

AIR

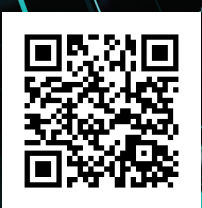
gmv[®]
INNOVATING SOLUTIONS

AIR is an Real-Time Hypervisor for safety-critical embedded space software implementing Time and Space Partitioning (TSP).

Unlock the full potential of your space systems with **AIR**, a cutting-edge bare metal hypervisor designed to meet the highest standards of performance, safety, and compatibility. Developed following the Integrated Modular Avionics (IMA) paradigm and fully ARINC 653 compatible, **AIR** empowers your spacecraft with unparalleled flexibility and efficiency.

For further information:

AIR is running under the GPL v2 license and can be accessed upon demand by emailing us to airproduct@gmv.com.



How does AIR work?

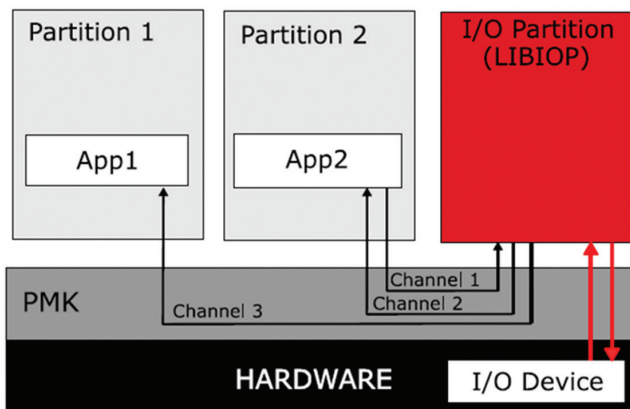
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To facilitate the development of the **AIR** community GMV provides remote access to an avionics laboratory.

It provides an open platform for testing **AIR** applications by giving free remote access to the supported boards. The facility provides access to the boards supported by **AIR** (gr740, leon3, leon4, zynqz1). New boards can be acquired if BSPs are developed by the community.

The laboratory is composed by **AIR** simulators, avionic target boards, different device drivers and some GMV auxiliary tools.

Hence, the user can test and experiment their **AIR** applications on real environment:



Time and Space Partitioning (TSP) at its Finest

With AIR's advanced Time and Space Partitioning (TSP) capabilities, multiple avionics applications with varying criticality can seamlessly coexist and operate independently on the same hardware target. This groundbreaking feature allows you to maximize the utilization of your resources while ensuring the utmost safety and reliability of your satellite operations.

Unprecedented Resource Sharing and Isolation

AIR enables your avionics applications to share resources effortlessly while maintaining robust isolation. This unique capability guarantees that each application functions autonomously, safeguarding your satellite's performance and operational integrity. Experience the perfect balance between resource optimization and absolute security with **AIR**.

Key Features of AIR

- Integrated Modular Avionics (IMA) Paradigm: Built following the IMA paradigm, **AIR** offers a standardized and modular approach to avionics system design, enhancing flexibility and simplifying maintenance.
- ARINC 653 Compatibility: Fully compatible with the widely adopted ARINC 653 standard, **AIR** ensures seamless integration with existing space systems and paves the way for easy migration and upgrades.
- Time and Space Partitioning (TSP): Benefit from AIR's TSP capabilities, enabling multiple avionics applications to coexist, run independently, and share resources efficiently without compromising safety or performance.
- Unparalleled Safety and Reliability: AIR's robust isolation mechanisms guarantee the utmost safety and reliability of your satellite operations, ensuring critical applications remain unaffected by others.
- Resource Optimization: With **AIR**, you can make the most of your hardware resources while maintaining stringent isolation, enabling efficient resource utilization without compromising performance.

More Technical Features

Partition Manager Kernel:

- Partitioning Management, Scheduling, Health Monitor.
- Multicore and Multiprocessor support.

Architecture support:

- SPARC v8.
- ARM v7.
- RISC-V (alfa version).

Board Support Package:

- Xilinx-Zynqz1.
- LEON2/3/4.
- Cortex-A family.

I/O Interfaces:

- SpaceWire.
- Ethernet.
- MIL-STD-1553.
- CAN.

RTOS support:

- RTEMS5.
- RTEMS48i.
- Bare Metal.