

Tri-Service Open Architecture Interoperability Demonstration

HOST/CMOSS/SOSA™/FACE™

STANDARDS SUMMARY

as seen at the TSOA-ID event on January 29, 2020 in Atlanta, GA

Each standard that was present at the TSOA-ID addresses decompositions of embedded systems and the interactions inside and around them.

First, let us overly simplify an embedded system into three buckets:

- Software applications that perform functionality
- Hardware that runs that software
- Networks that carry data between applications

The **HOST** Standard primarily targets the hardware piece of the puzzle for high performance embedded computing. The primary version of HOST relies on the VPX technology from the VITA consortium. It defines the electrical and mechanical interfaces for cards to plug into a chassis.

The **FACE™** Technical Standard provides standardization of generic software applications' interfaces (APIs) to support the portability of applications (capabilities) across different hardware. It also provides a modeling framework to capture the mission-specific data needed by applications in a standardized format.

The **SOSA™** Technical Standard tackles the problem of decomposing sensors, C4ISR and EW systems (EO/IR and RF) through the software, hardware, and networking within the system. It is leveraging many of the existing DoD standards efforts where they are appropriate. For example, the consortium is leveraging a subset of HOST and OpenVPX for the hardware, as well as using API definitions from the FACE Technical Standards, and protocol definitions from CMOSS, specifically MORA.

CMOSS serves a suite of individual standards that are combined together to provide a starting ground for developing an open C4ISR/EW (radios, SIGINT, EW, etc.) system for an Army vehicle. It also uses a subset of HOST & OpenVPX for hardware, uses MORA for protocol definitions from an antenna to a radio backend, and leverages VICTORY for system-to-system communication.

OMS and **VICTORY** both focus on the definitions of the networks & messages transferred between embedded systems and applications. Each capture requirements that allow standardized messages, like GPS position or fuel levels, to be transferred between capabilities that provide and use that data. However, each use different approaches, as their original target platforms were different. VICTORY originally targeted Army ground vehicles, where adding Ethernet infrastructure to support VICTORY's definitions is feasible. OMS targets primarily air platforms, where some platforms must rely on the existing networks, therefore requiring OMS to abstract at a higher level than Ethernet.

You can use these standards together to address the various embedded systems on a vehicle or aircraft today. For example, you can use a sensor system that uses the SOSA Technical Standard to provide track information via OMS to other systems. A HOST-based mission computer running FACE applications can further process the tracks before sending them to another application to display on a map. The alignment between the standards means that you can take the track processing application from the mission computer and move it to the sensor system. It also means you have the opportunity to share computing hardware between your sensor system and your mission computer.