

## **Open Architecture for Combat Systems**

Naval Combat System (NCS) Enterprises across the world face the challenge of delivering more capability within shorter timescales. Open architecture initiatives are a response to this challenge and can deliver benefits in meeting the challenges faced by an enterprise such as reduced costs through increased competition, more agile upgrade paths, optimized modularity and more effective obsolescence management through wider availability of components.

To be effective in delivering these benefits, open architecture must be coherent across many features of openness, including granularity, absence of IPR barriers, accessibility, modularity, availability, standards and management processes.

# **Value Proposition**

Standards that decompose the system into a set of modular components with appropriate granularity is an important concept in delivering an open architecture. Many applicable standards exist for the infrastructure and hardware layers and are exploited in such architectures. However, there are few wide-reaching standards between application layer components in an NCS context.

This obstacle has been recognized by many stakeholders and in particular contributed to the formation of the C4I Task Force within the Object Management Group® (OMG®), an international, open membership, not-for-profit technology standards consortium. The C4I Task Force's industrial participants have subsequently developed standards addressing this void including the Open Architecture Radar Interface™ (OARIS™), ALMAS™ and TACSIT Controller Interface™, and future specifications still in development (e.g. C2INAV RFP in progress). The OARIS primary use case is naval but it applicable to other service domains.

This specification has the following benefits:

- **Decoupling sensors** from Combat Management System (CMS) supports flexible modular and incremental change programs
- Configurability: runtime discovery of sensor component properties
- Extensibility: extend the core standard to deliver specific capabilities
- Reusability: one interface for many sensor sources drives maturity and streamlines integration

We are happy to discuss how OMG membership will benefit your organization. Please explore our website at **www.omg.org** and when you are ready, contact us at bd-team@omg.org or call +1-781-444-0404.



#### **Facilitate Information Exchange**

The OARIS specification facilitates information exchange between the external environment and the command team, by defining a layered subsystem to the CMS interface. OARIS addresses the concerns for radars as a subsystem and other specializations of subsystems (e.g. weapons) and sensors (e.g. sonar, electro-optic) that exist. The OARIS specification uses the subsystem and CMS abstraction to define the principal **system** actors between which the interactions defined by the interface take place. As depicted below, the specification is organized in abstraction layers—a foundation layer of subsystem services, above which sit sensor-specific services and radar-specific services, are at the top.



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The OARIS specification is organized by use cases, each describing a capability to be delivered through the interaction of a subsystem with a CMS. The use cases are themselves organized into the layers as to their applicability to subsystems in general, sensors, or specific applicability to radars.

Subsystem Services	Sensor Services	Radar Services
Subsystem Control	Plot Reporting	Clutter Reporting
Recording and Replay	Track Reporting	Missile Guidance
Simulation Support	Tracking Control	Search
Encyclopaedic Support	Jammer Control	Engagement Support
	Sensor Control	
	Sensor Performance	

### OMG Consultation, Command, Control, Communications and Intelligence Domain Task Force

The OARIS standard was led by the Consultation, Command, Control, Communications and Intelligence (C4I) Domain Task Force at OMG. See the work of the OMG C4I at https://www.omg.org/c4i/.

### **About OMG**

The Object Management Group® (OMG®) is an international, open membership, not-for-profit computer industry standards consortium. OMG Task Forces develop enterprise integration standards for a wide range of technologies and an even wider range of industries. OMG modeling standards enable powerful visual design, execution and maintenance of software and other processes. Visit **www.omg.org** for more information.



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