



Advancing Weapons Capabilities in Multi-Domain Environments

March 28, 2017

Presented to:
PSAR 2017

Presented by:
RADM Mark Darrah

PEO(U&W)



PEO(U&W) Programs

PMA-201

Precision Strike Weapons



PMA-208

Navy Aerial Targets and Decoys



PMA-242

Direct and Time Sensitive Strike



PMA-262

Persistent Maritime UAS



PMA-263

Small Tactical UAS



MALISS

PMA-266

Multi-Mission Tactical UAS



CSI

PMA-268

Unmanned Carrier Aviation



PMA-280

Tomahawk Weapons System



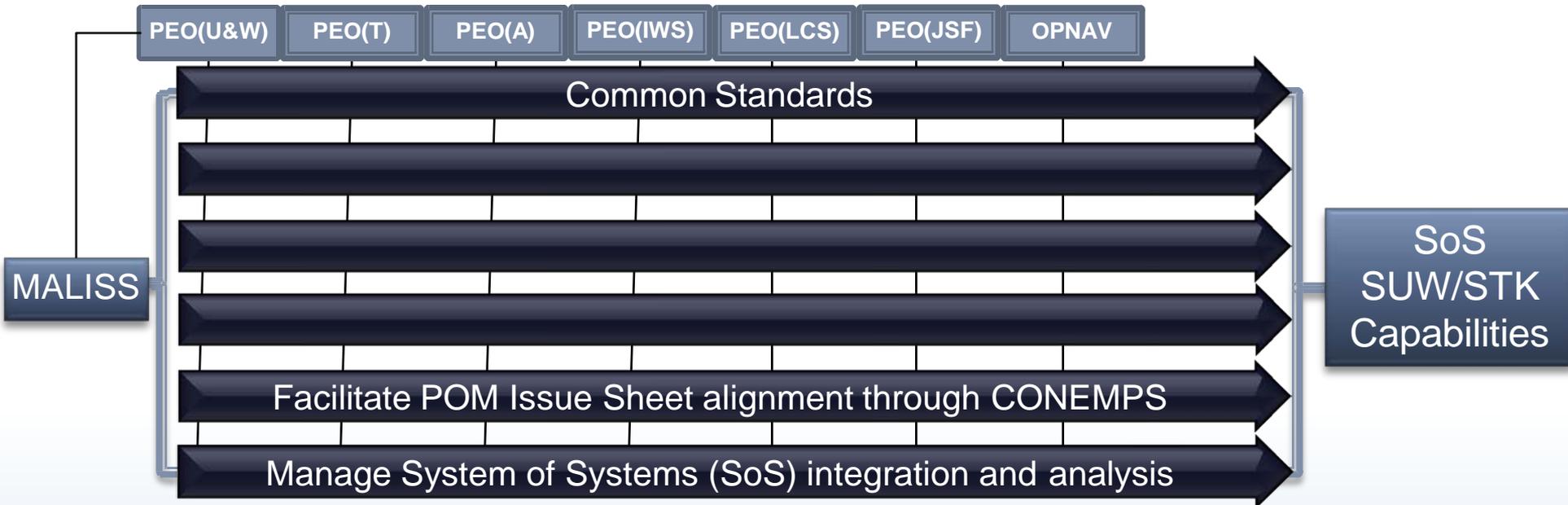
PMA-281

Strike Planning and Execution Systems





Mission Area Lead Integrator for Surface and Strike Warfare (MALISS)



Mission Area Lead Integrator for Surface and Strike Warfare (MALISS) ensures System of Systems (SoS) mission wholeness for the Surface and Strike Warfare (SUW/STK) mission areas.



PEO(U&W) Environmental Scan

Imperative

- Exponential world
- Complex maritime environment and operations
- Capable Maritime Adversary
- We have no more capability margin

Challenges

- Disaggregated Data Bases with no Common Interpreter
- Risk Avoidance Behavior Stunting Innovation and Delivery of Capability
- Culture of Platform Focused Resourcing and Development

Enablers

- Virtual Environments Driven by Existing Data
- Collaborative Planning and Execution
- Resilient Networks with Off-Ramps Enabled by Autonomy

Outcome Focus

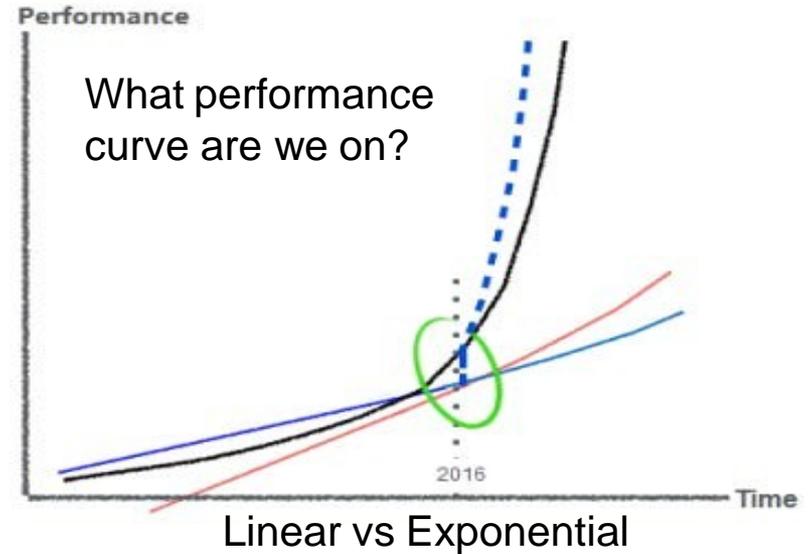
- Deliver Fully Integrated and Interoperable Capability
- Speed to Fleet
- Deliver Lethality at Range



Imperative

Threat Environment

- Adversaries Military & Maritime Growth
- Aircraft (5th Gen)
- Ships (effective reach and capability)
- Weapons (long range, high speeds)
- Network Capability (Interconnected)
- Cyber Capability





Challenges

- **Peer adversaries with regional advantages**
- **Fleet has areas of “game changing” capability**
 - Undersea system
 - Integrated Tactical Networks
 - Modularity
 - Our people
- **Opportunity for capability enhancement**
 - Combat Identification lacking
 - Susceptible to electronic attack
 - Limited integrated non-kinetic effects
 - Human oriented decision speed
- **Limited distribution and cooperative processing of sensor data and machine aided analysis**
 - Fleet fights with platform centric mindset
 - Sensor and fire control is trending toward a more integrated, distributed and capable maritime force



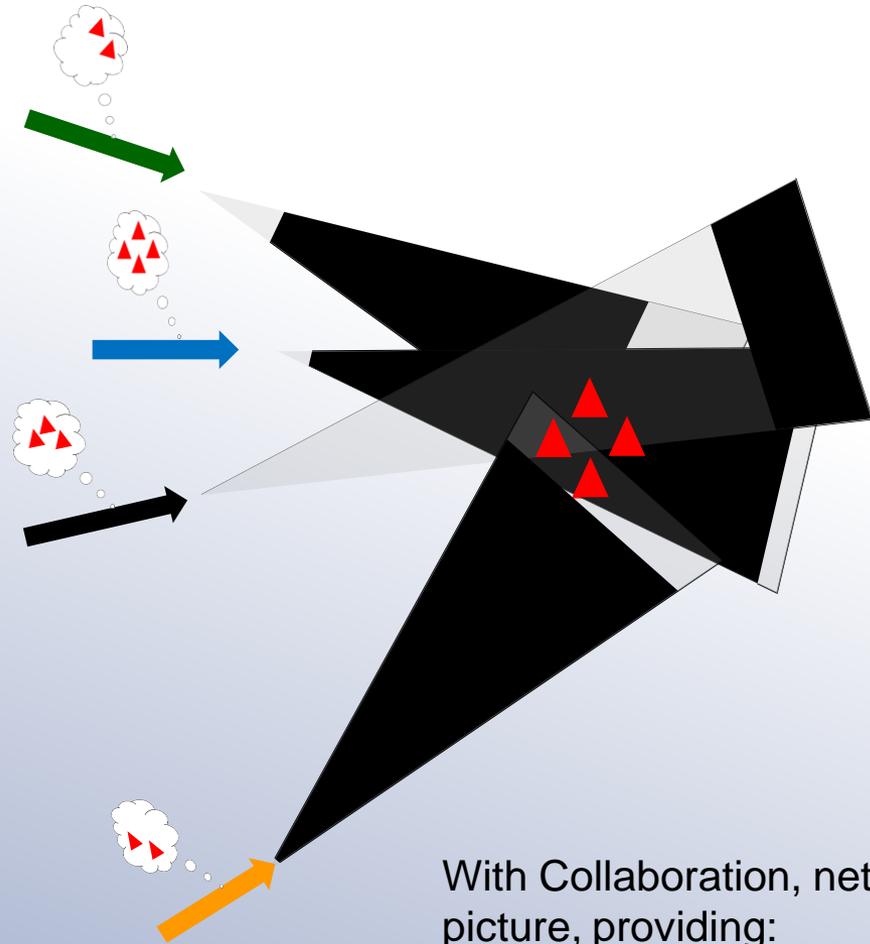
Enablers

- **Role-Based Execution: Maximizing the number of systems that can access and execute multiple functions using common data – PLATFORM AGNOSTIC**
- **Collaborative Behavior: Data Use, Mission Planning, Sensors, Weapons**
- **Direct Application of Autonomy across systems: Enables near real-time KILL WEB capability**
- **Extended Reach: Propulsion Technology Improvements**

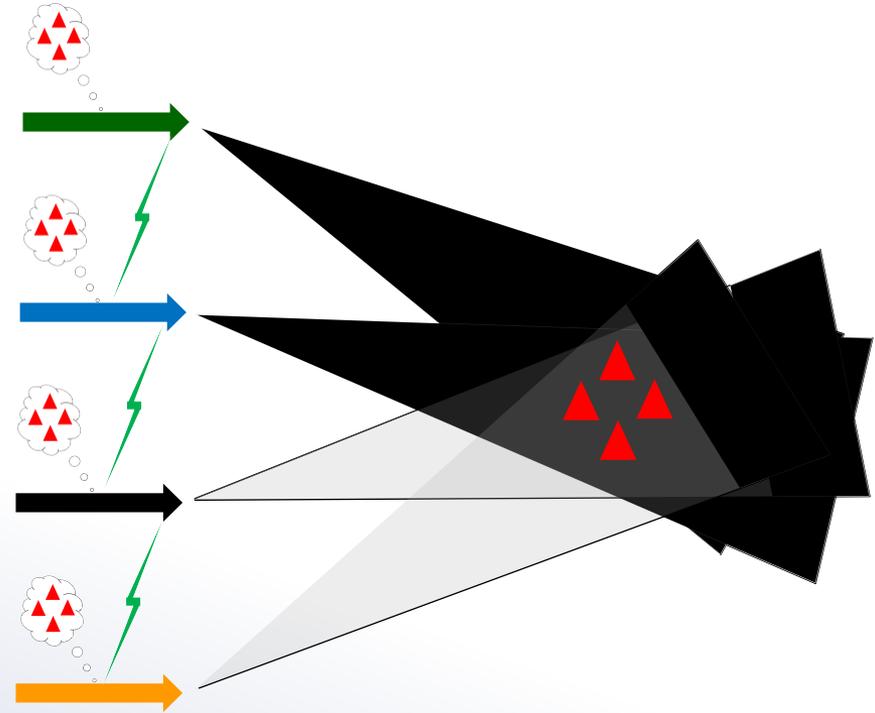


Weapon Collaboration

Without Collaboration



With Collaboration



With Collaboration, networked sensors work together to build a complete picture, providing:

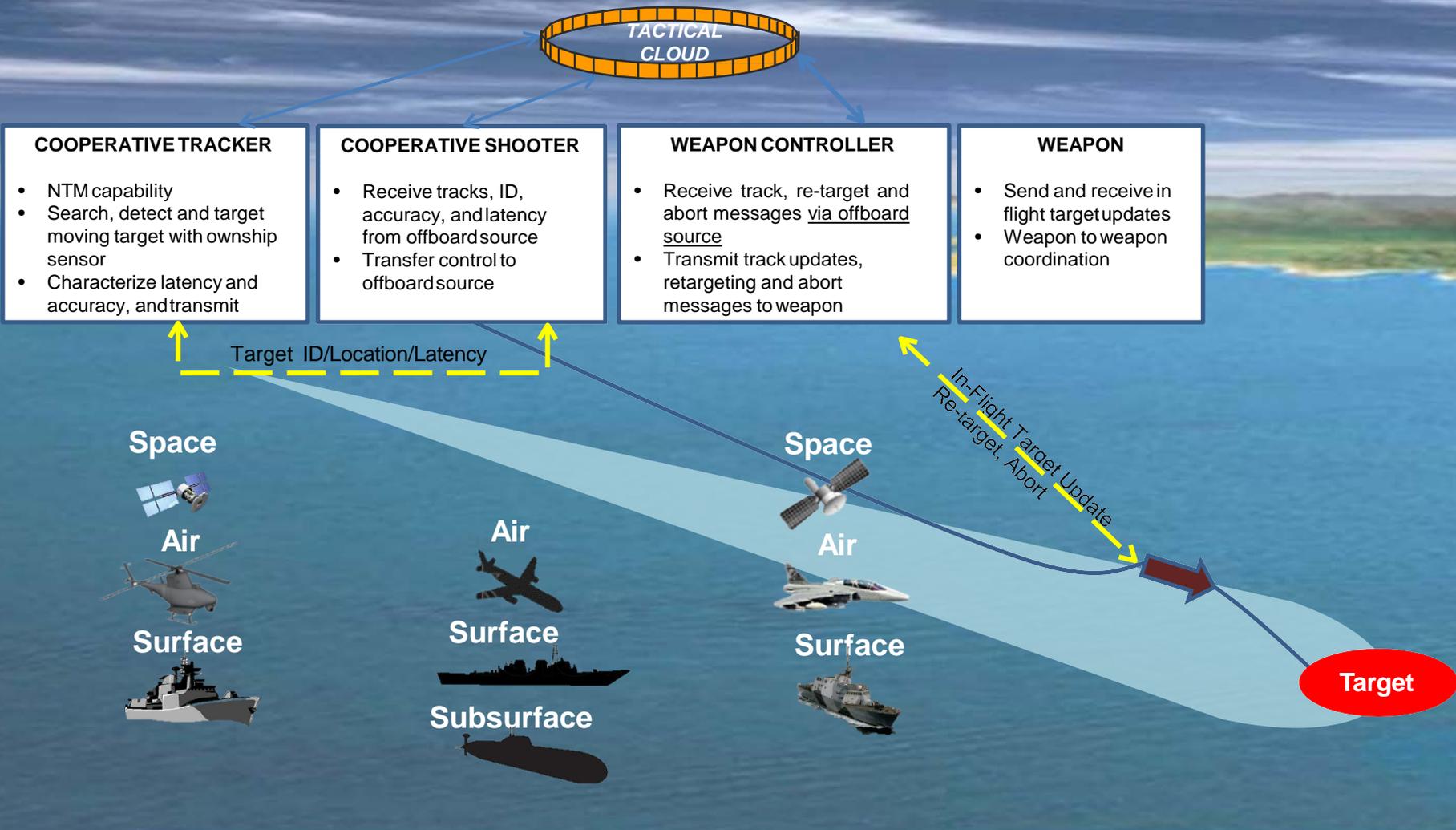
- Increased mission effectiveness/lethality
- Reduced Salvo Sizes
- Increased Commander's Flexibility



Functional Roles for Networked Sensors, Platforms and Weapons

Functional Roles

Notional Assets



We Must Focus on Data Needed to Fill Multiple Roles – Not the Platforms



Automation and Autonomy: Value to the Mission

Mitigate operational challenges associated with:

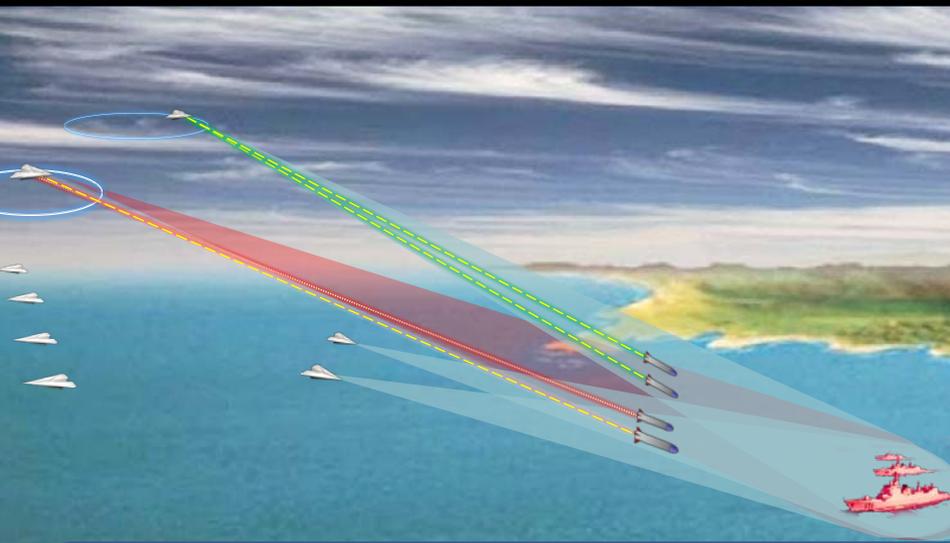
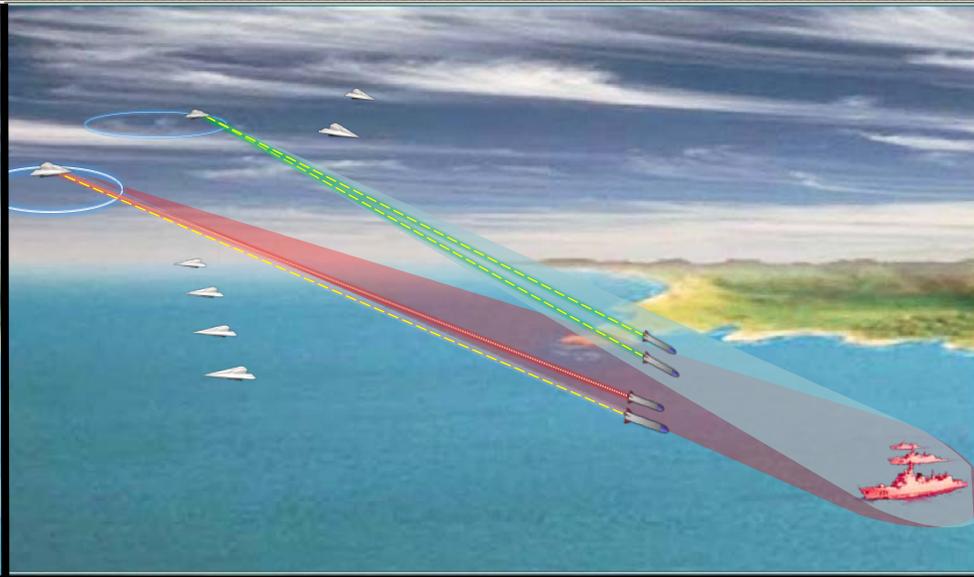
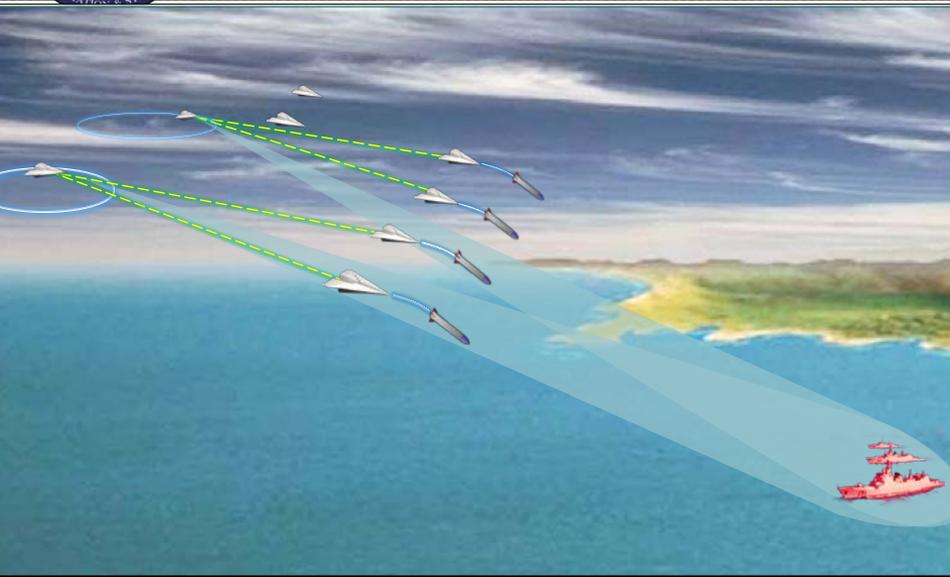
- Rapid Decision Making
- High heterogeneity and/or volume of data
- Data sharing among assets/ service/partner nations
- Intermittent Comms in a contested environment
- High Complexity of coordinated action
- Danger of Mission
- High persistence and endurance

In order to:

- Improve flexibility to quickly respond to battlespace changes
- Improve mission effectiveness
 - survivability, lethality, target detection, ID
 - interoperability with other entities (e.g. services, international partners)
- Optimize use of high value assets
- Minimize operational risk to humans
- Minimize operational cost (e.g. reduced human workload, reduced salvo sizes, reduced attrition, reduced fuel)
- Operate effectively in a comms/GPS degraded or denied environment



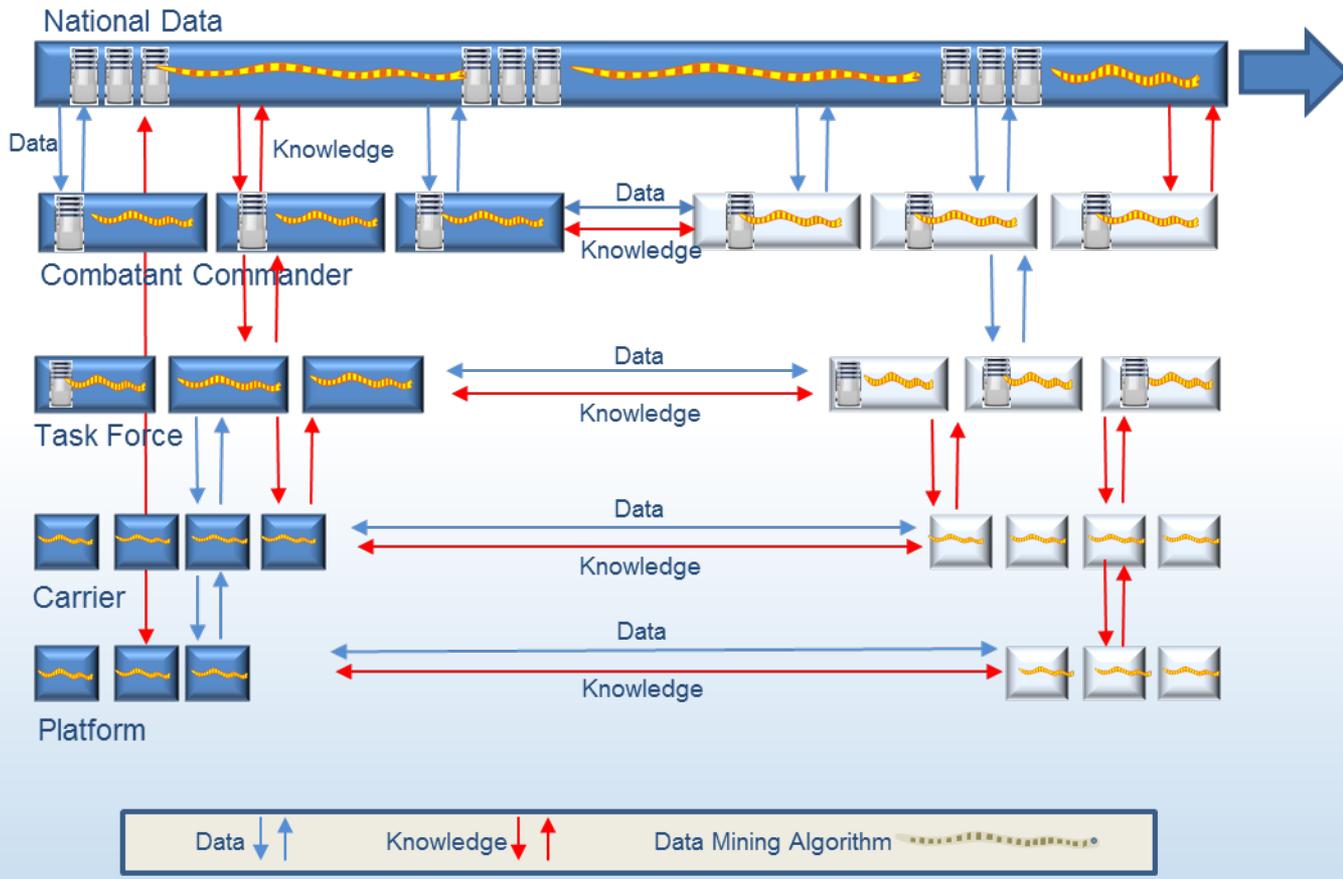
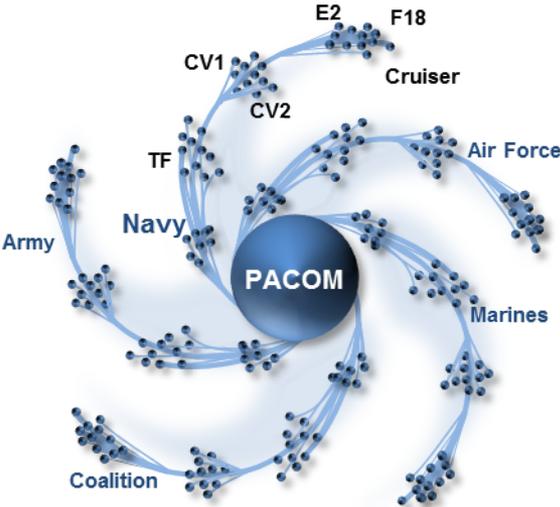
Kill Web OV-1



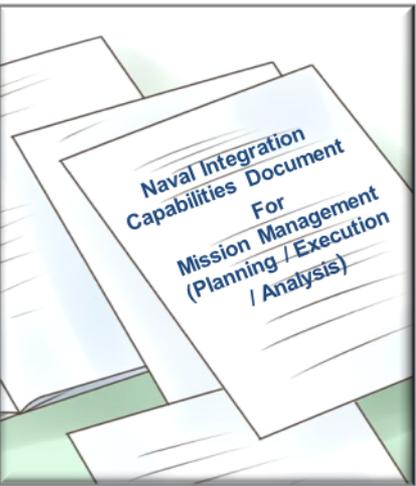
We Must Focus on Data Needed to Fill Multiple Roles – Not the Platforms



Virtual Collaboration Environment (VCE)

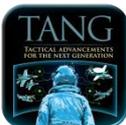


Requires:

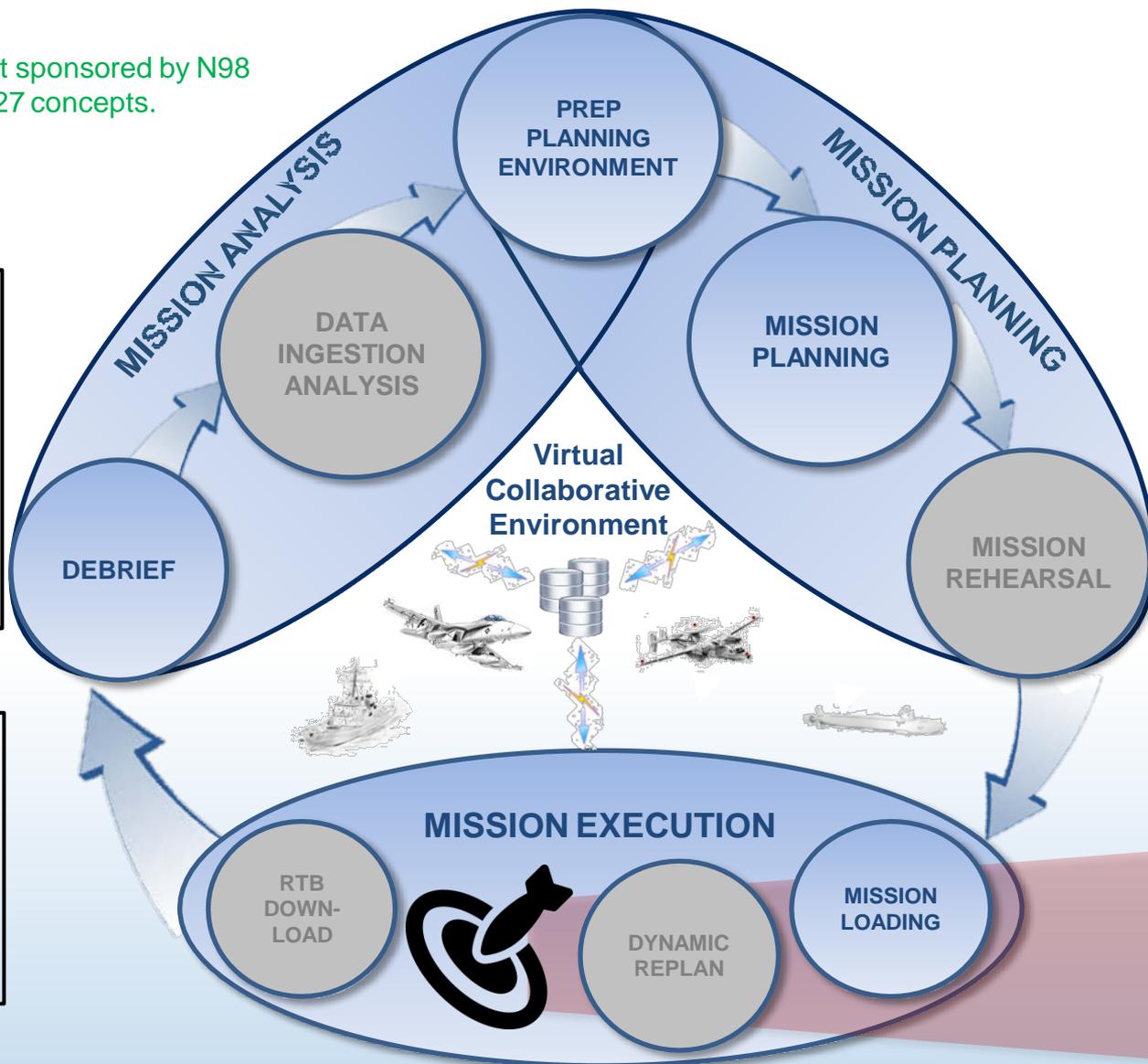




Mission Management



TANG event sponsored by N98 resulted in 27 concepts.



WOPR
(Wargaming Optimal Planning and Replanning)

PUNCH
(Pre / Post-Flight Unified Naval Combat Habitat)

KILLWEB

FUSION
(Fully Unified Seamless Integration Operational Networks)

CAVU
(Collaborative Airspace Visual Universal System)

PEO(U&W) Focus Areas



PEO U&W
Focus Areas

Partnership **Requirements** Align Investments
Cyber Advantage **Strengthen Workforce**
Modularity Ownership of Technical Standards
Competence Application **Product-Oriented Staffing**



NAVAIR
Commander's Intent



CNO
Design for
Maintaining
Maritime
Superiority

