STAR-DUNDEE VIRTUAL DEVICES AND SYSTEM SIMULATION

Session: SpaceWire Test and Verification

Short Paper

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ABSTRACT

STAR-Dundee's latest software API and applications allow users to build virtual SpaceWire networks on their PCs. Users can create their own virtual devices to represent hardware that may not yet be available, or to prototype features that aren't implemented in current hardware. Virtual SpaceWire networks can then be constructed containing these virtual devices. The virtual networks can also be integrated with one or more physical SpaceWire networks for testing, or can be tested in an entirely virtual environment.

These virtual devices and networks provide a number of benefits. For equipment developers the system provides a simple method of prototyping features without implementing these features in hardware. For equipment suppliers the system can allow users to test virtual implementations of hardware prior to purchase, or to begin development while waiting on delivery. For network designers virtual networks can be constructed to rapidly prototype and test potential network architectures, without the time consuming task of connecting SpaceWire cables to devices.

The ability to integrate devices and subsystems into a network without requiring the physical hardware to be present means that devices or subsystems developed at separate geographical locations can be virtually integrated at an earlier stage of development.

This paper describes the functionality provided to allow users to create virtual devices, the mechanisms used to integrate these virtual devices with one another and with physical SpaceWire networks, and the virtual devices provided with STAR-Dundee's software. The advantages and potential limitations of this concept of virtual integration are also identified and discussed.