

# USING SPACEWIRE AS EGSE INTERFACE

**Session: Test & Verification**

**Short Paper**

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## **ABSTRACT**

A data handling system based around the ERC32 processor uses the processor UART as the main EGSE interface for downloading test software to the equipment. Since the UART provided by the ERC32 has a baud rate of 38400 baud this is a bottleneck for the verification process.

This demand for an EGSE interface with increased speed can be met with a lot of different interfaces available, Ethernet, high-speed UART, and among other high speed serial links SpaceWire can be used. Since SpaceWire consists of space qualified hardware, the main advantage of using SpaceWire as an EGSE interface is that the same interface can be used on bread board models as well as flight models and it may even be used as a spare functional interface after launch.

The new generation of Saab Space Data Handling systems has the processor function based on the COLE system-on-chip device. The COLE ASIC developed by Saab Space is a combination of the COCOS I/O controller ASIC and the LEON2-FT processor, with additional features. In the COLE ASIC a high speed , (200 Mbps, 160 Mbps) SpaceWire interface is implemented. Eight SpaceWire links are included, each link can support RMAP in hardware. The LEON2-FT processor is equipped with a Debug Support Unit (DSU) providing breakpoints, watchpoints and trace facilities. The standard communication link to the DSU in LEON is a UART, but since the DSU is a memory mapped device connected to the AMBA bus, one of the SpaceWire links with RMAP protocol can be used to speed up software loading and trace memory dump.

The proposed paper will detail more of the advantages by using SpaceWire instead of other possible communication links. It will also describe the support functions needed to take advantage of the features provided by the SpaceWire link.