SPAWAR

Addressing Navy's Information Dominance Warfare through Systems of Systems Engineering and Integration

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Net Centric Operations/Interoperability Track
& System of Systems Track

Presenters:

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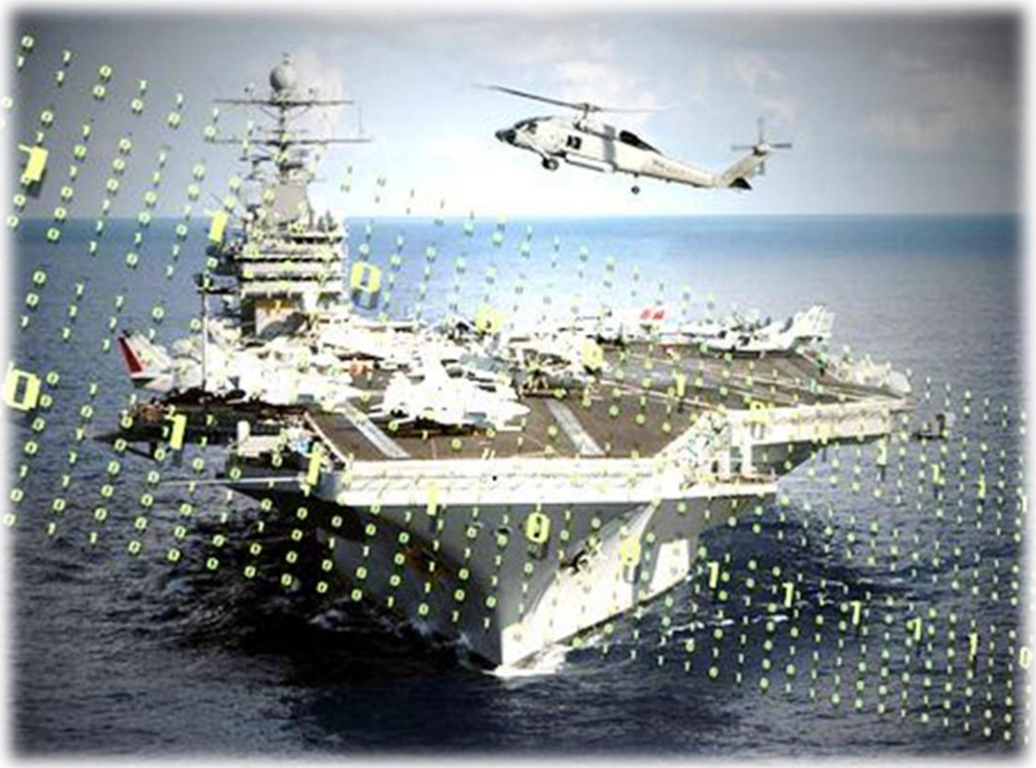
Presentation Outline

- Challenges to the Navy
- Navy Solution: Information Technology Technical Authority (IT TA)
- Navy IT TA Stakeholders
- Tenets of System of Systems Engineering and Integration (SoSE&I)
- SoSE&I Discussion
- Conclusions



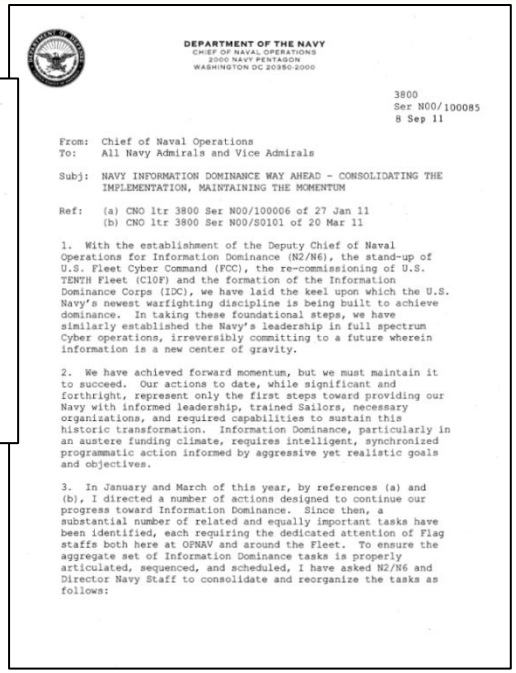
Challenges to the Navy

- Modern warfare has become ***critically dependent upon accurate and timely information*** for situational awareness and operational effectiveness.
- Naval operations today require ***integration and interoperability among interdependent platforms*** and supporting assets, increasing reliance on information, network, and communication systems for enhanced coordination and execution.
- The systems used to accomplish the operational tasks must be ***designed to conform to an IT architecture*** specified to achieve the required level of integration and interoperability.

Navy Solution: Information Technology Technical Authority (IT TA)

Paragraph 3.c Warfighting Capability (7)

(7) Seek ASN(RDA) support to provide a plan for a single IT Technical Authority (TA) by 3 Oct 11 to unify TA under SPAWAR for all new and legacy IT/Information Systems and networks, afloat and ashore. Plan must address: (a) certification criteria and governance structure for coordinating implementation and resourcing; (b) certification standards through which existing systems and networks will be certified; (c) consolidation of network architecture authority under SPAWAR; (d) rules of how Ship Construction-Navy (SCN) and Aircraft Construction-Navy (ACN) funded Cyber PORs will be affected. SPAWAR must assume duties as Single IT TA and execute the plan NLT 3 Oct 11. Lead: N2/N6. Support: ASN(RDA) and SPAWAR. Due: 3 Oct 11. Deliverable: Formal correspondence and decision brief.



DEPARTMENT OF THE NAVY
CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON DC 20350-2000

3800
Ser N00/100085
8 Sep 11

From: Chief of Naval Operations
To: All Navy Admirals and Vice Admirals

Subj: NAVY INFORMATION DOMINANCE WAY AHEAD - CONSOLIDATING THE IMPLEMENTATION, MAINTAINING THE MOMENTUM

Ref: (a) CNO ltr 3800 Ser N00/100006 of 27 Jan 11
(b) CNO ltr 3800 Ser N00/S0101 of 20 Mar 11

1. With the establishment of the Deputy Chief of Naval Operations for Information Dominance (N2/N6), the stand-up of U.S. Fleet Cyber Command (FCC), the re-commissioning of U.S. TENTH Fleet (C10F) and the formation of the Information Dominance Corps (IDC), we have laid the keel upon which the U.S. Navy's newest warfighting discipline is being built to achieve dominance. In taking these foundational steps, we have similarly established the Navy's leadership in full spectrum Cyber operations, irreversibly committing to a future wherein information is a new center of gravity.

2. We have achieved forward momentum, but we must maintain it to succeed. Our actions to date, while significant and forthright, represent only the first steps toward providing our Navy with informed leadership, trained Sailors, necessary organizations, and required capabilities to sustain this historic transformation. Information Dominance, particularly in an austere funding climate, requires intelligent, synchronized programmatic action informed by aggressive yet realistic goals and objectives.

3. In January and March of this year, by references (a) and (b), I directed a number of actions designed to continue our progress toward Information Dominance. Since then, a substantial number of related and equally important tasks have been identified, each requiring the dedicated attention of Flag staffs both here at OPNAV and around the Fleet. To ensure the aggregate set of Information Dominance tasks is properly articulated, sequenced, and scheduled, I have asked N2/N6 and Director Navy Staff to consolidate and reorganize the tasks as follows:

- ***CNO/ASN RDA designated SPAWAR*** to enhance integration and interoperability of information, network, and communications systems
- ***System-of-Systems Engineering and Integration (SoSE&I)*** approach across all platform types to include architecture/requirements & their governance, resourcing & certification

Expanding role and responsibility … enabler for Navy Info Dominance

Navy IT TA Stakeholders

IT Acquisition and Sustainment

Improve development coordination by providing the context for how each system fits into the larger SoS.

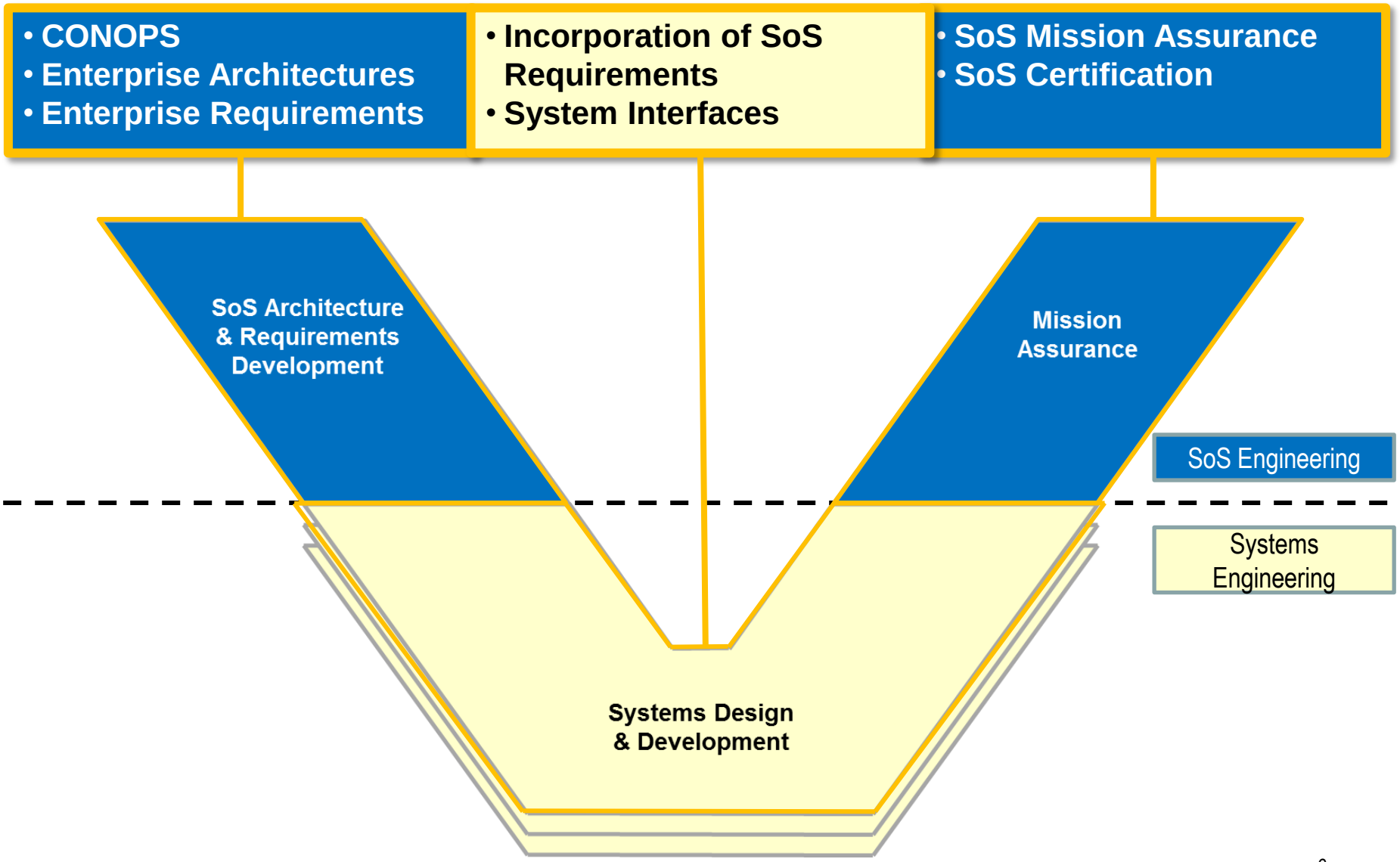
Fleet IT Users

IT Systems that integrate seamlessly into platforms and mission areas, to ensure a reliable mission support.

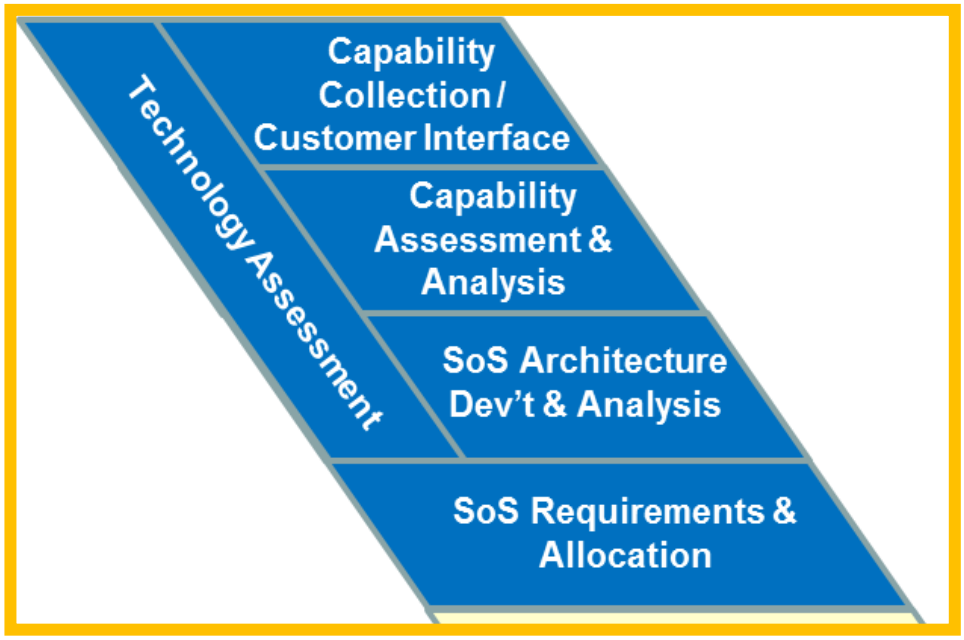
IT Acquisition Decision Makers

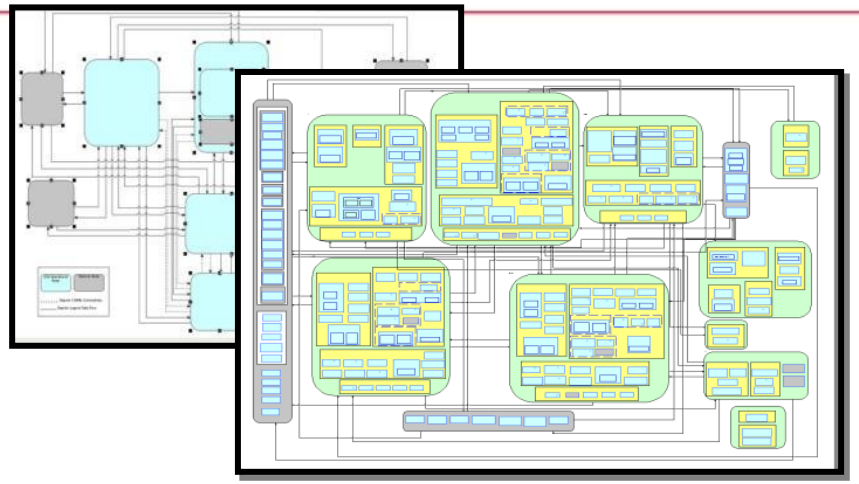
Support planning, management and budget process.

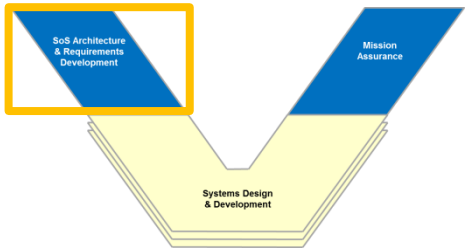
Tenets of System of Systems Engineering and Integration (SoSE&I)



SoS Architecture & Requirements Development







Benefits

- Comprehensive plan to align systems that are meant to work together for mission success
- Provides a foundation from which Navy Resource Sponsors can prioritize user needs and budget issues
- Establishes Overarching Requirements Baseline to improve Integration & Interoperability across the IT Acquisition Portfolio

SoS Architecture & Requirements Development
IT TA Example

Warfare Mission Needs

Fleet IT Users
(e.g., FLTCYBERFOR)

Information Dominance
Mission Needs Document

IT Acquisition Decision Makers
(e.g., OPNAV)

Information Dominance SoS
Architecture & Requirements

Portfolio Requirements &
Interface Control Doc's

Portfolio A | Portfolio B | Portfolio C | Interface Control

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CHENG

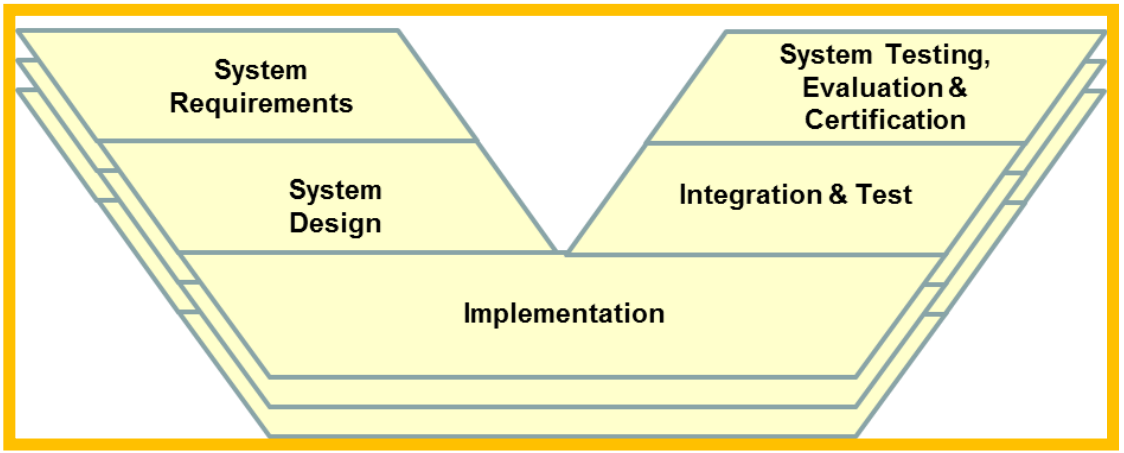
System Requirements &
Interface Control Doc's

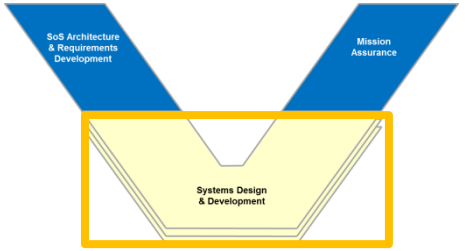
SPAWAR's IT TA baseline is the engineering/integration bridge at the enterprise-level to provide orderly flow-down of user needs to implemented platform baselines

SoSE&I Role in Systems Design & Development

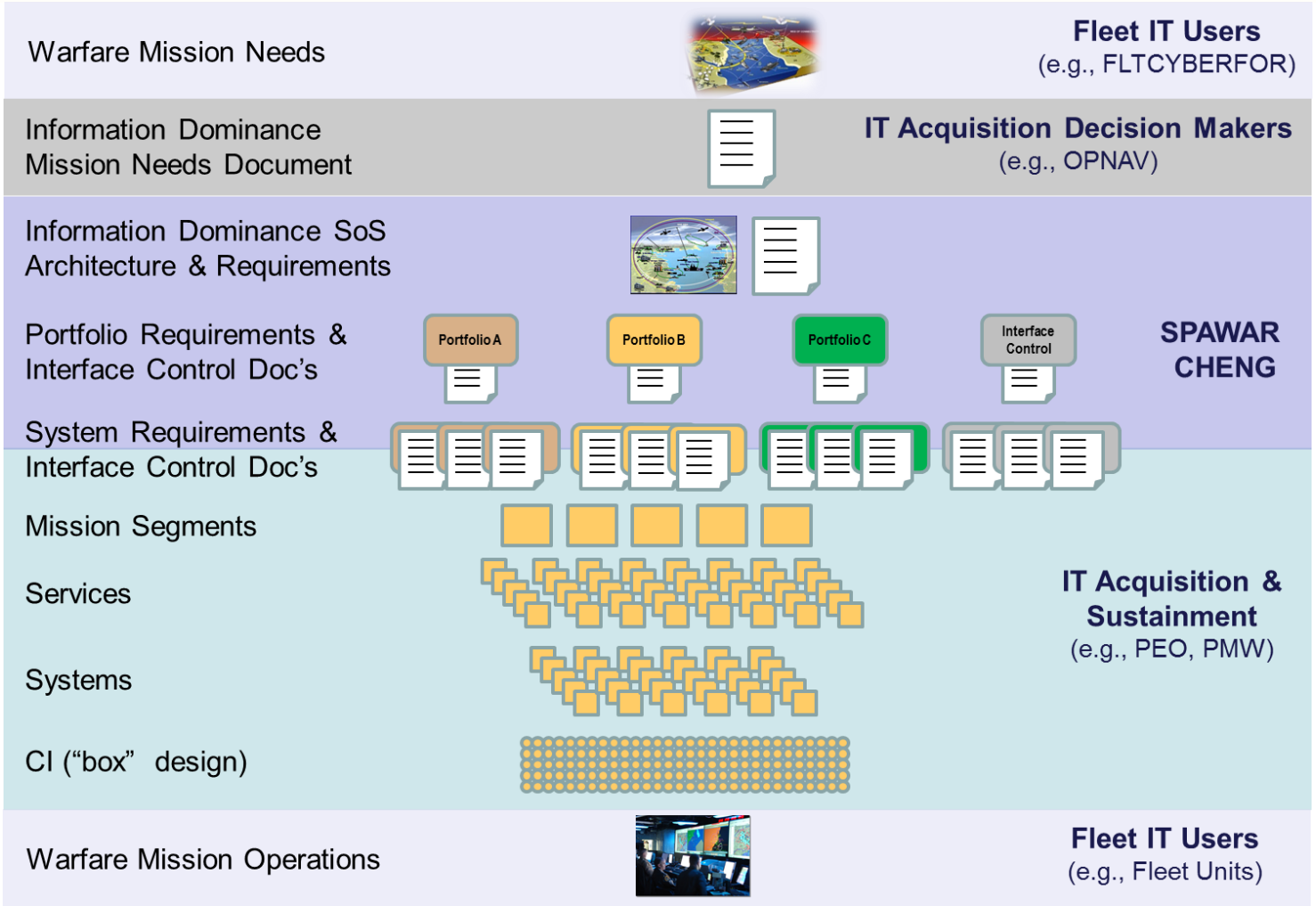
Benefits

- Provides a focus SoS mission success vice system optimization
- Establishes a framework for better coordination among individuals systems and programs



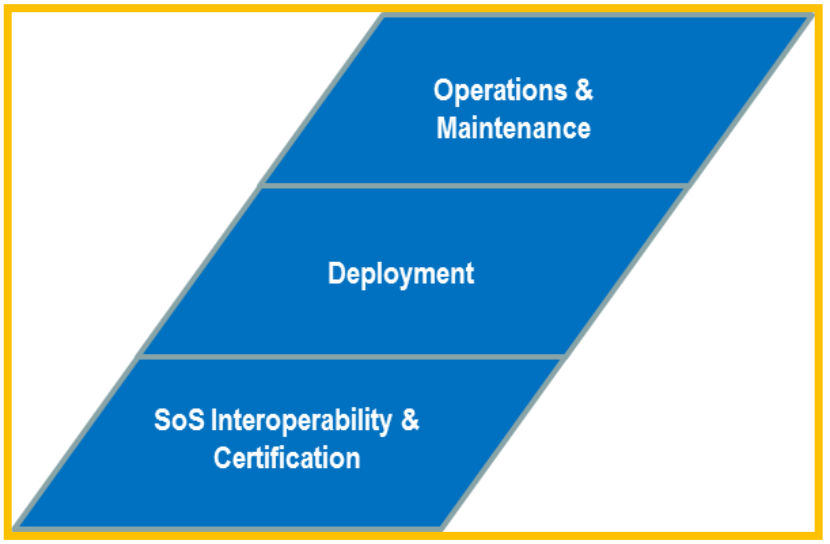


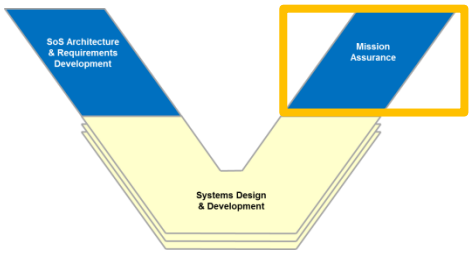
Systems Design & Development
IT TA Example



Assured traceability from mission needs to implementation … Jointly monitored across the development lifecycle

Mission Assurance





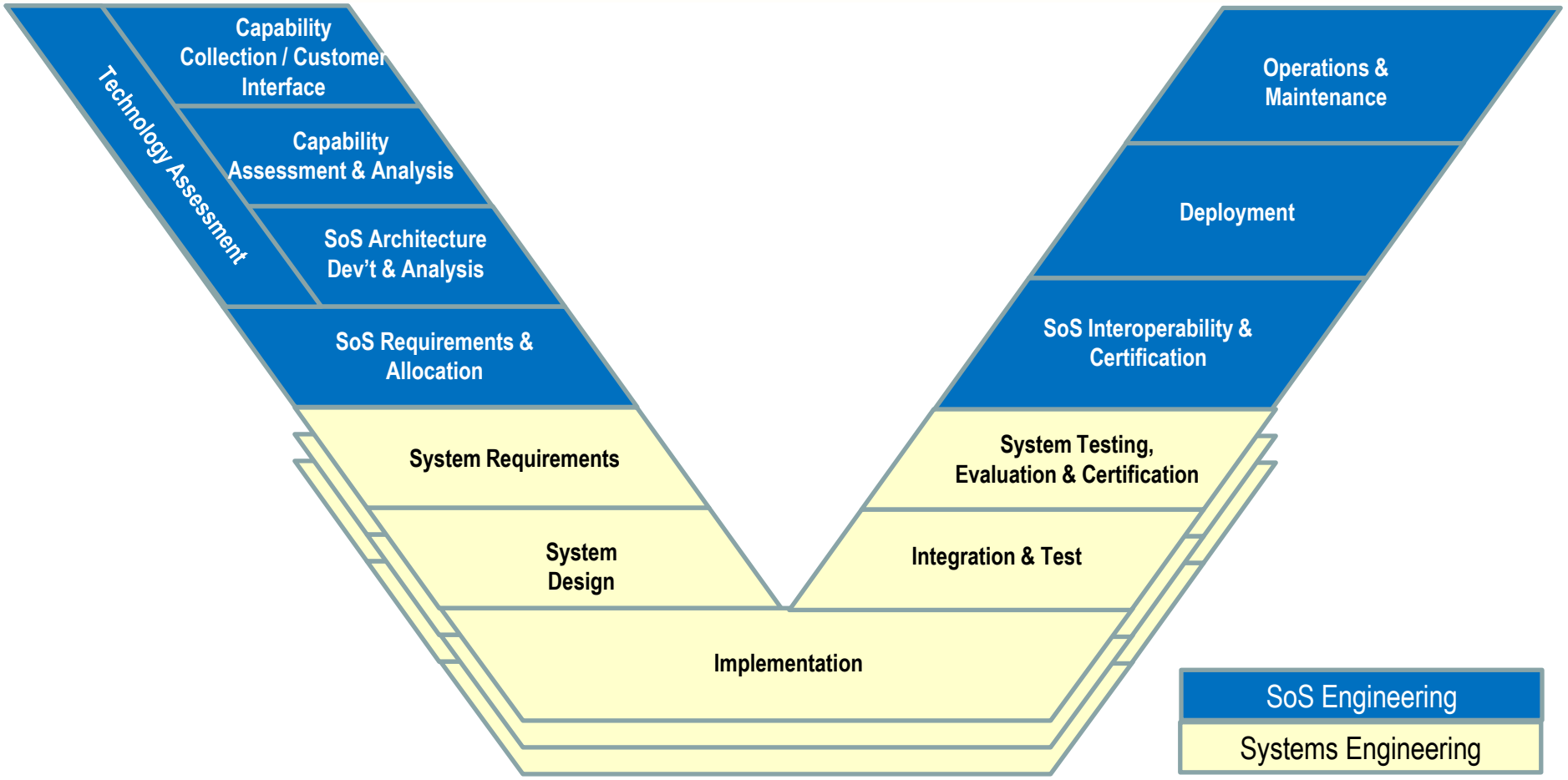
Benefits

- Understanding of SoS performance in context of mission success to shape acquisition planning
- Develops a comprehensive operations and maintenance to better align IT baselines in the Fleet

Mission Assurance Example

- SoS Test & Evaluation performed by analysis
  - Leverage Fleet Exercises and Experiments
  - Identify and mitigate Interoperability problems ahead of Deployment
- Multiple IT baselines exist in the fleet today
  - Over 20 different networks
  - 5 different operating systems
- Managing IT from a SoSE&I approach could eventually consolidate the number of baselines in the fleet.
- Designation of SPAWAR as IT TA will give IT issues a voice when considering afloat availability.

SoSE&I "Vee" In Review



Coordinated effort across Navy Stakeholders to ensure User Needs are effectively translated into Interoperable Solutions

Conclusions

- Modern Naval Warfare in a net-centric environment requires management at the SoS level to ensure integration, interoperability, and mission success
- SoSE&I is a disciplined approach to successfully guide simultaneous, complex acquisition and operations of Navy IT
- SPAWAR, designated as the IT TA, will manage SoS contribution to mission success via a SoSE&I approach

Information Dominance poses unprecedented integration and interoperability challenges among Navy systems

QUESTIONS

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