

Key Parts for the new RTM backplane in MicroTCA.4



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Agenda



- Motivation to have a RTM backplane in MicroTCA.4
- Key parts for the new RTM backplane
 - MCH extension
 - MCH-RTM extension
 - Rear Power module options
- Standardization in PICMG

Motivation

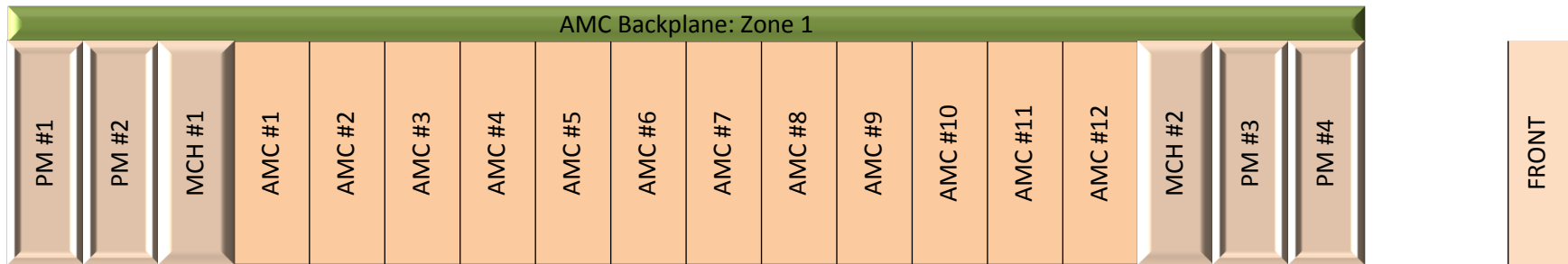
Need of RTM backplane in MicroTCA.4



- Save the space for an extra chassis
- Save all the interconnection RF cable between the standard MTCA chassis and the RF chassis
- Integration into the standard MTCA backplane is not possible due to the special requirements of RF signal quality and separate power lines with different values than 12 V
- Standardize only RTM backplane allowing users to add other functionality instead of RF signals to MicroTCA.4

MTCA.0:

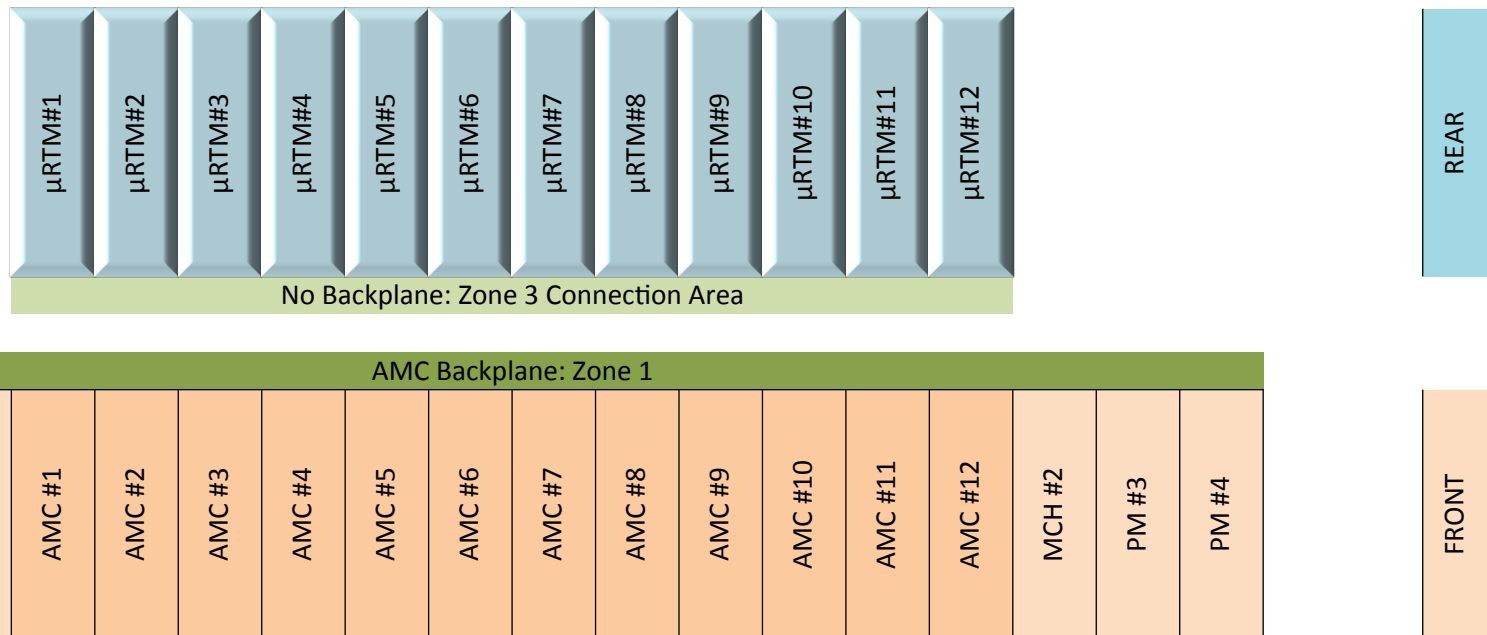
No RTM modules



Top-View of MTCA.0 System with MCH and PMs

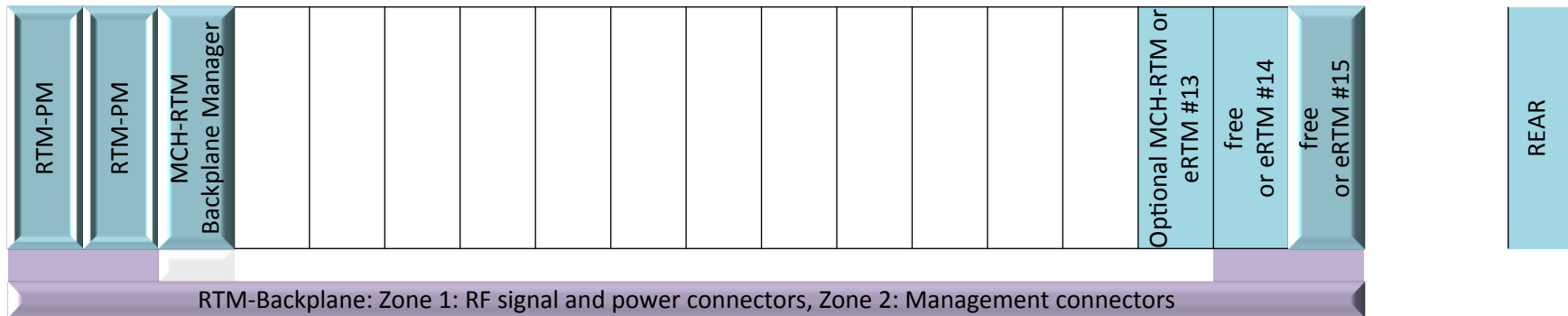
MTCA.4:

Adding μ RTM modules

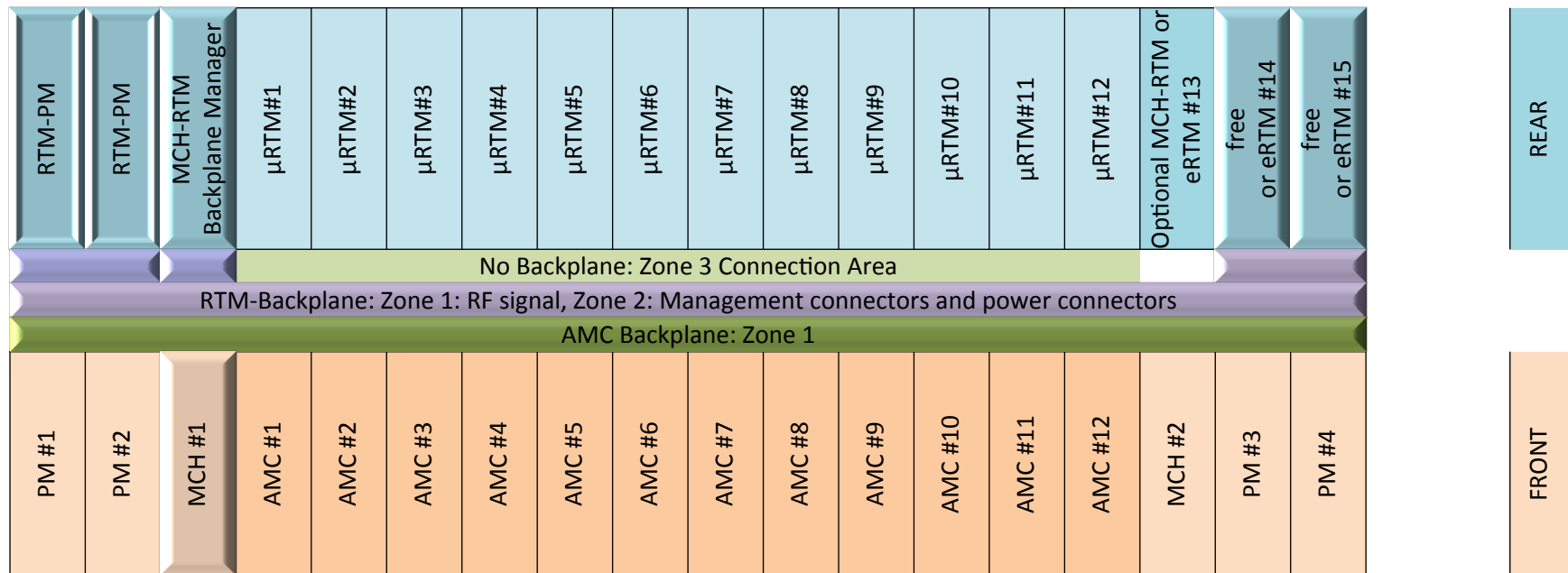


Top-View of MTCA.4 System with μ RTM

Next Extension of MTCA.4: Adding a RTM Backplane



MTCA.4 Extension: RTM Backplane, power, eRTMs



Top-View of MTCA.4 System with additional RTM Backplane, Rear Power Modules, MCH-RTM and optional eRTMs

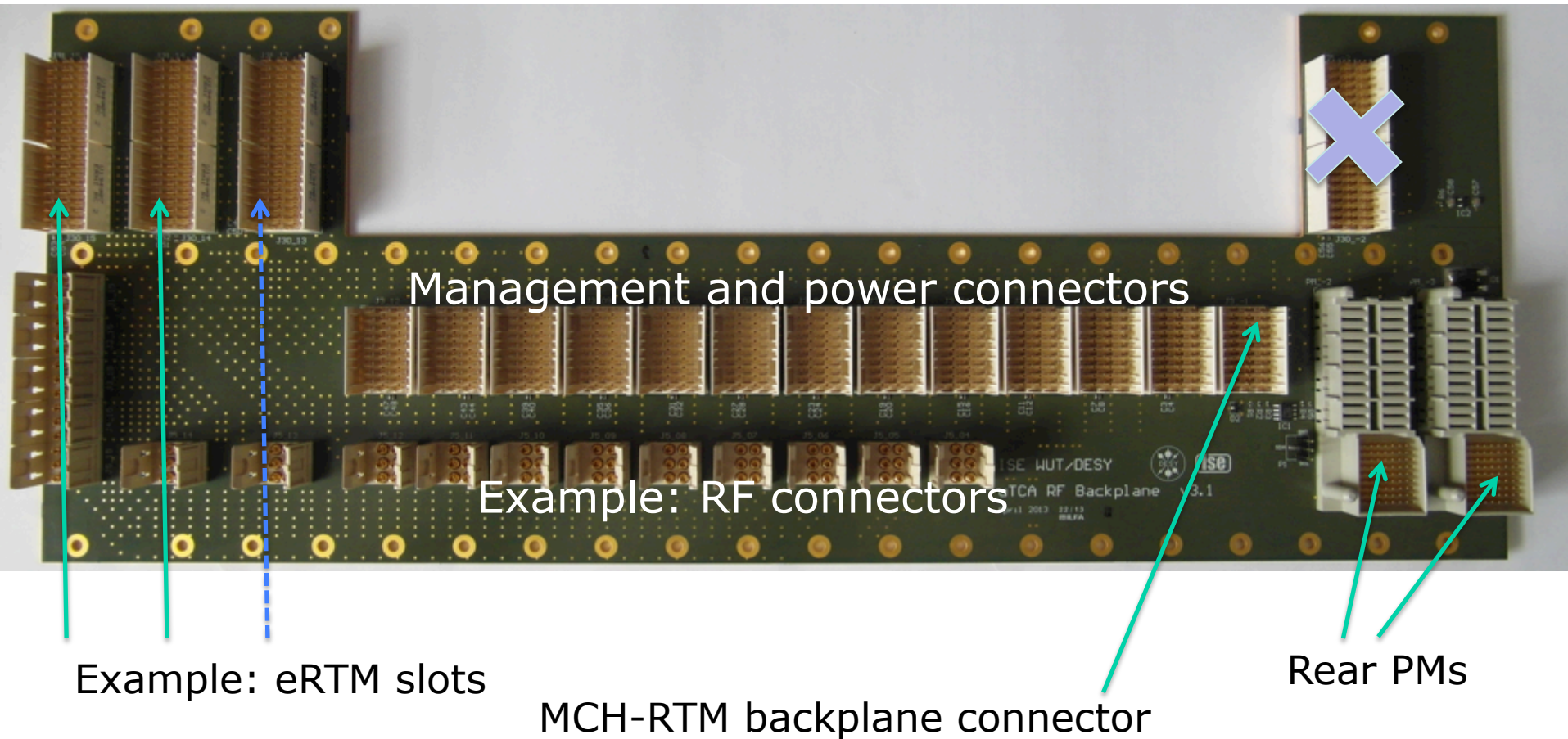


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RTM

Backplane Example



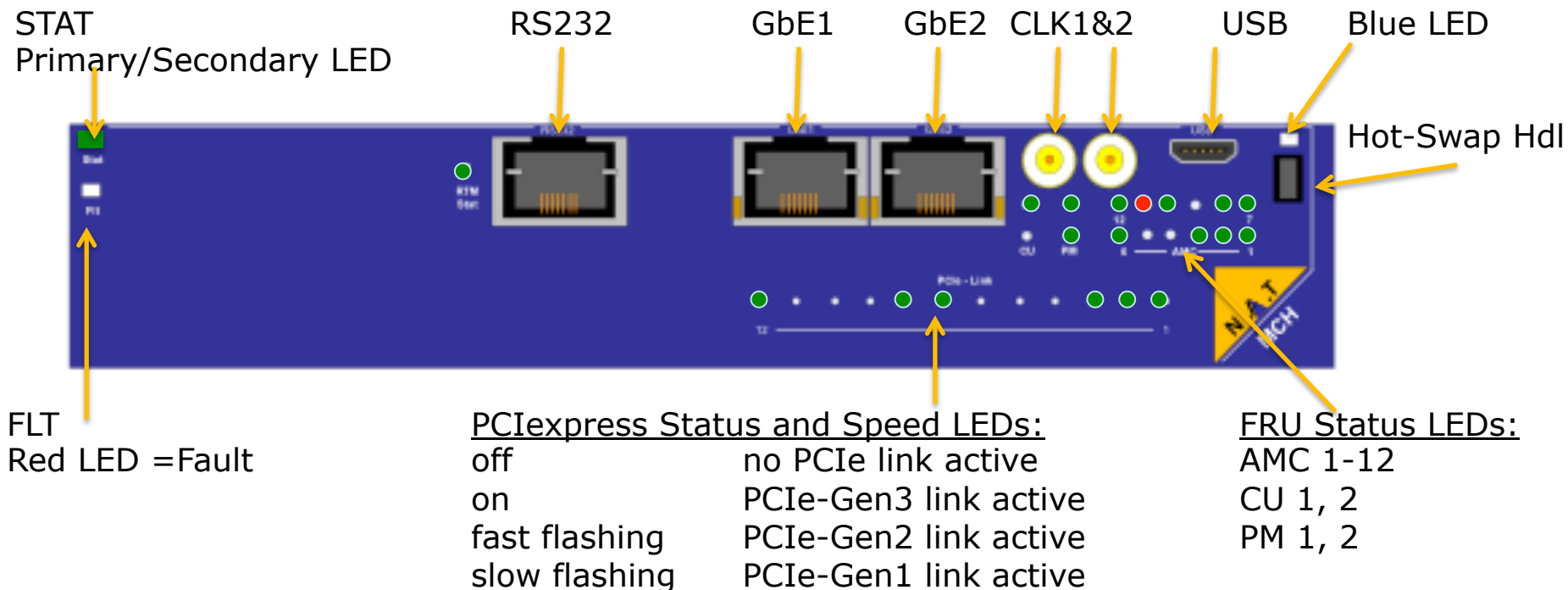


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Separate MCH or extending front MCH

NAT-MCH-PHYS or new version?



- Has already Zone-3 connector
- IPMI for extension of only 1 RTM can be multiplexed
- GbE, PCIe x4 lanes and SATA available
- Wish: more IPMI connections, 16 lane PCIeexpress, support of custom FPGA on RTM, PCIe support of 12 AMCs and MCH-RTM

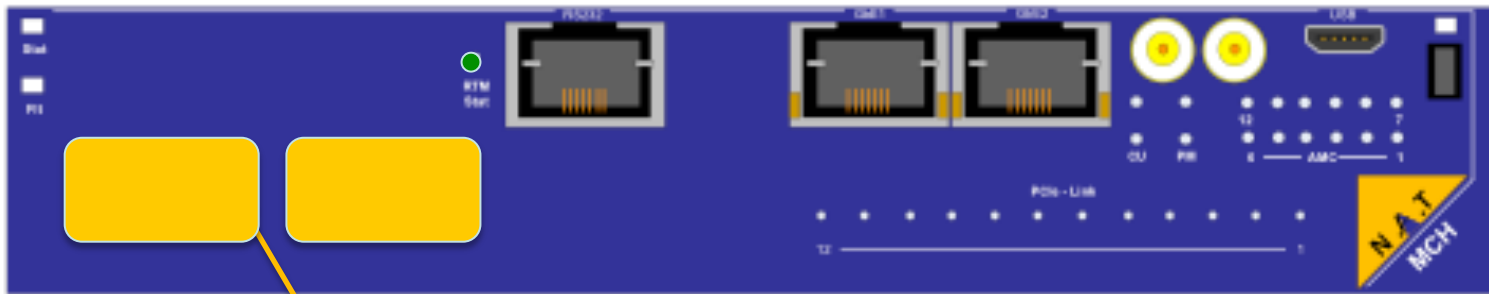
Front-MCH

Zone-3 Pinning

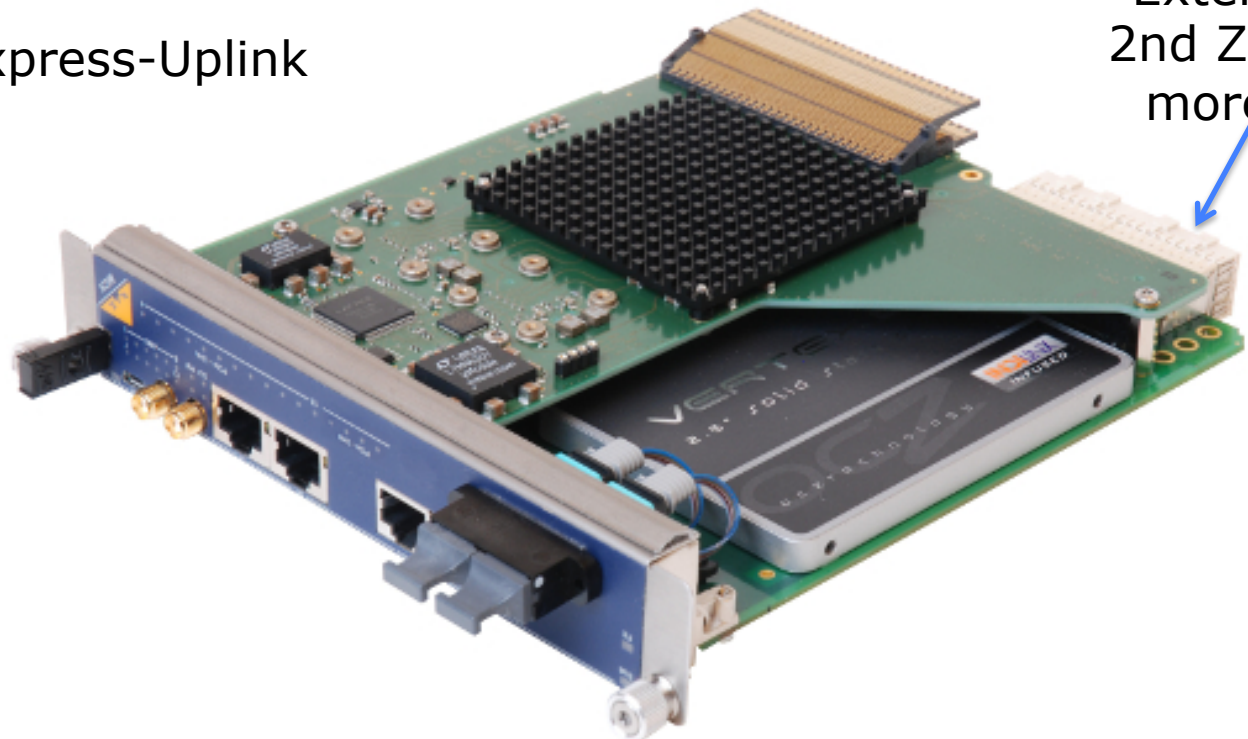


- Zone3 connector has to support
 - control of RTM-Backplane for example RTM-RF
 - IPMB-L for eRTM #13, #14, #15
 - IPMI-0 for RTM power module (Rear PM)
 - I2C for RTM Backplane FRU device
 - Optional: Power for eRTM#15 if no rear power module available
 - Standard RTM pins: JTAG, MP, PP for MCH-RTM
 - Optional Pins: SPI, PCIe, GbE, SATA

NAT-MCH-PHYS80- PCIEx16-UPLNK + Extension for RTM Backplane



Optical PCIexpress-Uplink



Extension:
2nd Zone-3
more I2C



Agenda

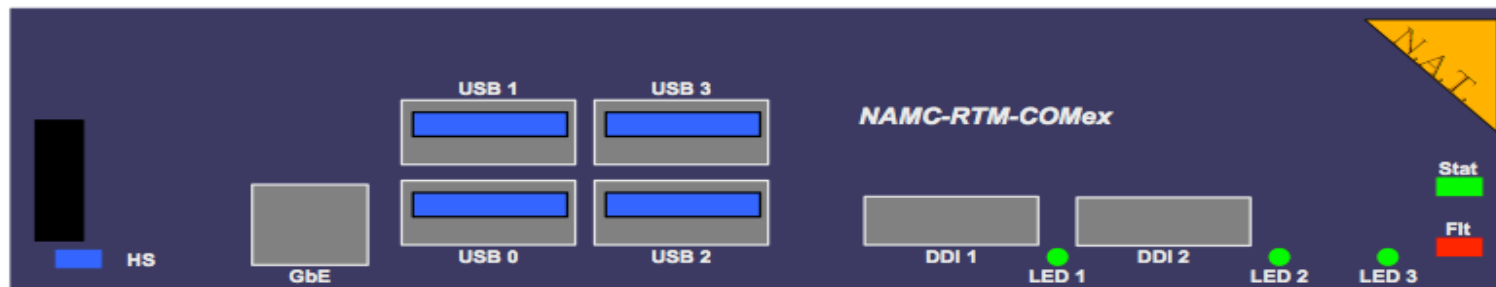
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MCH-RTM of 2013

NAT-MCH-RTM



- One Zone3 connector
- 4 lane PCIeexpress
 - 1xGbE
 - 2xSATA3
 - IPMI
 - Power





New MCH-RTM

NAT-MCH-RTM-RF



- Connected via Zone 3 connector to front MCH
- Connected via **Zone 2** Control&Data connector with RTM backplane
- Connected via **Zone 2** power connector to RTM backplane

New MCH-RTM

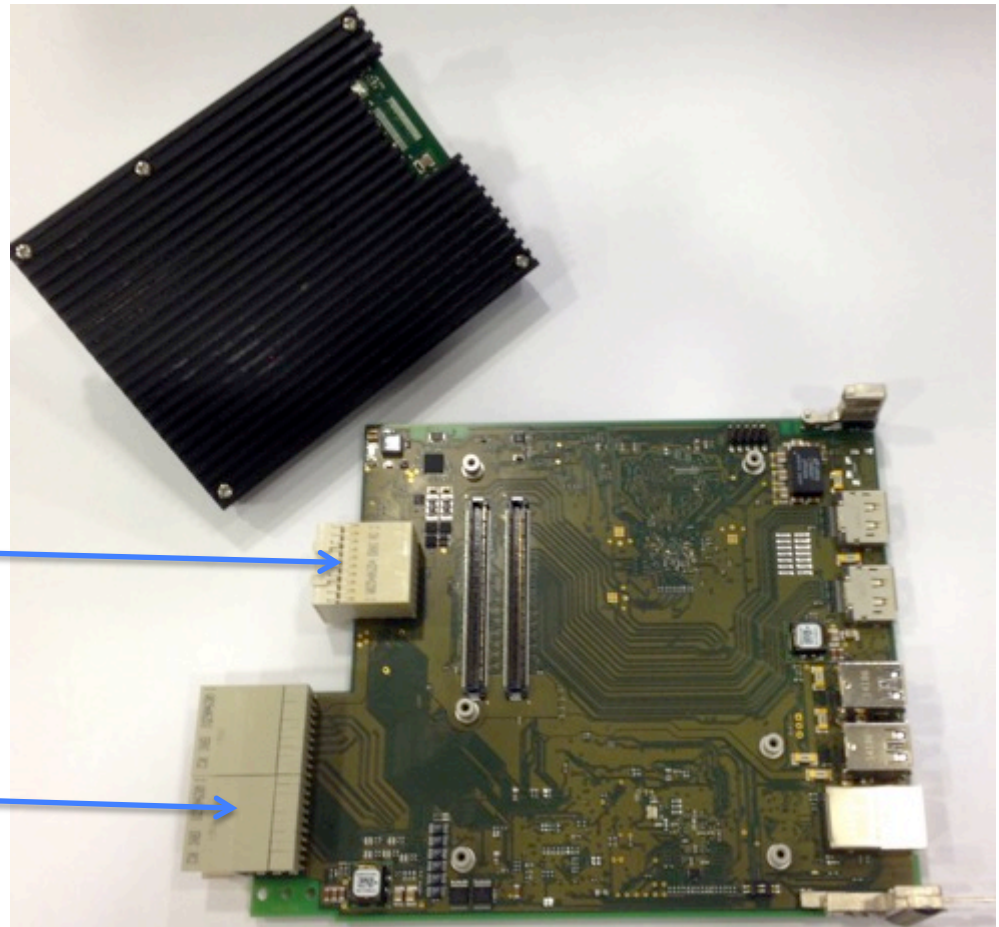
NAT-MCH-RTM-RF: Front Side



Optional:
COMexpress-CPU-Module

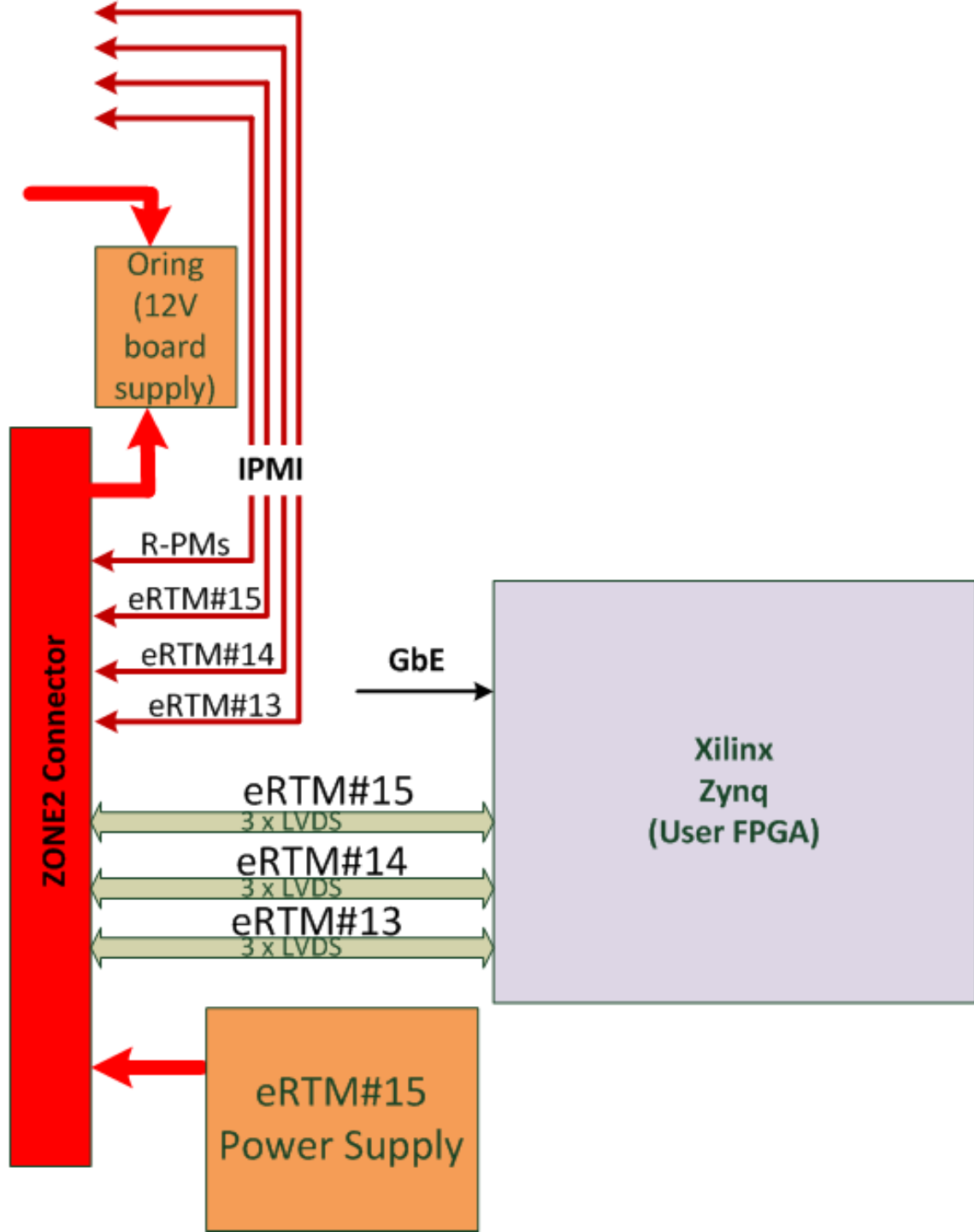
RTM Power connector
RTM Control&Data connector

Second Zone3 connector



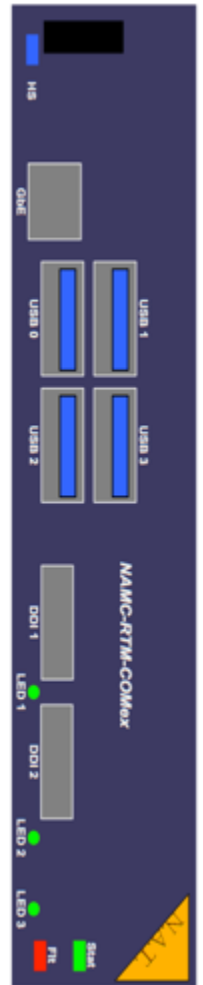
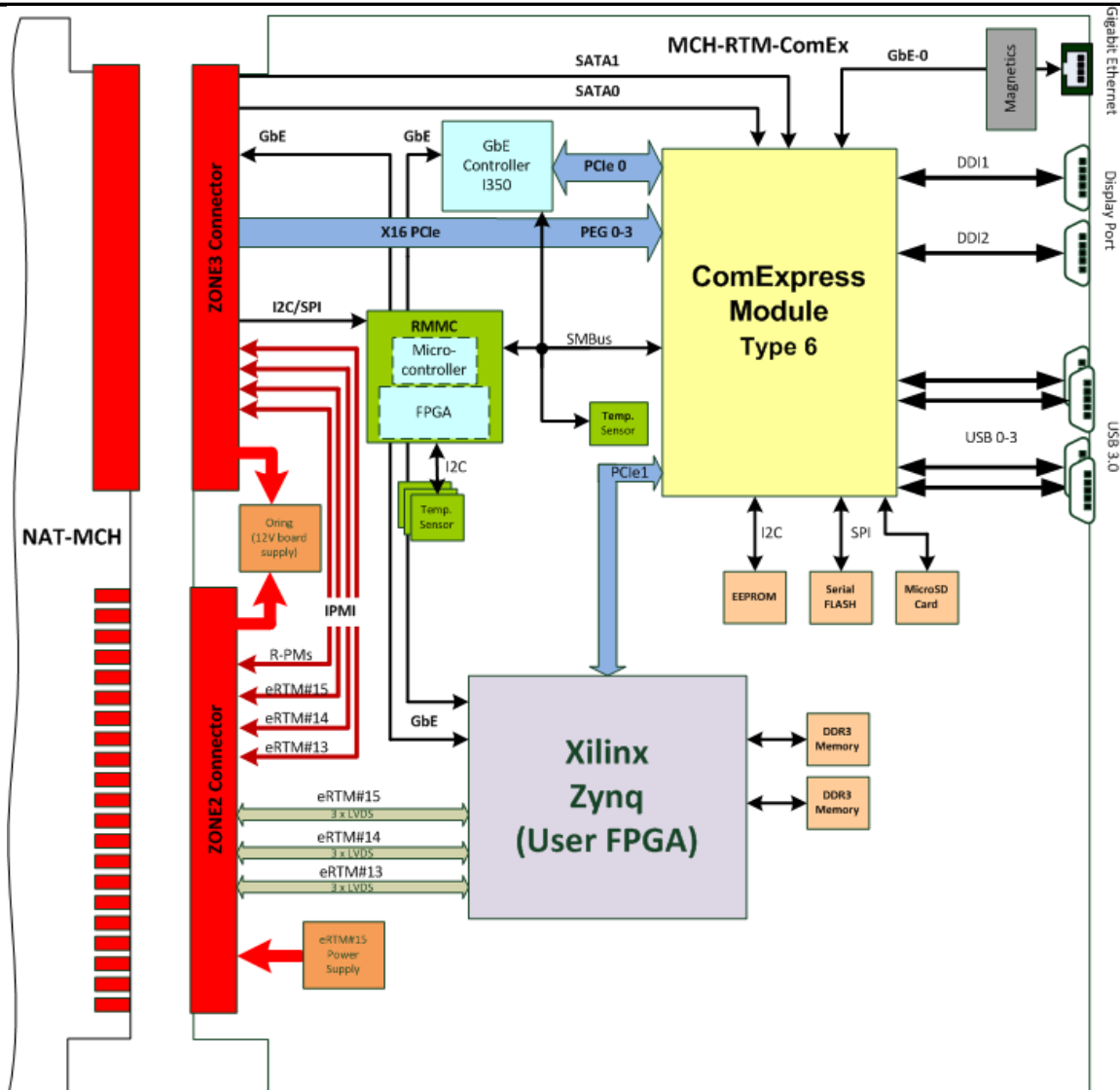
Extension

NAT-MCH



New MCH-RTM

NAT-MCH-RTM-RF: Block Diagram





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Rear Power Module

Standard or Specific



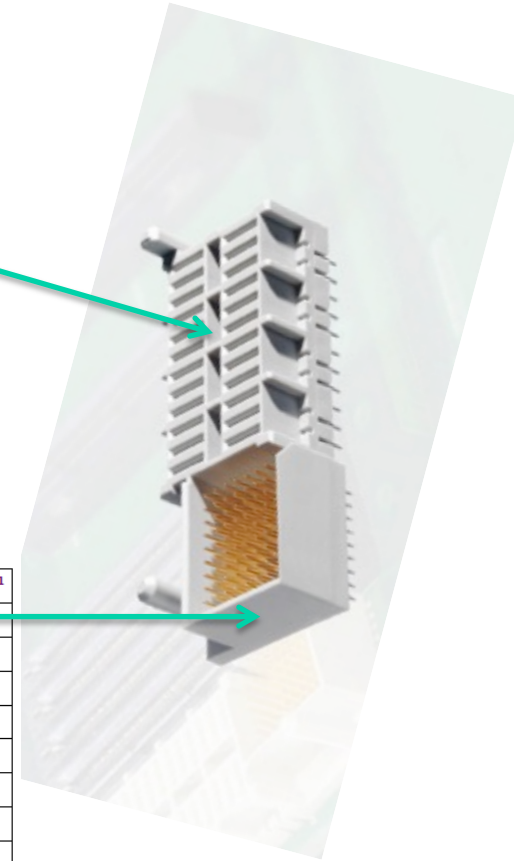
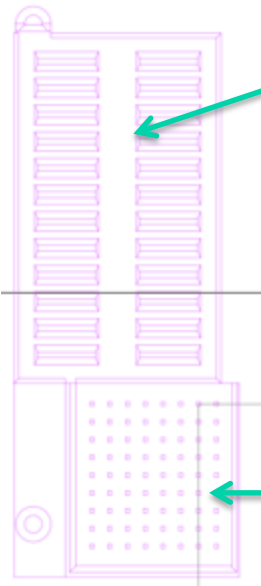
- Use of Standard Power Module Connector
- Pin assignment provides contention protection with standard Power Modules
- Provides power for:
 - MP for eRTMs – using pins of MCHs, CUs
 - PP for eRTMs – using pins of MCHs, CUs
 - +VV for μ RTMs – using AMC PP pins
 - -VV for μ RTMs – using AMC #EN pins

Rear Power Module

Standard and Specific



P13	+VV (#1)	PP+12V (#15)	P1
P14	+VV (#2)	PP+12V (#13)	P2
P15	+VV (#3)	PP+12V (#1)	P3
P16	+VV (#4)	GND	P4
P17	+VV (#5)	GND	P5
P18	+VV (#6)	GND	P6
P19	+VV (#7)	GND	P7
P20	+VV (#8)	GND	P8
P21	+VV (#9)	GND	P9
P22	+VV (#10)	GND	P10
P23	+VV (#11)	GND	P11
P24	+VV (#12)	PP+12V (#14)	P12



	H	G	F	E	D	C	B	A
1	MP+3.3V (#13)	MP+3.3V (#15)	ENABLE# (#13)	ENABLE# (#15)	PS1# (#13)	PS1# (#15)	PM_OK#	PS_PM# ¹
2	n.c.	n.c.	-VV (#1)	-VV (#2)	PS1# (#1)	PS1# (#2)	PMP_A#	n.c.
3	n.c.	n.c.	-VV (#3)	-VV (#4)	PS1# (#3)	PS1# (#4)	n.c.	n.c.
4	n.c.	n.c.	-VV (#5)	-VV (#6)	PS1# (#5)	PS1# (#6)	PMP_C#	n.c.
5	n.c.	n.c.	-VV (#7)	-VV (#8)	PS1# (#7)	PS1# (#8)	RST_PM_IN#	n.c.
6	n.c.	n.c.	-VV (#9)	-VV (#10)	PS1# (#9)	PS1# (#10)	RST_PM_A#	n.c.
7	n.c.	n.c.	-VV (#11)	-VV (#12)	PS1# (#11)	PS1# (#12)	n.c.	GA0 ²
8	n.c.	MP+3.3V (#14)	ENABLE# (#1)	ENABLE# (#14)	PS1# (#1)	PS1# (#14)	RST_PM_C#	GA1 ²
9	PWR_ON (#15)	PWR_ON (#14)	SDA_A	SCL_A	SDA_B	SCL_B	SMP	GA2 ²

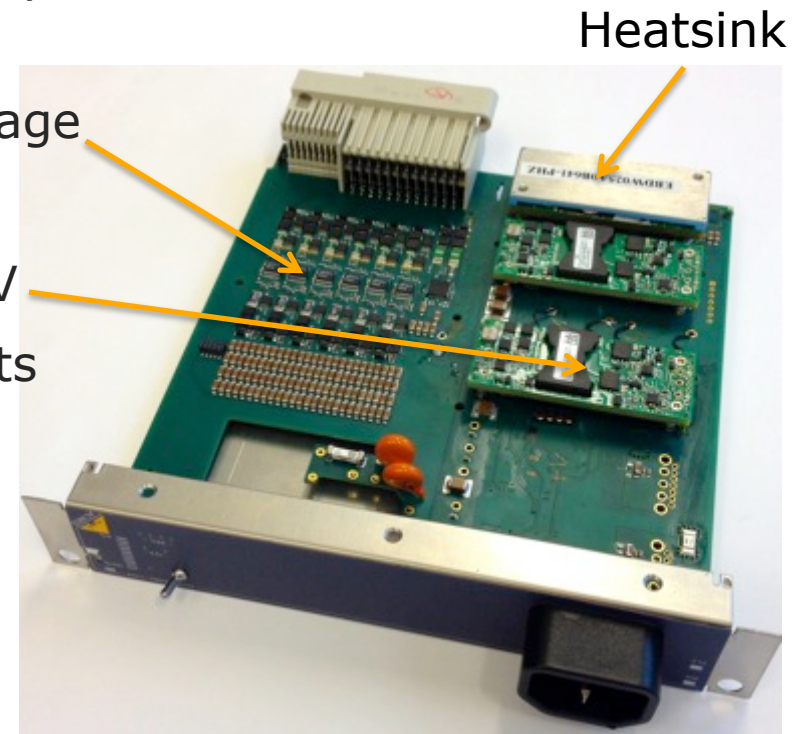
n.c. – not connected

Rear Power Module Specific

NAT-RPM-PSC: Power Supply Carrier



- Rear Power Module as Power Supply Carrier for
 - AC600 sub module with card cage
 - Up to 4 Sub modules for +V, -V
 - Submodules in different formats



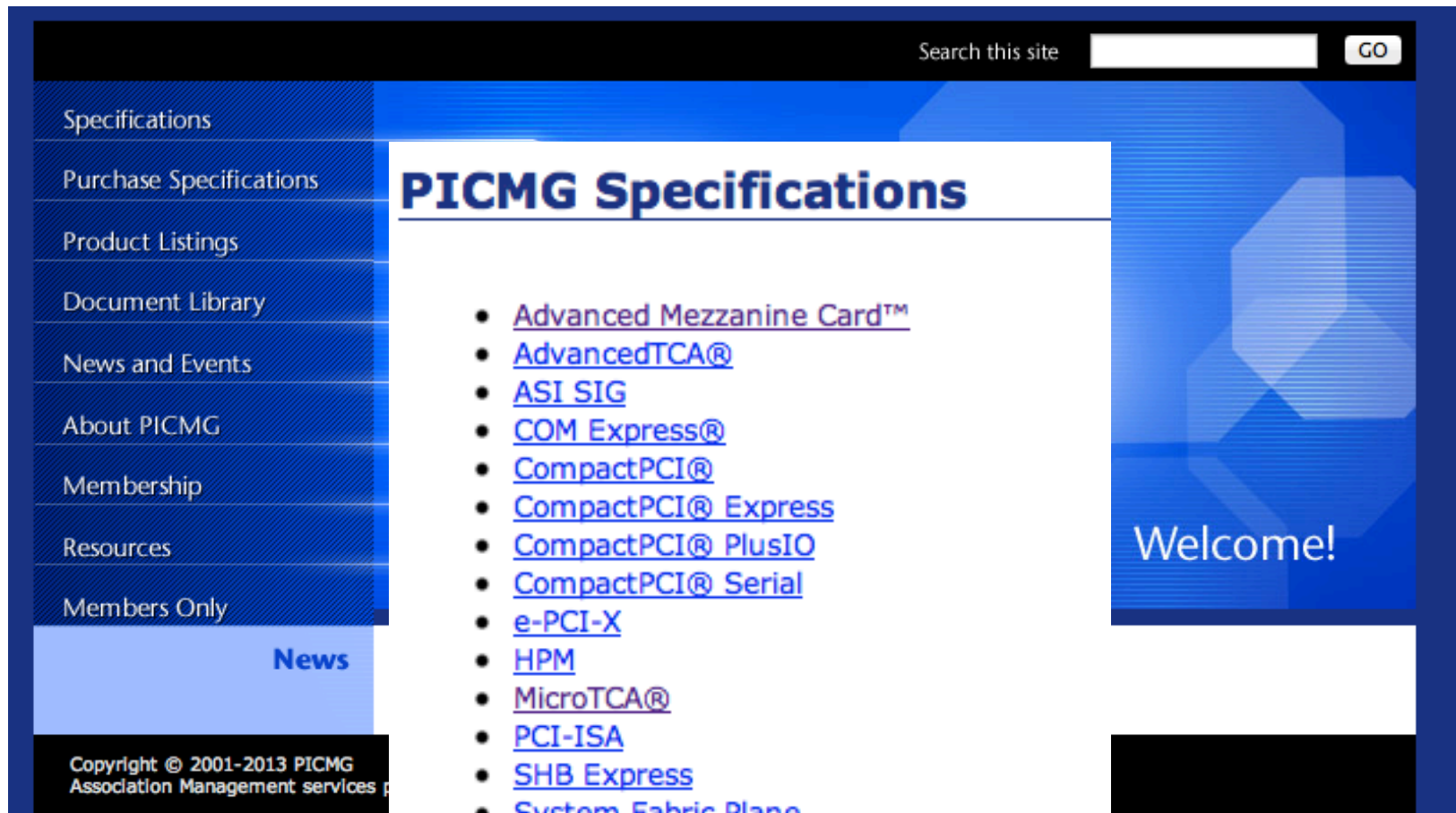


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Open Standard MTCA

www.picmg.org

A screenshot of the PICMG website. The page has a blue header with a search bar and a 'GO' button. A left sidebar contains a menu with links to Specifications, Purchase Specifications, Product Listings, Document Library, News and Events, About PICMG, Membership, Resources, and Members Only. Below the menu is a 'News' section. The main content area is titled 'PICMG Specifications' and lists various specifications as bullet points. A large blue graphic on the right side of the page says 'Welcome!'.

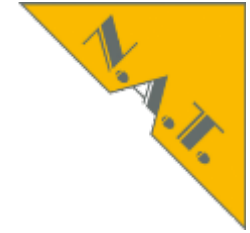
Search this site

PICMG Specifications

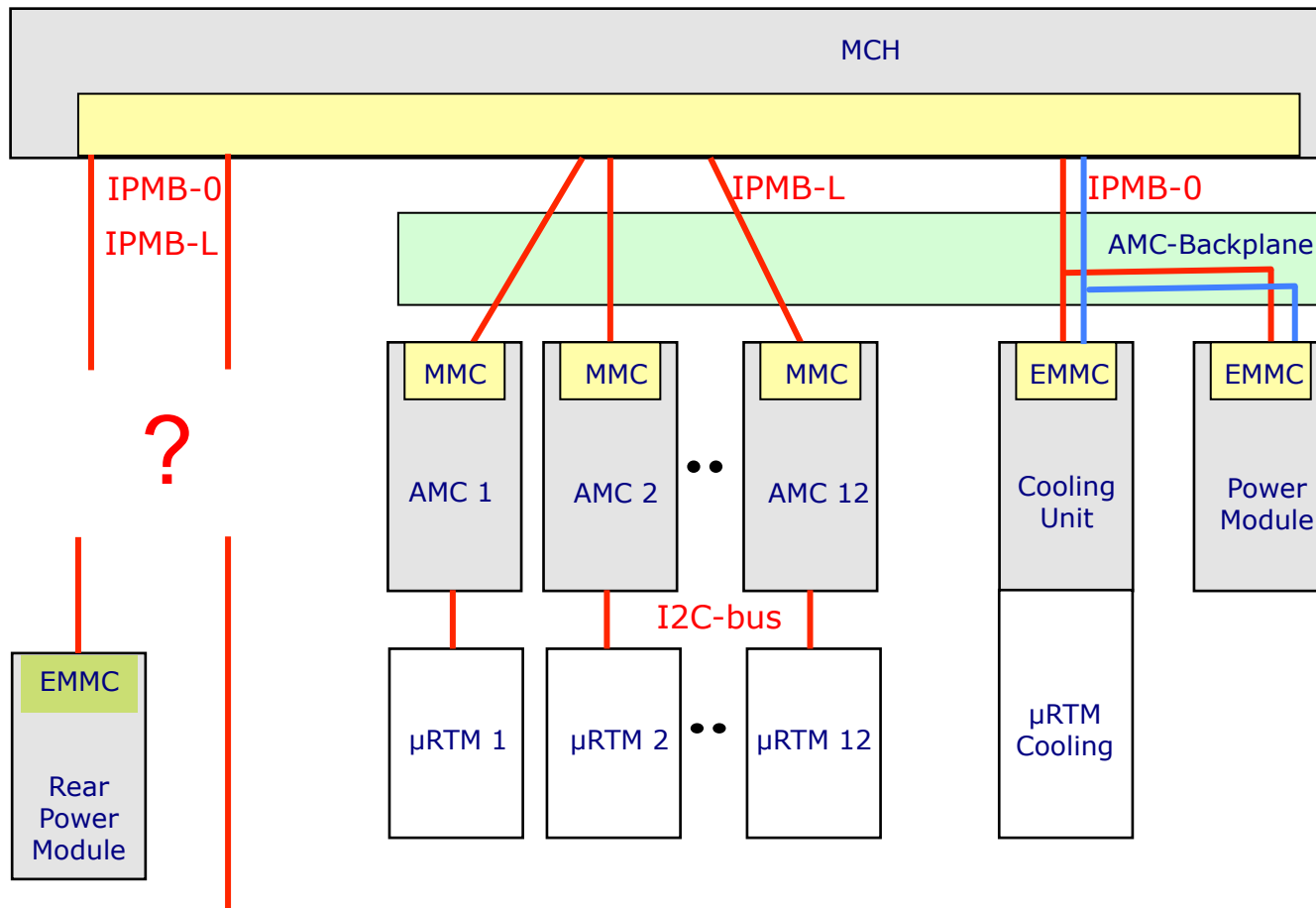
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- [System Fabric Plane](#)
- [All Specifications](#)

Welcome!

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Reason for MCH Zone-3 Definition



RTM-Backplane: RF-Connector, Power Connector (differential power)

PICMG Standardisation

Extension to MCH firmware



- New I2C addresses
- Extension of FRU-IDs for eRTMS
- New Power Records:
 - RF Carrier Activation Record (BP FRU)
 - Power Module Capability Record
 - Module Current Requirement Record
- E-Keying Support for RF high speed signals
- Sequencing of power up front and rear power modules ?

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- Thank You for Listening

Thank you very much!

Questions?



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Rear Power Module Specific Configuration Example

