

FACE avionics standard will transform systems design

By Curtis Reichenfeld
An industry perspective from Curtiss-Wright Controls Defense Solutions



In today's avionics system world, applications tend to be costly and unique and have long lead times. Because they are proprietary they create barriers to competition, which keeps costs high in an era of constrained budgets. The Future Airborne Capability Environment (FACE) promises to usher in a brave new world, where, for example, code developed for a helicopter radio software application can be transparently reused in a fighter jet. Reuse is dissuaded today because any modifications made to software created for a unique platform will require costly and time-consuming code recertification and testing. FACE middleware will make the reuse process simple and transparent, essentially doing away with the need to modify and recertify code.

The FACE initiative is backed by the government, principle and second-tier prime contractors, and the COTS vendor community, and is getting closer to producing a set of standards that will define a middleware approach for application software. This FACE approach promises to dramatically lower system development costs through application code reuse and portability. But be advised, no COTS vendor can claim that their products are FACE compliant today. COTS vendors are only able to identify appropriate products as "FACE Candidate Hardware" or "FACE Candidate Software," indicating that they have been designed to be suitable for certification and testing once the FACE standard is finalized and those protocols have been defined.

FACE examined

The objective of the FACE Consortium is to define a standard common operating environment to support portable capability-based applications across Department of Defense (DoD) avionics systems. The consortium is currently working toward establishing a strict set of open standards that builds on Open

Architecture (OA), Integrated Modular Avionics (IMA), and Modular Open Systems Approach (MOSA) concepts, all of which fit perfectly with the defense and aerospace COTS market's goals and principles.

Edition 2.0 of the FACE Technical Standard was completed on January 25, 2013 and is currently undergoing review by member companies. But FACE is coming soon; the government is already issuing RFPs and RFIs for which FACE is a requirement. FACE's mission is to define open middleware that will enable an application to talk to any hardware platform on any operating system over any I/O. Simply put, FACE has the potential to change the military avionics system landscape by making it possible to reuse standard avionics components across platforms and promote rapid technology insertion for avionics upgrades while cutting costs and reducing maintenance requirements and increasing competition among defense contractors.

Additionally, FACE will be a boon for designers of next-generation platforms who will gain access to less costly, faster-to-market, best-of-breed proven solutions. Likewise, FACE will improve technology on legacy aircraft, helping to extend useful life and cost. Leveraging FACE middleware, systems on older platforms will be upgraded more easily, quickly, and cost effectively and gain additional capabilities via new FACE-compliant applications developed first for use on next-generation platforms.

And FACE eliminates software and hardware interoperability headaches. The FACE middleware layer, which will reside on a particular COTS board's BSP, will feature a FACE-compatible API. This means that the application will not be aware of or even care what operating system is being used or whether the



Figure 1 | Curtiss-Wright Controls Defense Solutions' MPMC-9335 3U VPX Mission Computer and its VPX6-187 6U VPX SBC are examples of FACE Candidate Hardware that can host FACE Candidate Software.

underlying hardware is Intel or Power Architecture. As the platform becomes transparent, COTS vendors can focus on their differentiators such as integration tools, performance, cost, and faster time to market.

As an active member of FACE, participating in the Technical Working Group and Business Working Group, Curtiss-Wright Controls Defense Solutions is helping to provide the COTS vendor perspective to the initiative and offers FACE Candidate Hardware; this includes rugged embedded open standards-based modules and systems that are able to host FACE Candidate Software applications and operating systems (Figure 1).

FACE progresses up the ranks

FACE is gaining traction and the consortium is on track, making progress toward a releasable standard. COTS vendors and their customers need to be aware of this coming standard so that they are prepared to take full advantage of the benefits it can deliver. For more information, contact the FACE Consortium at www.opengroup.org/getinvolved/becomeamember, or the Open Group at www.opengroup.org.

Curtis Reichenfeld
Chief Technical Officer
creichenfeld@curtisswright.com
www.cwcdefense.com