

# *simulated*

INTEGRATED MODULAR AVIONICS



## WHY SIMA

SIMA (Simulated Integrated Modular Avionics) is a simulation environment for Integrated Modular Avionics (IMA) based on the ARINC 653 standard. SIMA provides robust partitioning, including time partitioning, on top of the Linux operating system. SIMA guarantees same application behavior as on the target platform by strict and proven conformance to the ARINC 653 specification. In a context of growing complexity and cost of avionic systems, SIMA is a cost effective alternative for debugging, testing, simulation and training of IMA systems.

GMV

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## INTEGRATED MODULAR AVIONICS

### PROFESSIONAL TOOLS FOR STATE-OF-THE-ART AND FUTURE AVIONIC PLATFORMS

GMV offers dedicated IMA training solutions and product support worldwide. Provided by engineers with an extensive experience in the IMA domain, our solutions can help your company to develop its capabilities, profitability and return on investment.

Integrated Modular Avionics (IMA) simplifies the development and integration of software components for environments with strict safety requirements. IMA decouples software from hardware, strengthens the use of commercial-off-the-shelf (COTS) products and encourages a development process with clear separation of concerns. Avionics systems are no longer seen as black boxes linked together during integration phase, but as a platform hosting a set of software components. This causes radical changes in the role of on-board software and its development. As such, software is now designed independently from the target system, it is designed in terms of scalable, modular and, hence, reusable components.

### HOW IT WORKS

One of the key features of IMA, Robust Partitioning, separates applications, such that even programs with strict hard real-time constraints and different criticality levels can co-exist on the same processing hardware without interfering with each other.

GMV's IMA tool, SIMA (Simulated IMA), provides robust partitioning, including time partitioning, to user applications on top of the low-cost operating system Linux. By strict and proven conformance to the ARINC 653 specification, SIMA guarantees same application behavior as on the target platform. Therefore, no code changes are required to port the application from the development environment to the final target platform. On the contrary, SIMA truly supports seamless integration with the tool-chain of the platform provider.

In the context of growing complexity of avionic functions, more engineers are needed for software development and validation. Licenses for tools and in particular for expensive target operating systems become cost drivers. SIMA is a cost effective alternative for debugging, testing, simulation of complete IMA systems and training on IMA and the ARINC 653 API.



Today, SIMA is already being used by engineering teams at major aircraft manufactures, avionics system first tier suppliers, and research institutes.

### TECHNICAL FEATURES

- Proven Compliance to ARINC 653 Part 1 (Required Services)
- Compliance to ARINC 653 Subset of Part 2 (Optional Services):
  - Multiple Module Schedules
  - Logbook System
  - SAP Ports and Naming Services
- Hard Real-Time on standard Linux distributions
- ARINC 653 compliant configuration
- Simple execution for quick debugging
- Complete simulation of IMA modules and systems
- Full integration of GNU and Linux tools into the development and execution environment
- Flexible ports based on UDP Ports or user defined callbacks



Application ARINC653

Simulated  
IMA

APEX interface

Core Services

POSIX Support

OS-Level  
POSIX-Compliant

If you need any further information, please contact **GMV** Avionics Center of Excellence at [info-avionics@gmv.com](mailto:info-avionics@gmv.com)