

# Applied Dynamics Adds SpaceWire Support to the ADvantage Framework

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Applied Dynamics (ADI) today announced the addition of SpaceWire to the growing list of communication protocols supported by the ADvantage Framework. Support for this communication standard, widely used throughout the space industry, allows users to further leverage the power of the ADvantage Framework in their spacecraft and satellite real-time systems.

## About SpaceWire

Originally utilized by the European Space Agency, SpaceWire communication networks are now used worldwide by national space agencies, including NASA, JAXA, and the RKA, in addition to wide use within the private space industry. Current NASA projects utilizing SpaceWire include the Mars Science Laboratory, the Lunar Reconnaissance Orbiter, the James Webb Space Telescope and many more.

Based in part on the IEEE 1355 standard, the SpaceWire protocol has been designed specifically to meet the unique demands of operation in space. SpaceWire supports arbitrary network topologies, allowing for the design of highly fault-tolerant and robust networks. The use of Low Voltage Differential Signaling (LVDS) and a low number of logic gates allows SpaceWire networks to consume little power while still supporting bidirectional communication rates up to 400 Megabits per second. Many SpaceWire devices are available in radiation tolerant form factors.

The adoption of the SpaceWire standard throughout the space industry has allowed data handling hardware to be reused by multiple missions, reducing costs and improving system reliability.

## About the ADvantage Framework

The ADvantage Framework provides a real-time usability layer on top of Linux (and other real-time or non-real-time operating systems), and is used to manage data handling, execution of analytics algorithms, control algorithms, simulations, data acquisition, and a range of other real-time computational tasks.

The ADvantage Framework is used throughout the global A&D industry to build and deploy real-time data facilities used to verify and type certify aircraft systems, jet engines, satellites, military ground vehicles, and submarines. With few exceptions, nearly every major commercial aircraft program is making significant use of the ADvantage Framework. In recent years, ADvantage Framework users have deployed real-time installations to interconnect a ubiquity of small, low-cost, real-time compute capability for industrial applications where time-based-performance of the data infrastructure is critical.

The ADvantage Framework is used by the US Air Force, the US Navy, the US Army, and NASA and is being used on advanced real-time and accelerated-computation multi-physics innovation research projects. ADvantage has been very

popular across the A&D industry due to its open architecture, open API's, and feature-rich capability to support Model Based Systems Engineering (MBSE) methods and to interface with advanced Product Lifecycle Management (PLM) systems. Coded in C/C++ and built upon best-in-class open source software, e.g. GNU, Linux, Python, WxWidgets, V9 offers unmatched performance.

In addition to SpaceWire, ADvantage supports more than two-dozen other real-time network interface types including Modbus, CAN, RS-4xx, UDP Ethernet, ARINC-664, SCRAMnet, Reflective Memory, and MIL-1553B and provides easy-to-use desktop tools for configuring data handing within the various network types and protocols.

#### About Applied Dynamics

Applied Dynamics helps companies make better use of modeling assets through all stages of product development, verification testing, demonstration, training, and maintenance. Applied Dynamics flagship product, the ADvantage Framework, is a real time, industrial Internet of Things (IoT) model based systems engineering software platform providing an agile, feature-rich environment for supporting the product development lifecycle through development, integration, verification, and certification. ADvantage embraces an open architecture and allows its users to leverage best-in-class COTS components and open source technologies. The ADvantage user base includes more than 50% of the Fortune 500 A&D companies and extends into marine, power systems, oil & gas, and the automotive industry.

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