

SpaceWire Working Group meeting #17, December 2011

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ESTEC, Noordwijk
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SpaceWire in 2011 Recap



- February: ESA Bulletin : Well Connected – The SpW on-board data handling network
- March: SpaceWire Working Group meeting #16, March 2011
- October: ESA SpW Brochure published
- November: SpaceWire International Conference San Antonio
- November: SpW User Group seminar in Japan – Leaflet SpaceWire Activities in Japan
- December: SpaceWire Working Group meeting #17

SPACEWIRE TECHNOLOGY PROVIDERS

ESA ESTEC technical centre in Noordwijk, the Netherlands, has developed several customer-tailored SpaceWire chips and related architectural priority (IP) cores to support the development of SpaceWire systems on Agency spacecraft. These are also available commercially. Avnet (AV) supplies the chips and SpaceWire Ltd (SW) supplies the IP cores.

- ESA SpaceWire Interface IP Core provides a complete interface to SpaceWire that can be readily implemented in a FPGAs programmable gate array (FPGA) or other chip technology. Already serving in several ESA missions.
- SpaceWire DMA/IP Core: there are two available, based on SpaceWire-assisted Remote Memory Access Protocol (see back page). One is the Initiator and one is the Target, the first used to send DMA IP commands and receive replies, the second to receive commands and read/write data and send results back to the Initiator.
- SpaceWire Host Application Specific Integrated Circuit (ASIC): the ESA SpaceWire is a complete SpaceWire router in a single chip, with eight SpaceWire ports each capable of 200 MBps of bidirectional data transfer, two bidirectional FIFOs (FIFOs), 16-to-160 pins for connecting to other electronics and an internal configuration port, available from Avnet as the ATTITUDE device.
- SpaceWire Remote Terminal Controller (ASIC): an instrument controller or a bridge between SpaceWire and the popular CAN Remote Area Network bus standard originally developed for automobiles, available from Avnet as the ATTITUDE device.

SPACEWIRE AROUND THE WORLD

SpaceWire-compliant devices and IP cores are available from numerous suppliers worldwide, demonstrating the standard's popularity. Below is a partial list of SpaceWire suppliers, together with space agency users and industrial partners:

- ESA/ESTEC (NL): a set of three chips (including the complete products with the range of application for the development, the delivery and many of SpaceWire routers, used for the development of SpaceWire IP cores (see left), software and tooling).
- ESA/ESTEC (NL): software and tooling designed to set up and debug SpaceWire communications during development. This can be used to set up or test the hardware.
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DESIGNING THE FUTURE

The SpaceWire Working Group has been a major vehicle for the development and adoption of SpaceWire. The working group is open to engineers across the world working with data-handling technology. Europe, Japan, Russia and the USA are currently represented.

ESA has an ESA's mandate to promote cooperation in space research and technology, the SpaceWire Working Group is a truly international collaborative body, developing technology not just for European states but also for the benefit of the whole space community. International reports must typically occur 2 years to develop and review SpaceWire-related standards and trade experience as its application in space systems.

The meeting will focus on the following topics:

- SpW networks for C&C (SpW-D) (Convenors Ph. Armbruster, ESA/ESTEC & S. Parkes, UoD)
- SpW Evolutions (Convenors D. Jameux, ESA/ESTEC & M. Suess, ESA/ESTEC)
- SpW Backplanes (Convenors A. Senior, SEA & M. Nomachi, UoO)
- SpW Plug-and-Play (Convenors G. Rakow, NASA/GSFC, C. Taylor, ESA/ESTEC, P.Mendham, SciSys)
- SpW Deployment and Handbook (Convenor, B. Cook, 4Links)
- SpW Test, Verification and “Certification” (Convenor Y. Sheynin, UoStPg)
- SpW International SpaceWire Conferences and Working Group meetings