Note 1: Prototype Temp Alts



FORCEnet Naval Approach: Trident Warrior 04 ICW Sea Viking 04

Netting the FORCE for transformational combat capability



Objectives:

- A. Develop a prototype of selected FORCnet Capability to an ESG supported by the Tactics / techniques /procedures (TTP) and (CONOPS).
 - **Increased BW to small ships**
 - **Dynamically shared BW**
 - **Intra-ESG single hop ship to ship satellite comms**

- B. In a cooperative effort with USMC, develop surrogate and prototype equipment that address challenges of the 2015 MEB with the potential for rapid acquisition or interim operational capabilities in the areas of:
 - OTH/OTM communications
 - Mobile COCs
 - Friendly force tracking
 - Distributed collaborative planning

Event Description

Name: Trident Warrior 04

Purpose: Field Experiment for FORCEnet prototype ICW MCWL deployable MEU prototype SV 04

Executive Agent: NETWARCOM

Host: COMTHIRDFLT / I MEF

Participants:

C3F, BonHomme Richard ESG, 15th MEU, MCWL, I MEF / MEB staff, NWDC

Date: 25 Oct-03 Nov

Location: Social Opareas, CAMPEN

Key Events

Spiral 1 Nov 03

Spiral 2 Mar 03

LOE May 04

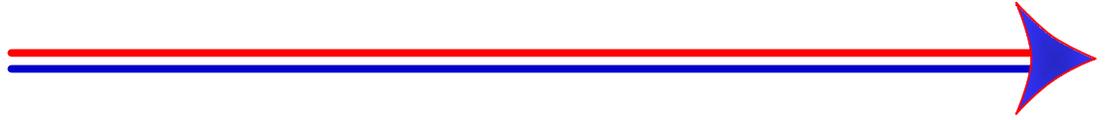
Spiral 3 June 03

Wargame July 04

Full System test Aug 04

Execution 26 Oct-03 Nov 04





CAPABILITIES

- FORCEnet enhances situational awareness & operational collaboration. It brings the right information to those who need it when they need it.

DESIRED FUTURE

What is FORCEnet?

- Multi-lingual translators for coalition ops
- Real time multi-level tactical picture
- Pervasive persistent sensors across all spectrums
- Dynamic / tiered scalable mission planning

- All in one integrated planning system
- Real time M&S available at decision desktop
- "Knowledge" visualization beyond flat screens* (stimulates 6⁺ of senses)
- Agents based dynamic content management

- ∞ Bandwidth AFLDAT
- FORCEnet, FCS, constellation are indistinguishable
- Energy based weapons via the Net
- Information warfare capability to tactical unit
- Decision maker has the right info. at the right time

- You can reach information when & where you need it
- Total situational "understanding"
- Subscribe to shared total knowledge

Technical Solutions

- Meta-data structure with control database like access to global data structure
- Data strategy
- Real time data replication
- IP Based systems
- IPVG

- TCA
- Teleport
- Enterprise Services
- MLS
- JC²
- JISR
- Intelligent Agents
- DCGs

- >.99999 Network Availability
- Self regulating / Self repairing networks
- Mobile wearable user based voice comms (votera)
- Undersea comms. (laser comms)
- Mobile wearable user based voice comms

- Multi-band antennae
- JTRS
- Laser or free-space optical connectivity on ships
- Agent enabled transport layer

Managerial Issues

- Single PEO → FORCEnet PEO
- Complete organic / non organic trust
- Culture shift from platform to network
- GIG Architecture
- DISA Provided infrastructure

- S&T Innovation Integration funding with Congressional support
- Fully integrated architecture
- IP's URL
- IP Selected as CNO





Pushing the Edge on Innovation

Netting the FORCE for transformational combat capability



Disruptive Technology



- Operationally-focused DOTMLPF Innovation Continuum
 - FORCEnet Integrated Prototypes
 - Culminates in Trident Warrior series at-sea experiment
- Naval Venture Initiative Technology Exploitation
 - Sharing ideas with Venture Capital community
 - Evaluating cutting edge technologies in Venture Capital portfolios
 - Commercial Technology Transition Officer
- Building the FORCEnet backbone afloat and ashore
 - Afloat : USS CORONADO (SBBL), HSV
 - Ashore: BG in the Sand, Joint Distributed Engineering Plant, Joint Training & Experimentation Networks
- Creating an Innovation “Hot Spot”

Innovation & Experimentation: The FORCEnet Engine

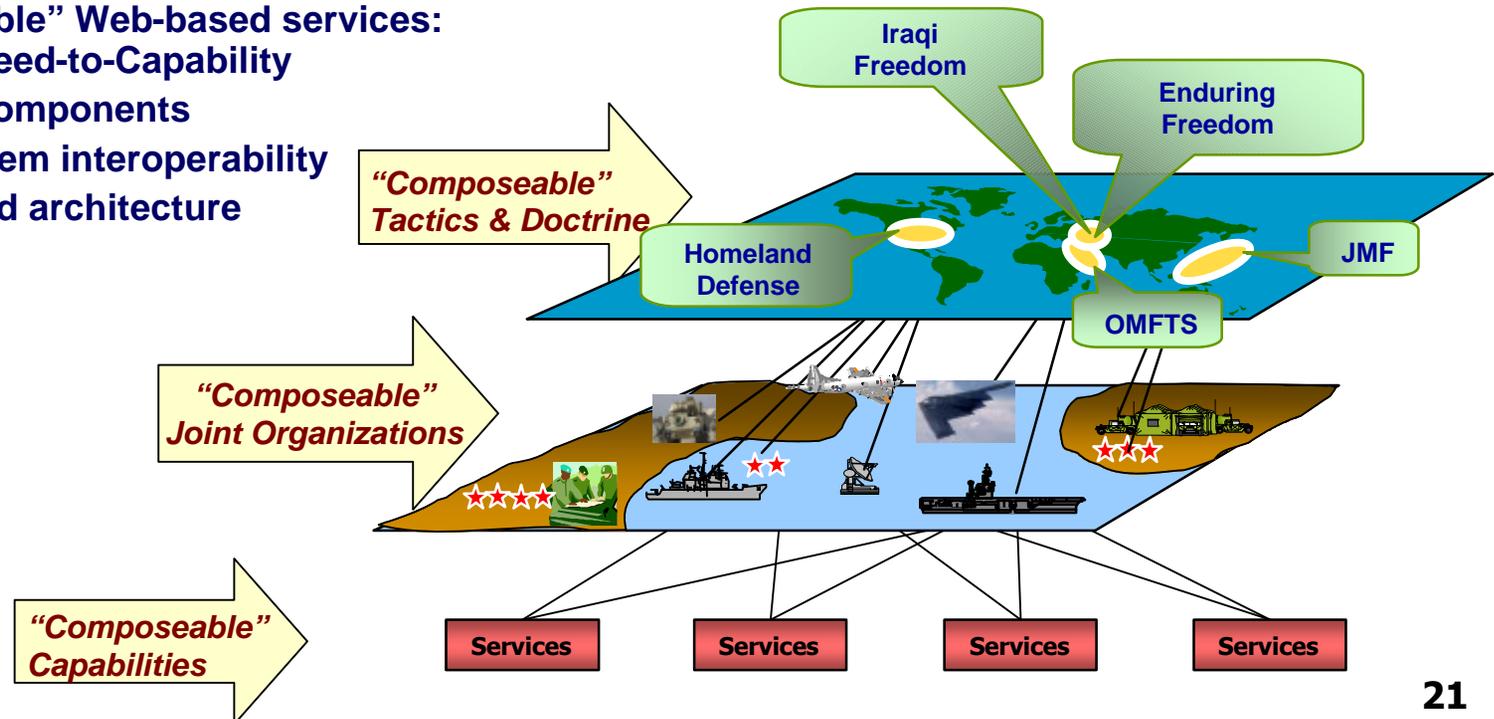


Composeable FORCEnet Vision

Netting the FORCE for transformational combat capability

Composeable Web Services permit Composeable Capabilities

- Transform Warfighting Operations
 - “Assemble components on the fly”
 - Joint - Agile - Tailorable
 - Geospatial –based shared awareness and collaboration
 - Intuitive linkage to information
- Transform the Acquisition Process
 - “Composeable” Web-based services:
Increase Speed-to-Capability
 - Re-usable components
 - Legacy system interoperability
 - Object-based architecture
 - Plug-n-Play





ORGANIZATION

- FORCEnet enables a fast, smart & connected organization that offers higher quality of life, greater operational efficiencies & heightened collaboration.



FORCEnet Leadership Across the DoN

Netting the FORCE for transformational combat capability



What Can You Do?

- 
- DoD is transforming
 - Need for greater Combat Power
 - Interoperability both Joint and Combined is paramount
 - Efficiency is a must do
 - Step up the pace of transformation in Industry
 - Adopt a long-term relevance posture with DoD
 - Participate in definition / development of C4ISR standards
 - Integration Centers, Consortia initiatives, and “teaming” are steps in the right direction
 - Partner with Government on developing a speed to capability acquisition approach that is fair, competitive, faster, and non-proprietary
 - Link labs / developmental / experimentation capabilities to facilitate coordinated DoD / Industry efforts



“FORCEnet will enable the naval service to employ a fully netted force, engage with widely distributed combat forces, and command with increased awareness and speed as an integral part of the joint team.”

Admiral Vern Clark

**Sea Power 21 begins with FORCEnet...
What it takes to win!**