Surface Navy Combat Systems Engineering Strategy

Defense Daily Open Architecture Summit
Looking Ahead to ACB 12 and Beyond Panel

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Looking Ahead to ACB 12 and Beyond Panel

- What is Navy's Surface Ship Road Map for Implementing OA over Next Decade?
  - The critical enabler for future Combat System upgrades is transitioning to a network-based COTS Computing Environment. Combat Systems roadmaps are tied to converting Mil Std computing plants to COTS-based open architecture. The first OA installs are complete and operational in CG 52 and CVN 68
- What Lessons were Learned from Early OA Efforts?
  - As in most complex engineering and computer upgrades, the first installations of open architecture were difficult
- Will Planned Modernization be on Schedule?
  - We will continue the Transition to a network-based COTS Computing Environment on schedule but we must be flexible to the constraints of available funding

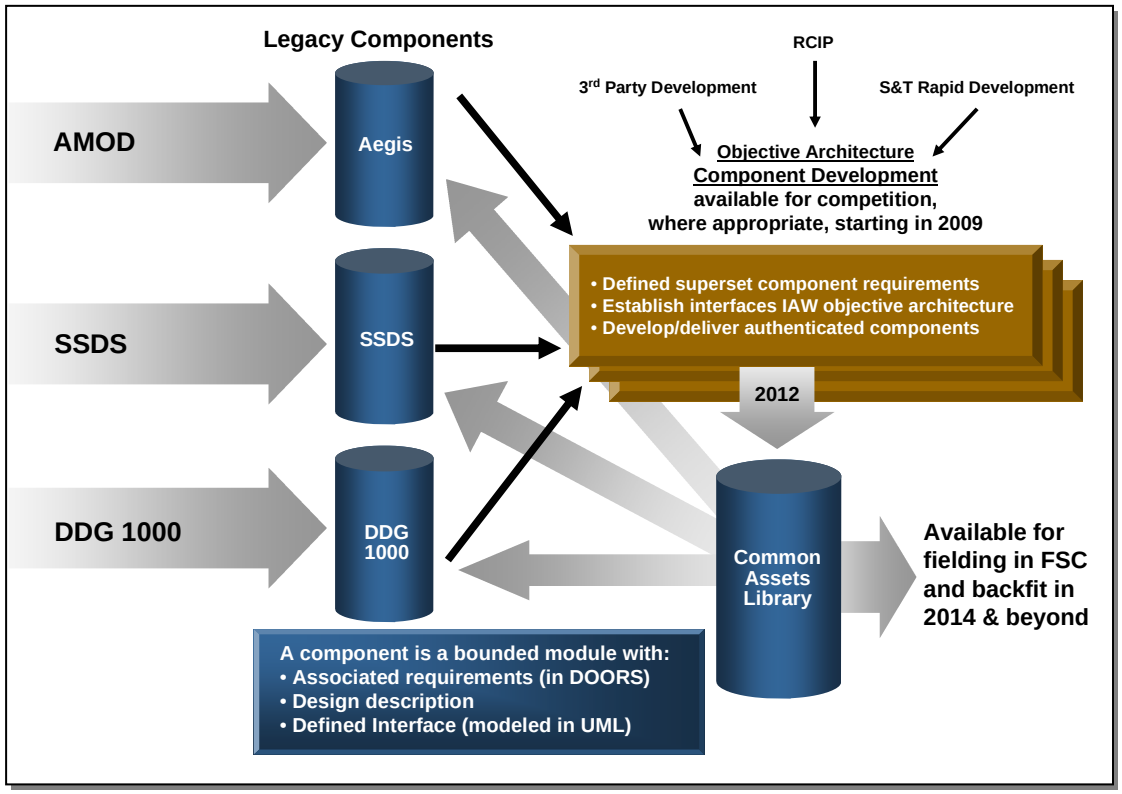
Surface Navy Combat System
Transition to Objective Architecture On Track

As of November 2009

- Decoupling of Software from Hardware on NIMITZ & BUNKER HILL completed ☑
- NIMITZ final SSDS Software Cert completed 12 June 09 ☑
- BUNKER HILL CSSQT successfully completed 30 July 09 ☑
- BUNKER HILL final Software Cert scheduled November 09 ☑

2012

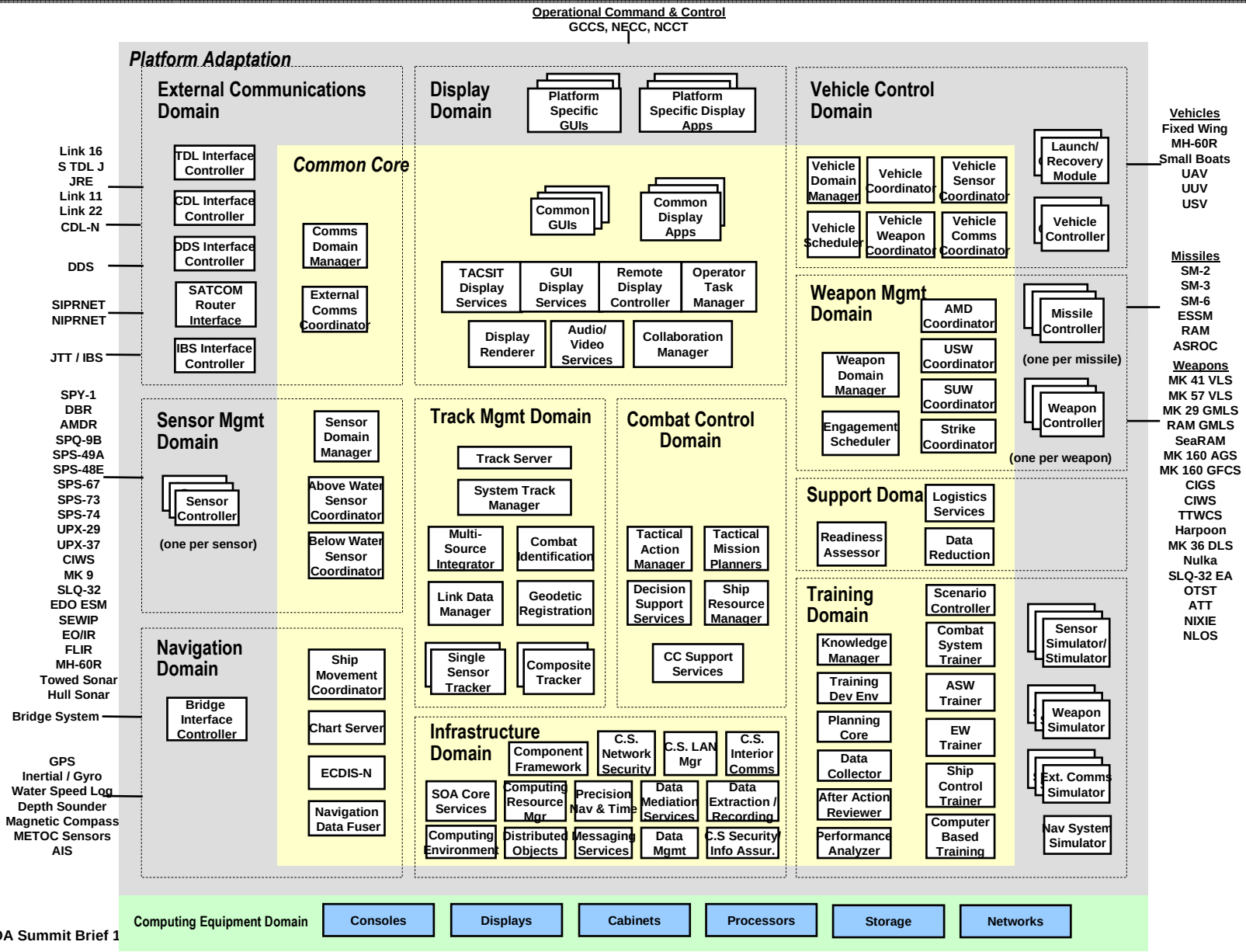
- Aegis modernization (ACB 12) component level interfaces delivered at CDR (1Qtr FY10) and with each delivered computer program build ☑
- SSDS interfaces already documented at component level
- Small number of common components integrated in both Aegis & SSDS-ACB 12



2014 - 2022

- Number of common components will increase with each ACB eventually moving to a common software core for all Surface Navy Combat System
- Warfighting capabilities required will determine which components modified

Surface Combat System Top Level Architecture



Transitioning to Objective Architecture Based Combat System

2008

- ✓ Aegis designed as an integrated combat system
- ✓ Aegis ACB 08 / TI 08 decoupled hardware from software
- ✓ SSDS designed with federated combat system network and hardware decoupled from software
- ✓ SSDS ACB 08 adds open standard middleware
- ✓ Future capability improvements planned for both programs through Advanced Capability Build (ACB)

2012

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2014-2022

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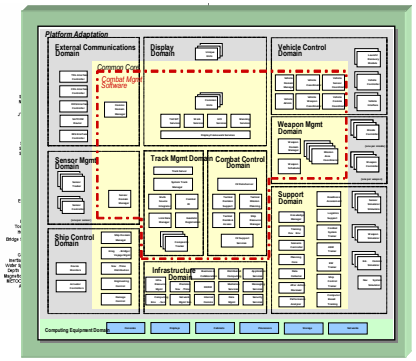
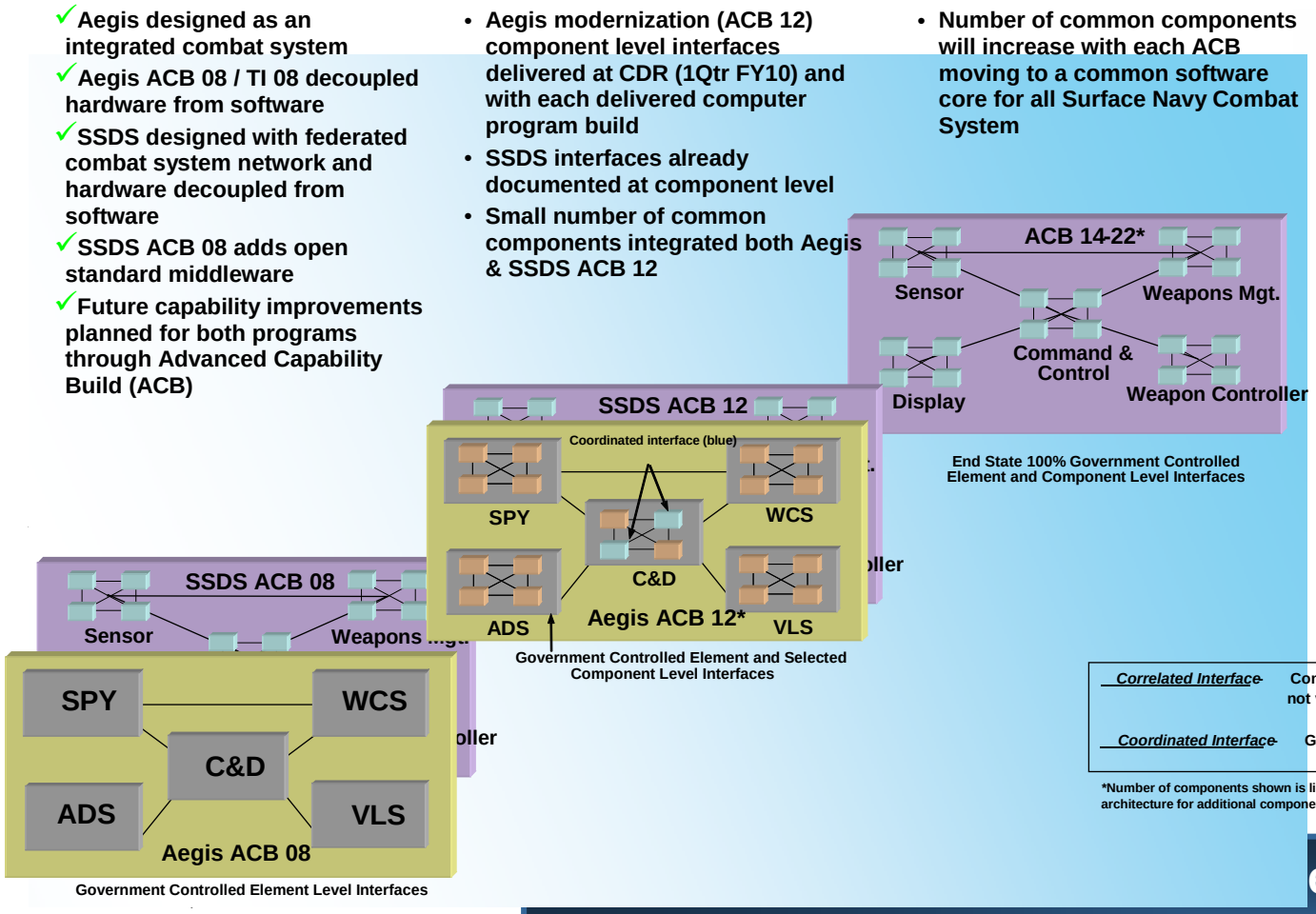
Objective Architecture





Correlated Interface – Contractor described & controlled; not vetted through governm ent coordination process

Coordinated Interface – Government Controlled and Validated

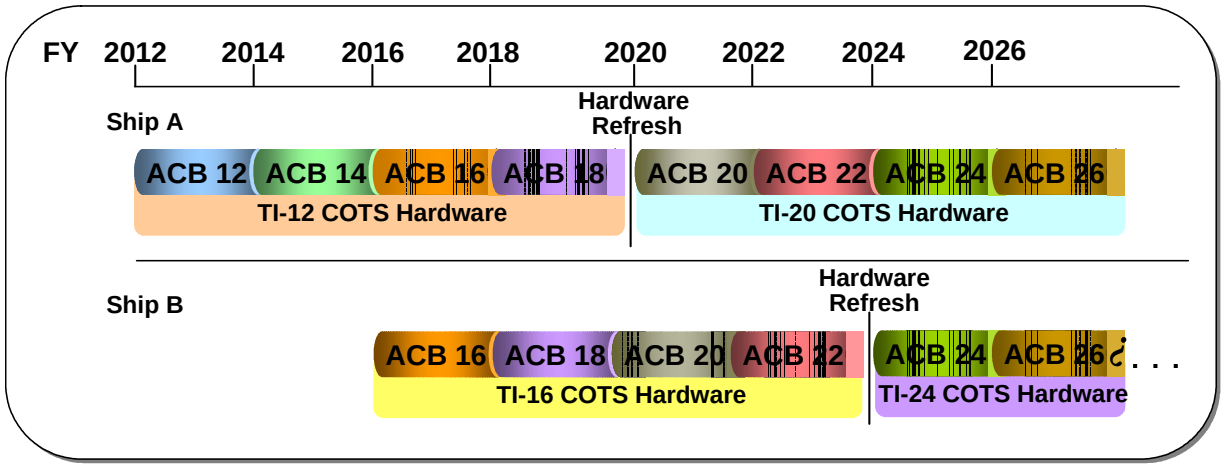
*Number of components shown is limited for illustrative purposes. Refer to ADD or top level objective architecture for additional component decomposition

es determine components modified

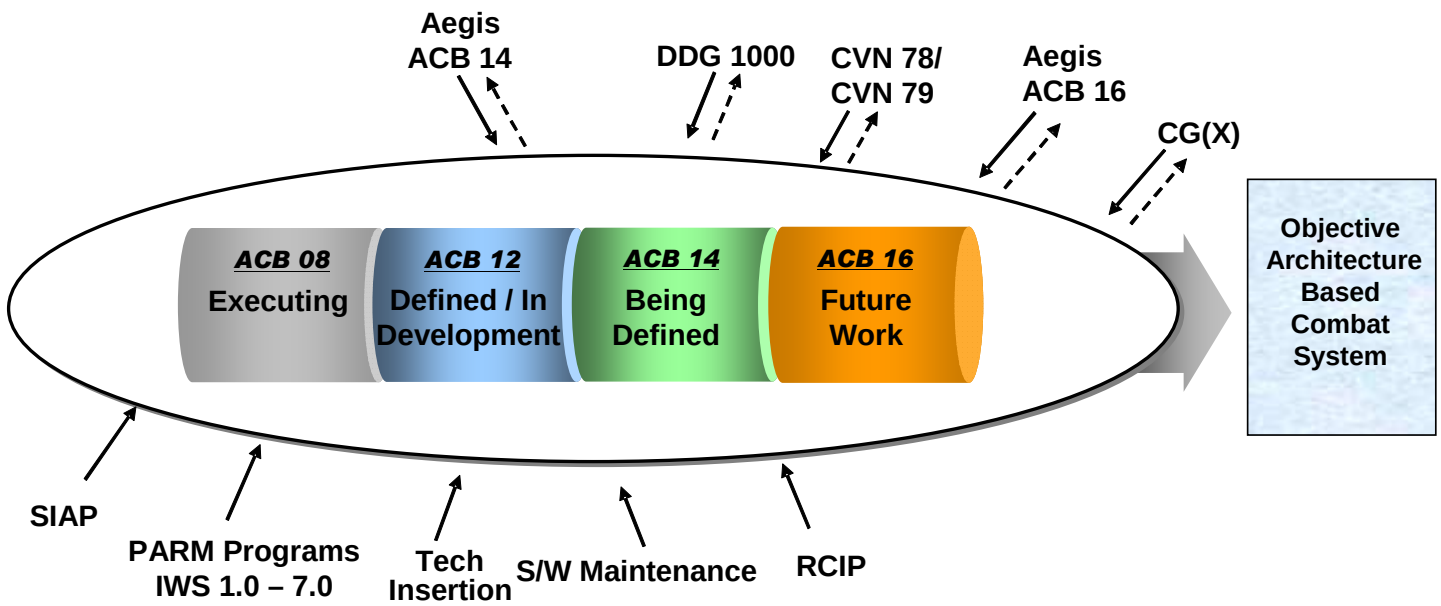
Advanced Capability Build / Technology Insertion

ACB / TI Notional Model

- Requires transition to COTS computing via initial TI
- Each ACB builds on prior ACBs while adding new capabilities
- Transitioned ships receive new ACB every 2 years
- Every ship receives every other TI



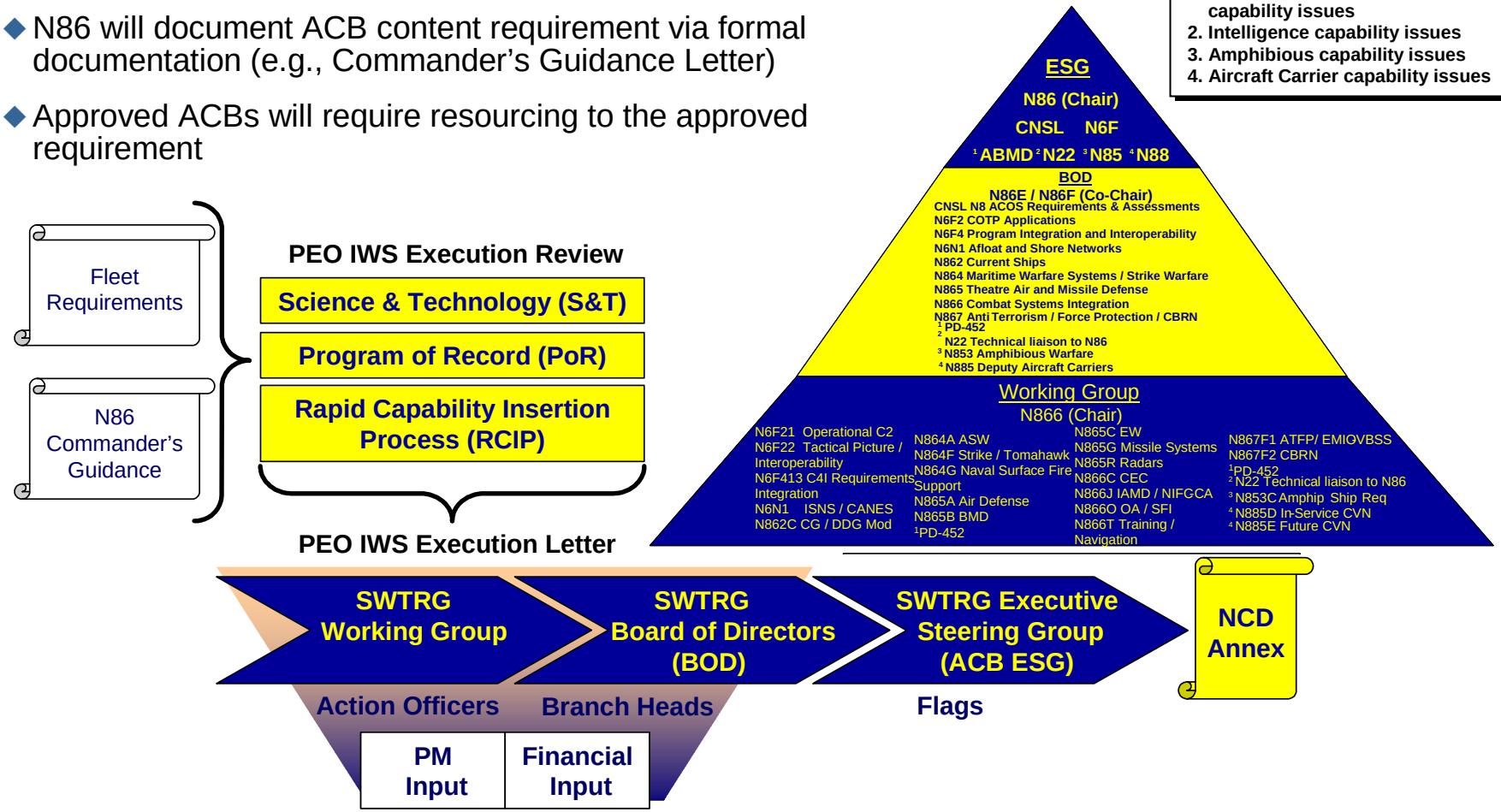
ACB Definition



Surface Warfare Tactical Requirements Group (SWTRG)
ACB Content Definition Process

- N86 defined Advanced Capability Build (ACB) content for the Acquisition Community
  - Informal, collaborative approach between Action Officers and PEO IWS SIPMs / MPMs for content definition and alignment
  - SWTRG is formal content definition governance process
- N86 will document ACB content requirement via formal documentation (e.g., Commander's Guidance Letter)
- Approved ACBs will require resourcing to the approved requirement

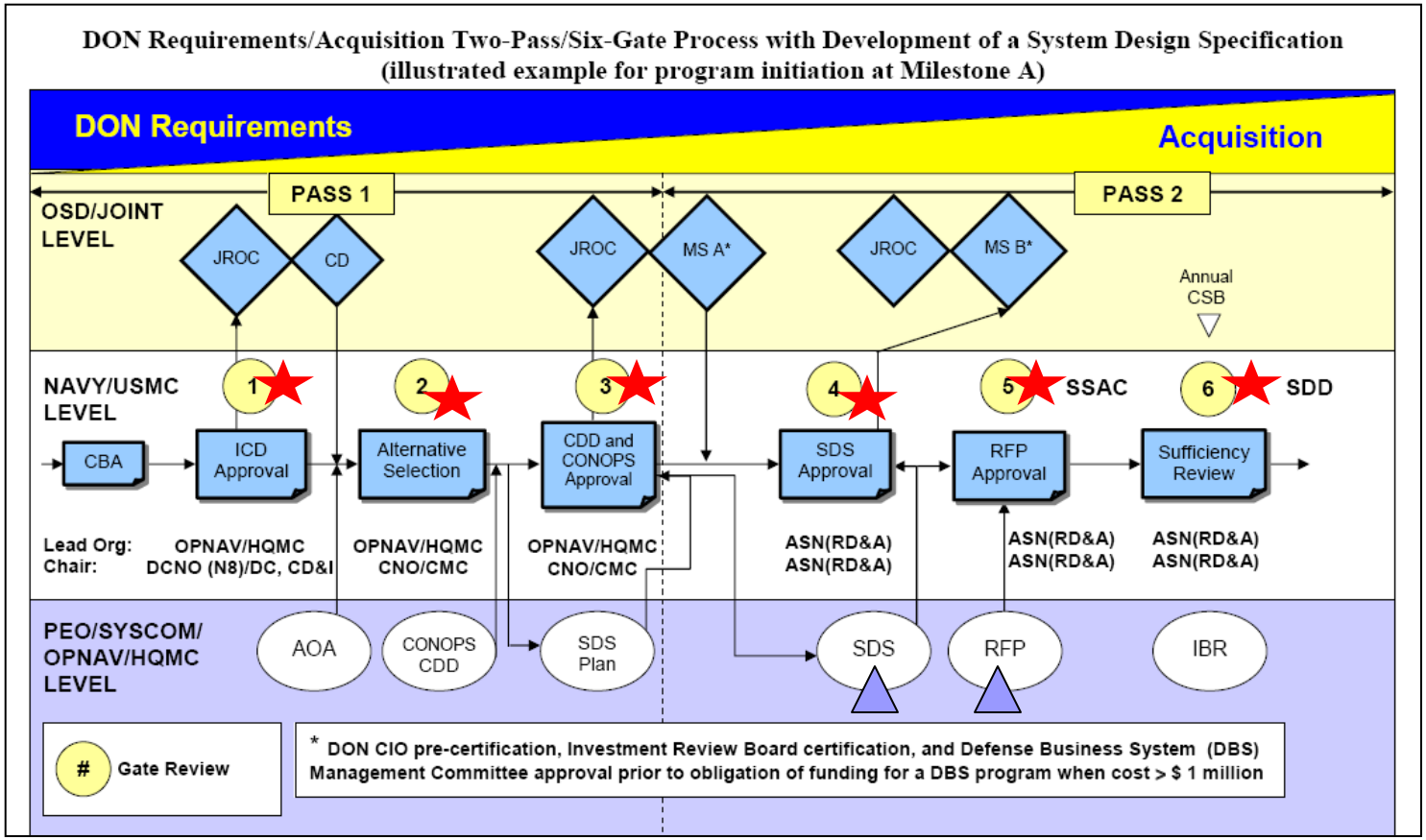
Required attendance for:
1. **Air and Ballistic Missile Defense capability issues**
2. **Intelligence capability issues**
3. **Amphibious capability issues**
4. **Aircraft Carrier capability issues**



OA checkpoints are being built into the Department of Navy's Six Gate Review Process to ensure compliance

★ OA Checkpoints

▲ OA Guidance



SECNAV introduced the six-gate, two-pass process to more effectively integrate the Naval requirements and acquisition decision processes. This process improves visibility and insight into the development, establishment and execution of programs.

Combat Systems Engineering Strategy Summary

- Transitioning to network-based COTS computing environment as soon as feasible will achieve significant computing and warfighting improvement
- Establishing a combat system based on a common objective architecture with products applicable to multiple ship classes
  - Government owned architecture and authenticated interfaces driven by Architecture Description Document (ADD)
- Conducting combat system development through disciplined systems engineering principles and processes

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