



Combat/C2 Systems Data Exchange Technology Development & Experimentation

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At a Glance

What is it?

■ This technology development and experimentation project examines and assesses combat/command and control systems (CS/C2) technology solutions designed to bridge the gaps and seams between programs of record, program executive offices (PEO) and military services.

How does it work?

■ Employing a disciplined experimentation process, this project works across distributed Navy and other service laboratory environments to mature and objectively assess technology articles in operationally relevant use cases. The ultimate goal is to inform, acquire and transition new technologies that overcome current gaps between PEO-fielded systems with specific 2010-11 transition opportunities into PEO-IWS advanced capabilities build product line, PEO-C4I CANES/afloat core services, as well as versions of PEO-C4I new start application interoperability framework. PEOs -U&W, -LCS and -Sub will be included in 2012-13 unmanned vehicle (UxV) projects. These experiments will leverage and refine existing technologies under development by ONR and information management/video collaboration tools developed by USAF Air Staff

What will it accomplish?

■ This program provides a foundation for the Chief of Naval Operations (CNO) Information Dominance fleet goals by achieving rapid force composition and integration enabling more informed and rapid decision making across the force in challenging anti-access/area denial (A2AD) and Air/Sea Battle scenarios.

Point of Contact

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Achieving Chief of Naval Operation goals for Information Dominance requires rapid and effective integration of joint and U.S. Navy sensors, combat systems and tactical platforms that automates the movement of data between deterministic combat and non-deterministic C2 systems.

Analysis conducted by the Office of Naval Research (ONR) over the past six years reveals success against a near-peer regional competitor in all warfare areas requires rapid composition of force and movement of data across the force to enable immediate connection of any sensor to any weapon. However, data movement between systems and platforms remains largely a manual process, using voice, chat and M.S. PowerPoint capabilities that do not effectively counter the threat.

Automating movement of data between deterministic and non-deterministic systems, or even between a platform local area network and the broader force wide area network, requires that quality of service (QoS) and information assurance mechanisms be established and enforced through service level agreements (SLAs). These agreements would be implemented in the technologies developed and fielded by multiple PEOs. This project is focused on solutions to critical acquisition and technology gaps that hinder achieving OPNAV goals for information dominance.

Experiments conducted in 2010-11 addressed mutual objectives across all organizations, leveraging and refining ONR and Air Force Research Laboratory technology articles. The experiments documented best patterns and practices and exposed new technologies to enable rapid, fully integrated, cross-platform warfare capabilities being delivered to the fleet as early as 2014.

The project continues in 2012 with multiple PEOs, USAF and OSD to establish consistent data handling mechanisms, metrics and technology to overcome critical cross-PEO gaps in fielding Common Control Services for Unmanned Vehicles. This will become increasingly crucial as more autonomous UxV systems are introduced at the tactical level, requiring integration across the joint force to orchestrate these platforms without humans in the loop.

Research Challenges and Opportunities:

Two-way information exchange between CS and C2 Systems

- Performance requirements (QoS/SLA)
- Information assurance across CS/C2 seams
- Deterministic/nondeterministic
- Expose readiness data to operational level (C2RPC) over DIL

Enterprise level information management in DIL environment

- Enterprise fusion of CS and C2 data to optimize Force C2
- Force level dynamic prioritization of information flow via DIL communications

Incorporating common control services for UxVs

- ISR, autonomous vehicles, distributed sensor fields, etc.
- Discovery, data strategy, error model, etc.



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