

# **Proposal for SpaceWire-R**

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# Purpose of This Presentation

- ❖ Some spacecraft onboard sensors process and compress data taken by them, and a loss of a small amount of data may lead to a loss of very important information.
- ❖ Therefore, these sensors require an onboard protocol that performs reliable transfer of data over a SpaceWire network.
- ❖ This presentation proposes a protocol called SpaceWire-R that performs reliable transfer of data over a SpaceWire network.

## SpaceWire-R (1/2)

- ❖ SpaceWire-R was developed based on a protocol called the Joint Architecture Standard Reliable Data Delivery Protocol (JAS RDDP) developed by the Sandia National Laboratories.
- ❖ JAS RDDP was based on a protocol called the GOES-R Reliable Data Delivery Protocol (GRDDP) developed by the Goddard Space Flight Center (GSFC) of NASA.
- ❖ SpaceWire-R is upper compatible with JAS RDDP and can be operated with implementations of JAS RDDP by selecting appropriate values for some options and parameters.
- ❖ There is already a draft specification of SpaceWire-R (see next page), which can be distributed upon request.

# SpaceWire-R (2/2)

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## SpaceWire-R

**DRAFT**

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# Comparison of Functions

	GRDDP	JAS RDDP	SpW-R
Reliable Transfer (Retransmission Control)	X	X	X
Multiplexing	X	X	X
Segmentation		X	X
Flow Control			X
Keep Alive			X
Redundancy Control			X

- ❖ Unlike those of GRDDP and JAS RDDP, the specification of SpaceWire-R is written with the style of ISO and CCSDS protocol specifications.

# Near-Term Schedule

When	Activity
December 2011	Draft specification (issue 0.2) available
January-February 2012	Prototyping of basic functions
March 2012	Update specification and generate issue 0.3 based on results of prototyping
Summer 2012	Upgrading of prototype and evaluation of protocol
Fall 2012	Update specification and generate issue 0.4 based on results of evaluation