# CRUCIAL SPACEWIRE ELEMENTS IN RASTA

**Session: SpaceWire Equipment and Software**

**Short Paper**

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## ABSTRACT

The RASTA (Reference Avionics System Test-bench Activity) was initiated by the European Space Agency (ESA) to provide a single development platform to reduce the number of different test environments established in technology developments.

The RASTA objectives are to allow the developed technology items to be validated and demonstrated in a flight representative environment, to support mission and spacecraft design and on-board software validation through the project life-cycle by means of a coherent development platform, to maximize reuse of the existing avionics technologies and to be scalable and flexible.

The RASTA development platform has been developed for ESA to provide the means to demonstrate functional and performance requirements of satellite on-board systems and subsystems. A crucial part of the RASTA development platform is the SpaceWire network and the elements implementing it. The key elements implementing the SpaceWire network are the various RASTA boards harboring ASIC or FPGA components implementing SpaceWire links.

A variety of boards have been developed to support the implementation of complex avionics and payload management systems. These boards carry components with SpaceWire interfaces from a number of different manufactures. For example, boards have been developed to support the Aeroflex UT699RH device, the Atmel AT7913E (SpaceWire-RTC) ASSP and the LEON3FT-RTAX Actel FPGA based processors.

Other existing boards are also compatible with the RASTA concept, such as the SpaceWire router boards from Aeroflex and Star-Dundee. Generic FPGA boards targeting the Xilinx Virtex devices and the Actel RTAX2000S device are used to implement custom system-on-a-chip configuration. These boards have all in common that they provide SpaceWire interfaces on their front-panel.

The full paper will present the RASTA concept, the crucial SpaceWire elements and how SpaceWire networks can be implemented using this development platform.