Objective Simulation Framework (OSF)

Overview

The Department of Defense (DoD) and its organizations, such as the Missile Defense Agency (MDA), continue to operate under tight budgets. To ensure that these constraints would not adversely impact the fielding of the Ballistic Missile Defense System (BMDS), the MDA leadership undertook robust Modeling and Simulation (M&S) capability improvement activities to complement BMDS test events.

MDA’s Enterprise M&S approach has as its core a joint element and system BMDS M&S Framework, which is a composable, scalable, and configurable architecture that facilitates various stakeholder applications and events. Additionally, the required M&S Framework incorporates necessary functions from the Single Stimulation Framework (SSF), Missile Defense System Exercise (MDSE), integrated Element digital (SEI), Missile Defense System Exercise (MDSE), and its organizations, such as the Missile Defense Agency (MDA), continue to provide a modular test execution. The Communities of Interest (COI) provide Government-Furnished Equipment/Information (GFE/GFI), requirements, schedule, and funding. A Common Object Library (COL) serves as a repository for BMDS M&S assets such as: Core Truth data and models, Element representations, and resultant data from test and training events. Each Element representation, whether it is a sensor, weapon, or Command and Control, connects to the OSF through a Participant Interface (PI).

Development Approach

Team Teledyne has been selected to develop MDAs goal of a flexible M&S Architecture – the Objective Simulation Framework. OSF is configurable to support all Stakeholder Applications to include BMDS Concept Evaluation, Developmental Engineering, Assessment (including Ground Test and Continuous Digital Assessment), and OSF provides Truth Stimulation and Integration to support interoperability, performance assessment testing, and training events. OSF is made up of Enterprise Services that support event preparation and assessment activities as well as Execution Services that support event execution. The Communities of Interest (COI) provide Government-Furnished Equipment/Information (GFE/GFI), requirements, schedule, and funding. A Common Object Library (COL) serves as a repository for BMDS M&S assets such as: Core Truth data and models, Element representations, and resultant data from test and training events. Each Element representation, whether it is a sensor, weapon, or Command and Control, connects to the OSF through a Participant Interface (PI).

Legacy M&S Sustainment/Enhancements

As the OSF is being developed, Team Teledyne is providing sustainment and enhancement support to SSF under a separate task order on the OSF contract. Our support ensures that the SSF continues to provide a modular test framework interconnecting BMDS Elements/Components and HWIL facilities. SSF supports distributed exercises and training. The SSF allows for the tactical systems to be exercised in a realistic theater and/or global conditions by utilizing tactical HW and SW. Ultimately, OSF will replace SSF for these applications, providing greater modularity and composability.

Meeting the Challenge through Experience and Innovation

Teledyne Brown Engineering (TBE) has designed and built complex, integrated test and assessment tools for missile defense since the mid-1980’s. We built and operated the Integrated System Test Capability (ISTC) and the MDSE, which are accredited for the testing of legacy missile systems. These frameworks have qualified for the Software Engineering Institute’s Capability Maturity Model Integration (CMMI) Level 3 certification. Teledyne has also developed the widely used Extended Air Defense Simulation (EADSIM) – a many-on-many simulation of air, missile, and space warfare.

Through past work, TBE has built positive working relationships with the MDA, Missile Defense Integration and Operations Center (MDIOC), all branches of the military, Project Offic- es, and the element developers. Team Teledyne has the experience, capabilities, and professional skilled staff required to develop and deploy the OSF for MDA. Likewise, we are prepared to apply our knowledge and innovative techniques to develop, integrate, and enhance System Frameworks for future clients.