Welcome to the

4th meeting of the xTCA Interest Group

Agenda:

Speaker	Title
M. Joos	The PH/ESE xTCA Evaluation Project
H. Müller	An ATCA framework for the RD51 SRS electronics
R. Je Gac	Overview on the LHCb ATCA strategy
J. P. Cachemiche	Recent ATCA development for
P. Farthouat	xTCA in ATLAS
N. Letendre	IPMC Mezzanine for ATCA boards
B. Bielawski	BE/CO: uTCA projects
R. Larsen	Ongoing developments at SLAC aimed at RF, BPM and Control systems for upgrades and LCLSII accelerator

Next Meeting: During the TWEPP 2012 conference in Oxford

The PH/ESE xTCA Evaluation Project

Progress report

Markus Joos

in collaboration with

Vincent Bobillier, Stefan Haas, Francois Vasey and Paschalis Vichoudis

Project definition

## Evaluate µTCA for it suitability as a platform for future modular electronics for HEP experiments

Tasks:

- Technical evaluation of components for µTCA and MTCA.4 systems
- Development of tools (H/W and S/W) for the testing of commercial components
- Conduct market surveys
- Report results to the xTCA IG
- Build up support for components of common interest

Project duration:

- February 2011 – mid 2012
- Discussion of continuation in early 2012

Equipment purchased

| Manufacturer	Type	Number
Schroff	6-slot MTCA.4 shelf (type: 11850-019)	1
Kontron	Kontron AM4904 MCH (with PCIe GEN2 switch)	3
Kontron	Kontron AM5030 processor AMC	5
Elma	Elma AMC load module (ref.: 031716; single width full size)	6
ESD	ADIO-24 AMC	Not shown on picture
Vadatech	12 slot µTCA shelf (ref.: VT892-112-000-000)	2
Vadatech	792W power module (ref.: UTC010-200-000-010)	2
NAT	MCH (with PCIe GEN2 switch; NAT-MCH-Base12-GbE-SSCH-TCTCXO-PCIEx48). So far only GEN1 switch received	4
Concurrent Technologies	AM310 processor module (ordered)	
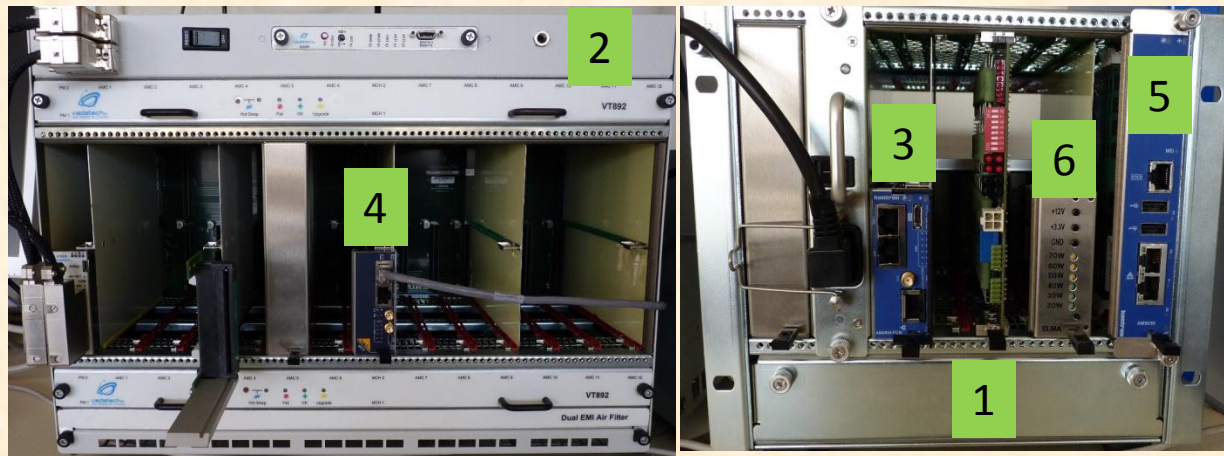
Equipment developed

MMC test AMC

MMC mezzanine (based on design from CPPM)
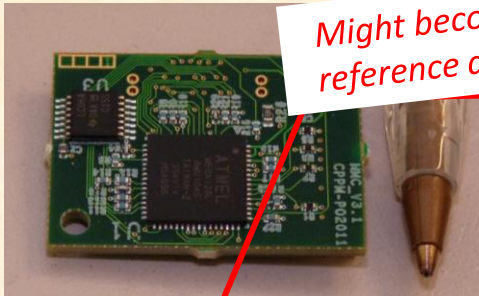
Might become a reference design
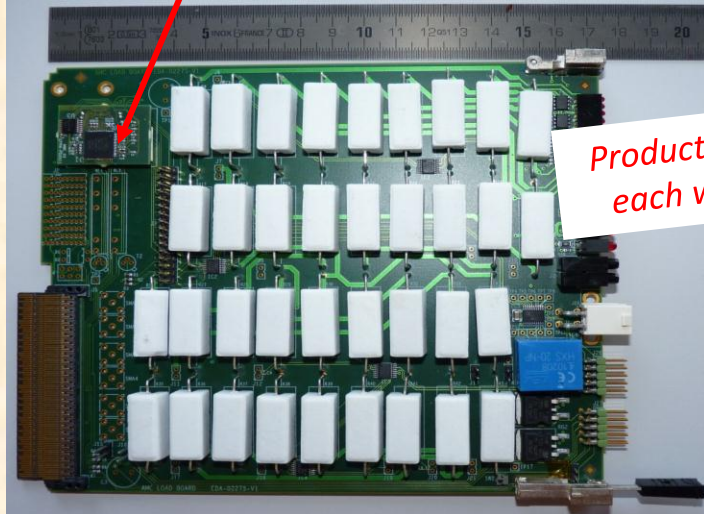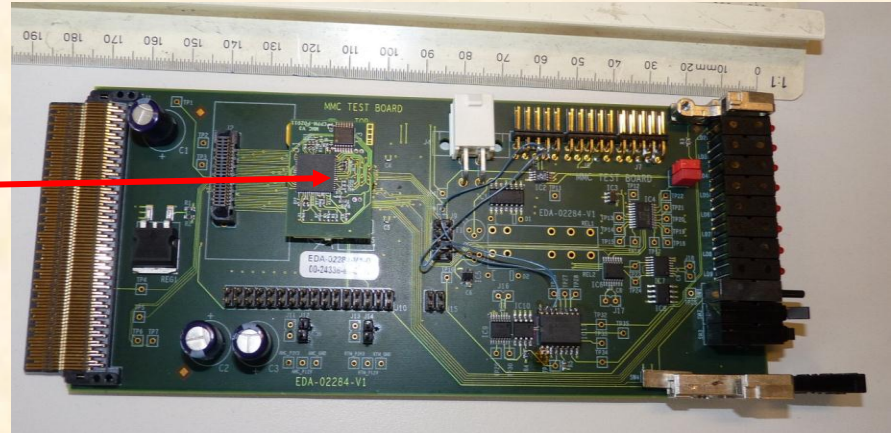
*Production of 15 boards of each will start very soon*
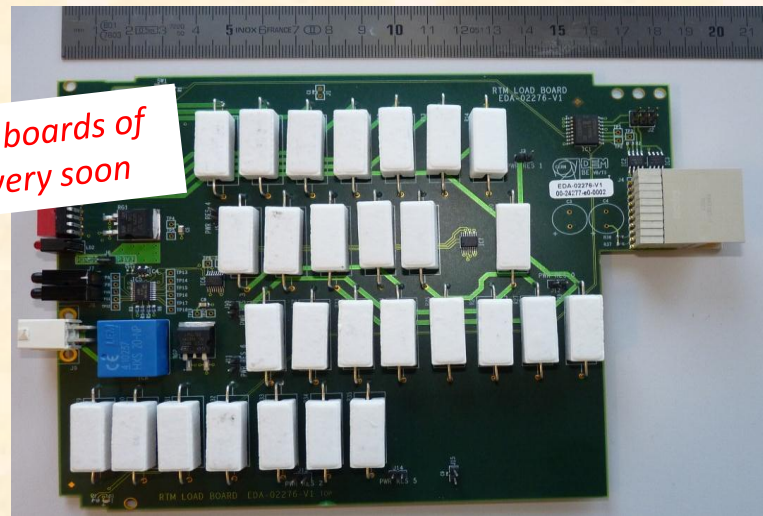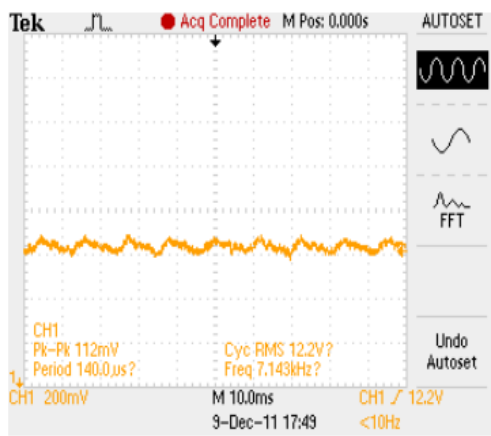
AMC load board

RTM load board

Results

- For the detailed report see: https://espace.cern.ch/ph-dep-ESE-BE-uTCAEvaluationProject/Shared%20Documents/xTCA%20summary.docx

- Many (mostly minor) interoperability problems encountered
- Components providing the same function (e.g. shelf or MCH) can have very different features and user interfaces (S/W)
- µTCA seems to be growing rapidly
    - Large choice of shelves, MCHs, processors, FPGA/FMC AMCs
    - Also some digitizers available now
    - MTCA.4 received well by OEMs
    - Many customizations
        - Special signal routing on backplanes
        - Backplanes with integrated MCH functionality
        - Many options (cooling, PSUs, data transfer protocols)

Results

- Crate PSU preliminary tests
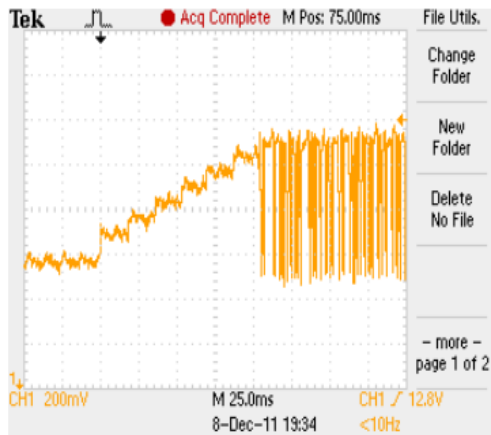
Regulation and ripple measurements

Long term measurements with load variations and temperature monitoring

The next phase

- Complete the tasks of the first phase (MMC S/W, load board H/W and S/W)
- Continue the market surveys and maintain contacts with (potential) users via e.g. the xTCA IG
- Continue and expand the project with these objectives:
  - Pay equal attention to µTCA and ATCA
  - Discuss collaboration with LHCb and ATLAS on ATCA evaluation
  - Discuss collaboration with BE/CO and CMS on µTCA evaluation
  - Focus efforts of PH/ESE on infrastructure components
    - Shelves and Power supplies (with focus on electrical and cooling performance)
      - Manufacturers contacted for offers for shelf
    - Continue evaluation of µTCA MCH modules (and processor AMCs)
  - Propose procedures for the acceptance testing of (commercial) xTCA components