U.S. ARMY TECHNICAL INTERCHANGE PAPER PRESENTATION SCHEDULE				
Tentative Presenations Time	Organization	Paper Title	Abstract	Presenter
9:30-9:55	CoreAVI	Display Management Services	Sharing Graphical Resources in a FACE™ Environment Abstract Graphical compositing is a standard feature used by many avionics systems and has had many proprietary implementations and APIs defined on a per system basis. The Open Group FACE Consortium's Technical Working Group has driven a well needed standardization of graphical compositing APIs. API standardization includes driver level compositing support through the EGL_EXT_Compositor extension and application level standardization through the Display Management Services defined in the Future Airborne Capability Environment FACE Technical Standard, Edition 3.0. This paper discusses the EGL_EXT_Compositor and some lessons learned during implementation of Display Management Services.	Daniel Herring
10:00-10:25	Rockwell Collins	Methods for Avionics Systems to Support Third Party Development	Today's aircraft are built with highly integrated avionics solutions that provide enhanced situational awareness and reduce workload. This paper researches how integrated avionics can be designed to simplify augmentation of avionics systems with new features developed by third parties. We reviewed technical solutions to enable 3rd party integration, including Future Airborne Capability Environment Technical Standard (FACE™), ARINC 661, video input, table driven interfaces, and application co-hosting. We found that a system implementing all of these solutions offers maximum flexibility, and a system implementing FACE™ Technical Standard and ARINC 661 most efficiently enhances an avionics system to support third party development.	Jason Myren
10:30-10:55	IDI	Air Force's Continuous Integration and Continuous Development with the FACE™ Technical Standard FACE™ VV&A on the Hanscom MilCloud	*Air Force's Continuous Integration and Continuous Development with the FACE™ Technical Standard - FACE VV&A on the Hanscom MilCloud* , details the development and performance of Verification, Validation, and Accreditation (VV&A) efforts using model-based tools and processes for the US Air Force's Resilient-Embedded Global Positioning System/Inertial Navigation System (R-EGI), Virtual EGI Development and Testing, lead by Infinite Dimension, Inc. (IDI). TES combined model-based VV&A capabilities to support open systems development efforts aligned to the FACE Technical Standard in a continuous integration/continuous development (CI/CD) process hosted on the HmC. The approach utilized for R-EGI may well change how cross-organizational development teams collaborate.	Dr. Jeff Wallace
11:00-11:25	Textron	Applying FACE Concepts to Existing One System® Remote Video Terminal (OSRVT™) Software Services	This paper presents the recent work done in applying Future Airborne Capability Environment (FACE) reference architecture concepts to selected software services in the currently fielded One SystemÆ Remote Video Terminal (OSRVTô) system. It talks about the implementation approach, tools used, data modeling as well as challenges and lessons learned. A template service architecture is presented which can be used to migrate legacy software services to FACE reference architecture at the Portable Component Segment (PCS) and Transport Services Segment (TSS) layers. Results of performance impact assessment using this template service architecture indicate that messaging related timing impacts due to FACE segments is minimal.	Theodore Meyer
11:30-11:55	US Army AMRDEC	Rapid Integration Framework (RIF) and the U.S. Army Booth	PAO Aviation and AMRDEC present the Rapid Integration Framework. This Open Systems Architecture, based on the UH-60 Crew Mission Station (CMS) is the basis for many integration demonstrations presented at this TIM. The Rapid Integration Framework Presentation serves as an overview of the framework, its history and relevance, as well as a guide to the Rapid Integration Platform work performed by 20 organizations presented at this TIM.	Chris Edwards
1:00-1:25	Adventium Labs	Basswood BALSA in Real-time	Real-time performance is a critical aspect of avionics computing. The Basic Avionics Lightweight Source Archetype (BALSA) exemplar gives an easy-to-run example for users of the FACE Technical Standard, but is not intended to run with hard real-time constraints. To address this limitation, we developed *Basswood* , a BALSA-based exemplar using components aligned to the FACE Technical Standard running in a real-time environment. Basswood facilitates practical demonstration of model-based systems engineering using the Architecture Analysis and Design Language (AADL). Basswood helps demonstrate how combined use of the FACE Technical Standard and AADL allows application of virtual integration analysis methods to FACE UoCs.	Tyler Smith & Dr. Rob Edman
1:30-1:55	US Army AMRDEC	A Strategy for Leveraging Domain Specific Data Models	Domain Specific Data Models (DSDMs) capture common domain concepts in a reusable, extensible data model. DSDMs are defined in the Future Airborne Capability Environment (FACE) Technical Standard and provide a manner to achieve FACETM Conformance for a data model. This paper introduces a strategy for the development of multiple, related DSDMs across Army aviation software capabilities. The recommended approach requires enterprise investment to develop and manage the multiple DSDMs. Software capabilities developed as FACE Units of Conformance will leverage the governed DSDMs. This allows FACE Conformance while supporting the separation of concerns through the curation of the DSDMs.	Dr. Bubba
2:00-2:25	Skayl	Interface Documentation Maturity Levels	As Model-Based Software Engineering continues to gain traction in our industry, data models will become more commonplace in software architectures and acquisition programs. Interface Documentation Maturity Models (IDMLs) proffer a framework for considering the maturity of data models. Not only does such a framework provide modelers and architects a way to characterize their models, it also enables program managers and contracting officers to write requirements for the creation (and subsequent evaluation) of models. The relationship of each IDML to existing technology and alignment with the FACE Data Architecture standard will also be discussed.	
2:30-2:55	TES SAVI / IDI	Model-based Code Generation for the FACE™ Technical Standard FACE™ Transport Service Segment (TSS) type specific code and configuration file	Model-based Code Generation for the FACE™ Technical Standard - FACE Transport Service Segment (TSS) Type Specific Code and Configuration File, details how TES and RTI used TES-SAVi – AWESUM® and RTI's Connext DDS to generate from a FACE user supplied data model (USM) the message software for FACE Transport Services Segment. These model-based tools were used to support US Air Force's Resilient-Embedded Global Positioning System/Inertial Navigation System (R-EGI), Virtual EGI Development and Testing, lead by Infinite Dimension, Inc. (IDI). These model-based capabilities were applied to and used within a R-EGI Continuous Integration/Continuous Development (CI/CD) process hosted on the Hanscom MilCloud (HmC).	Dr. Jeff Wallace
3:00-3:25	AdaCore	Programming Language Run-Times and the FACE™ Standard: Achieving Application Portability and Reliability	A programming language run-time library for a FACE™ Operating System Segment (OSS) profile has to implement the associated Capability Set in a manner consistent with the Design Assurance Level (DAL) targeted by that profile. AdaCore's Cert and Ravenscar-Cert libraries meet these requirements, for Ada's Safety Base/Security and Safety Extended Capability Sets. They implement the needed functionality while facilitating inclusion in airborne systems requiring certification against the highest DALs of DO-178B/C. This paper summarizes these run-time libraries and shows how they meet the portability requirements of the FACE Capability Sets together with the assurance requirements of high-DAL systems.	Dr. Patrick Rogers
3:30-3:55	US Army AMRDEC	Transformation Capabilities in Configurable Common Services A Lesson Learned from CMS Development	The development of the Crew Mission Station (CMS), and subsequent realization of the Rapid Integration Framework (RIF), feature a core system of fully-configurable software components that would host capability software. To reduce the need to recompile core system components, the core system provides functionality to hosted capabilities using generalized messages rather than specific messages addressing the true nature of the hosted capability. Through these generic messages, the specifics of the hosted capabilities are abstracted away so the core system software components do not need to change when hosted capabilities change, or new ones are added.	Steven Price & Bill Tanner
4:00-4:25	LDRA	The FACETM Conformance Verification Matrix 3.0 in Practice Integration of FACETM Conformance in the Software Development Process	Imagine having someone guiding you through the planning and delivery of your FACE unit of conformance. Someone advising you and keeping track of all the conformance verification matrix requirements that need to be satisfied. Including giving you a head start, by providing template documents needed by the verification authority. All the while, this someone is keeping track of your progress and can deliver various types of reports at your request. And your code is inspected to ensure that you don't have any FACE coding rule violations. Including suggesting a fix after it has pointed out the exact line of code where the violation has occurred. Also, before submitting to the VA, this someone, assists you with a run through the FACE conformance test suite to flush out any remaining issues and insuring a passing conclusion. LDRA's tool suite, is that someone.	Ricardo Camacho & John Thomas