



CERN-IPMC: Status update

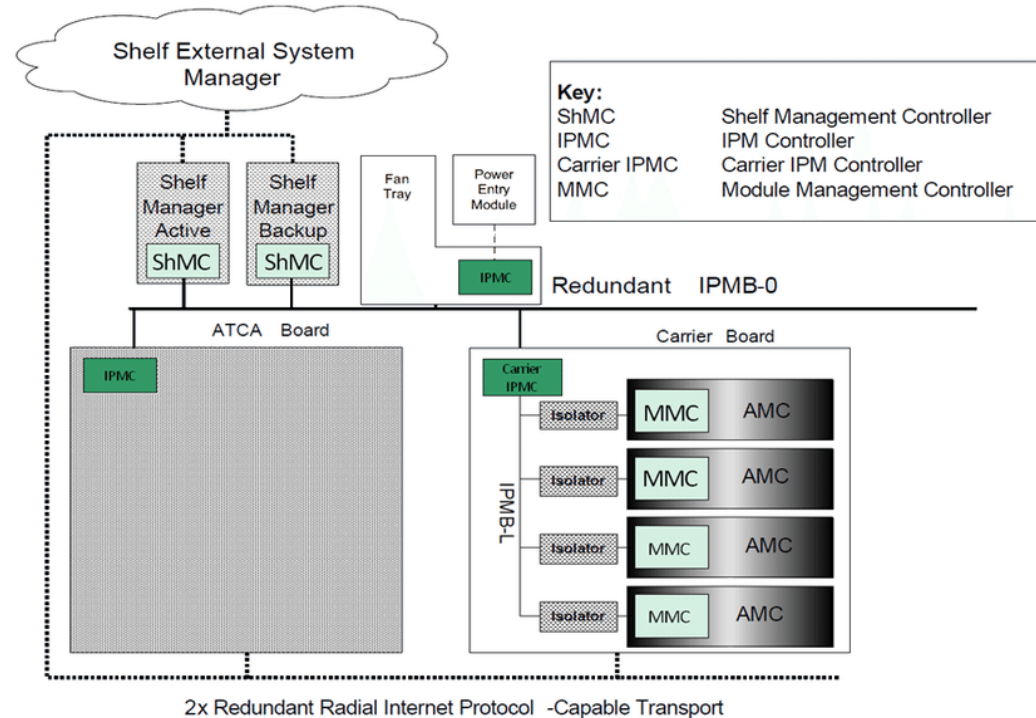
15th xTCA Interest Group Meeting

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General overview

Role of the IPMC for ATCA blades:

- Monitoring sensors
 - Voltages, temperatures ...
- Controlling the system
 - Power management
 - Port/clock activation
 - ...
- Ensuring proper operations
 - Compatibility
 - Hot swap
 - Redundancy
 - ...



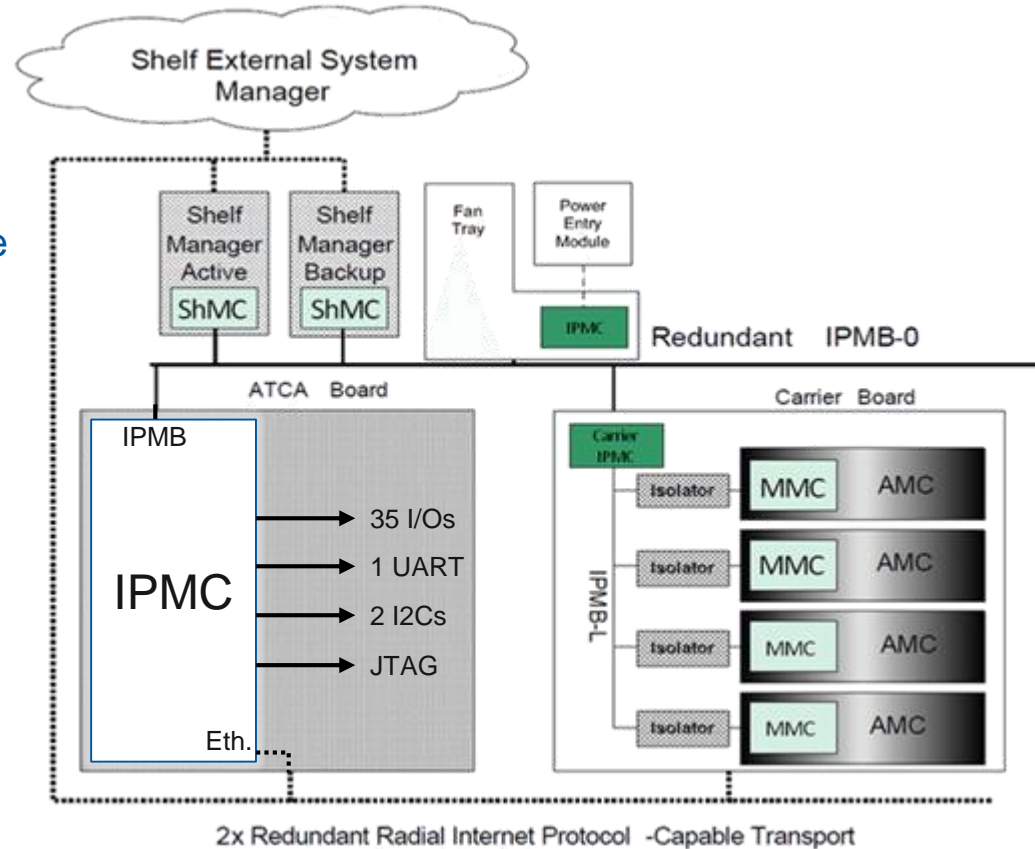
General overview

- Project started in 2016 – First prototypes in 2017
 - **Adaptation of the Pigeon Point IPMC solution**
 - **Commercial solution that requires a licence**
 - small license fee is included in the price of the IPMC
- New customization procedure in 2018
 - **No need to sign NDA**
- New hardware version in 2019 (version 2)
 - Update Ethernet PHY and SPI memory components



CERN-IPMC Hardware

- Small form factor
 - DIMM-DDR3 VLP with limited size
 - Vertically plugged
- Interfaces
 - Up to 8 AMCs + 1 intelligent RTM
 - Standard signals (HA, HS...)
 - 35 user I/Os
 - 2 I2Cs
 - 1 UART
 - 1 Ethernet
 - 1 JTAG Master

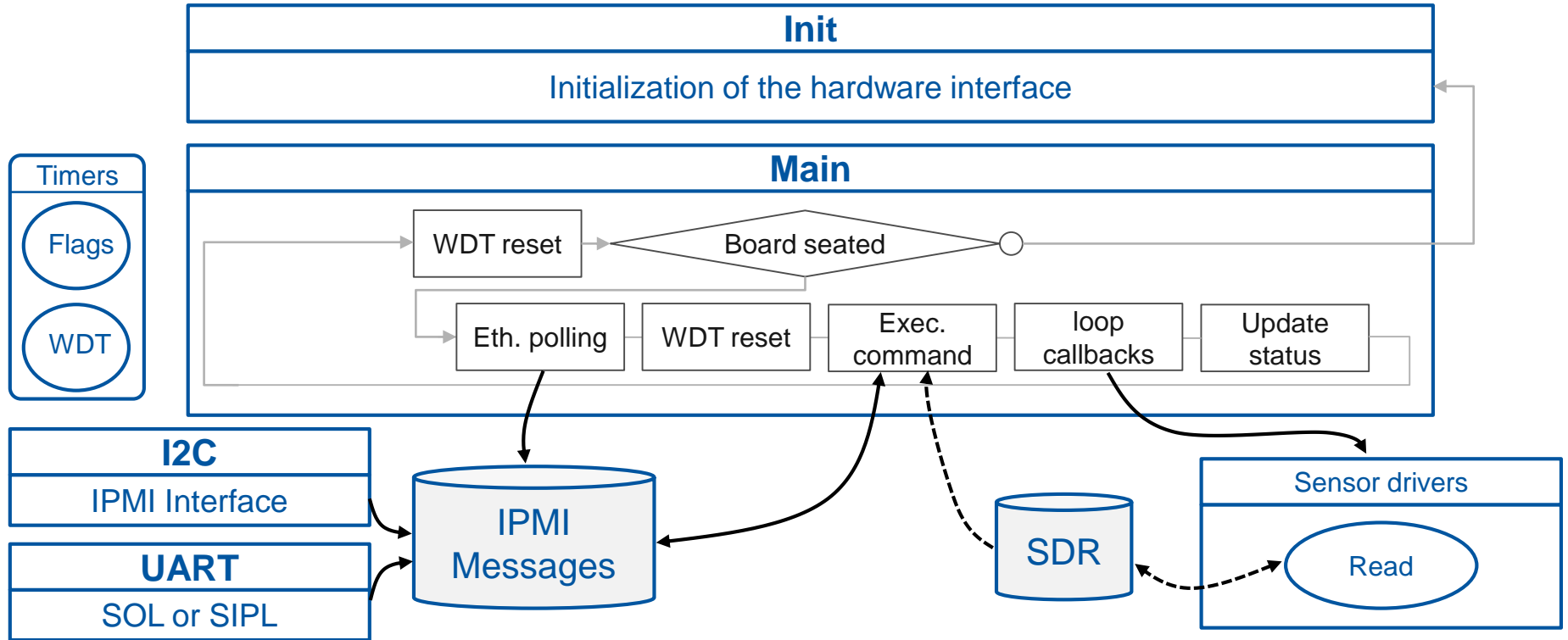


CERN-IPMC Software

CERN-IPMC design is based on the BMR solution (Pigeon Point)

- **Limitations :**
 - Project architecture was not made for multi-customization
 - No embedded O.S – No threads
- **Advantages:**
 - Robust: the most important need for security reason
 - Compliance with the standard

CERN-IPMC Software



A new document to present the software architecture will be available soon

CERN-IPMC customization

- Customization:
 - Additional commands (OEM) can be easily implemented
 - Callbacks can be implemented (timer based, loop iteration based)
 - Allow playing with payload interfaces: I/Os, I2Cs, ...
- Limitations:
 - One has to bear in mind that functions have to be as short as possible : Each function that hogs the loop for a long time prevents other commands from being executed.
 - Might Slow down the reactivity
 - Might cause communication issues

CERN-IPMC productions

- Up to 100 modules are ready to be sent as soon as possible
 - Delayed because of lockdown
 - Will be shipped to users, to be contacted via e-mail next week
- Next productions: through frame contract
 - Being currently written (first draft under review)
 - Goal to produce a first batch Q3/Q4 2020
 - Based on 1000 modules over the next two years, according to the forecast we obtained from the users

CERN-IPMC debugging

List of fixed issues / improvement made since last IG meeting:

- DHCP support:
 - based on MAC address in addition to client ID that was already supported (automatic detection depending on server request)
- MAC address issue: storing MAC addresses in EEPROM
- Support of TPS2459 for AMC management
- Support for level inversion of AMC management pins
- Support for additional power sequence instructions
- Improve sensor driver template to support “sensor not ready”
- Fix for IPMB issue (patch from pigeon point has been ported)
 - Slowed down because of the lockdown

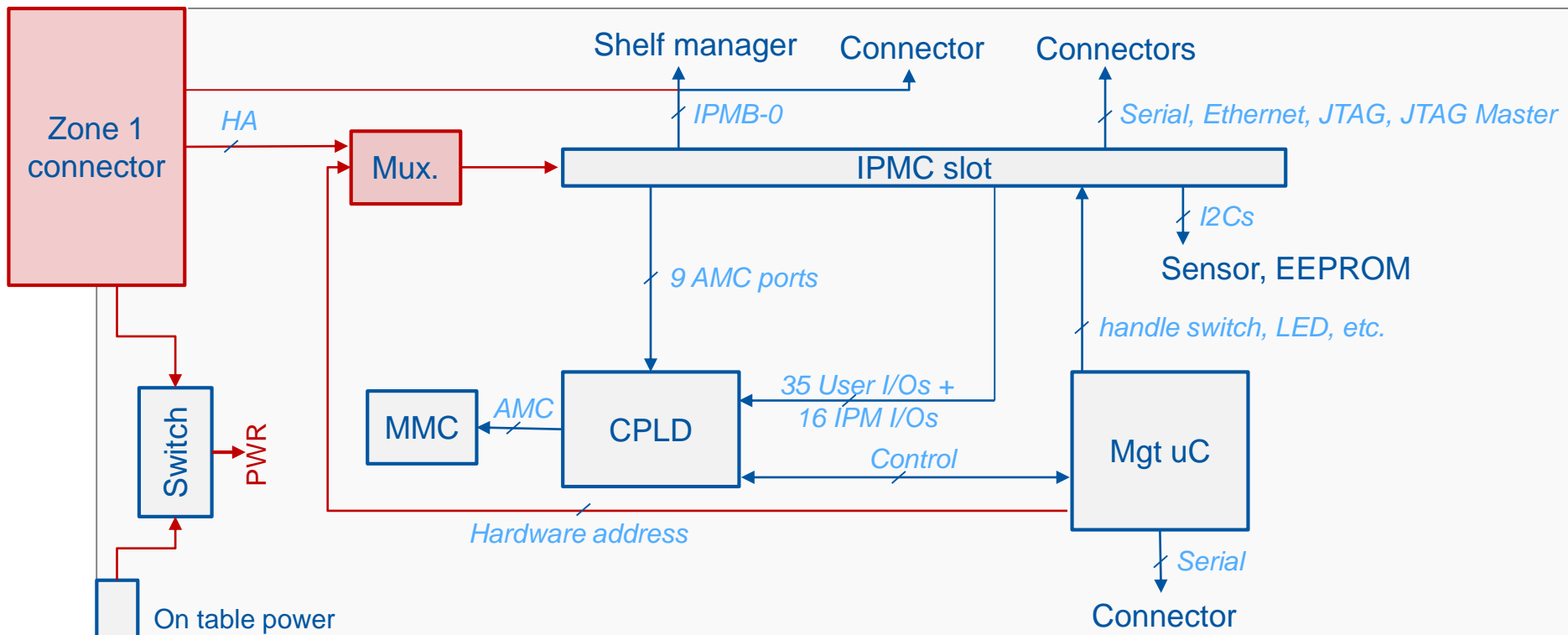
CERN-IPMC debugging

Current debugging systems

- Pulsar IIb blade:
 - Specific configuration – not all of the interfaces are connected
 - Only 1 ATCA blade
 - Allow testing of the IPMC in the shelf
- Test bench setup:
 - All of the interfaces are connected
 - Cannot be used in crate
 - New version has been designed – layout on-going

CERN-IPMC Tester

- * Can be used on desk and in a shelf
- * New parts compared to previous design in red



CERN-IPMC web application

- Improvement since last IG meeting:
 - New ticket system (based on discourse or e-mails)
 - Being improved and new version shall come soon
 - Added ordering system in order to simplify ordering CERN IPMCs
 - Being improved and new version shall come soon
- Web application will be updated soon:
 - Improve stability:
 - ticketing system, ordering interface, remote compilation interface
 - Improve versatility:
 - goal to re-use for other projects

CERN-IPMC support

- E-mails: (epesebe-xtca-support@cern.ch)
 - Dedicated to specific question:
 - Specific to the setup, hardware...
 - That could not be solved by someone else (e.g.: bug within the core functions)
 - Used for request / orders
 - Ticket can be public or private and F.A.Q input can be created based on a thread
- Discourse: (<https://cern-ipmc-forum.web.cern.ch/>)
 - General questions: how-to?
 - Request for use experience
 - Sharing a comment, an experience that might interest someone else
 - E.g.: sensor drivers

Thank you

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