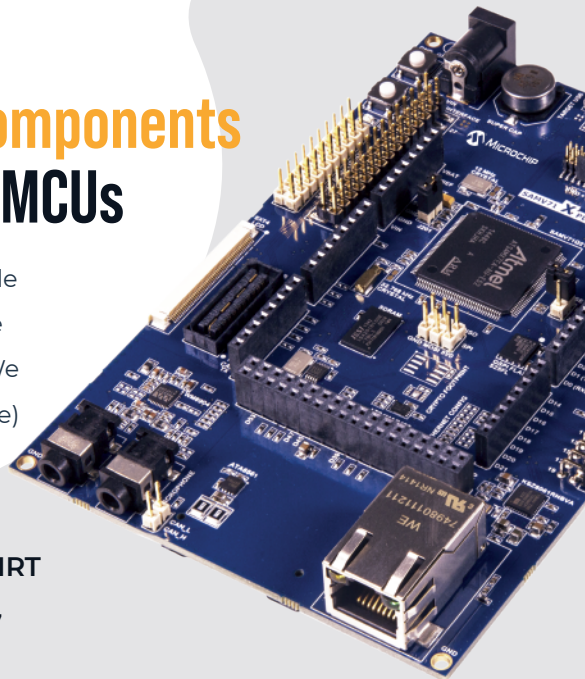


Qualified software components for Microchip Cortex MCUs

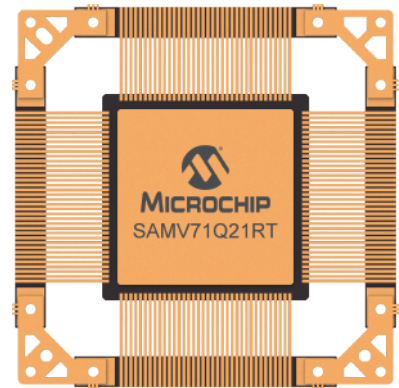
N7 Space provides commercially available reusable software components for space ARM microcontrollers from Microchip. We currently offer BSW (Bootloader Software) and BSP (Board Support Package) for the following devices:

- ATSAMV71Q21
- SAMV71Q21RT
- SAMRH71
- SAMRH707



Technical highlights

- Model based PUS-C TC/TM stack developed using ASN.1/ACN modelling supported by ESA asnlsc compiler
- Self test of the critical CPU modules
- Failure reporting through boot and death reports
- Bare metal design (no RTOS used)



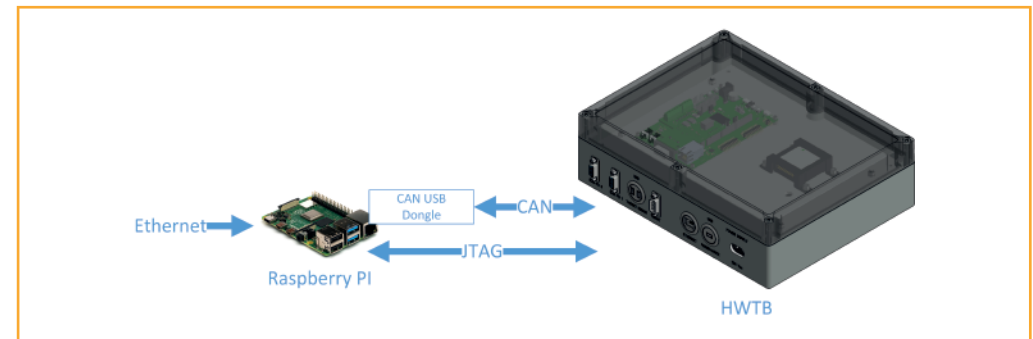
- ESA ECSS qualification test suite and data pack (criticality C, criticality B pending)
- Execution from internal Flash memory or external memories - Various TC/TM interfaces supported (UART, CAN, SpaceWire)

WE PROVIDE ADAPTATION FOR PROJECT NEEDS WITH SUPPORT TO QUALIFICATION ON TARGET PLATFORM.

CANopen On-Board Protocol Stack



N7 Space provides commercial support to deployment of open-source Lely CANopen library for target on-board systems. Criticality B pre-qualified version of this library has been prepared during ESA activity. Pre-qualification data pack is available for ATSAMV71Q21 and SAMV71Q21RT. We can support deployment of the library for different target platforms including porting of the test suite and adaptation of the qualification environment.



The space-grade lely-core library provides:

- Complete implementation of all CANopen services according to CiA 301 and ECSS-E-ST-50-15C standard: - PDO - SDO - SYNC - EMCY - NMT
- Support for ECSS-based bus redundancy in NMT service.
- Support for ECSS “time objects”
- ECSS criticality level B validation test suite and documentation:
 - ◆ Static memory allocation
 - ◆ No external libraries dependencies
 - ◆ Pure C99/C11 interface
 - ◆ 100% line, branch and MD/DC coverage by unit-tests
 - ◆ Complete ECSS-required documentation set
- Static code generator from DCF device configuration files (CiA 306)
- For non-critical software: Linux and Windows based C++ wrapping libraries for convenient communication with embedded devices
- Compatibility with other lely-core parts that are not related to ECSS standard (e.g. TIME service).