

MARC

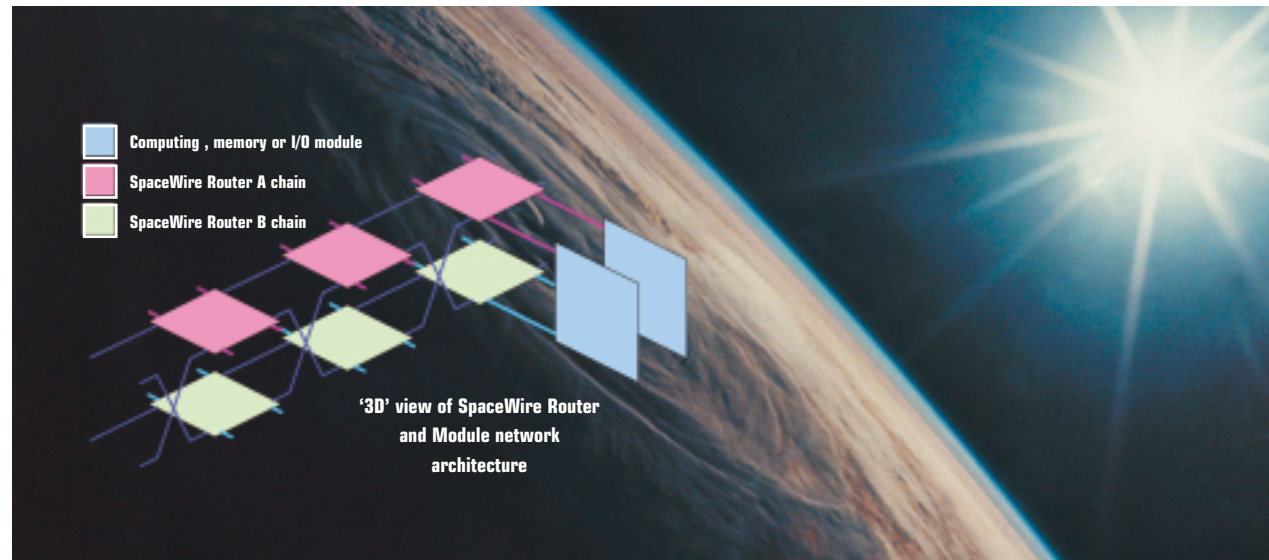
Spacecraft processing systems solutions

overview

Modular Architecture for Robust Computing (MARC) provides a unified and robust approach to future spacecraft data management systems:

- Open system spacecraft architecture
 - Modular and scalable
 - SpaceWire technology
 - Layered fault detection architecture, single point failure tolerant
 - Built-in fault detection, isolation and recovery
- Applications include:
 - Complex and/or multiple payloads
 - Integrated computers for smallsat bus and payload
 - EO spacecraft avionics
 - Science spacecraft avionics
 - Planetary robotic systems
 - Compatible with the Spacecraft Onboard Interfaces Standard (SOIS)

MARC hardware from SEA is fully scalable from low power mission applications to complete spacecraft avionics and payload processing systems ▶



MARC systems offer:

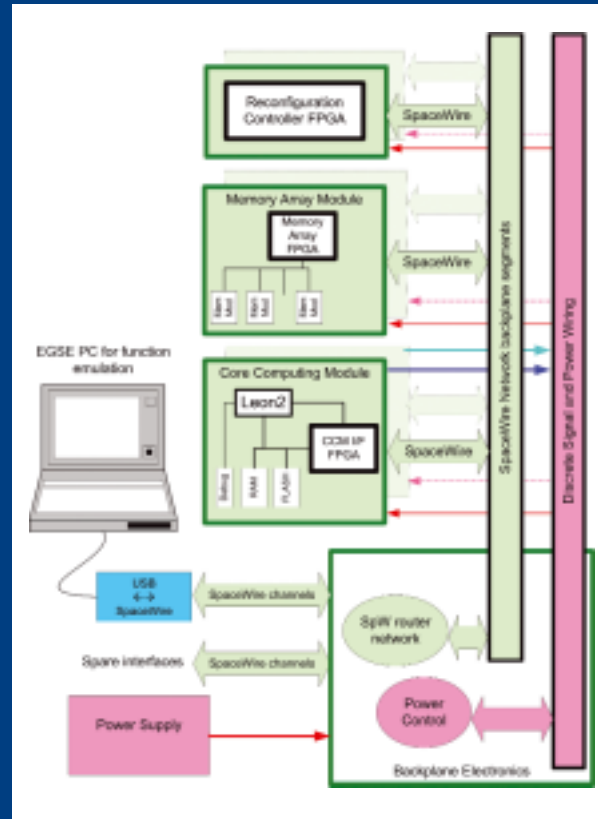
- Scalable architecture to efficiently match requirements from small robotics missions to an optimally integrated avionics/payload data processing system for large EO missions.
- Network design is processor independent.
- Layered fault-management providing robust system level processing and storage functions.
- System level watchdog providing reliable hardware trapping of processor node failures and automatic reconfiguration.
- Fully configurable to include only the modules required for a specific mission.
- SpaceWire network can be extended into unit and system EGSE for simplification of AIT.

Solid technology base:

- SpaceWire technology for robust intra-unit networking backplane. Extendable physically inter-unit while still maintaining complete logical integration.
- MARC principles for robustness, fault-tolerance and efficient topologies evolved through spacecraft requirements analysis, system breadboarding and evaluation.
- Extensive use of off-the-shelf flight parts with FPGA customisation of key functions to create the MARC specific services.

MARC modules include:

- SpaceWire HArdware Reconfiguration & Protection (SHARP) controller.
- Processor Module based on LEON2FT.
- Memory array module providing core capability for distributed, fault-tolerant solid-state mass memory systems.
- Standard, scalable backplane for SpaceWire routing and power distribution.



MARC demonstration system

MARC Spacecraft processing systems solutions

Further information from SEA

telephone +44 (0) 1373 852 000

facsimile +44 (0) 1373 831 133

email info@sea.co.uk

web www.sea.co.uk

BS EN ISO 9000:2000
(ISO 9000-3 UK TickIT for software)



SEA

