Cyber-Security Attack Resilient Architecture

The architectural concept is based on two physically segregated functional areas which are assigned to safety critical or non-safety critical requirements. Each area features assigned hardware components which are designed to specific functional and criticality requirements of the applications.

**SAFE AREA** hosts safety-critical functions at DO-254, DO-178C DAL C or higher (e.g. Digital Map or Terrain Awareness) and provides the interfaces to the aircraft avionics system.

**APP AREA** hosts Apps from the world of Commercial Electronics. These Apps implement specialized data processing functions incorporating sensor and cockpit data (e.g. video processing, sensor data fusion). Apps run on commercial operating systems.

**SEGREGATOR** performs hardware segregation of both areas and intelligent software monitoring of the APP AREA. It prevents direct access from the APP AREA to the safety critical elements of an aircraft avionics system. Data such as computation results can be exchanged between APP AREA and SAFE AREA through a well-defined protocol. With this concept, new Apps can be developed independently from the hardware and aircraft environment. Cyber resilience is integrated by security shell technologies.

**Key Advantages**
- Multi-core processor technology
- HD video and graphics
- High-speed interfaces
- FACE compatible
- Safe and secure
- Highly robust and reliable
- SWaP-optimized
- ITAR free

**Mission Computing**

Safety, Performance and Apps in true Synergy
Mission Computing Paves the Way for Integrated Mission Sensor Suites

The Mission Computer can integrate all elements of a modern aircraft mission sensor suite in one device. Powerful applications can process and fuse sensor data with other information. This can reduce pilot and operator workload within mission related tasks allowing greater capacity to perform new, complex operations within networked environments (NCE).

Integrated and Fused Applications
- Sensor Steering and Tracking
- Sensor Exploitation
- Data and Information Fusion
- Image and Video Processing
- Pilot Assistance

The Integrated Mission Sensor Suite is just one tentative solution to enable new mission profiles. The Mission Computer enables you to fulfill your advanced mission requirements.

Mission Computing - Fully Compliant, Plug-in COTS and Apps

End Users
Can access quickly and easily adapt their aircraft mission computers to new mission requirements during the in-service lifecycle of the aircraft by adding new computers to new mission requirements during the aircraft’s lifecycle. Can now quickly and easily adapt their aircraft mission computer in a fast and flexible way, even during an aircraft’s lifecycle. With increasingly challenging operational requirements, aircraft mission systems are being designed to become even more powerful. Within mission computing safety critical and non-safety critical functions have to be developed and certified according to the highest safety standards. Developing for certification is complex, time-consuming and costly. All this leads to limited means of configuration, flexibility and steers programs to proprietary solutions. In order for end users to adapt to changing mission profiles they require a method of updating their mission computer in a fast and flexible way, even during an aircraft’s lifecycle.

Example configuration of a multipurpose Computing Platform

- Processor: Intel Kaby Lake Xeon 7th Generation Processor
- Memory: min. 256 GB
- Environmental: -40°C - +70°C
- Power: 28 VDC
- Housing: ARINC 600 3U VPX
- Power Supply Module
- Storage: solid state disk
- Cooling: liquid
- Safety requirements: DO-178C up to DAL B aviation safety standards.
- Certification: DO-254, SAE ARP4754A
- Operating System: Wind River VxWorks ARINC 653 V2.5
- Graphical Interface: CoreAVI OpenGL SC 1.0.1 and 2.0
- Graphics/Video: CoreAVI GeForce 9400M, NVIDIA Quadro M6000
- Software: COTS, open source and custom
- Development Environment: Wind River, CodeStream, Embedded Linux
- Applications: COTS and custom
- Security: SELinux, Trusted Compute Node
- Protection: SELinux, Trusted Compute Node
- Storage: Solid State Drive
- Connectivity: 1000BaseT Ethernet
- Networking: 3U VPX, 6U PXI
- Power: 28 VDC
- Environmental: -40°C - +70°C
- Certification: DO-178C up to DAL B aviation safety standards.

WITH HENSEOLDT mission computing solutions, commercial hardware and software can be embedded in a safety-critical airborne environment certifiable to DO-254 and DO-178C up to DAL B aviation safety standards.