Some SpW-RT discussion comments

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Towards integral interconnection infrastructure for onboard systems

Next generation modular spacecraft avionics move towards integral interconnection infrastructure

SpaceWire is the technology for such integral on-board interconnections

SpaceWire as the integrated networking infrastructure

- – for a spacecraft
- – for the spacecraft and the payload

Multiple information/command flows in the integral interconnection

SpaceWire-RT - Closing the gap

Spacecraft distributed on-board systems have several (3-5) different interconnections :

- *sensor buses* for data streams from sensors and instruments

- *command buses* for commands from control units to instruments and spacecraft equipment

- *telemetry busses* for telemetry data

- *data buses* for data exchange between computing modules in the course of data and signal processing

- *time synchronization buses* for on-board clock synchronization

- *sideband signals* for hard real-time signaling and control

> *We do need transport service with timeliness (10s ms) to integrate Control traffic into SpaceWire interconnection*

SpW-RT aside SpW routers

- Design of the SpW-RT without SpW routers involvement

    - Possible.

    - Feasible ?
      e.g. address translation tables for ACK…

    - **Robust** ?!

- Without routers it wouldn't be possible to prevent violation of time-slots scheduling in the network (errors in nodes and software, bubble idiots due to faults, etc.) and thus ensure robust timeliness

- Just let us realise it, understand the limits of this, reasonable by itself, approach !

SpaceWire-RT / "SpaceWire-T"

- SpaceWire-RT - to develop general architecture

- "SpaceWire-T" to develop, validate, trial in all the details

  – SpaceWire-T – a standardised implementation profile of the SpaceWire-RT

- Return to evolution towards the full SpaceWire-RT