SpaceWire Working Group Meeting 13

Introduction Session 2

SpaceWire RT

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Outcome SpW WG mtg#12 (February 2009)

- Draft protocol specification in version 2.1 was discussed during the WG

- There was no principle technical problem identified during the review and the discussion

- There is a concern about the requirements on the actually quality of service needed for application on-board of spacecrafts. The current QoS are taken from the SOIS definition.

- There was a concern raised about the complexity in particular on the implementation of the CCSDS Guaranteed QoS using retries. The complexity of the implementation has to be assessed in detail.

- Not all devices are required to support all levels of QoS. The complexity of the implementation can be tailored to the QoS requirements

- SpW-RT should not be made mandatory to be used in the future for all SpW based systems. A specific system has decide where to use or not to use SpW-RT.

- Task force should be established to identify the required use cases.

Status since SpW WG mtg#12 (February 2009)

- At ESA level

    - Brainstorming – roadmap meeting held at Estec on the 7th of July involving Astrium: O. Notebaert, C. Honvault, TAS: could make it, UoD, ESTEC: M.Suess, C. Taylor, F. Torelli, G. Magistrati and Ph. Armrbuster.

    - Main outcomes
        - Requirements re-assessed, ESA primes and CNES (developing "Routed Architectures") to be consulted
        - Retry mechanism considered as not required
        - Time distribution and synchronisation mechanisms to be defined
        - Basic QoS not required
        - Discussion about Opportunistic traffic – could be removed : *this has been reconsidered in the mean time*
        - Emphasis to be put in the RT protocol for Network Management and Fault Handling (e.g. babbling idiot)
        - Validation by simulation required (c.f. Teletel – Astrium SpW-RT-PVS)

High level requirements for SpW-RT

- **SpaceWire-RT must match the requirements of future space applications and must ensure**:

  - ✓ Dependability.

  - ✓ Time determinism.

  - ✓ Fault containment.

  - ✓ Synchronization.

  - ✓ System configurability and monitoring.

  - ✓ Efficiency within a SOIS compliant communication system.

  …….. While keeping highest data throughput !

High level requirements for SpW-RT

In other words, we need:

- (more) Robustness

- Timeliness

…. taking into account that SpW interfaces, cables, routers and nodes are designed to be intrinsically reliable.