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By John McHale

GREENBELT, Md. - Experts at NASA' Goddard Space Flight Center needed a solution that could enable satellites to communicate directly to one another for their Cross Link Integrated Development Environment (CLIDE) program. Software defined radio technology from Spectrum Signal Processing in Burnaby, British Columbia, met their needs.

NASA Goddard engineers will use Spectrum's SDR-3000 subsystems to develop technologies to facilitate satellite-to-satellite communications, a key requirement for future NASA missions. Spectrum is also providing software-based modem cores implemented in Field Programmable Gate Arrays (FPGA) to facilitate a faster development schedule.

"The SDR-3000 provides a rapid prototyping platform for the CLIDE program," says Jason Soloff, Communication Systems Engineer at NASA. The architecture provides both the capabilities and flexibility necessary to meet the requirements of the program."

NASA's CLIDE Project will develop inter-satellite cross links, or communications links between satellites, enabling lower cost constellations of satellites to provide critical scientific data in a timely fashion. These direct satellite-to-satellite links allow for mesh connectivity and ad hoc networking, thereby ensuring that a satellite communications network can provide full coverage of the earth, Spectrum officials say. Multiple SDR-3000s will be used to simulate spacecraft in the lab and demonstrate full communications networking capabilities, including the inter satellite crosslinks.

NASA officials liked the flexibility and reconfigurability of the SDR-3000 for simulating waveforms, says Manuel Uhm, senior manager of strategic marketing at Spectrum. They had been using different commercial-off-the-shelf technologies but could not get the results they wanted and were about to stop and wait for technology to catch up when they heard about the SDR-3000, he continues The Spectrum system is very new, having only been on the market six months, Uhm adds.

The SDR-3000 family of software defined radio subsystems is based on the CompactPCI form factor. The use of Serial RapidIO provides high-speed data throughput to match the processing power offered by high performance signal processing devices, such as FPGAs, digital signal processors, and PowerPCs, Spectrum officials say. The use of Spectrum's quicComm Application Program Interface enables a heterogeneous processing environment whereby a customer can use different signal processing devices to solve different parts of the signal-processing algorithm without intimate knowledge of the underlying hardware. In this way, a customer is not limited to one signal-processing device that may be suboptimal at certain aspects of an algorithm.

Spectrum Signal Processing designs, develops, and markets high performance wireless signal processing and packet-voice processing subsystems for use in communications infrastructure equipment. Spectrum subsystems are targeted for use in government communications systems, satellite hubs, cellular base stations, media gateways, and next-generation voice and data switches. For more information on the SDR-3000 contact Manuel Uhm by phone at 604-421-5422, by email at manuel_uhm@spectrumsignal.com, or on the World Wide Web at http://www.spectrumsignal.com.

Military & Aerospace Electronics May, 2003
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