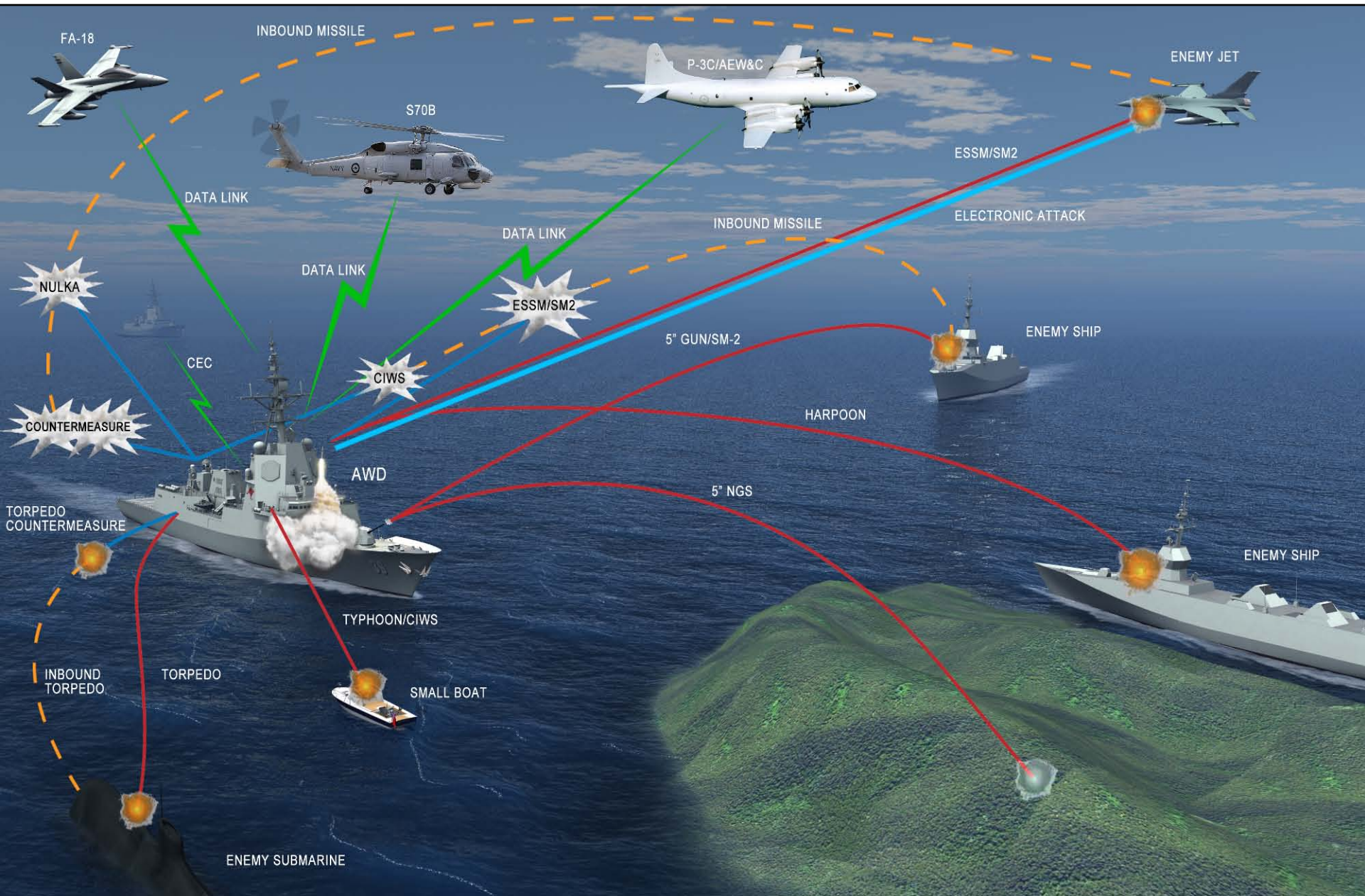


AIR WARFARE DESTROYER ALLIANCE

SEA 4000 Air Warfare Destroyer

Hobart Class Combat System Integration

Building Australia's Future Air Warfare Capability
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CG 47: USS Ticonderoga

27 Ticonderoga Cruisers have been deployed with the AN/SPY-1A, AN/SPY-1B and AN/SPY-1B(V) Radar Systems. The new Cruiser Conversion Program, a top national priority, will upgrade many of the Aegis Cruisers with the SPY-1D(V) signal processor enhanced capability.



DDG 51: USS Arleigh Burke

63 Arleigh Burke Destroyers, 57 commissioned, 6 more under construction, have or will be outfitted with the AN/SPY-1D/D(V) Radar Systems.



F-310: Fridtjof Nansen

Five Norwegian New Frigates, 4 commissioned, 1 under construction, will mark the introduction of the SPY-1F Radar System. SPY-1F is a smaller, lighter version of the AN/SPY-1D Radar System.



F101: Alvaro de Bazán

The four Spanish F-100 Frigates field the AN/SPY-1D Radar System. Fifth ship is in build.



*DDG 173: Kongo
DDG177: Atago*

The first allied ship to carry the AN/SPY-1D Radar System, the four Japan Kongo Class and two Atago Class Destroyers are fully operational in the Asia Pacific region.



KDX-III Multi-Mission Destroyer

In June 2002, the SPY-1D Radar System was selected for the next-generation Korean Destroyer Experimental KDX-III. One has been commissioned with two more under construction.



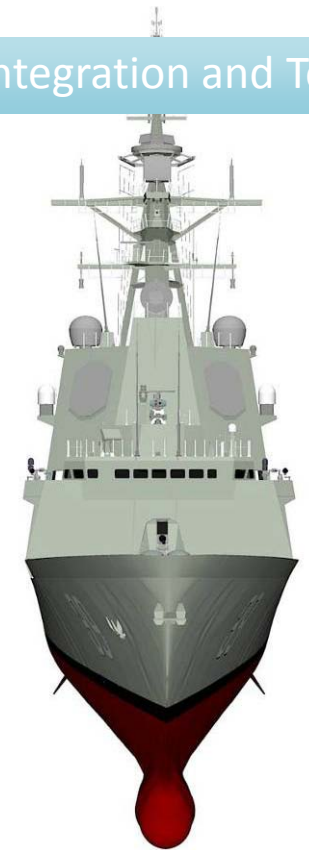
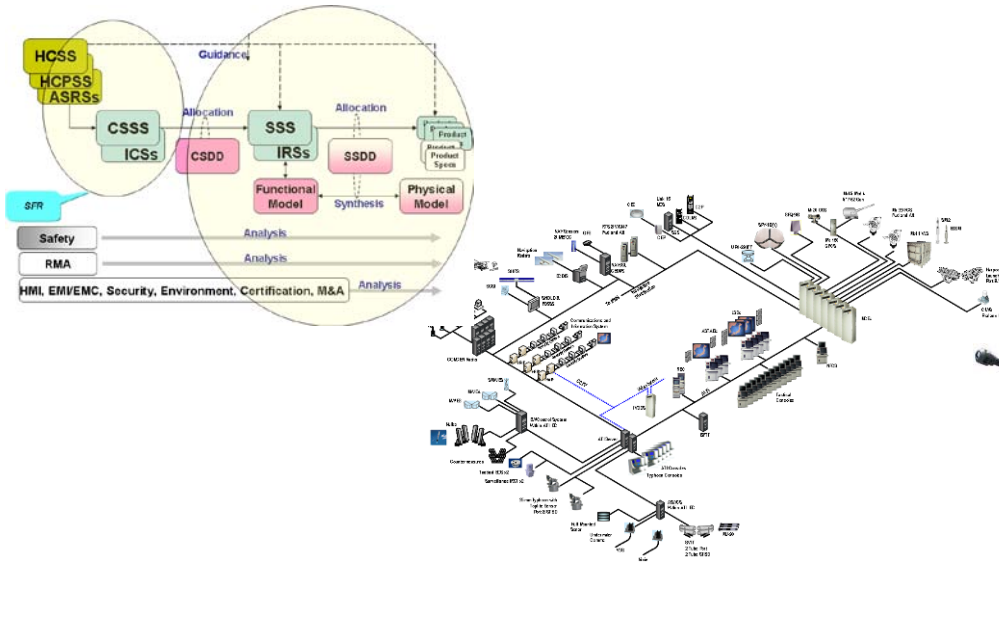
Image Courtesy of Lockheed Martin

Systems Engineering

Architectural Design

Equipment Selection

Integration and Test



Integration Risk Management

- AWD Integration Risk Management Program Phases
 - **Architecting** early to minimise the ‘Integration Risk Profile’
 - **Managing** the integration risk profile throughout design and equipment selection
 - **Planning** the integration activities to retire integration risk early
 - **Executing** the plan and continually seeking opportunities to integrate early where beneficial



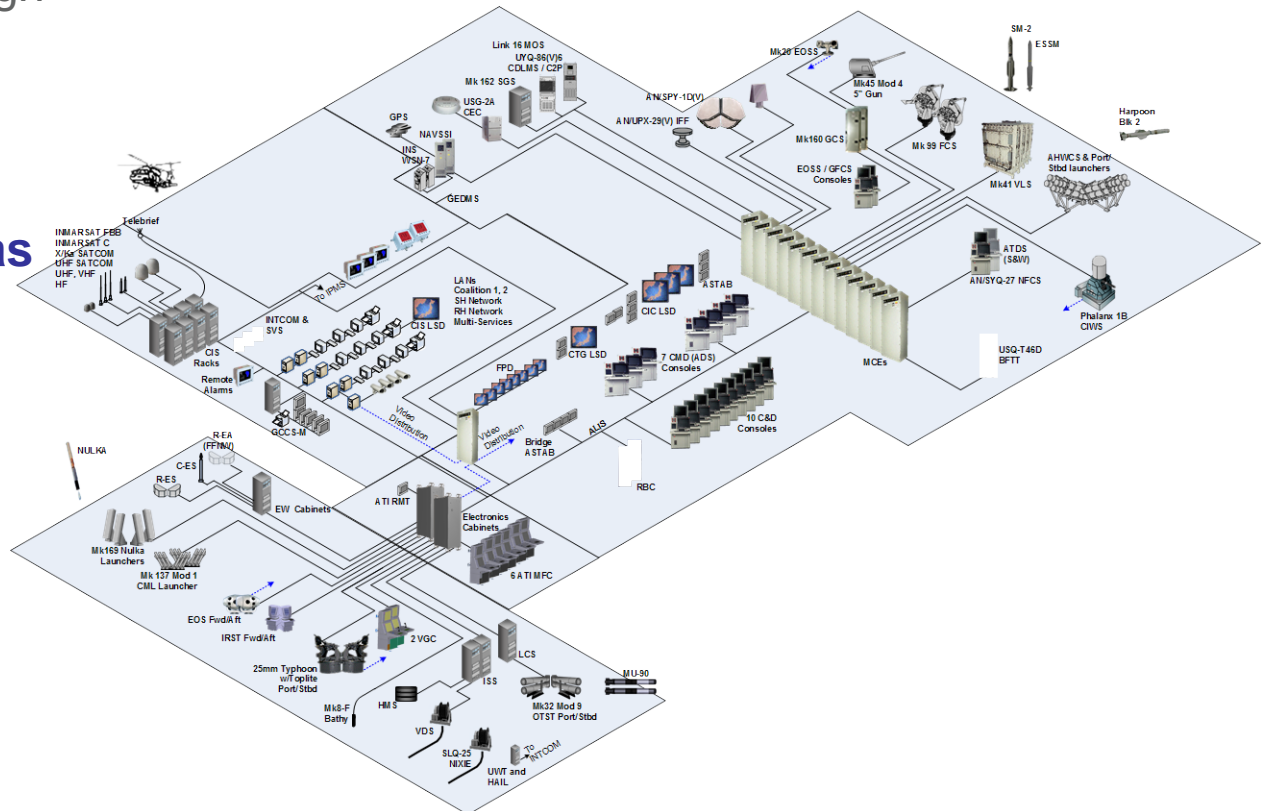
Architect to Minimise
Integration Risk

Manage Integration
Risk During Design

Plan Integration
Program

Execute and
Continuously Improve

- AWD Architectural Design
 - Performed Early
 - Covered Multiple Considerations
 - **Integration Risk was one of the many Considerations**



RAN Air Warfare Destroyer HOBART Class Combat System Physical Architecture

Architect to Minimise Integration Risk

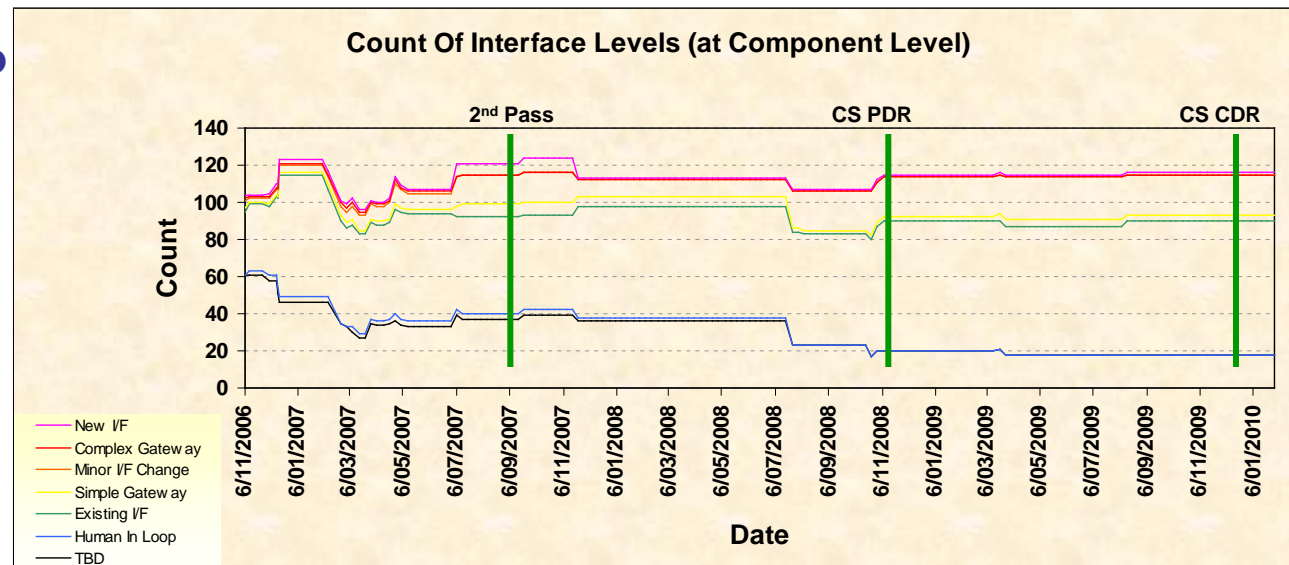
Manage Integration Risk During Design

Plan Integration Program

Execute and Continuously Improve

- Equipment Selections Made Throughout Design Phase
 - Vendor Responses Assessed against Selection Criteria
 - Selection Criteria included impact to Integration Risk
- Integration Risk Profile Managed Throughout Design

- **Integration Risk Needs to be Managed throughout the Architecture / Design Phases**



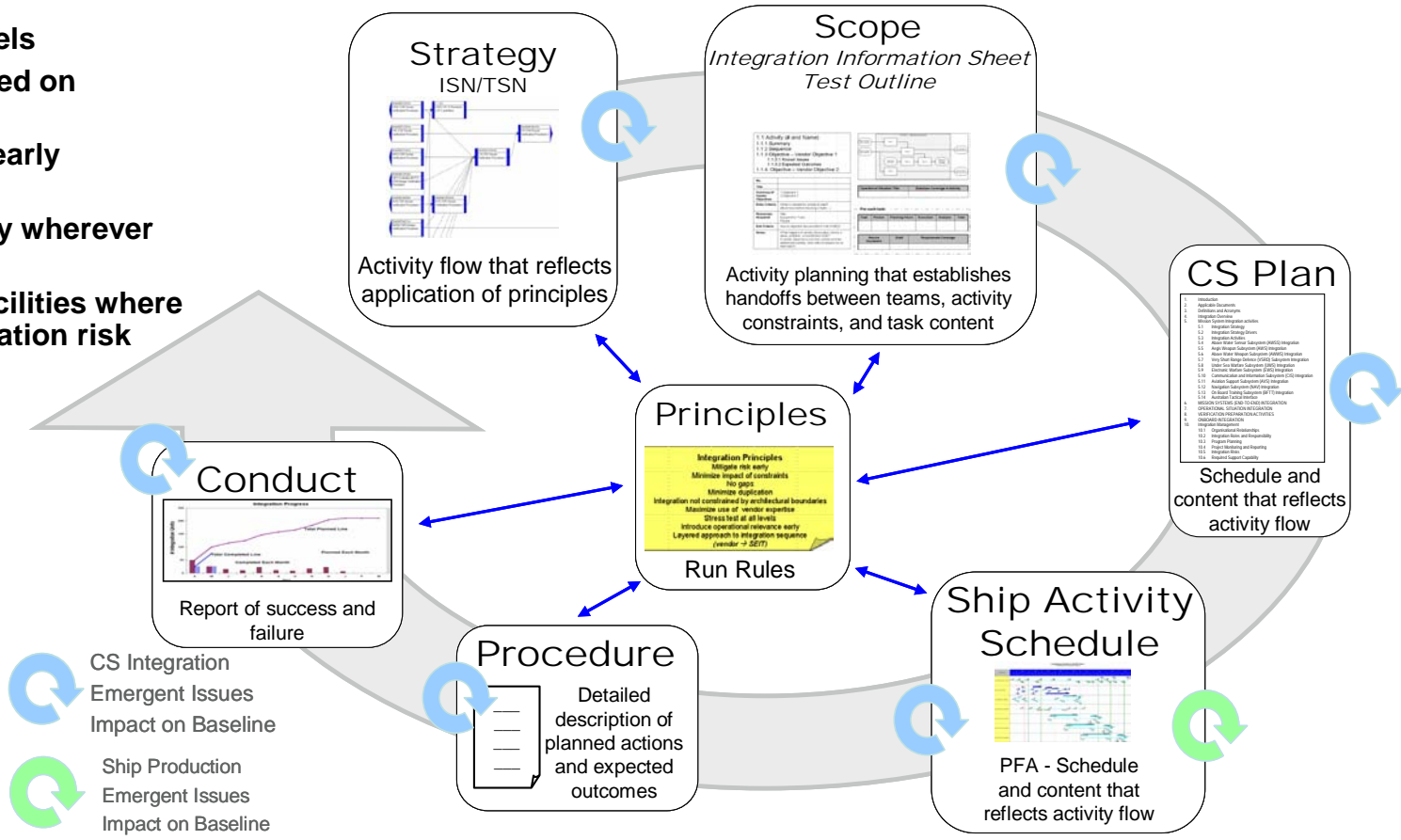
Architect to Minimise Integration Risk

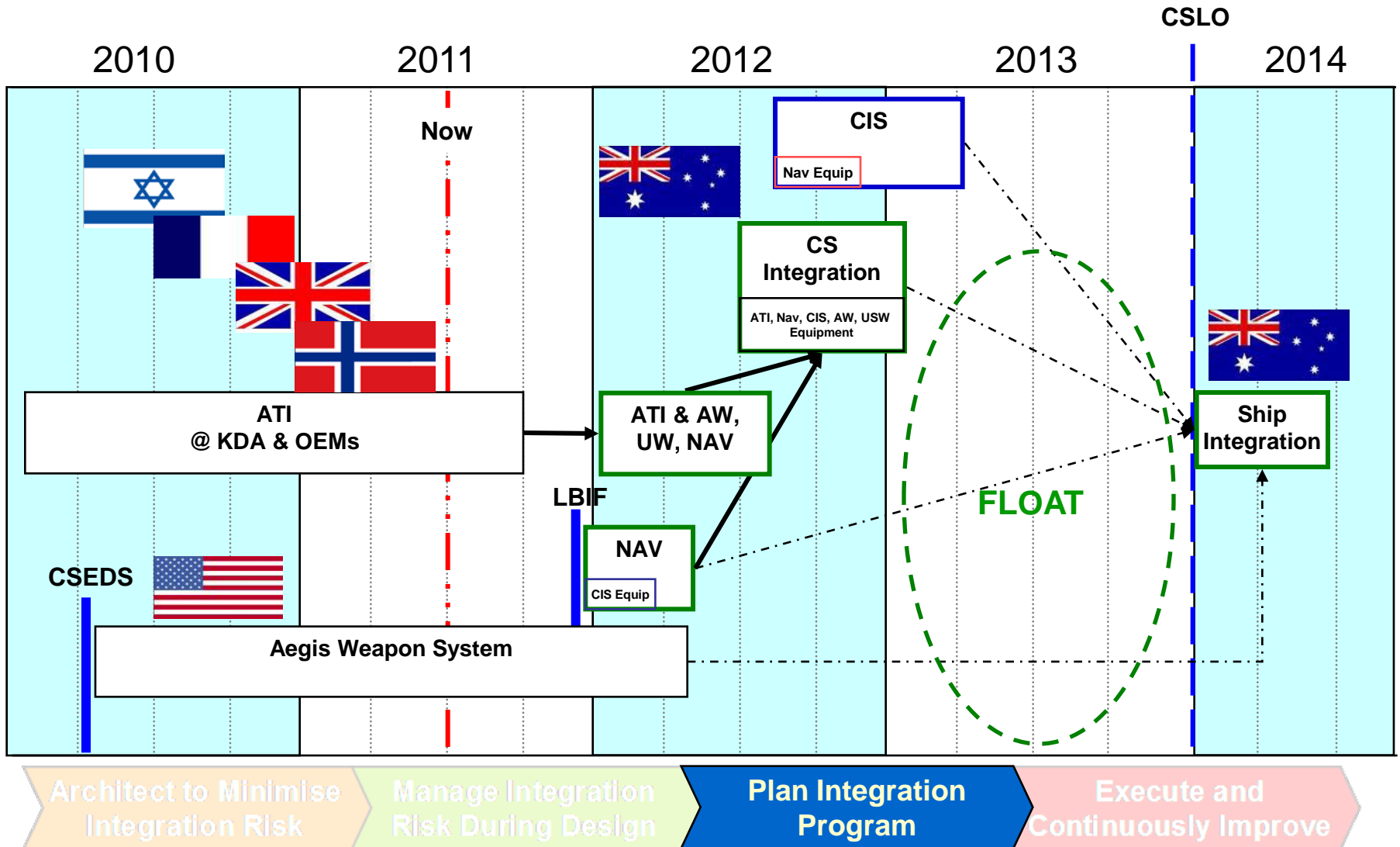
Manage Integration Risk During Design

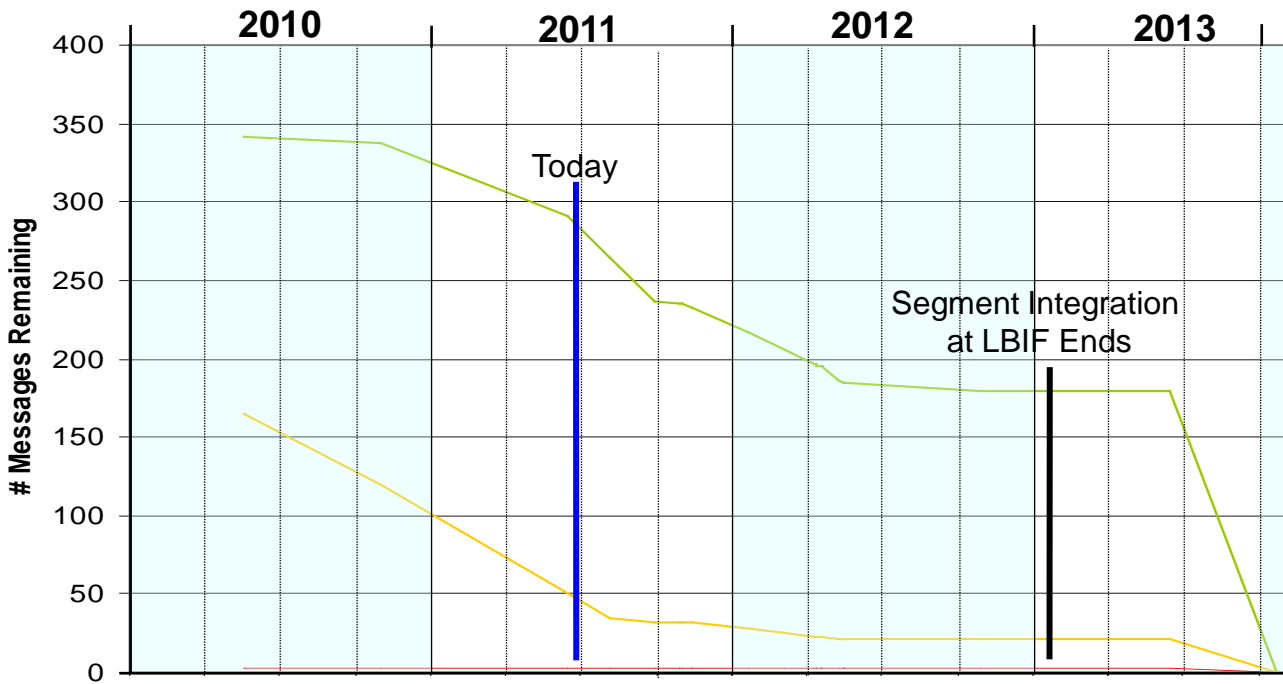
Plan Integration Program

Execute and Continuously Improve

- Define interface risk levels
- Sequence activities based on integration risk
- Seek Opportunities for early integration
- Use real equipment early wherever possible
- Use Vendor and USN facilities where this reduces ship integration risk
- Minimise shipboard Integration







Architect to Minimise Integration Risk

Plan Integration Program

Execute and Continuously Improve

- Integration of the Hobart Class Combat System is a complex task
- The approach being taken to manage the integration risk
 - Started at the combat system Architecture Definition
 - Continued through Design
 - Enabled the Integration Strategy and Plans to be aligned with the Architecture
 - Is now being executed
- The approach has been supported by the ‘Design Driven’ approach taken by the Commonwealth and the maturity and stability of the Aegis Weapon System
- Integration is well advanced and running to plan
- Focus will shift to the LBIF in Australia in 2012 and to HMAS Hobart in 2014
- Some predominantly low integration risks is being carried forward to the ship construction phase and this is under management control

