



Advancing the Forge:

A software factory supporting the U.S. Navy's PEO IWS X Integrated Combat System

Executive Summary

Sigma Defense's SOLUTE team has been central to advancing The Forge, the U.S. Navy's software factory, from prototype to production in support of Program Executive Office Integrated Warfare Systems (PEO IWS) X's Integrated Combat System (ICS), now part of Portfolio Acquisition Executive (PAE) Mission Systems for CPE Combat Systems and Fires, building on a successful prototype Other Transaction Agreement (OTA), Sigma was awarded a five-year production OTA to help modernize how combat systems software is developed, integrated, and delivered to the Fleet.

The team is engaged at every phase of the software development lifecycle, providing end-to-end product development, architecture support, and integration for ICS. This contributes to the convergence of AEGIS and SSDS into a unified, modular combat system designed for rapid update and fielding. Leveraging a modern IL5 DevSecOps environment with automated CI/CD pipelines, Sigma speeds delivery of mission-critical capabilities, shortens integration timelines with automated testing, and improves software scalability through loosely coupled architectures. Sigma Defense serves on product teams like Theseus for combat system displays and Anvil for tactical PaaS. Additionally, the team enables the broader Forge ecosystem by maintaining compliant infrastructure and pipelines as the maintainer of IL5 Black Pearl and as part of the Black Ops enabler team. This helps shift the Navy from legacy development cycles to a model that delivers combat capability at the speed of relevance.

Customer Challenges

- The inability to keep pace with evolving threats due to slow legacy software development and deployment cycles.
- The need to shift from platform-centric to software-driven warfare requires a new model to deliver at the speed of relevance.
- Fragmented combat systems (AEGIS & SSDS) require integration into a unified, scalable ICS.
- Legacy architectures limit rapid updates, making it difficult to incorporate fleet feedback and new threat data in near real time.
- Lack of modern DevSecOps infrastructure and automation leads to slower testing, certification, and delivery.



How Sigma Defense Delivers

- Re-architecting AEGIS and SSDS to support the development of ICS.
- Refactoring AEGIS and SSDS systems with modern software development and delivery capabilities in a DevSecOps environment.
- Migrating existing software architecture to a set of modular, scalable, low-propagation-cost software components.
- Building, enhancing, and sustaining the Forge Tactical Platform as a Service (TacPaaS) as part of the Anvil product team.
- Development of the Event Reconstruction Software that pushes tactical data replays to a mapping service frontend that can be controlled by an operator at their console.
- Serving on the Theseus ICS Display product team to support software development, architecture design, and integration testing for the Combat Management System, specifically re-architecting AEGIS and SSDS displays to support a future common display system for ICS.
- Provisioning and maintaining IL5 and IL6 CI/CD infrastructure for the Forge's development environments as part of the Black Ops enabler team.
- Providing Black Pearl support to product and enabler teams, including defect identification and resolution.

Outcomes

- Implemented a modern DevSecOps software factory (The Forge) with automated CI/CD pipelines at IL5, accelerating development, testing, and delivery of combat capabilities.
- Re-architected legacy systems into a modular, loosely coupled ICS framework, enabling scalability, faster updates, and simpler integration.
- Embedded software-development experts into cross-functional product teams to enable capability development, from design through integration and deployment.
- Successfully Delivered Event Reconstruction Software to DDG 81 & DDG 123.
- Accelerated testing and integration through automation, reducing reliance on IL6 environments and enabling faster and more reliable validation of mission software.
- Enabled continuous delivery of fleet-relevant capabilities, rapidly incorporating fleet feedback and emerging threat data into operational software at the speed of relevance.
- Built a software factory with a robust foundational platform and the flexibility to achieve immediate and long-term objectives.
- Provided Black Pearl support that achieved:
 - 97% reduction in time to fix bugs
 - 90% decrease in software factory setup costs
 - 98% shorter onboarding time
 - 99% uptime across IL2/IL5 impact levels

