



PMW-780

PEO C4I & Space
CBMANET
DARPA Industry Day
30 August 2005

Ed Wunner
PEO C4I & Space
Technology Assessment & Transition
Comm: 619-524-7595
Email: edward.wunner@navy.mil



Agenda



- PEO C4I & Space
 - Organization & Structure
- BSN Involved PMWs
 - PMW-780 Air Integration
 - PMW-160 Networks & Services
- Technology Transition Goals, Processes & Standards
 - NCW Levels
 - PEO Acquisition/S&T Roadmap “Circle Of Life”
 - NESI



PEO C4I and Space Organizational Structure



IA Certification

PEO C4I & Space

**DJC2
JPO
PMW 140**

**Command
& Control
PMW 150**

**Networks &
Ent. Services
PMW 160**

**Communications
PMW 170**

**ISR & IO
PMW 180**

**AMF JTRS
PMW 190**

**Carrier Integration
PMW 750**

**Ship Integration
PMW 760**

**Submarine Integration
PMW 770**

**Air Integration
PMW 780**

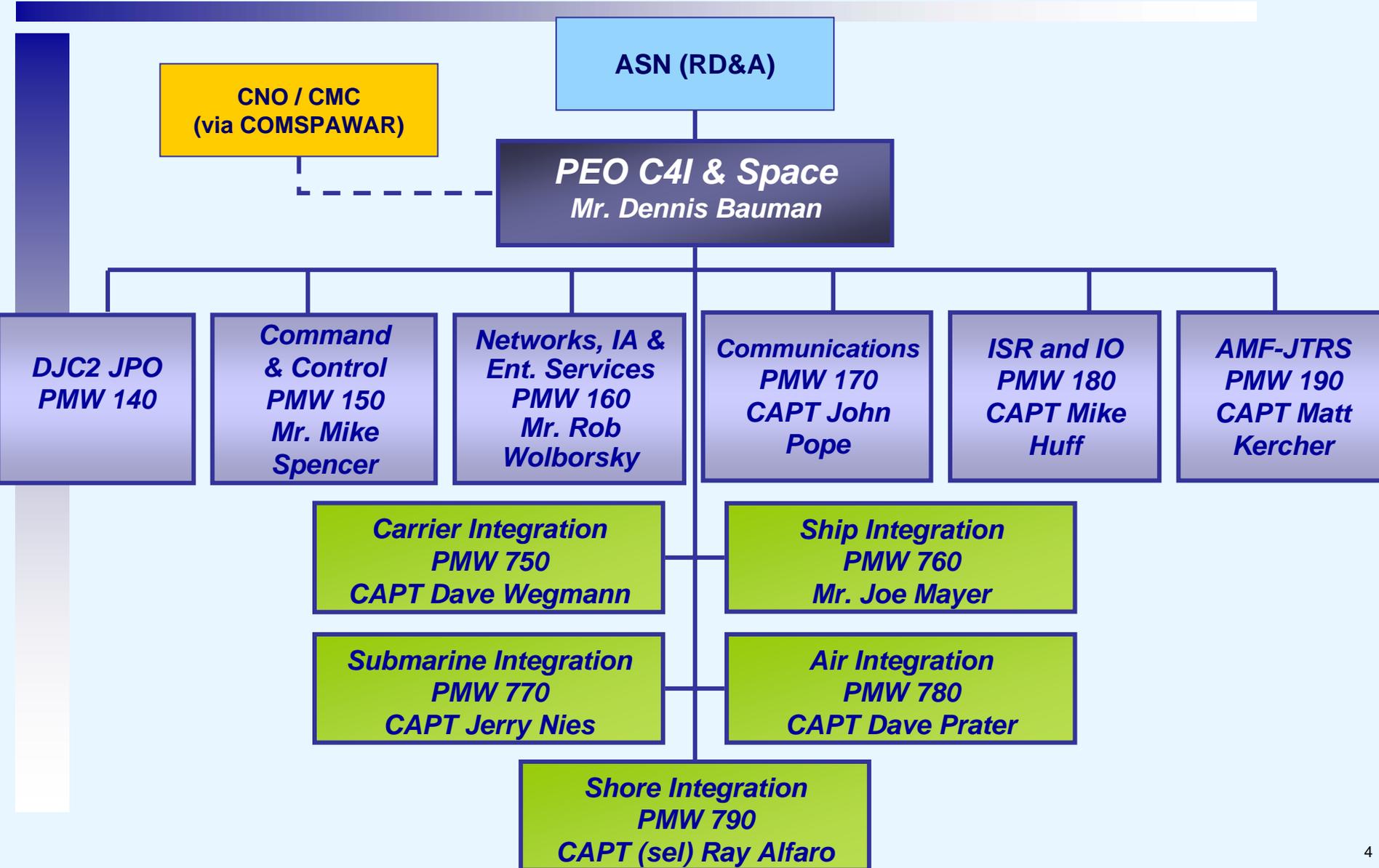
**Shore Integration
PMW 790**

Functional PMs responsible for product development and sustainment.

Platform PMs are responsible for Integration to the platforms, primary fleet POCs, Installation, and accelerated delivery of the C4I capabilities to platforms (through platform sponsors and new ship construction).



PEO C4I and Space Organizational Structure

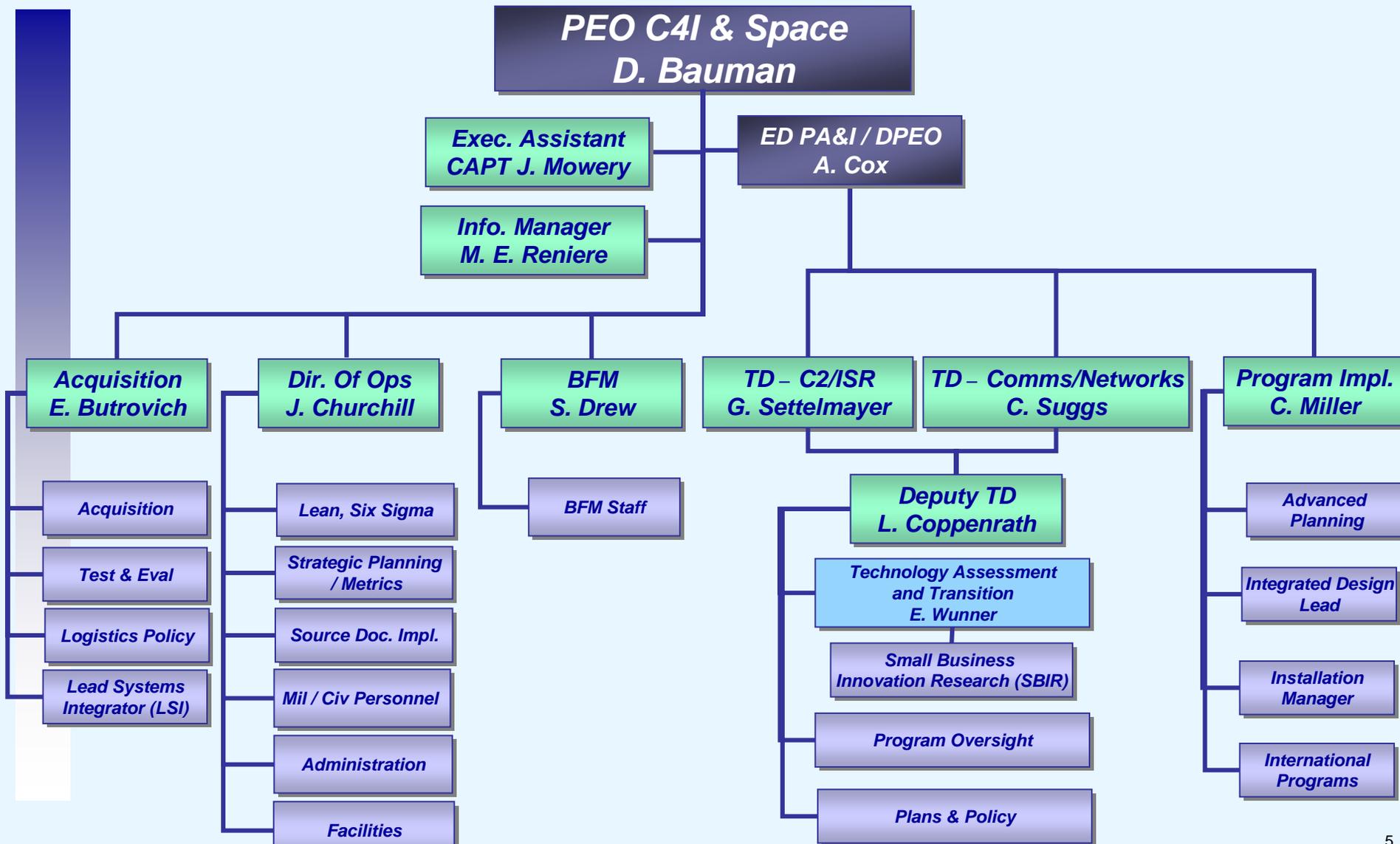




PEO C4I and Space

Front Office Organizational Structure

(Effective 26 August 2005)





PMW-780 Air Integration



Battle Space Networking (BSN) Warfighting Objective



**Applying FORCEnet to the Tactical Edge
of the Network**

**Net Warfighters in the Joint Battlespace
to Shorten the Kill Chain, and Deliver
an Improved Common Operational and
Tactical Picture**

*Use the Right Platform to Place the
Right Weapon on the Right Target at
the Right Time*



Operational Impacts



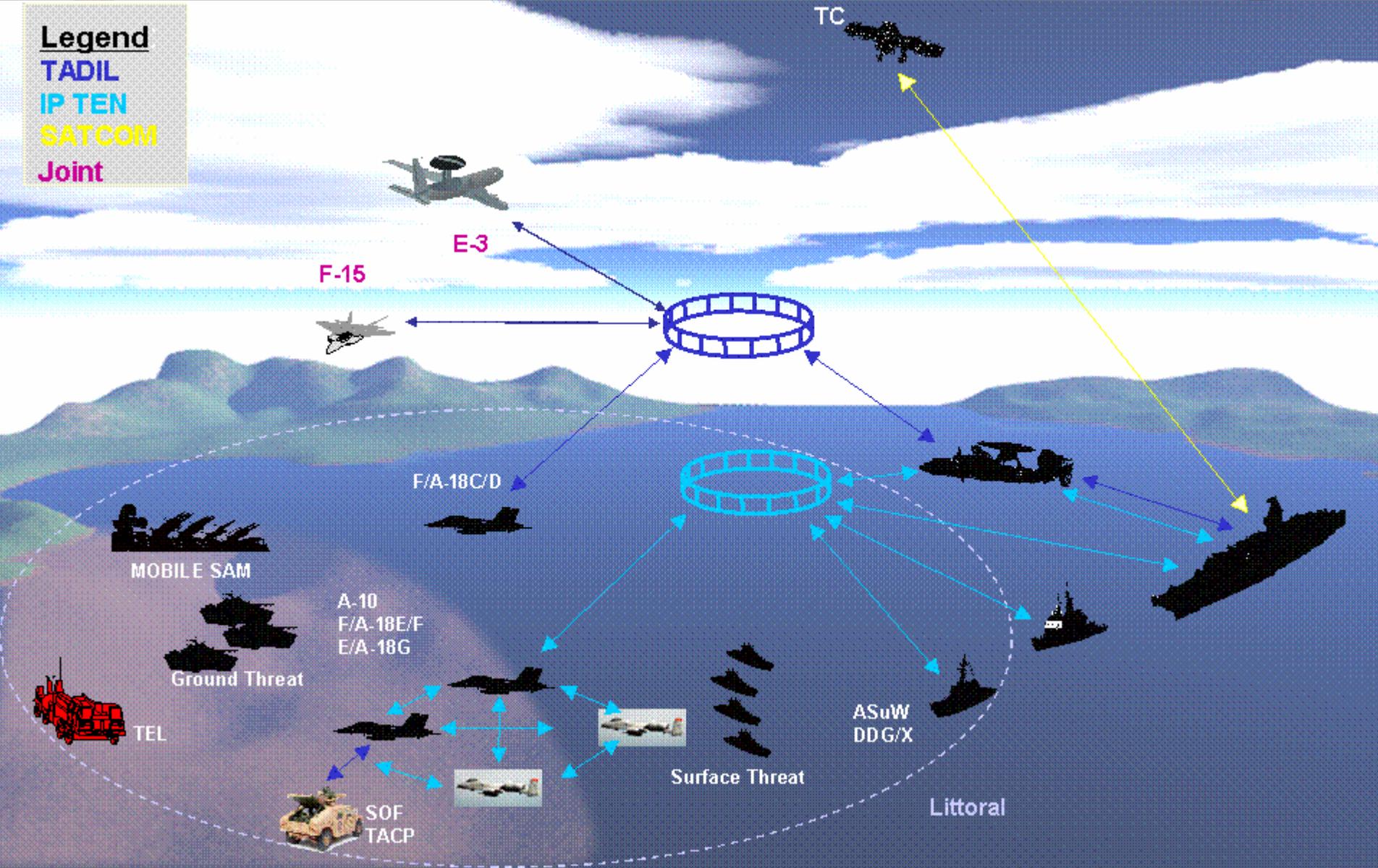
- Shortens the Kill Chain
 - Breaks stovepipes that delay sensor to shooter information flow
 - Reduces delays, removes steps in the C2 chain
 - Reduces the need for target reacquisition/correlation
- Improves the Common Operational and Tactical Picture
 - Supports linking and passing of tactical information across service, platform, and network boundaries beyond capability resident or planned for data links
- Improves Platform Survivability
 - Reduces time from threat discovery to tactical action
 - Improves handling of complex threat scenarios
- Enhances decision making speed and quality
 - Allows handling and processing of larger volumes of tactical data with better matching to time-critical mission needs



BSN Objective Capability



Legend
TADIL
IP TEN
SATCOM
Joint





Overall BSN Assumptions



- Initial efforts of BSN focuses on the airborne tactical edge (E-2, F/A-18) and future increments will include other platforms
- Leverage existing programs for capabilities development, integration, and acquisition documentation
- Schedule
 - Introduce TEN capabilities in FY12
 - Initial hardware and software delivery date in mid FY08
 - Will provide early drops for lab testing and integration
 - Final delivery in Mid 09 for integration and testing by platforms
 - Initial network services and applications available in mid FY08
 - Initial Capability Document defined and delivered by early FY07
- MIDS JTRS support Level 3 networking requirements
- Ancillary equipment requirements developed in parallel



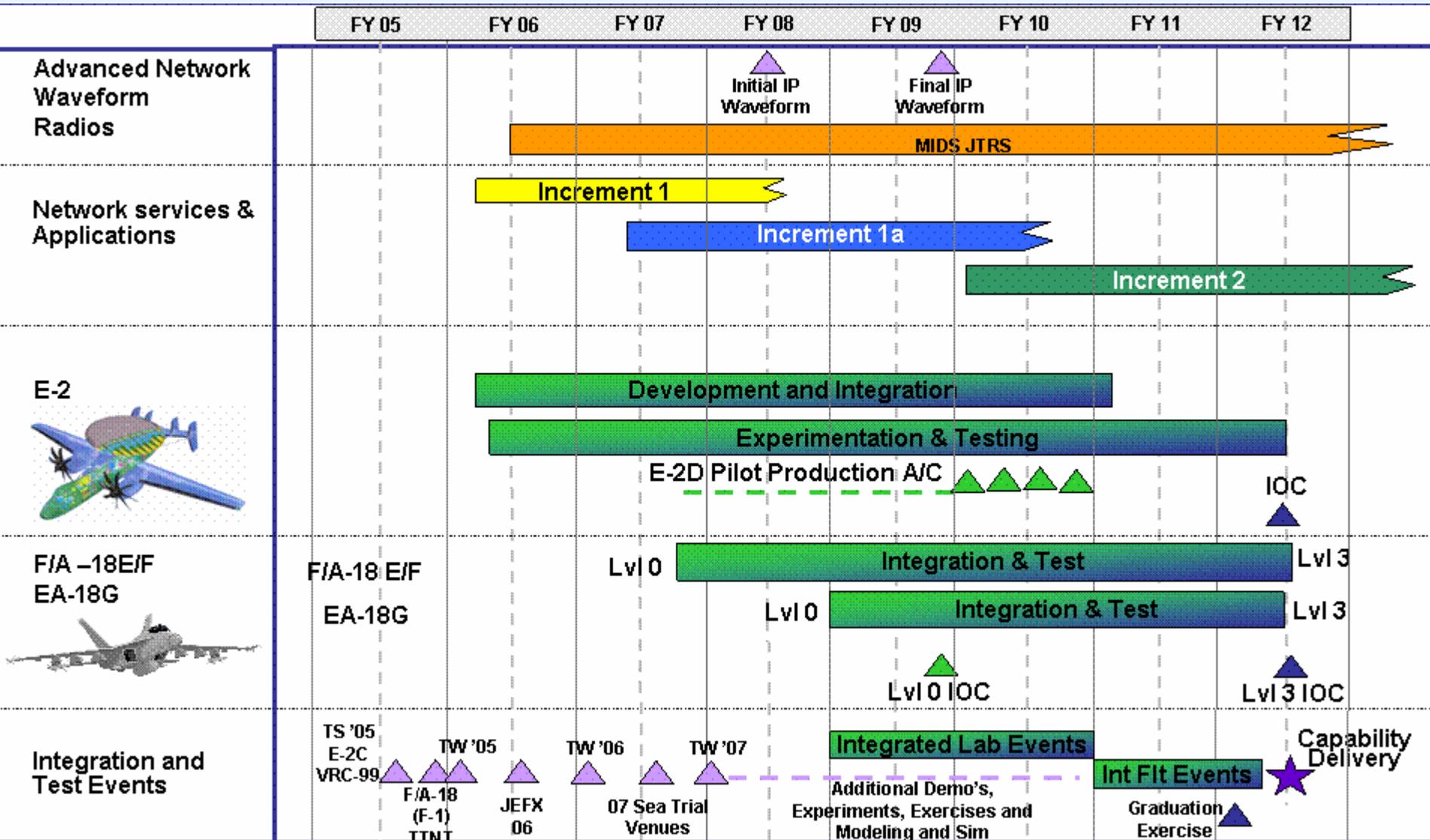
Program Execution



- Leverages investments and schedule of existing programs
 - MIDS JTRS - radio
 - JTRS Networking Waveforms - waveform
 - GCCS-M / Composeable FORCEnet (CFn) - applications
 - ADNS – tactical network services
 - DARPA and ONR Future Naval Capability and Rapid Technology Transition programs
- PR07 Plus-Up funding focused on a limited scope
 - Limited number of platforms: F/A-18, E-2 as pathfinders
 - Limited mission area: Littoral Strike (CAS, ASUW, TSS)
 - Future spirals will include additional platforms and leverage existing systems (such as GCCS-M/JC2, DCGS, JMPS) to expand capabilities
- Tightly defined objectives
 - Shorten the Kill Chain
 - Improve the Common Operational and Tactical Picture (COTP)



TEN Program Schedule

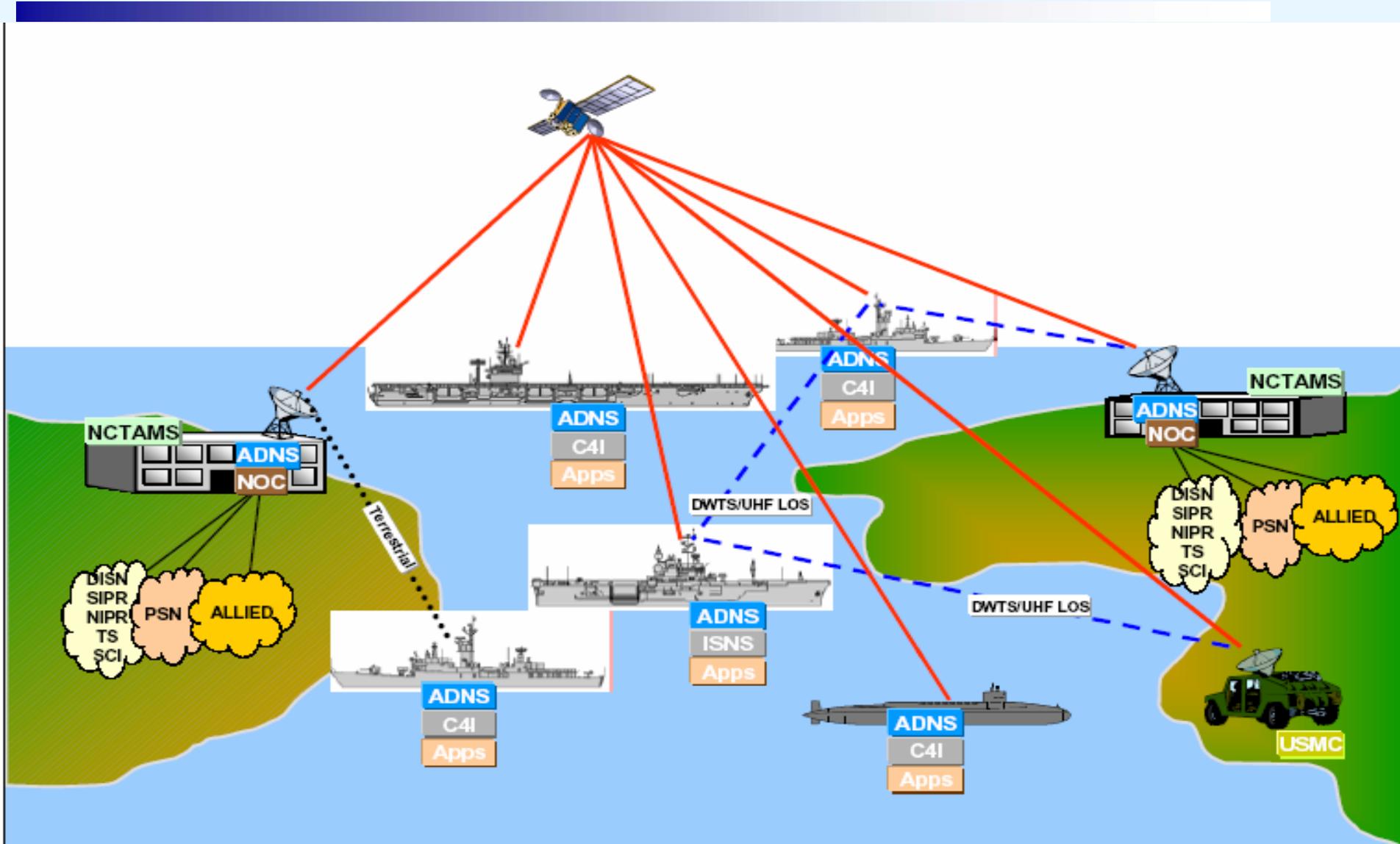




PMW-160 Networks & Services

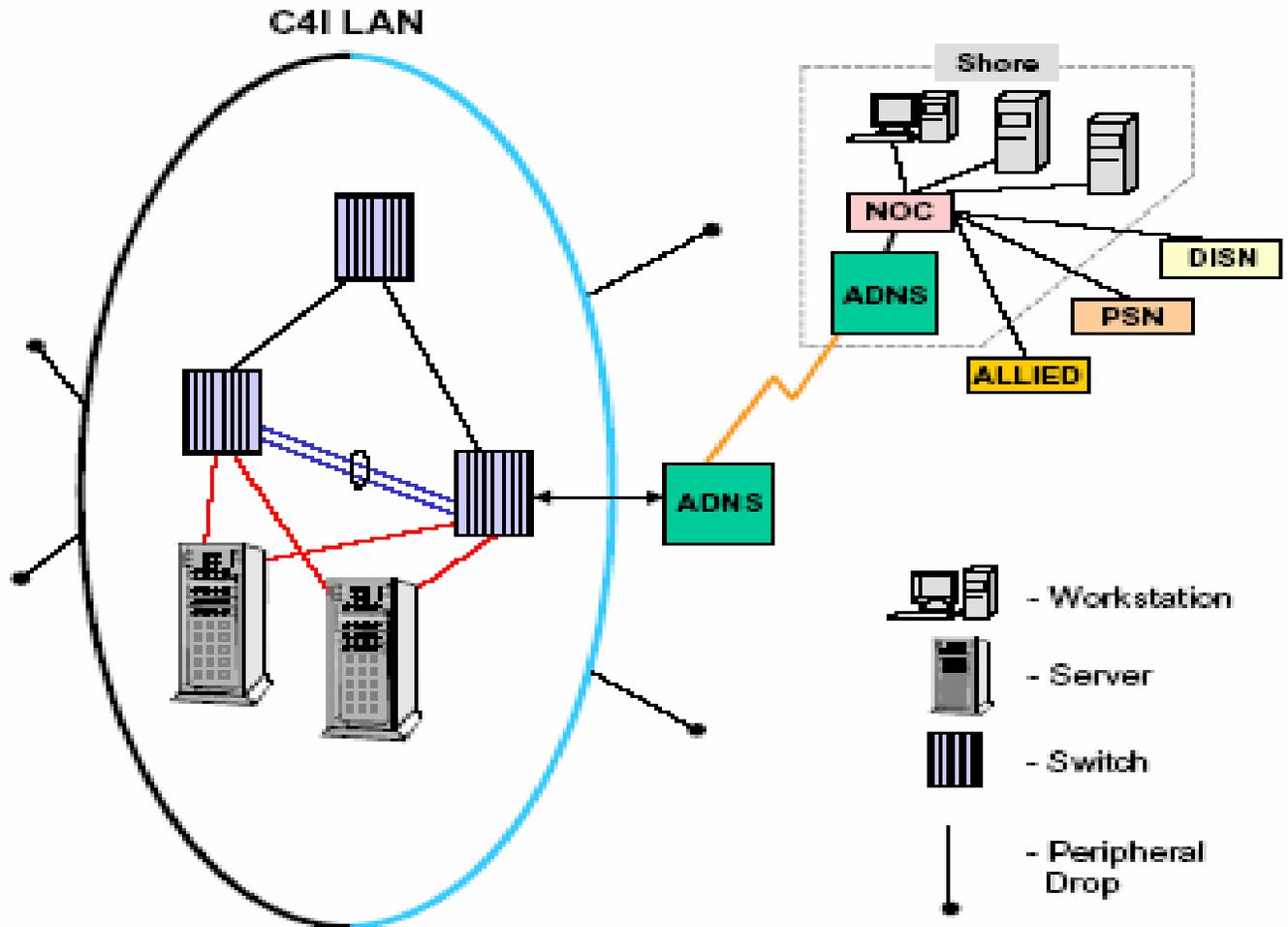


High Level Concept Graphic (OV-1)





Systems Interface Description (SV-1)

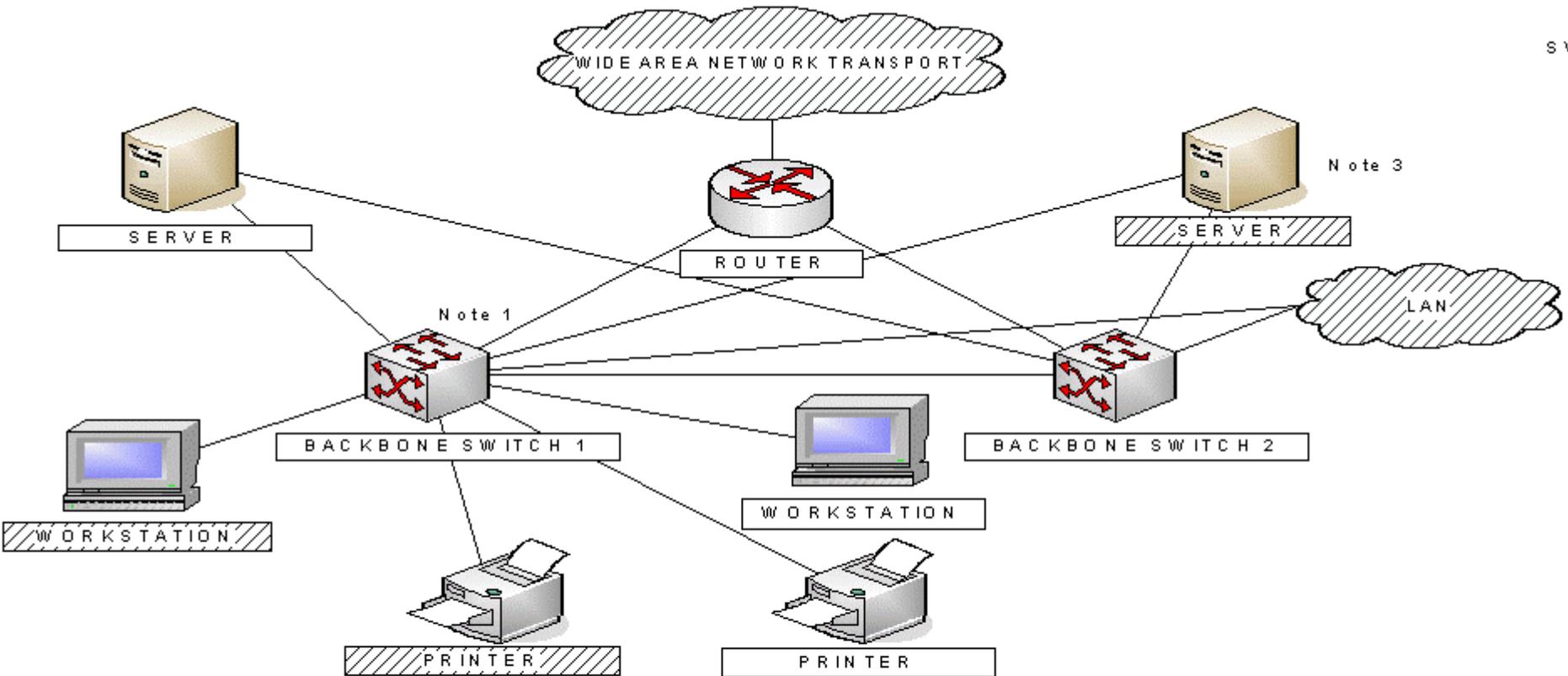




Systems Communications Description (SV-2)



SV-2



- NOTES:
- 1) ANY CONNECTION FOUND ON BACKBONE SWITCH 1 MAY BE FOUND ON BACKBONE SWITCH 2.
 - 2) LINES DO NOT REPRESENT PHYSICAL CONNECTIONS, ONLY LOGICAL COMMUNICATION PATHS.
 - 3) NON C4IAL CONNECTIONS MADE TO THE BACKBONE SWITCHES MAY BE SINGLE HOMED





Technology Transition Goals, Processes & Standards



NCW Roadmap Overview Alignment



- Defines NCW Capability levels for ships, subs, aircraft, and shore nodes
 - Requires Fleet and OPNAV endorsement of NCW Levels for platforms
- Charts levels by platform across FYDP
 - Bandwidth enabled
 - Services Oriented Architecture
 - User Customized Systems
- Synchronizes Requirements with Resources to deliver Capabilities
 - Slow down some, speed up others
 - Reduce budget for some, increase budget for others
- Provides rationale basis for SHIPMAIN decisions
 - Enable capability based “voting”



Naval Platform NCW Characteristics



Fn Concept

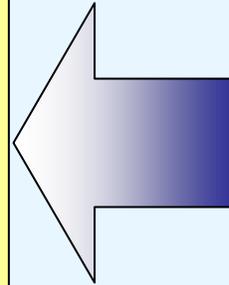
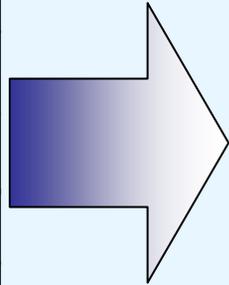
| |
|---|
| Robust, reliable communication to all nodes |
| Reliable, accurate and timely information on all battle-space units |
| Storage and retrieval of authoritative data sources |
| Information assurance |
| Modular architecture |
| Distributed and collaborative command and control |
| Seamless cross-domain access and data exchange |
| Robust knowledge management |
| Automated decision aids |
| Autonomous and disconnected operations |
| User-defined and shareable SA |

Naval Platform Characteristics

| |
|---------------------------------------|
| Bandwidth Enabled |
| Services Oriented Architecture |
| User Customized Systems |

DoD Net-Centric Checklist

| |
|-------------------------------------|
| Internet Protocol (IP) |
| Secure & Available Comms |
| Quality of Service |
| Application Diversity |
| Smart Pull (vice smart push) |
| Data Centric |
| Post in Parallel |
| Assured Sharing |
| Only Handle Information Once (OHIO) |



Capability Stepping Stones to FORCEnet



**Based on Fn
Concept
Document**

Full IT21
"Online"

- IP Reach Back
- Local Area Networks
- Wideband Receive
- RF Management
- Survivable comms

Level 0

Today

Net Connected
"Improved decision making"

- Web-based services
- Improved network reliability and performance
- Increased bandwidth
- Improved coalition operations and data sharing
- Tailorable situational awareness tools
- Standardized data exchange between domains
- Defense in depth

Level 1

FY07

Net Enabled
"Network based command and control"

- Multi-path and improved transport reliability
- Dynamic bandwidth mgmt
- Customized applications and data sources
- Common infrastructure and data exchange standards
- Improved data exchange across domains
- Enterprise management for asset analysis and repair
- Initial knowledge management and automated decision aids
- Assured sharing
- Distributed command and control operations
- Modular and open architecture

Level 2

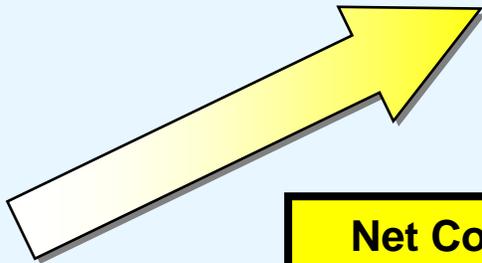
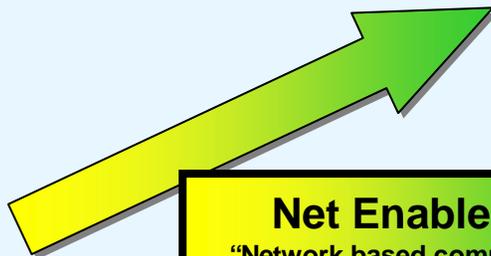
FY10

Fully Net Ready
"Decision-making under undesirable conditions"

- Robust, reliable communication to all nodes
- Reliable, accurate and timely information on friendly, environmental, neutral and hostile units
- Storage and retrieval of authoritative data sources
- Robust knowledge management capability with direct access ability to raw data
- User-defined and shareable SA
- Distributed and collaborative command and control
- Automated decision aids to enhance decision making
- Information assurance
- Seamless cross-domain access and data exchange.
- Interoperability across all domains and agencies
- Autonomous and disconnected operations
- Automatic and adaptive diagnostic and repair
- Modular architecture to expedite new capabilities

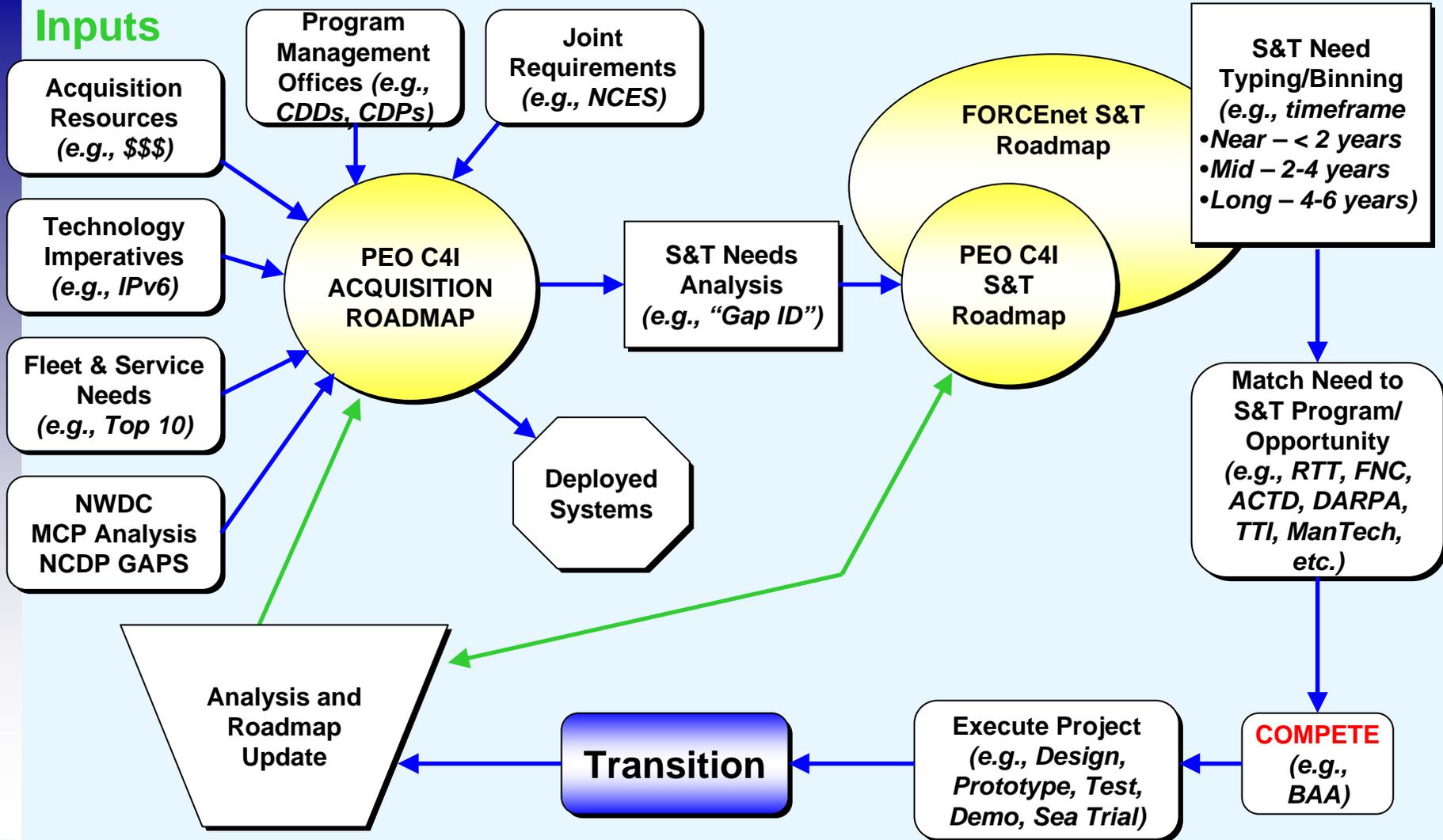
Level 3

FY14





PEO Acquisition/S&T Roadmap "Circle Of Life"





Net-centric Enterprise Solutions for Interoperability (NESI)



- Working harmonization with OA and FORCEnet
- Provides implementation guidance to facilitate the design, development and usage of information systems for net-centric warfare
- Cross-Service effort between Air Force (ESC) and Navy (PEO C4I & Space)
 - Army & DISA participated informally
- Actionable guidance that **SHALL** be followed by all PEO C4I products to include S&T transitions
- A community policy that can adapt to changing standards or disruptive technologies

For more information:

<http://nesipublic.spawar.navy.mil/>