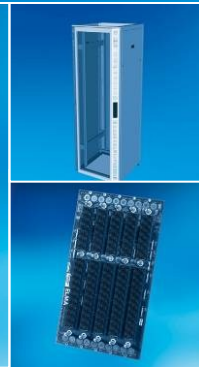


ELMA
Your Solution Partner



**MTCA Workshop
at
DESY Dec. 2012**

System Solutions

Integrated Systems Chassis Platforms Backplanes Embedded Products Cabinets

Enclosures & Components

Enclosures Front Panels Handles

Rotary Switches

Switches/Encoders Knobs LEDs

Scalability of XTCA Systems

MTCA Workshop >>
11th-12th December 2012

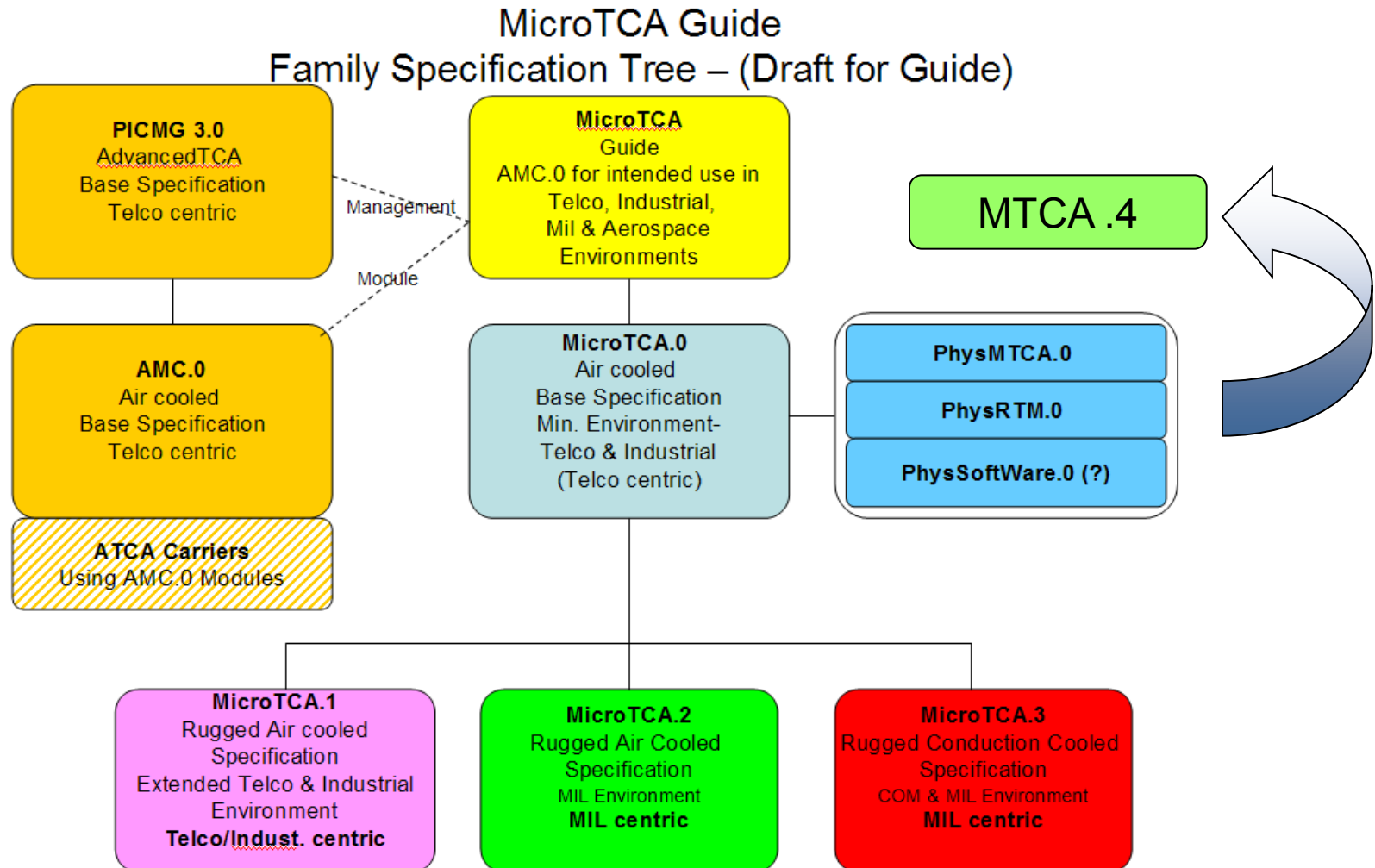
Friedrich Fix



- **MTCA Standards**
- **MTCA.0**
- **MTCA.4**
- **Management Systems**
- **Scalability from MTCA to ATCA**

MTCA Standards

MTCA Family Tree



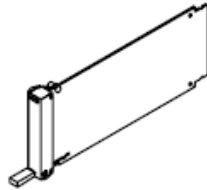


Chassis

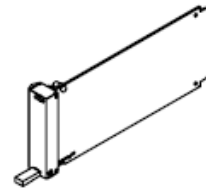


Module Sizes

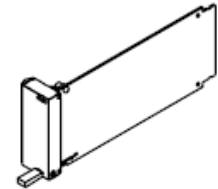
Single Modules (75 mm)



Compact Size (3 TE)

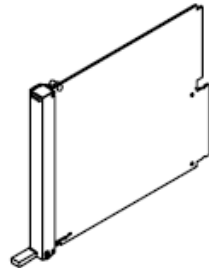


Mid Size (4 TE)

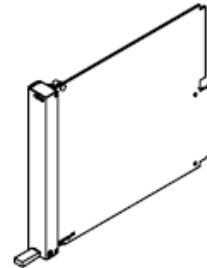


Full Size (6 TE)

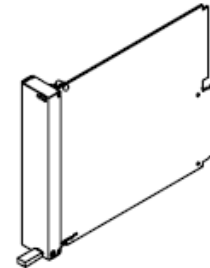
Double Modules (150 mm)



Compact Size (3 TE)



Mid Size (4 TE)



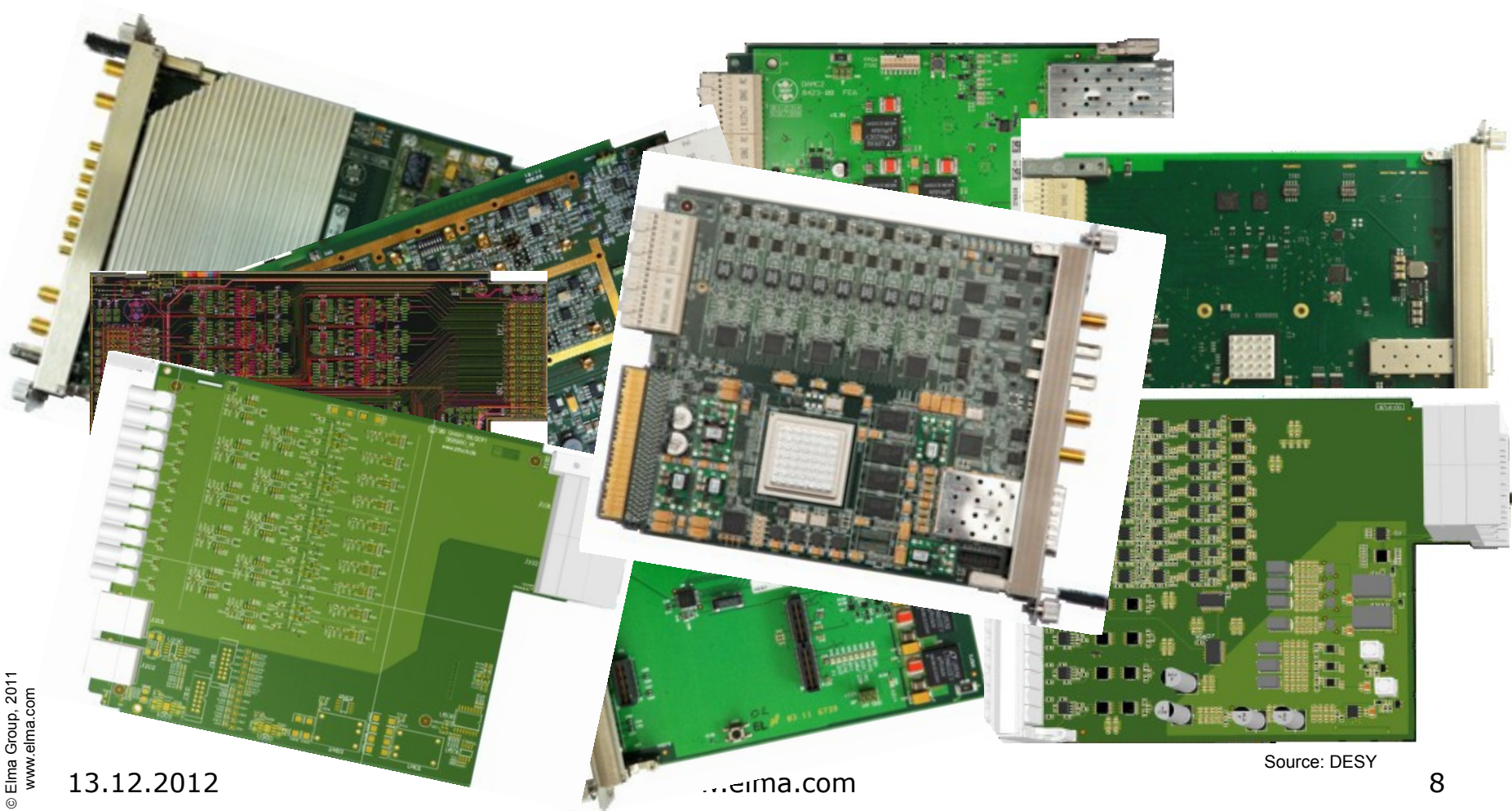
Full Size (6 TE)

MTCA.4 Modules

The Market offers a great variety of boards from different manufacturers



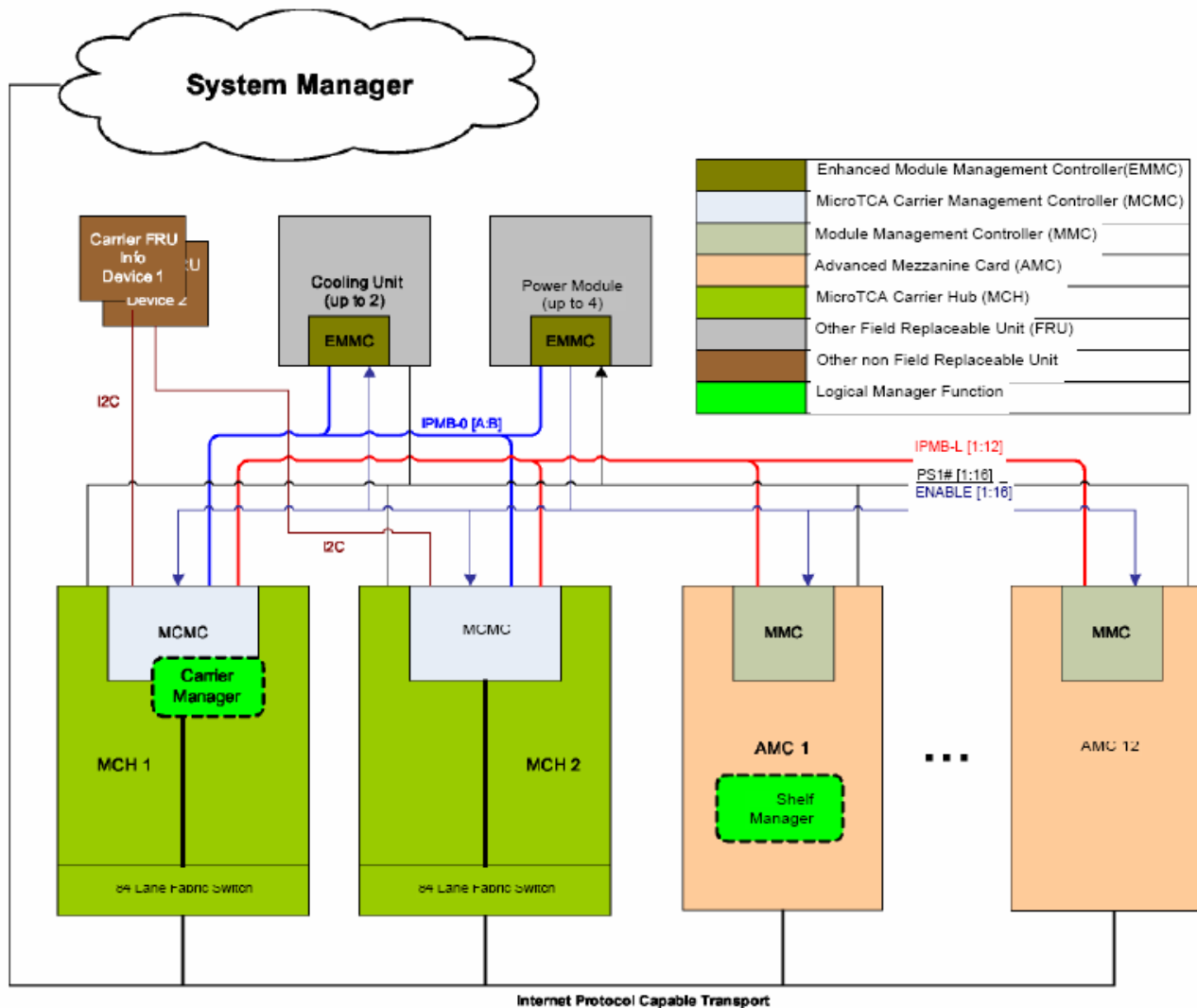
MTCA.4 Boards are still at the beginning, but numbers growing in short time



General μ TCA management connections

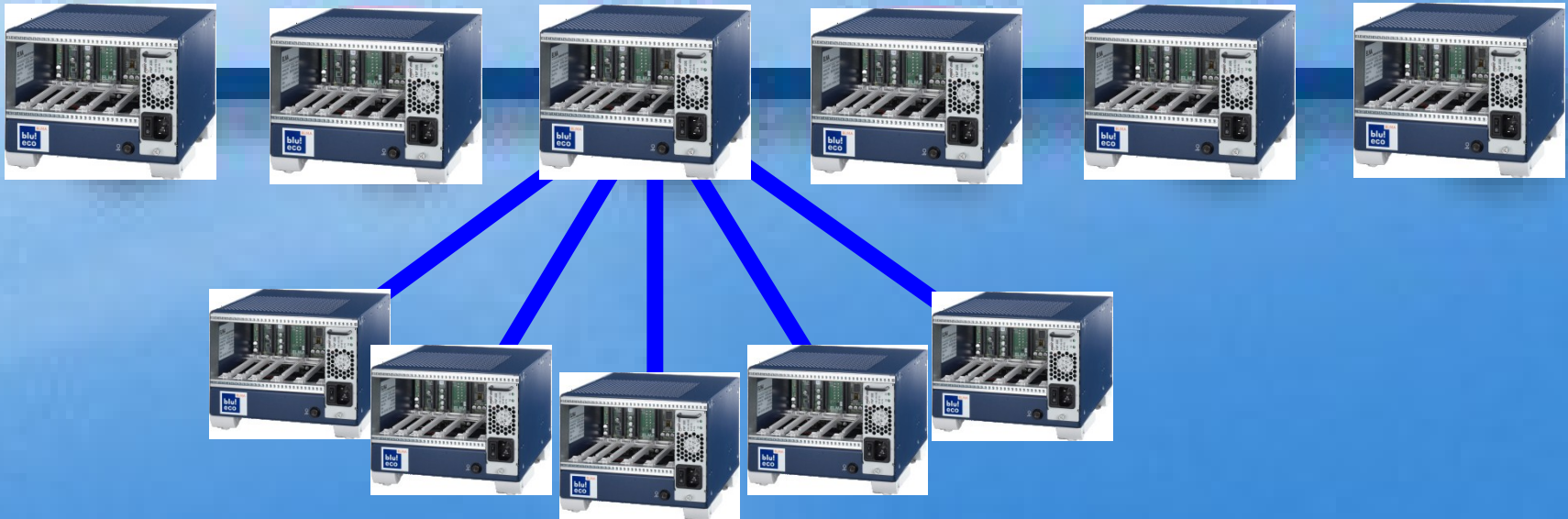
- management connection outside a μ TCA shelf
 - system manager \Leftrightarrow shelf manager
 - via ETH
 - shelf manager \Leftrightarrow carrier manager
 - via ETH
- management connections inside a μ TCA shelf
 - AMC \Leftrightarrow Carrier Manager (MCH)
 - via IPMB-L
 - Carrier Manager \Leftrightarrow PMs + CUs + FRUs
 - via IPMB-0
 - MCMC (MCH) \Leftrightarrow Carrier Management FRU Information Device
 - via I2C
 - MCMC (MCH) \Leftrightarrow redundant MCMC (MCH)
 - via IPMB-L

Figure 17 Management aspects of an example MicroTCA Shelf



Source: N.A.T.

Simple Busstructure. The Systems are connected via Ethernet and are similar to all net connected elements. Each system is able to build up subconnections.



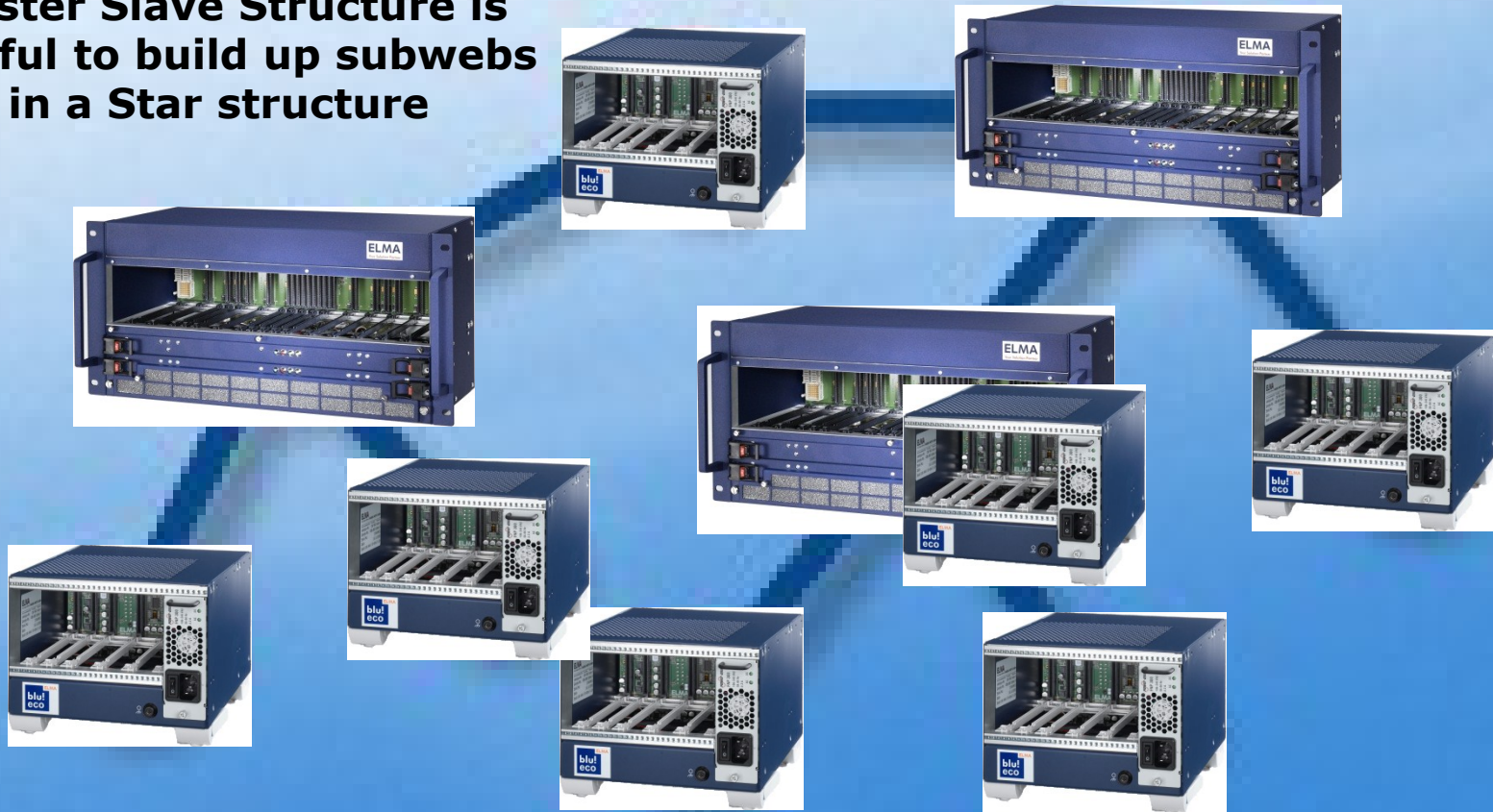
Management Systems Structure

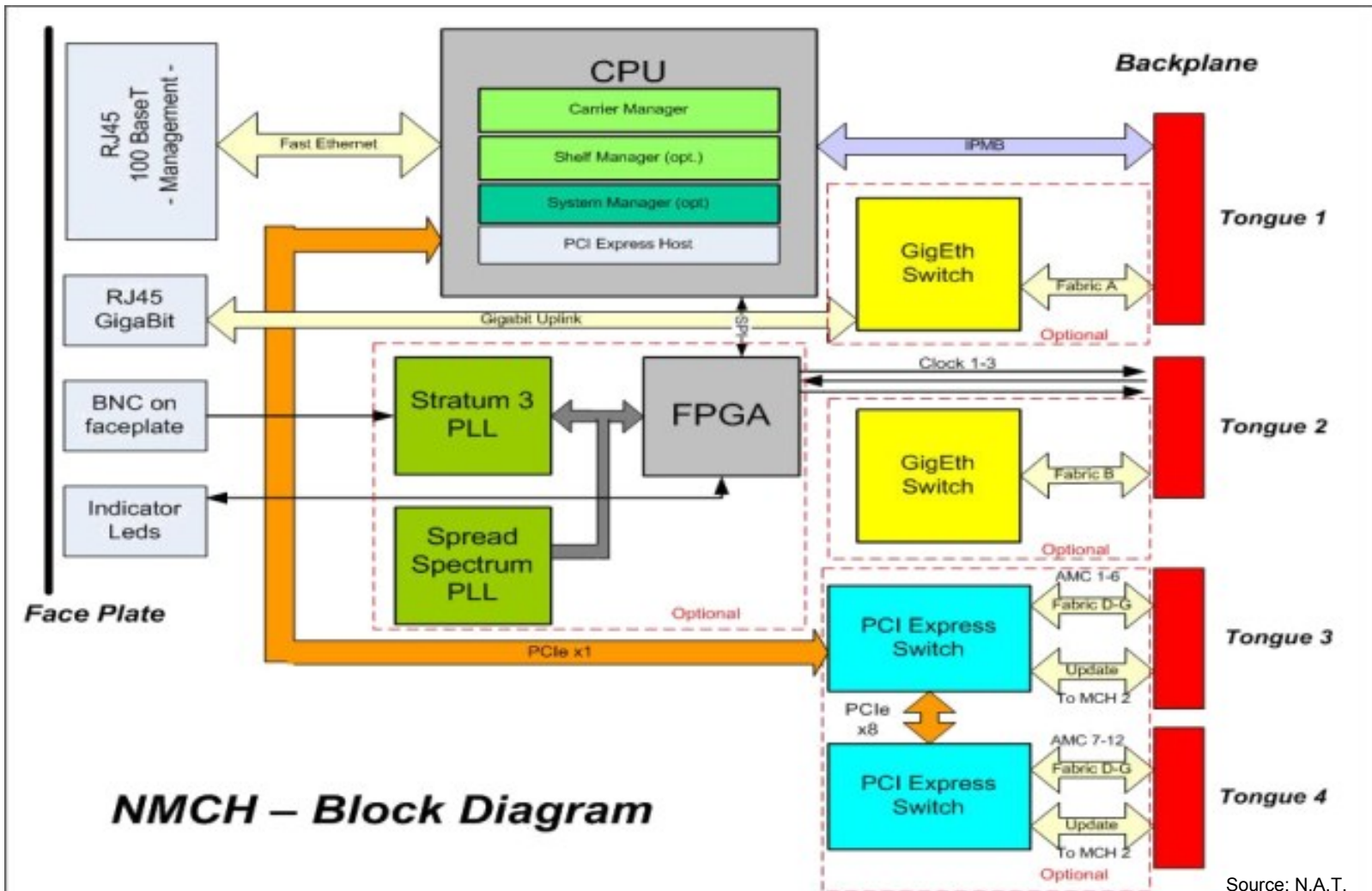
Star Structure. All connections are switched over the main system. It generates a lot of Traffic and needs huge resources. It is necessary to have a redundant or a high integrated System to optimize such network



Management Systems Structure

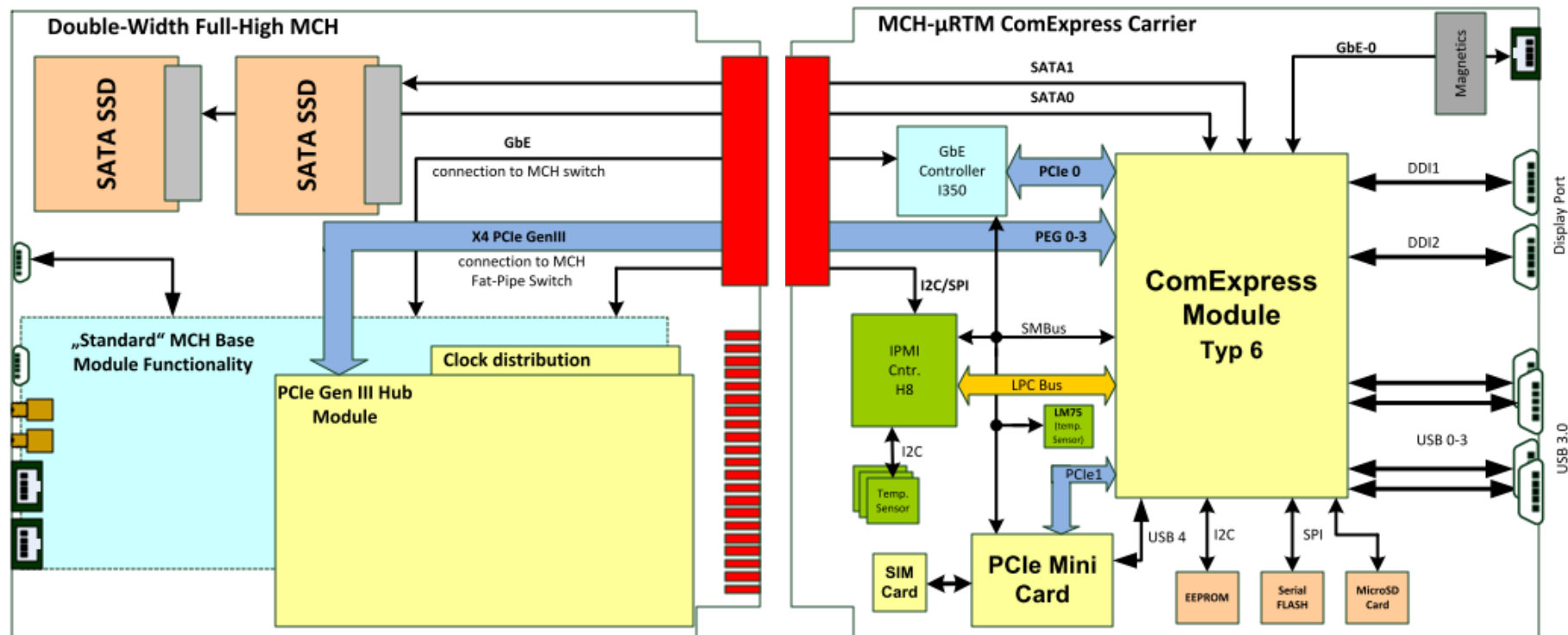
**Master Slave Structure is
helpful to build up subwebs
in a Star structure**





Source: N.A.T.

**MCH for MTCA.4 to manage also the RTM Modules.
Additional Functions with SATA, GbE and other links to RTM Connector,
prepared to use an MTCA ComExpress Carrier for more performance in
MTCA.4 Systems**





| | |
|------------------|---|
| Management | <ul style="list-style-type: none"> • for up to 13 AMCs, up to 4 PMs, up to 4 cooling units (2 front and 2 rear) • on-board Carrier manager; on-board open HPI compliant shelf-manager • CLI via Telnet or USB • firmware update and script based configuration via TFTP • on-board Webserver • NATview-EASY |
| Switches | <ul style="list-style-type: none"> • 16 Port GbE switch Fabric A to 12 AMCs and update link to the second MCH slot or AMC13 • 48 Port PCIexpress Gen3 Switch (Gen3 backwards compatible to Gen 2 and Gen1) Fabric D-F to 12 AMCs, up to 6 independent virtual PCIe cluster configurable |
| Front connectors | <ul style="list-style-type: none"> • 2xGbE Uplink; USB and RS232 • Status LEDs for AMCs, PMs and CUs • status LEDs for PCIe lanes to all AMC slots (active status, speed status Gen1, Gen2, Gen3) |
| storage | <ul style="list-style-type: none"> • one 2.5 inch SSD with 128 GB mounted on NAT-MCH- PHYS or two 1.25 inch SSD in RAID mode possible |

**NAT-MCH-PHYS and NAT-MCH-PHYS-RTM for MTCA.4
are ready to manage all MTCA.4 Systems
With or without RTM Modules**



**Additional Feature:
RTM
with
Com Express Module**

13.12.2012

www.elma.com

Source: N.A.T.; DESY

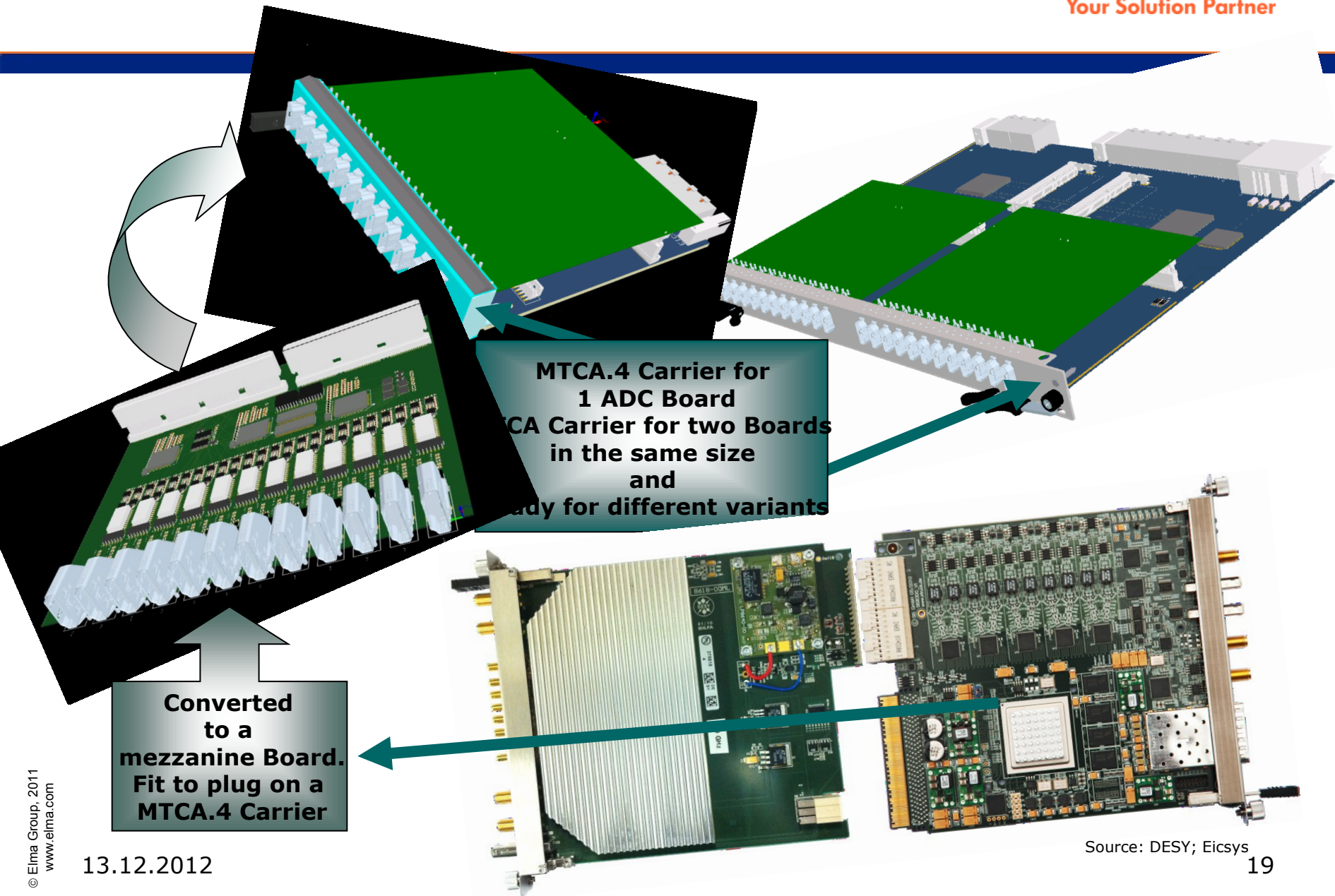
17

Scalability from MTCA to ATCA

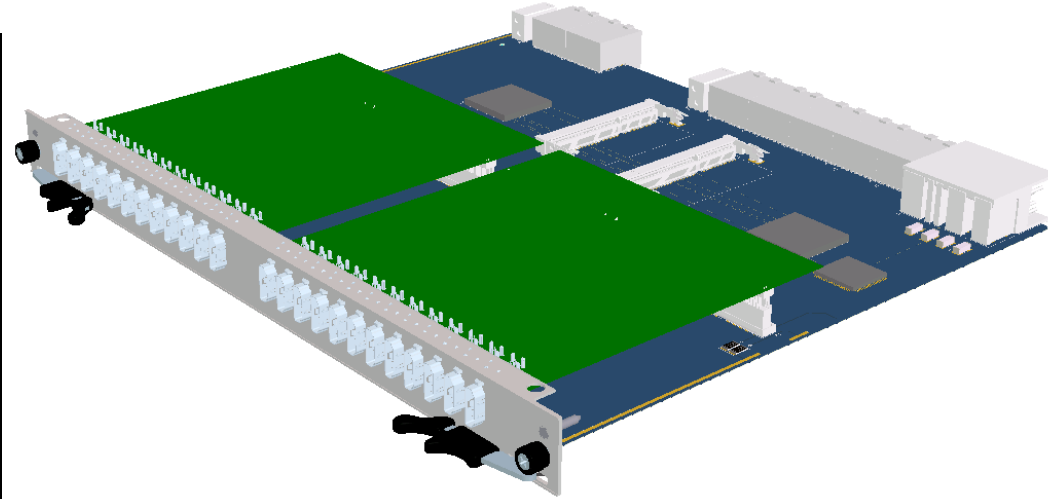
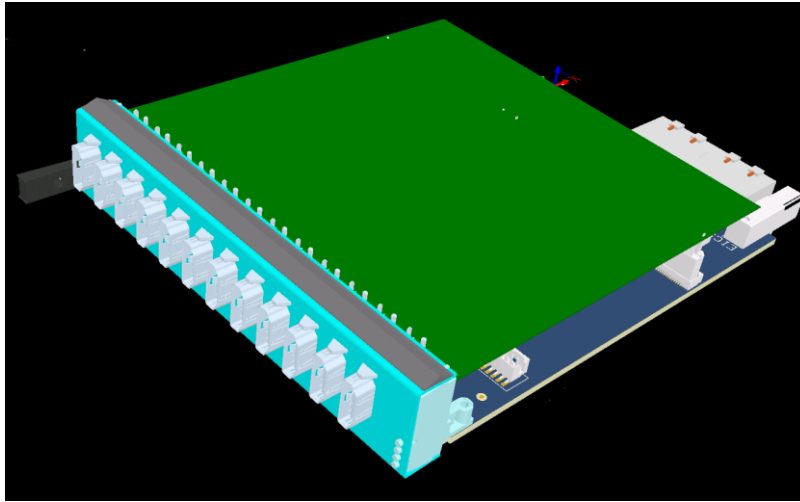
Scale up from MTCA.4 to ATCA only with small adjustments if the resources are too small



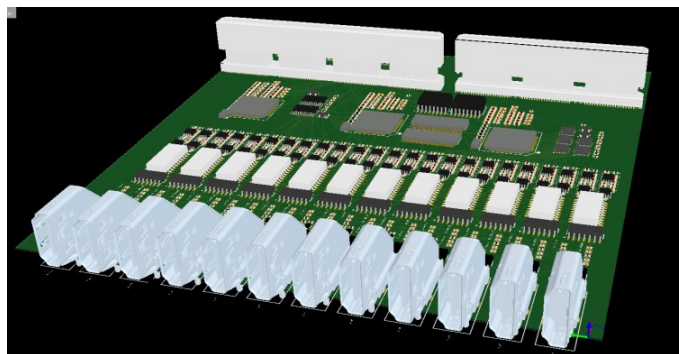
Scalability from MTCA to ATCA



Scalability from MTCA to ATCA



Source: Eicsys



- Mezzanine Board could have various features.
- (The Sample shows ADC functions for a special Project).
- The Mezzanine Interface is proprietary.
- The MTCA.4 Carrier has Interfaces according to the standard.
- The Carrier size is full size.
- The ATCA Carrier is according to the ATCA Standard.

Thank you for your attention.

