Honeywell’s EGI began as a Army/Navy/Air Force program that developed a small, reliable, lightweight navigation and guidance unit that contains precise position service GPS on one standard electronic module, plus ring laser gyro inertial navigation system.

Enhanced software now aligns message protocols to those defined within the FACE Technical Standard allowing for the rapid integration into FACE open architectures. To reduce integration costs, and increase interoperability, Honeywell chose the FACE Standard, for it has become the de facto standard interface of choice for current military acquisition efforts. Honeywell’s EGI includes a FACE PCS, TSS, PSS, and a FACE User Supplied Data Model. The software suite and data model is FACE Conformant. TES assisted Honeywell align the EGI software with the FACE Technical Standard and supported Honeywell during the BITS Pilot Event. Post event, Honeywell contracted TES-SAVi FACE VA services.
RTI’s DDS – FACE TSS Implementation
(Submitted to a FACE Verification Authority)

RTI Connext DDS (Data Distribution Service) is a DDS specification compliant middleware product line that provides well-defined interfaces and plug-and-play interoperability between heterogeneous system components. It simplifies communications with high-level APIs for data sharing, publish-subscribe, request-reply and queuing. Libraries support all major programming languages and operating systems. Tools support monitoring, debug, database integration, data recording and data playback.

RTI has developed a reference implementation for a FACE TSS on top of its Connext product which is a technology readiness level (TRL) level 9 product. The TSS is implemented as a software adaptation layer over RTI’s core Connext DDS functionality. This combination provides a TSS implementation that exposes an open wire-standard protocol, Real-Time Publish Subscribe (RTPS), enabling use of existing RTI and third-party software tools without modification.
Honeywell FACE Conformant, April 2017 - The Honeywell EGI – Embedded Global Positioning Systems-Inertial Navigation System (EGI)

(Pending FACE Conformance) RTI’s DDS – FACE TSS Implementation

RTI Connext DDS (Data Distribution Service) is a DDS specification compliant middleware product line that provides well-defined interfaces and plug-and-play interoperability between heterogeneous system components. It simplifies communications with high-level APIs for data sharing, publish-subscribe, request-reply and queuing. Libraries support all major programming languages and operating systems. Tools support monitoring, debug, database integration, data recording and data playback.

RTI has developed a reference implementation for a FACE TSS based on this test readiness level (TRL) level 9 product. The TSS is implemented as a software adaptation layer over RTI’s core Connext DDS functionality. This combination provides a TSS implementation that exposes an open wire-standard protocol, Real-Time Publish Subscribe (RTPS), enabling use of existing RTI and third-party software tools without modification.

TES-SAVi – Model-Based Tools for FACE Product Development

FACE Verification Authority, sanctioned May 2014

TES resources with TES-SAVi tools were used to develop and integrate Honeywell and RTI FACE software products; and TES-SAVi FACE VA resources were contracted to conduct the verification efforts for the Honeywell EGI and Wind River VxWorks 653 products.

(see http://www.opengroup.org/face/third-party-tools; and

https://tes-savi.com/services/face-verification-authority/)
**Honeywell** FACE Conformant, April 2017 - The Honeywell EGI – Embedded Global Positioning Systems-Inertial Navigation System (EGI)

(Pending FACE Conformance) **RTI’s DDS – FACE TSS Implementation**

RTI Connext DDS (Data Distribution Service) is a DDS specification compliant product line that provides well-defined interfaces and plug-and-play capability between heterogeneous system components. It simplifies communications with high-level APIs for data sharing, publish-subscribe, request-reply and queuing. Libraries support all major programming languages and operating systems. Tools support monitoring, debugging, database integration, data recording and data playback.

**SAVi – Model-Based Tools for FACE Product Development**

FACE Verification Authority, sanctioned May 2014

**FACE Conformant, March 2017 - Wind River’s VxWorks 653**

Wind River’s VxWorks 653 product is the global standard for open, partitioned critical systems and is now used in over 4000 programs, by over 200 customers in 80 aircraft using the ARINC 653 standard with RTCA DO-178B and DO-178C certification requirements for both single-core and multi-core systems.

VxWorks 653 supports multiple levels of safety on a single compute platform, and has COTS DO-178C DAL A certification evidence available for FAA-certified systems.
FACE Conformant, April 2017 - The Honeywell EGI – Embedded Global Positioning Systems-Inertial Navigation System (EGI)

(Pending FACE Conformance) RTI’s DDS – FACE TSS Implementation

RTI Connext DDS (Data Distribution Service) is a DDS specification compliant middleware product line that provides well-defined interfaces and plug-and-play interoperability between heterogeneous system components. It simplifies communications with high-level APIs for data sharing, publish-subscribe,

Mercury Systems / TES-SAVi Flight-Ready Processing Hardware prepared specifically for FACE Product Developments and Deployments

Introducing TESseract™ for FACE Developers and FACE Platforms

TESseract™ (a Tucson Embedded Systems, Inc., TES-SAVi, Mercury Systems, and FlightWire partnership) is a scalable off-the-shelf solution for rugged, flight capable UAS computers hosting FACE architectures. TESseract VNXx4 is the first in a line of expanding systems, which can grow as needs change, from a small 2-card systems, to a fully redundant 8-slot solutions

TES-SAVi’s TESseract™ processor is loaded with a common operating environment for FACE v2.1 and architecture libraries. TESseract™ is prepared to support a wide-range of Military avionics, embedded development or real-time safety-critical operations (see https://tes-savi.com/services/face-verification-authority/)
Honeywell EGI / RTI-DSS / TES-SAVi / Wind River – FACE 2.1 BALSA aka the FACE Integration Team (FIT), June 2017

KEY
- FACE Defined Interface
- External Interface
- Non-Conformant Interface

FACE Boundary
- Portable Components Segment
  - EGI Manager
  - ATC Manager
- Platform Specific Services Segment
  - Platform Device Services
    - EGI Controller
    - Aircraft Config.
    - ADS-B In
    - ADSB Out
- I/O Services Segment
  - 1553 IOS
  - UDP Writer
  - UDP Reader

Device Driver
- Health Monitoring
- Ethernet Device Driver

Interface Hardware
- (e.g., MIL-STD-1553, Ethernet)

Transport Services Segment
- TS UoC
  - Transport Capability
  - Distribution Capability
  - Configuration Capability
  - Transformation Capability

Operating System Segment
- VxWorks 653
  - FACE Conformant Operating System Segment
  - FACE Safety Base Profile

Platform Device Services
- ADS-B In
- ADSB Out

Transport Services Segment
- TS UoC
- Distribution Capability
- Configuration Capability
- Transformation Capability

MFD
- Connext DDS
- BALSA

EGI Sim (X-Plane)
- NASA World Wind
- Embedded GPS/INS
- EGI Sim (X-Plane)

Tesseract – Rock-3
- Flight-ready hardware
- Host to VxWorks 653 OS

Honeywell

Wind
- AN INTEL COMPANY

Mercury Systems

Honeywell EGI / RTI-DSS / TES-SAVi / Wind River – FACE 2.1 BALSA aka the FACE Integration Team (FIT), June 2017