5th MTCA.4 Workshop
2016

powerBridge

Computer

![powerBridge Computer logo]

- Over 20 years in the market

- Privately owned

- Over 25 years VME experience

- Own Lab and integration facilities

- powerBridge has delivered over 27.000 VME boards and 5.500 systems

- PICMG member, actively working on MTCA.4 specification

- ISO 9001:2008 and 14001:2009 approved

powerBridge and their partners are the backbone of VITA & PICMG Technology. We are experts of technologies.

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C o m p u t e r

RackPak/M4-2.
Small, dense MTCA.4.

Current 2U MTCA.4 Crate

- 2U 19" MTCA.4 crate, PICMG MTCA.4 R1.0

- 6 double mid-size AMC slots

- 4 double mid-size µRTM slots

- Double full-size MCH slot

- Double full-size Power module slot

- Exchangeable cooling unit with front to left or right to left air flow

- Dust filter exchangeable

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C o m p u t e r

RackPak/M4-2.
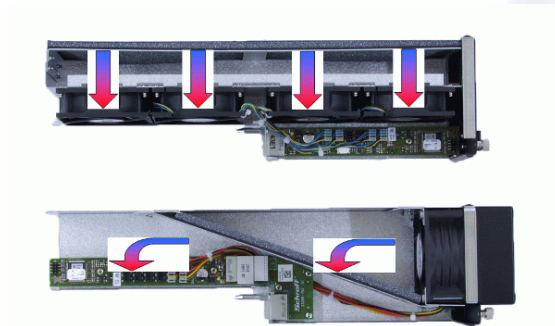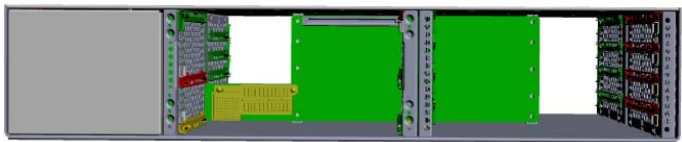## *Small, dense MTCA.4.*

Backplane Topology
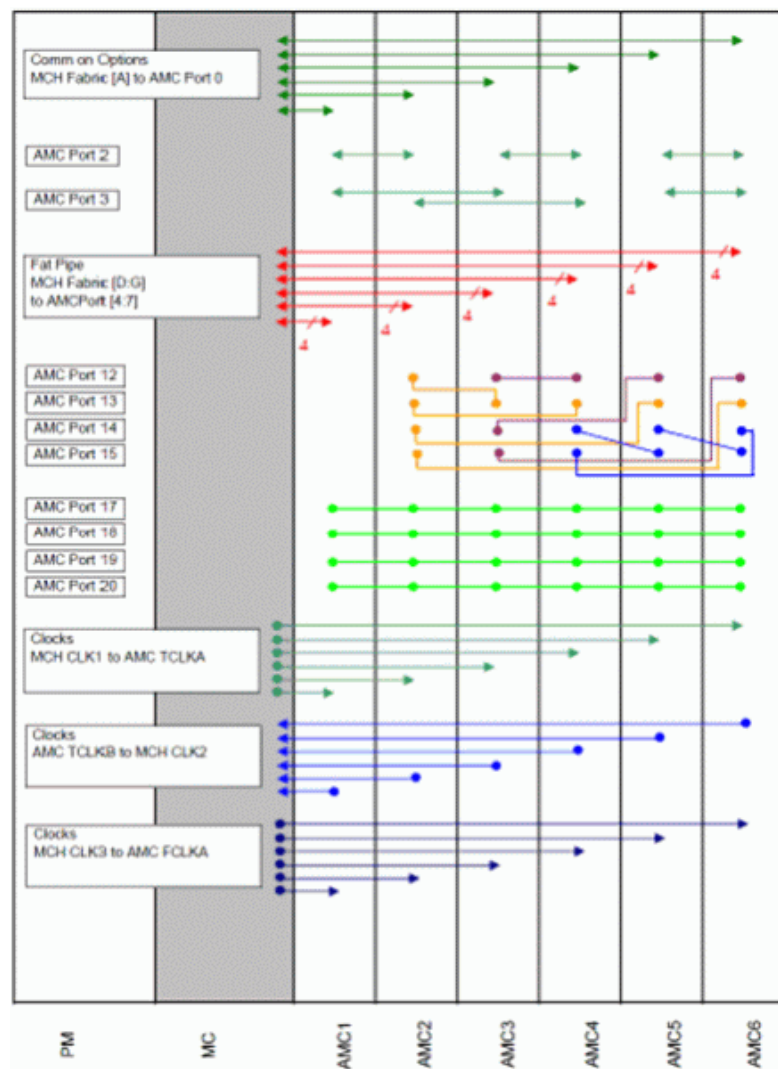
- Single Ethernet Link (Port 0) to every AMC
- Dedicated SATA Links on Ports 2&3
- PCIe x4 support on Ports 4-7
- Point to Point connections on Ports 12-15
- Daisy Chain on Ports 17-20
- TCLKA, TCLKB and FCLKA Clocks

RackPak/M5-1.
Smart, dense MTCA.4.

Development together with N.A.T. and Pentair

- 2U 19" MTCA.4 crate, PICMG MTCA.4 R1.0

- 5 double mid-size AMC slots

- 1 double full-size AMC slot

- 5 double mid-size µRTM slots

- Double full-size MCH slot with µRTM Slot

- Double full-size Power module slot

- Exchangeable cooling unit with front to left or right to left air flow

- Dust filter exchangeable

- Order codes:
  RackPak/M5-1R (right-to-left cooling)
  or
  RackPak/M5-1F (front-to-left cooling)

- Available soon!

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## C o m p u t e r

RackPak/M5-1.
Smart, dense MTCA.4.

Backplane Topology
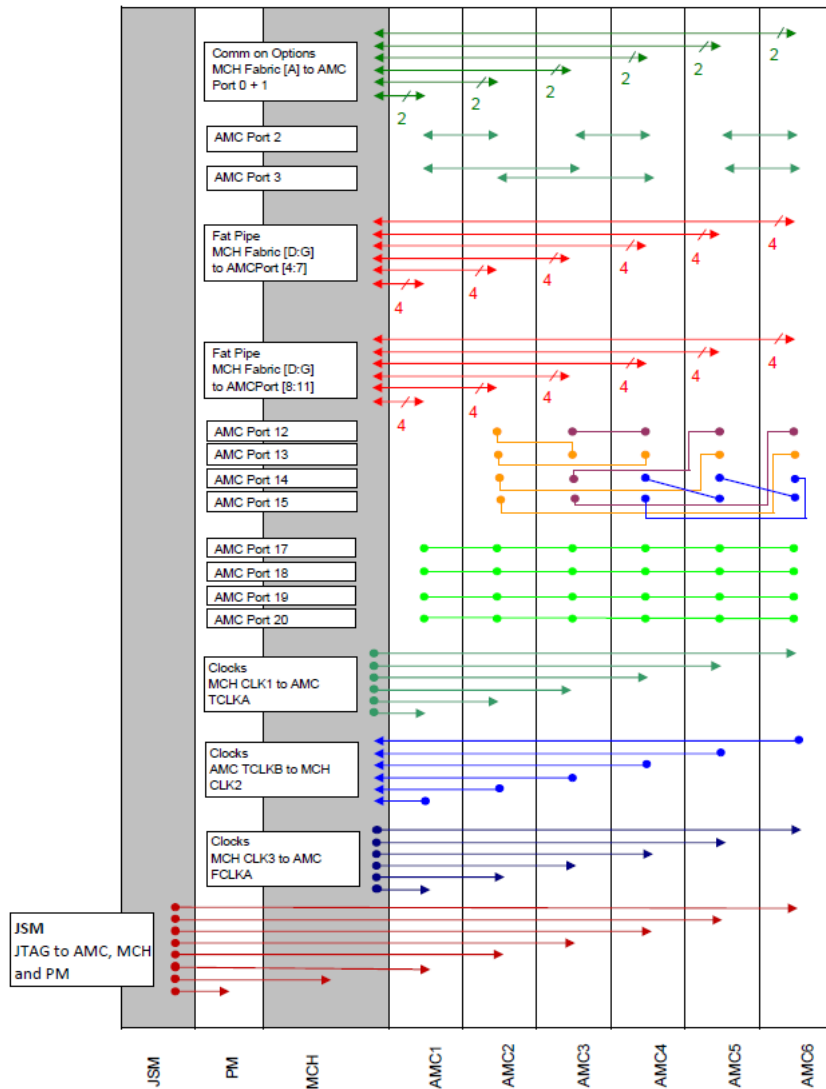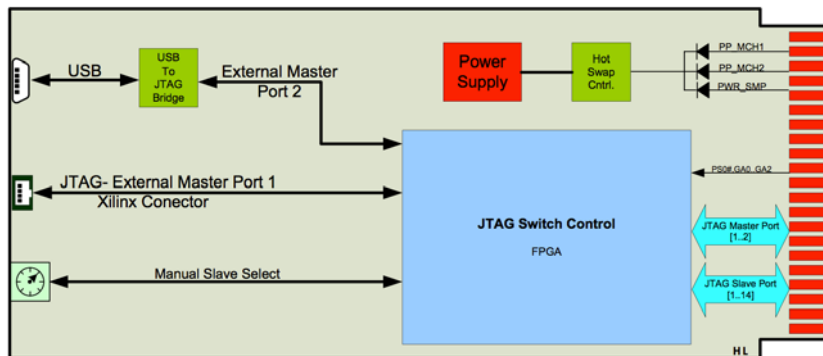

- **Dual** Ethernet Link (Port 0+1) to every AMC

- Dedicated SATA Links on Ports 2&3

- **PCIe x8** support on Ports 4-11

- Point to Point connections on Ports 12-15

- Daisy Chain on Ports 17-20

- TCLKA, TCLKB and FCLKA Clocks

- **JTAG Switch Module (JSM)** Slot

- Optional White Rabbit Support

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C o m p u t e r

JTAG adapter.
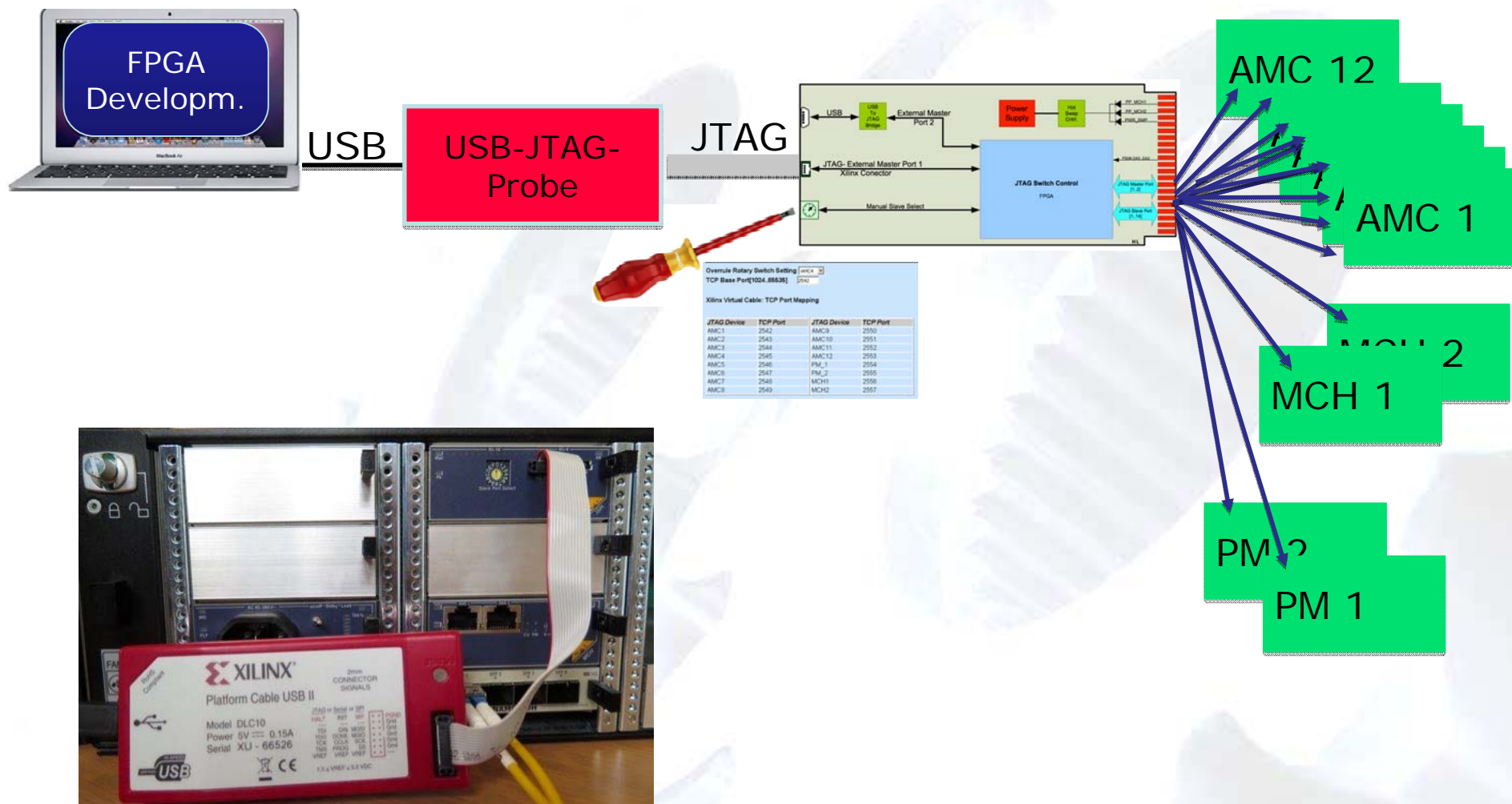## *Ease of programming.*
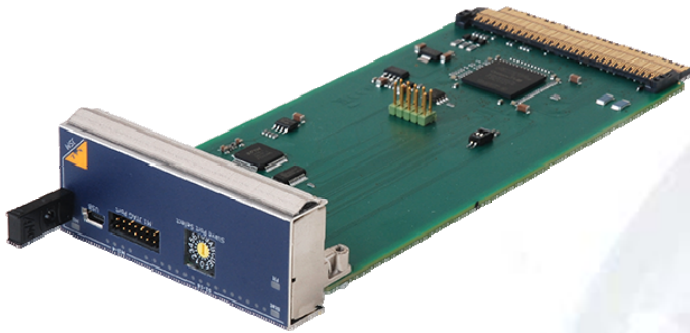
JTAG Switch Module

- JTAG Switch Module (JSM) in single mid/full size AMC form factor with onboard FPGA to adapt to any JSM pin out at AMC type backplane connector (default N.A.T. pin out, others upon request)

- JTAG download via MCH through Ethernet

- JTAG programming connector at front panel

- Automatic arbitration between JTAG Masters

- Target selection through JTAG information

- Overrule of automatic operation and dedicated selection of JTAG target by front panel elements

- Multiple JSM pinout configurations via FPGA

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JTAG adapter.
Ease of programming.

Lattice Diamond Programmer 3.0

USB

USB

USB To JTAG Bridge

External Master Port 2

Power Supply

Hot Swap Cntrl

PP_MCH
PP_MCH2
PWR_ENBP

JTAG- External Master Port 1
Xilinx Conector

JTAG Switch Control
FPGA

PGM DAC GND

Manual Slave Select

JTAG Master Port [1-2]
JTAG Slave Port [1-14]

Overrule Rotary Switch Setting | AMC4 |
TCP Base Port[1024..66636]   2542

Xilinx Virtual Cable: TCP Port Mapping

JTAG Device	TCP Port	JTAG Device	TCP Port
AMC1	2542	AMC9	2550
AMC2	2543	AMC10	2551
AMC3	2544	AMC11	2552
AMC4	2545	AMC12	2553
AMC5	2546	PM_1	2554
AMC6	2547	PM_2	2555
AMC7	2548	MCH1	2556
AMC8	2549	MCH2	2557

AMC 12

AMC 1

MCH 2

MCH 1

PM 2

PM 1

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JTAG adapter.
Ease of programming.

connect_hw_server
open_hw_target -xvc_url
192.168.137.193:2542

Ethernet

MCH

AMC 12

AMC 1

MCH 2

MCH 1

PM 2

PM 1

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AG AD1x.
GPGPU AMC with SRIO
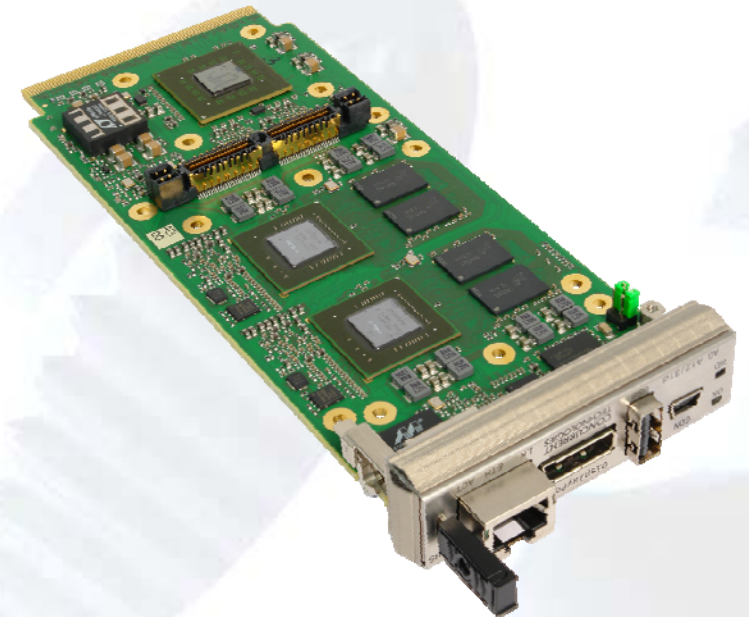
- 2 NVIDIA Tegra K8 (750 GFLOPS)

- RapidIO fabric connectivity

- Linux BSP

  - Based on NVIDIA Linux 4 Tegra (L4T) and includes:

  - U-boot image

  - Linux kernel (3.10 currently)

  - Sample root file system

  - Concurrent Technologies documentation

  - NVIDIA documentation links

  - Drivers for USB to Serial converter chip

AG AD1x.
GPGPU AMC with SRIO

Project Caldey Island Block Diagram rev 03

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C o m p u t e r
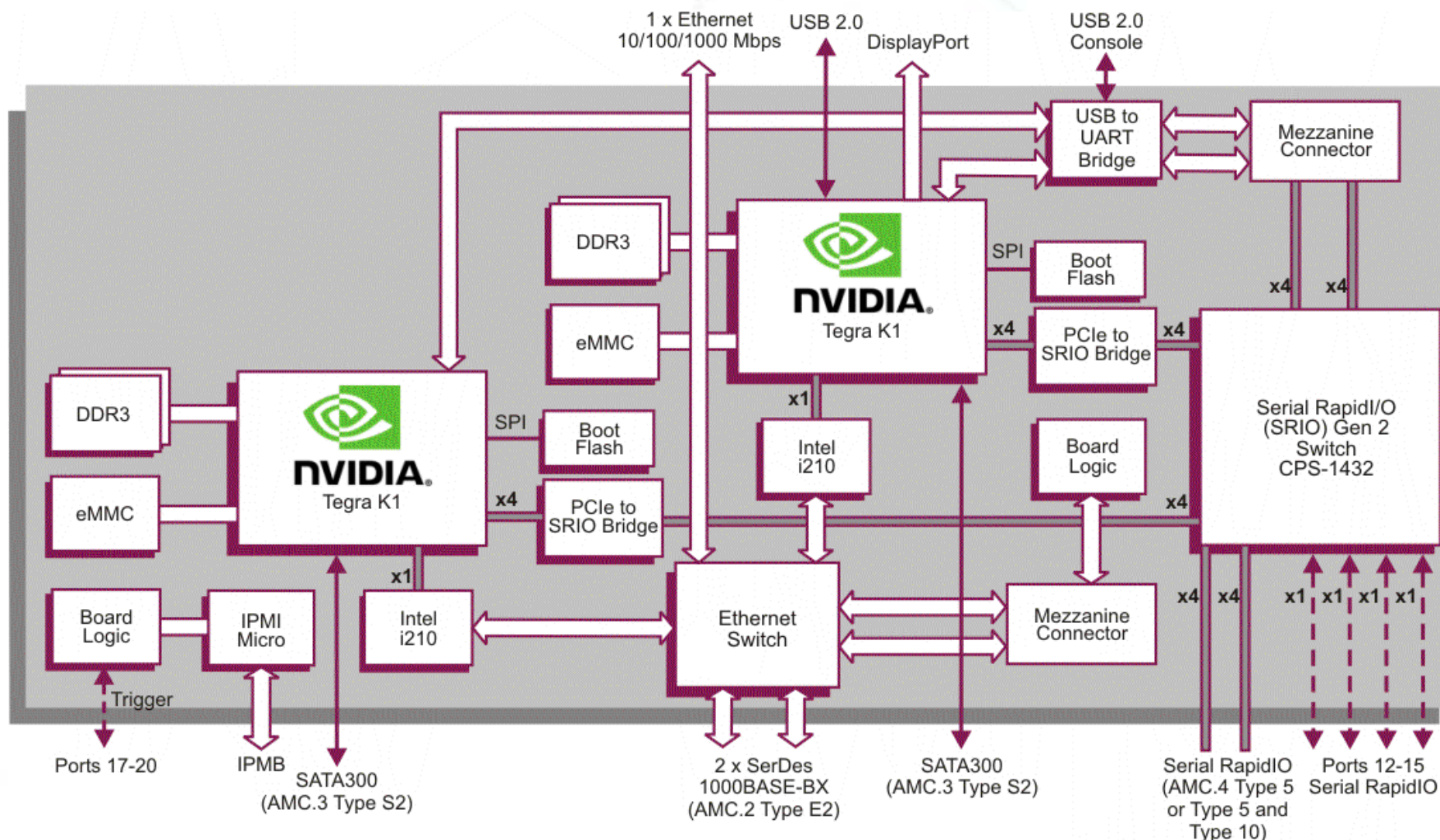
- **Evaluation Boards Supplied with:**

- A paper licence for Linux 4 Tegra
- Pre-loaded with u-Boot, Linux 4 Tegra and a CUDA based example
- To access the primary TK1, the customer requires:
- DisplayPort monitor
- USB keyboard/mouse
- To access the secondary TK1 device, the supplied USB to Serial drivers must be loaded
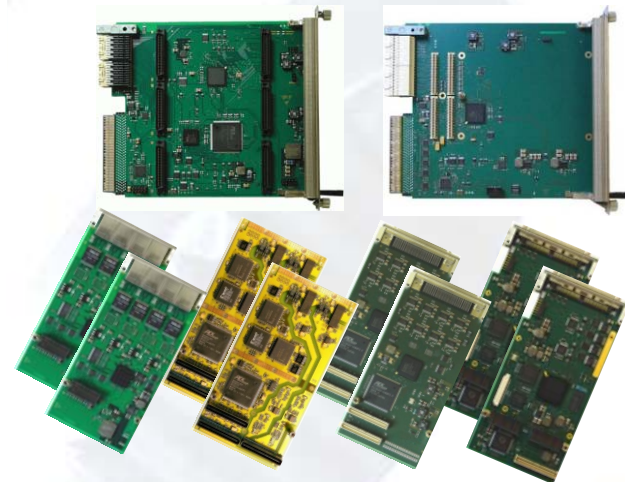
- **Deployment Boards Supplied with:**

- These will be supplied pre-loaded with u-Boot
- The user is expected to have their own Linux 4 Tegra image and CUDA based applications which they will upload to the eMMC flash
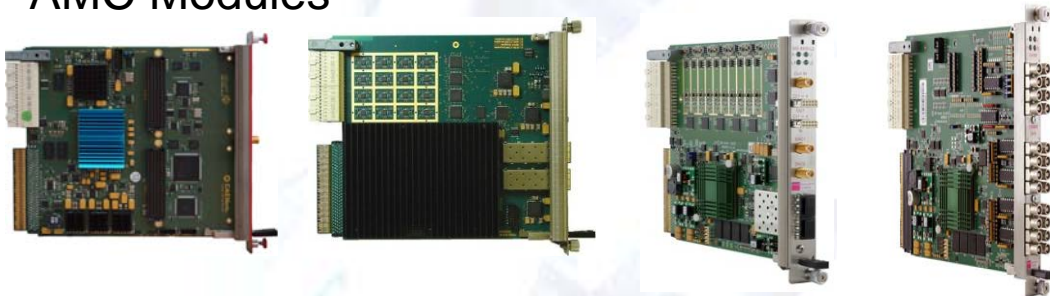
MTCA Toolbox.
Starterkits and components.

- MTCA.4 Starter Kits, including MCH, CPU & PM

- Carrier + Mezzanines (IP, PMC, XMC, FMC)

- AMC Modules

- SW & FW Support including BSP, source code drivers, sample applications, FPGA framework

- Spare parts, like filler modules, adapter cables, program and debug tools, test adapter

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The network for your success.

- ARTESYN EMBEDDED TECHNOLOGIES
- ADLINK TECHNOLOGY INC.
- ARBOR
- CONCURRENT TECHNOLOGIES
- esd
- N.A.T.
- PENTAIR
- Portwell
- RENICE
- SANBlaze Technology, Inc.
- SURF
- TEWS TECHNOLOGIES

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Contact Information.

Let´s discuss your requirements and test our performance!

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