



FACE™ Conformant Software for Aircraft Survivability

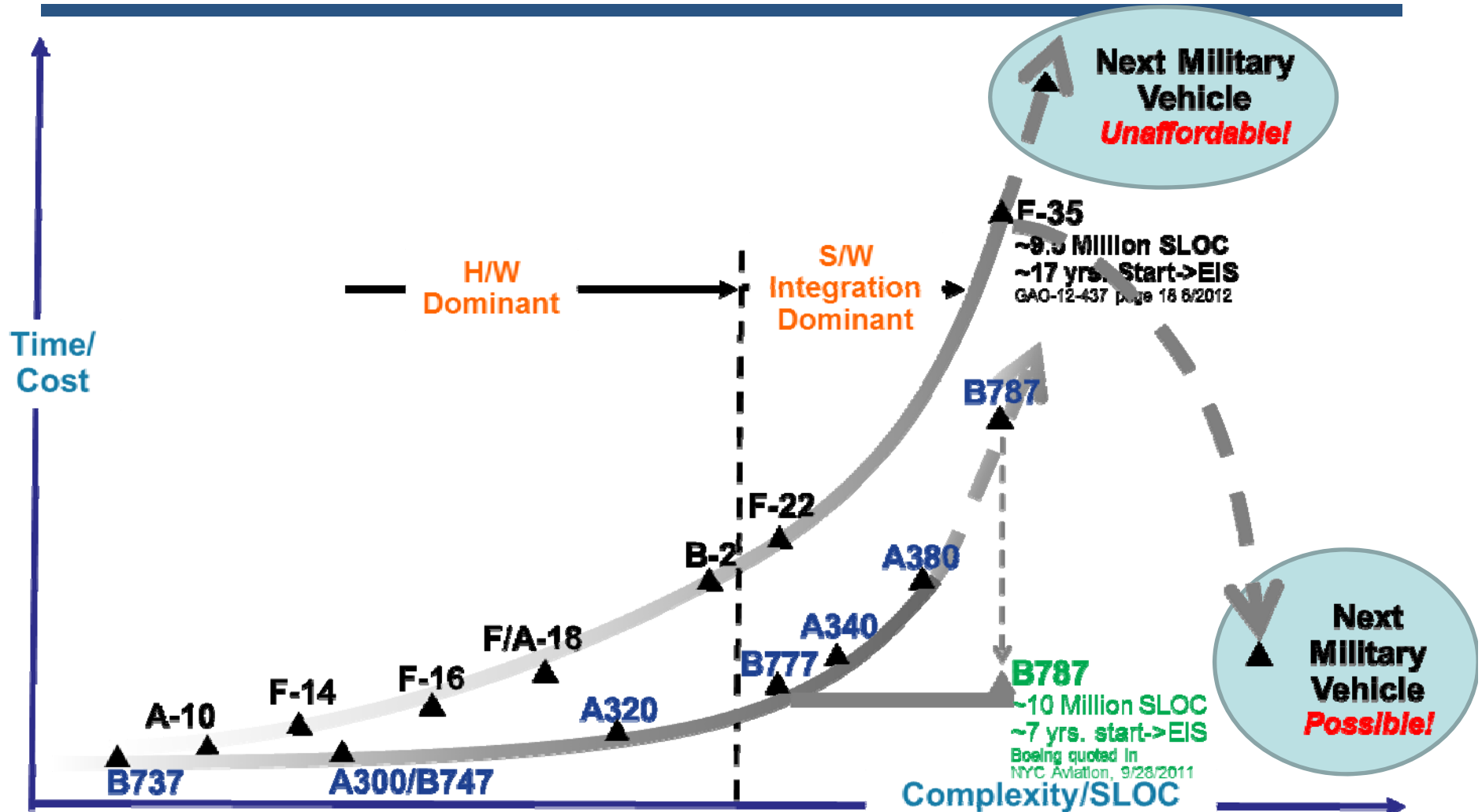
Jeffry A Howington

**Steering Committee Vice Chairman,
The Open Group FACE Consortium**

**Rockwell Collins Government Systems
Airborne Solutions**

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The Challenge: Reduce Costs and Time to Field



Benefit for ASE: Quickly and affordably build new capabilities to counter adversary threats as they arise!

Enabling Innovation Through Open Architecture



Different Capabilities



Standardized Interfaces

Bring this concept to avionics software!

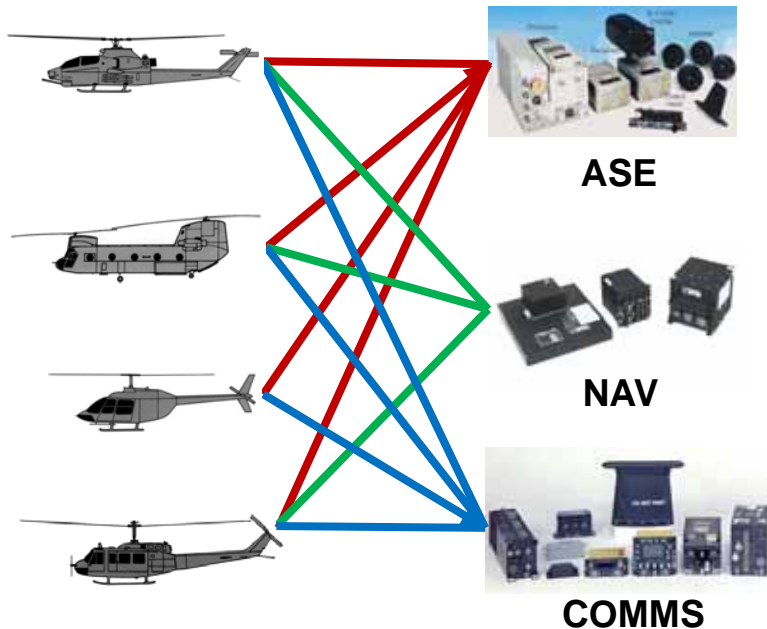


The FACE Concept Reduces Integration Effort for SW Reuse

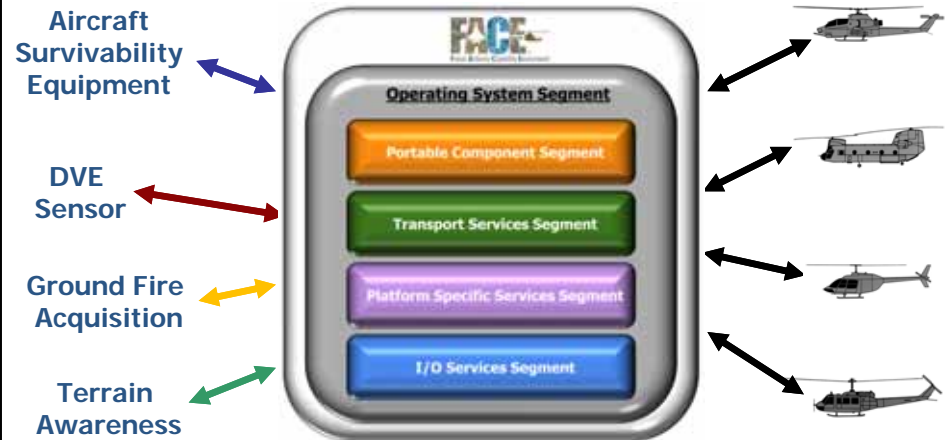


Traditional / Legacy

- Each platform must develop unique software to integrate avionics/SA hardware and software products
- Each platform maintains expertise only for their product
- Each new software block requires an 18-33 month integration cycle



FACE



- Re-use hardware agnostic applications across multiple platforms
- Reduce duplicative investment for the same capability
- Common operating environment and data architecture enable system of systems integration and interoperability

Backed by a FACE Consortium with over 90 Members



The FACE Consortium was formed in 2010 by The Open Group

Sponsor Level Member Organizations

- Air Force Research Laboratory
- Boeing
- Lockheed Martin
- Rockwell Collins
- US Army PEO Aviation
- US Navy NAVAIR

Principal Level Member Organizations

- AeroVironment, Inc.
- BAE Systems
- BELCAN
- Booz Allen Hamilton
- DRS Training & Control Systems
- Elbit Systems of America
- GE Aviation Systems
- General Dynamics
- Green Hills Software
- Harris Corporation
- Honeywell Aerospace
- IBM
- Northrop Grumman
- Raytheon
- Sierra Nevada Corp.
- Sikorsky Aircraft
- Textron Systems
- US Army AMRDEC
- Wind River

Associate Level Member Organizations

- Abaco Systems
- AdaCore
- Arizona State University
- Astronautics Corporation of America
- Avalex Technologies
- Brockwell Technologies
- Carnegie Mellon Univ. – Software Engineering Institute
- CERTON Software, Inc.
- CMC Electronics
- Cobham Aerospace Communications
- Cognoscenti Systems
- Core Avionics & Industrial Inc.
- Crossfield Technology LLC
- CS Communication & System, Inc.
- CTSi
- Curtiss-Wright Defense Solutions
- DDC-I
- Delta Information Systems, Inc.
- DornerWorks
- Draper Laboratory
- DRT
- Elma Electronic Inc.
- Enea Software & Services
- ENSCO Avionics
- Esterel Technologies
- Esterline AVISTA
- EuroAvionics USA LLC
- Garmin International, Inc.
- GEICO Inc.
- Gore
- IEE
- Infinite Dimensions
- Inter-Coastal Electronics, Inc.
- Johns Hopkins Univ. - APL
- Joint Tactical Networking Center
- Kaman Precision Products
- KEYW Corp.
- KIHOMAC
- Kontron America Inc.
- L-3 Technologies
- LDRA Technology
- Leidos Inc.
- Lynx Software Technologies
- Mercury Systems
- North Atlantic Industries, Inc.
- OAR Corporation
- Performance Software
- Physical Optics Corp.
- Presagis USA, Inc.
- PrismTech Corp.
- Pyrrhus Software
- Rapid Imaging Software
- Real-Time Innovations
- Riverside Research
- Rogerson Kratos
- SAIC
- Selex Galileo Inc..
- SimVentions
- Skayl LLC
- SwRI
- StackFrame, LLC.
- Technology Service Corp.
- Terma North America
- TES-SAVI
- Thales USA, Inc.
- Thomas Production Company
- Trideum
- TTTech North America, Inc.
- University of Dayton Research Institute
- Vector Software, Inc.
- Verocel
- VTS, Inc.
- Zodiac Data Systems

FACE Certified Conformant Products Available Now



Avoidance Re-router

Provides aircraft and flight plan risk alerting and flight plan rerouting using cognitive decision-aiding technologies.



Mission Flight Management Software

Forms the core of an advanced flight management capability that is easily customized through its open architecture interfaces.



FliteScene

A high performance, combat proven, feature rich, digital moving map software product that provides advanced situational awareness



Embedded GPS/INS

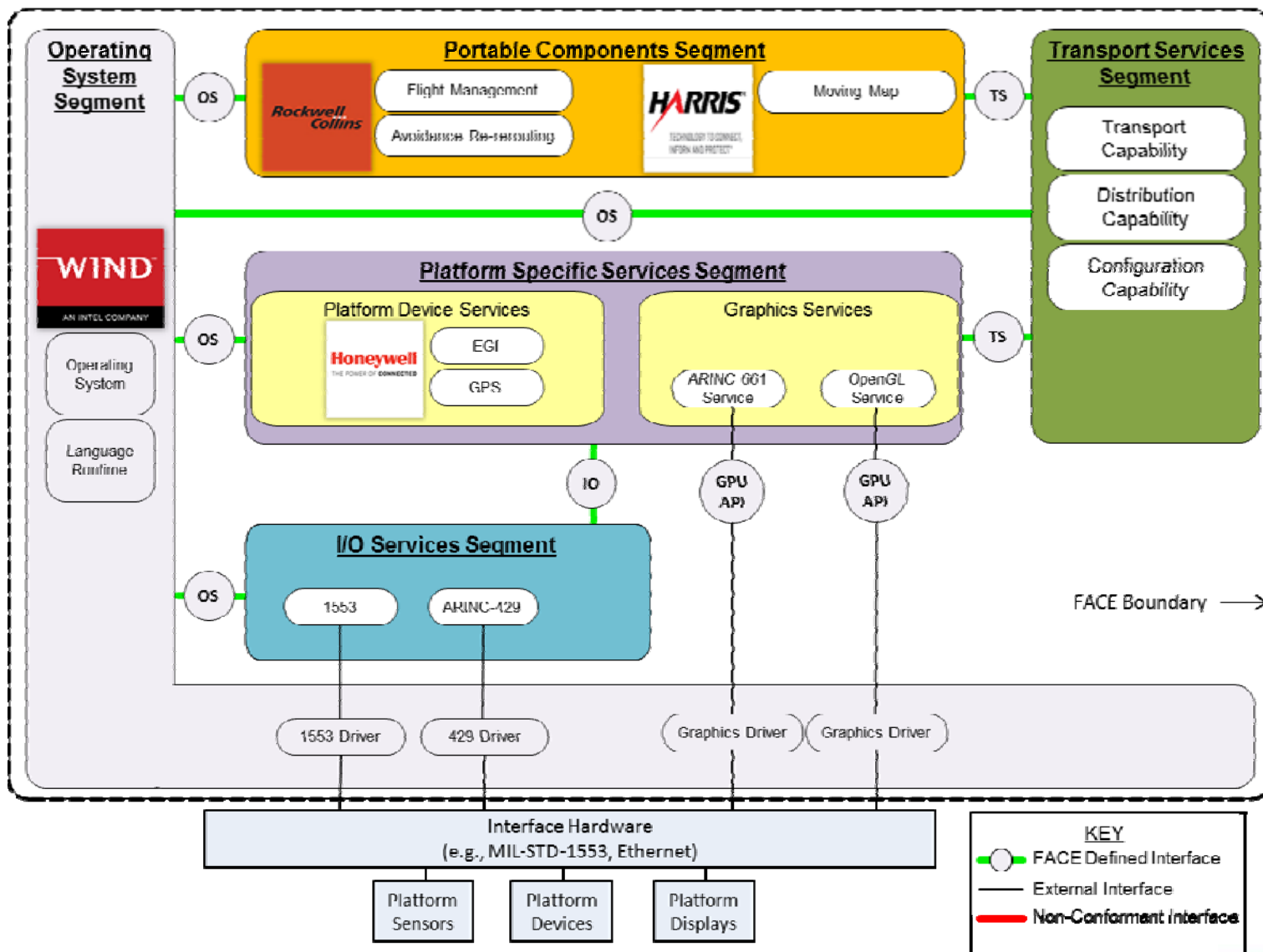
Device Driver to work with Honeywell EGI's. Converts raw 1553 data messages into a FACE Data Model for use in FACE integrated systems.



VxWorks 653 RTOS

VxWorks 653 2.5 real time operating system with FACE safety base profile support

Aircraft Survivability Example from FACE Conformant Software



Edition 3.0 Areas of Update



- Restructure of Technical Standard for readability
- System Model Metadata Definition
- Data Architecture Enhancements
- Component Framework/Model Integration
- I/O Enhancements/Extensions
- Configuration Services Enhancements
- TSS Interoperability Enhancements
- Graphics Enhancements
- Language Runtime Enhancements
- Lifecycle Management
- Interface Definition Language Updates

These areas were focused on to enhance portability and interoperability of the FACE UoCs

Summary



- The FACE concept harnesses the power of Open Modular Architecture to:
 - Promote innovative capability across aircraft types
 - Enhance flexibility and interoperability
 - Reduce cost and time to field resulting solutions
- Backed by 90+ members, FACE Software is:
 - Demonstrating integrated capability across developers
 - Achieving FACE certification and moving to flight maturity
- Announcing FACE Technical Standard Edition 3.0
 - Reorganized for readability and understanding
 - Improved and robustly tested technical requirements
 - Oriented to enable advanced framework, system and data model development concepts

Using the FACE Technical Standard is a must for any Defense avionics software procurement where reuse is a goal!