SpaceWire Evolution and Standard Revision

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SpaceWire Today: Status

ECSS-E-ST-50-12C Links, nodes, routers and networks (31 July 2008) :

The SpaceWire Standard has been renumbered and is otherwise identical, in terms of technical content, to the previous ECSS-E-50-12A Links, nodes, routers and networks (24 January 2003) standard.

Published complementary standards covering protocols running over SpW:

1. **ECSS-E-ST-50-51C** SpaceWire protocol identification (5 February 2010)
2. **ECSS-E-ST-50-52C** SpaceWire - Remote memory access protocol (5 February 2010)
3. **ECSS-E-ST-50-53C** SpaceWire CCSDS packet transfer protocol (5 February 2010)

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SpaceWire : Missing elements

4) Protocol extension for Command & Control and (high throughput) Data Transfers: SpW-D

- Technical document/specification ⇒ as input to ECSS-E-ST-50-5(*4*)

5) SpaceWire Handbook ⇒ potential ECSS Handbook ?

6) SpaceWire Validation and Certification (?) ⇒ part of HBK ?

7) ECSS-E-ST-50-12D: NWI to be submitted to ECSS secretariat

- A consolidated list of change requests for ECSS-E-ST-50-12C should be agreed by the SpaceWire WG
- This list will be submitted by the convener

8) SpaceWire-2

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SpaceWire Evolutions

Backwards compatible with existing SpW devices
(or introduced as an option)

- *Links (SpW Codec)*
- *Routers*
- *Controllers*
- *Remote Controllers*

SpaceWire (1)

Standard Revision

ECSS-E-ST-50-12D

e.g. :

- Cable specification
- Removal of ambiguities
- Connectors
- Distributed interrupts

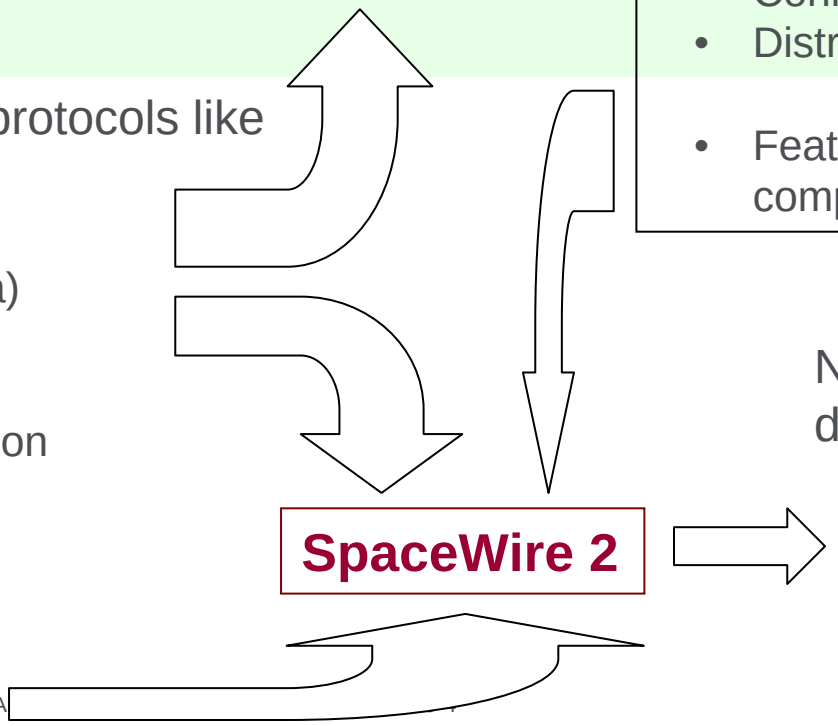
- Features leading to compatibility issues

Support for additional protocols like SpW-CC&HTDT:

- SpW-RT
- RMAP based (Jaxa)
- SpW-D
- SpW-VC (4Links)
- Time Synchronisation
- SpW-PnP

SpaceFibre

- Encoding (HSSL)
- VC



SpaceWire 2

New Generation of devices (i.e. on DSM)

- *Links (Codec)*
- *Routers*
- *Controllers*
- *Remote Controllers*

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Standard Revision

1. SpW users (mainly the Working Group) have detected a number of ambiguities or errors in the ECSS-E-ST-50-12C Standard e.g.:
    a. Ambiguous formulations
    b. Mix of normative clauses and descriptive text
    c. Clear errors in e.g. figures

2. SpW users (mainly the Working Group) have proposed a number of new features to be introduced in SpaceWire e.g.:
    a. Configuration port 0 in nodes
    b. Signalling codes to carry interrupts across the network
    c. Half-duplex and/or simplex links
    d. Link level virtual channels

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ECSS-E-ST-50-12D

- The standard revision shall not invalidate the investments made in devices and systems following the current standard
- The objective of the revision shall improve the standard but still allow current devices to claim compliance
    a. New requirements may be introduced if they are compatible with the current standard
    b. May be introduced as optional requirements as long as a compatibility mode with current systems is maintained
    c. Need verification by breadboarding before standardisation

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Considered Dispositions for CR

All change requests shall be disposed in one of the following 4 classes

a. Inclusion in the revised standard ECSS-E-ST-50-12D
b. To be covered by a chapter in the SpaceWire Handbook
c. To be reconsidered for standardisation as part of SpaceWire-2
d. Issue not to be considered for standardisation

Disposed change requests shall be marked with one of the following labels

a. Consolidated disposition by SpW WG
b. Preliminary disposition (pending further definition and verification)
c. No disposition could be agreed

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Discussion Process

1. In the following items which have been raised as formal CR or respective presentations are presented
2. Sometimes a preliminary disposition has been made
3. The result of the WG discussion and the disposition will be recorded
4. All shall serve as input for a consolidated list of change requests from the SpW WG to the ECSS secretariat as basis for the initiation of a new work item

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