

14th MicroTCA Workshop

2-4 December, 2025

DESY, Hamburg



Workshop start: 14:00

Introduction: 14th MicroTCA Workshop 2025

for Industry & Research

Holger Schlarb,
Accelerator Beam Controls (MSK)/DESY
DESY, 02.12.2025



Hybrid



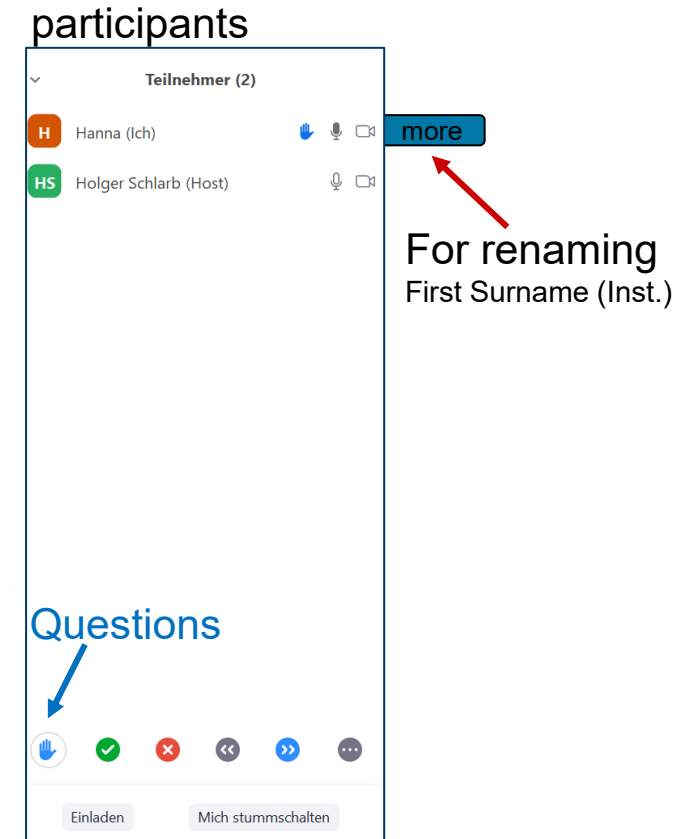
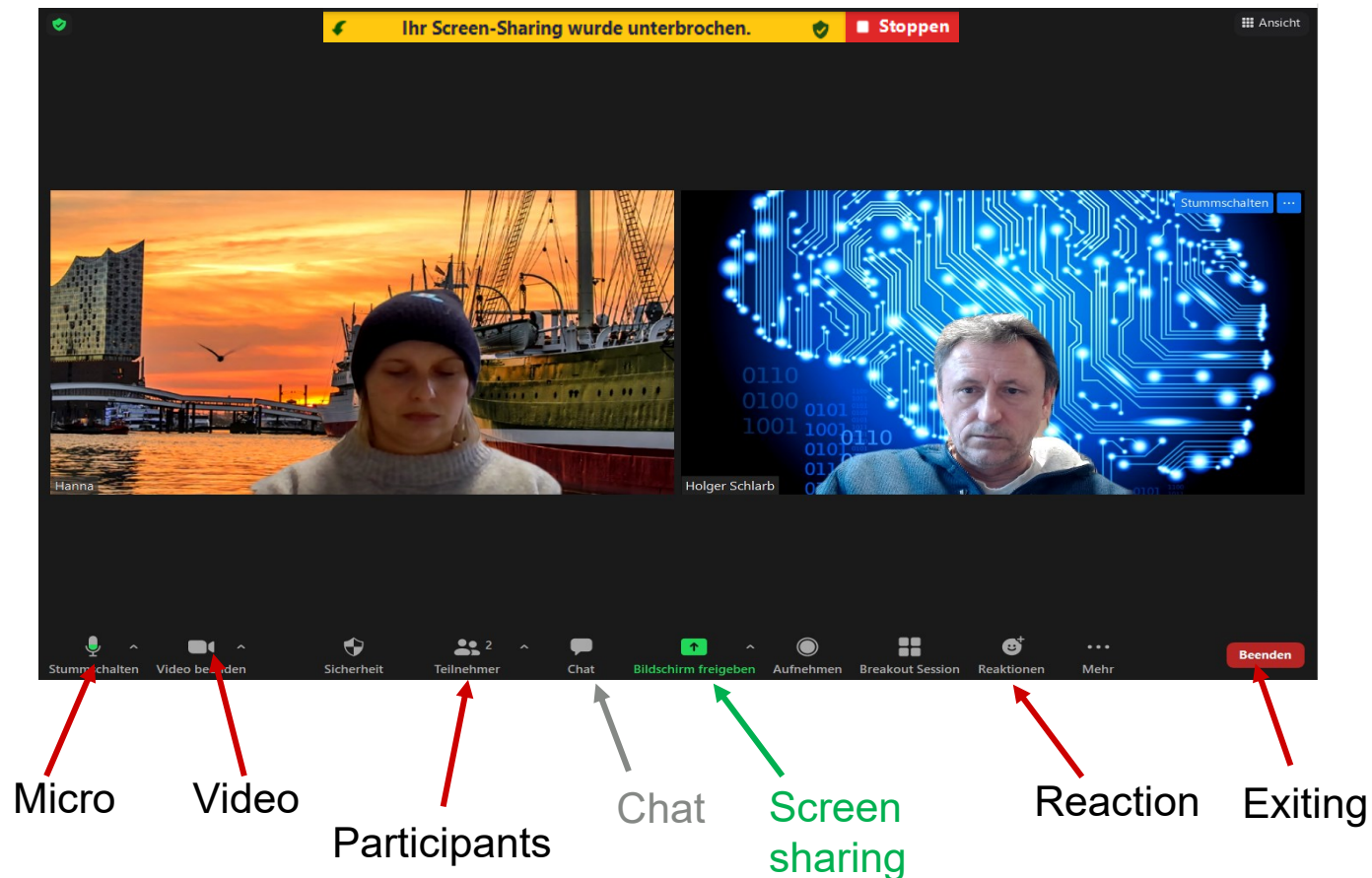
Networking

Info's ZOOM Meeting

Remote Participants: please keep micro muted

Remote Speakers: please video on/ **green button** for slide sharing

Remote Questions: use chat / **raise hand** / switch video & micro on



Welcome all our participants from research ...

Institutes:



University:



Welcome all our partners from industry ...

Exhibitors:



Participants:



Workshop program Mo - Th

Indico page: <https://indico.desy.de/event/49291/timetable/#20251201>

Monday 1/12: Pre-workshop “VERSAL Adaptive SoC Architecture” 9:00-17:00

Timetable

< Mon 01/12 Tue 02/12 Wed 03/12 Thu 04/12 All days >

Print PDF Full screen Detailed view Filter

09:00 Preworkshop Versal™ Adaptive SoC Architecture and Design Flow
A. Finck (PLC)
J. Michaelson (Avnet)

10:00

11:00

The diagram illustrates the Versal Adaptive SoC Architecture and Design Flow. It is divided into three main sections: Scalar Engines, Adaptable Engines, and Intelligent Engines. The Scalar Engines section includes a Dual-Core Arm® Cortex®-A72 Application Processor, a Dual-Core Arm® Cortex®-R52 Real-Time Processor, a Platform Management Controller, and Accelerator RAM. The Adaptable Engines section features a large red block representing Block RAM and UltraRAM. The Intelligent Engines section includes AI Engines and DSP Engines. These engines are interconnected by a Programmable Network on Chip. Below the network, various interfaces and components are listed: PCIe® w/DMA & CXL, DDR4, HBM, 32Gb/s, 56Gb/s, 112Gb/s, 100G Multirate Ethernet Cores, 680G Cores, Direct RF, MPI, LVDS, and GPIO. Logos for AVNET®, AMD, and PLC2 are displayed on the left side of the slide. An AMD Coaching Service Provider logo is also present.



~ 70 participants registered

- 4 Sessions on HW architecture and Design flow, details please see: <https://indico.desy.de/event/49291/page/5648-preworkshop>

Or talk to

➔ Jens Michaelson

Workshop program Mo - Th

Indico page: <https://indico.desy.de/event/49291/timetable/#20251201>

Monday 1/12: Pre-workshop “VERSAL Adaptive SoC Architecture” 9:00-17:00

Tu Morning: three tutorial sessions ~ 7 contributions, Tu 9:00 – 12:30

52 new participants!

MicroTCA
Basic
tutorials



Timing in
MicroTCA



09:00	Introduction <i>Kay Rehlich</i> 09:00 - 09:05	Hardware Design in MicroTCA <i>Behzad Boghrati</i> 09:00 - 10:00
	The Basics <i>Ralf Waldt</i>  09:05 - 09:35	
	MicroTCA Management <i>Heiko Koerte</i> 09:35 - 10:05	
10:00	Communication links, clocks and triggers <i>Kay Rehlich</i> 10:05 - 10:30	EMI consideration for precision analogue electronics in MicroTCA <i>Frank Ludwig</i> 10:30 - 11:00
	Coffee break 10:30 - 11:00	
11:00	The MRF Timing System <i>Jukka Pietarinen</i> 11:00 - 11:30	FWK Firmware Framework <i>Cagil Guemues et al.</i> 11:00 - 11:45
	The White Rabbit based Timing System <i>Dietrich Beck</i> 11:30 - 12:00	Rapid hardware integration with the ChimeraTK software framework <i>Dr Martin Christoph Hierholzer</i> 11:45 - 12:30
12:00	The DESY x2 and x3 Timing Systems <i>Victor Andrei</i> 12:00 - 12:30	



MicroTCA
hardware
developers



Firmware &
Software
integration

Workshop program

Tu / We/ Th

8 session with 38 talks:
➔ 13min + 2min Q&A

Keynotes: Accelerators Controls (P.Chu)

15" discussion slot after each session

14.00 ➔ Tuesday

14:00	Welcome to DESY	Edgar Weckert
14:00 - 14:15	Introduction to Workshop	Dr Holger Schlarb
14:15 - 14:30	Deployment and Development of MicroTCA at ESS	Faye Chikien
14:30 - 14:45	Status of MicroTCA at the Spallation Neutron Source	Thomas Justice
14:45 - 15:00	Summary of MTCA Workshop in Japan 2025 and Status of MTCA at J-PARC in 2025	Fumihiko Tamura
15:00 - 15:15	RF Beam Noise Feedback System for the High-Luminosity LHC Crab Cavities	Dmitry Hristov Marinov
15:15 - 15:30	Discussion	
15:30 - 15:45	Coffee Break	
15:45 - 16:15	New FPGA, CPU and ADC/DAC products	Karl Judek
16:15 - 16:30	Overview of DMCS Projects and MicroTCA.4 Developments	Prof. Dariusz Makowski
16:30 - 16:45	Engineering Challenges in Scaling MicroTCA for High-Power Double Full-Size AMC Configurations	Christian Ganninger
16:45 - 17:00	New building blocks and uplink solutions with the NAT-MCH	Heiko Korte
17:00 - 17:15	Vadatech: Accelerating Your Development (DAQ ToolSuite)	Alex Annis
17:15 - 17:30	Libera Brilliance X: MTCA.4 Readout Electronics for Electron Synchrotrons	Peter Pavlovic
17:30 - 17:45	Discussion	
17:45 - 18:00		



Wednesday

09:00	Keynote: Systematic Approaches for Accelerator Controls	Paul Chu
09:00 - 09:30	Industrial server: Host of MicroTCA building blocks (a summary case)	Robert Eise
09:30 - 09:45	Smart Infrastructure around MTCA Crates	Udo Weiss
09:45 - 10:00	MTA 93 QMC - Expanding Modularity and Performance: Unlocking New Potential for MTCA Platforms	Tim Tewe
10:00 - 10:15	Discussion	
10:15 - 10:30	Coffee Break	
10:30 - 11:00	Experimental point-to-multipoint distribution of WR-Based clock and PPS signals through pTCA Backplane	Juan Fernández et al.
11:00 - 11:15	DAMC-XSTIMER: Status Update on Hardware, Firmware, and Timing Infrastructure for PETRA IV	Hendrik Lippek
11:15 - 11:30	Precision Timing & Advanced RF Solutions for Particle Accelerators	Jiaqi Bai
11:30 - 11:45	NGCII Detector Controller synchronization using White Rabbit	Matthias Seidel
11:45 - 12:00	Micro Hertz Temperature and Phase Stability of a LISA Phasemeter based on MicroTCA as ground-support equipment	Dr. Christian Darsow-Rohm
12:00 - 12:15	Discussion	
12:15 - 12:30	Lunch	
12:30 - 14:00	DESY Tour 02	
14:00 - 14:15	First results of CW diagnostics for future accelerator	Olaf Henner
14:15 - 14:30	Custom data acquisition using FMCs and MicroTCA	René Geißler
14:30 - 14:45	First Major Release of 'fwk'	Cagil Guemues
14:45 - 15:00	Machine control and beam diagnostics prospects for the DALI project	Klaus Zenker
15:00 - 15:15	Progress of MTCA Platform and Applications in Large-scale scientific facilities	Hongrui Cao
15:15 - 15:30	Discussion	
15:30 - 15:45	Coffee Break	
15:45 - 16:15	Integration of prototyping and cost-effective XILINX-AMD SoC/FPGA platforms in the DESY Firmware Framework	Alejandro Piñas
16:15 - 16:30	Flashless, Network-Based Booting of MicroTCA AMCs	Patrick Huesmann
16:30 - 16:45	Actually utilizing the standardization - Applying (C)OTS software for monitoring and controlling MTCA installations	Simon Fischer
16:45 - 17:00	AMD Versal ACAP Devices for low latency and high compute applications	Jens Michaelson
17:00 - 17:15	ESS Linux: Yocto based linux on MicroTCA CPUs	Gabriel Fedel
17:15 - 17:30	MicroTCA Development for PIP-II Beam Instrumentation at Fermilab	Robert Turner White
17:30 - 17:45	Discussion	

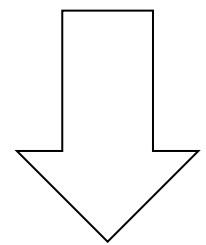
Thursday

09:00	Summary of the 2025 MicroTCA workshop in China	Junqiang Zhang
09:00 - 09:15	Update on the development and deployment of the MicroTCA based detector controller, NGCII	Mathias Richter/Hagen
09:15 - 09:30	The DAMC-DS6014DR: A High-Speed, High-Performance RFSoC-Based Digitizer Utilizing AMD Zynq UltraScale+ Techno	Dr Behzad Doghrati
09:30 - 09:45	2025 Status Report - MYRRHAMINERVA LLRF System	Dr Andrea Belland
09:45 - 10:00	Status Update on the Open-Source Synchronous Multi-Axis Motion Controller Solution for Large-Scale Experimental Ph	Michael Rindler
10:00 - 10:15	Discussion	
10:15 - 10:30	Coffee Break	
10:30 - 11:00	Advancing Optical Interlock System with Custom MicroTCA RTM Solution for MYRRHA	Mr Kriszian Ferenc
11:00 - 11:15	High channel count Simultaneous Analog IO to MTCA.4	John McLean
11:15 - 11:30	Bringing an AMC into operation with ChimeraTK	Christian Willner
11:30 - 11:45	MicroTCA for photon beamlines - on-the-fly scans with spec	Martin Tolkiehn
11:45 - 12:00	Discussion	
12:00 - 12:30	Lunch	
12:30 - 12:45	Close out	Dr Holger Schlarb



Lunch

← 14.00



Sufficient time for departure



Harbor tour & Dinner

← 18:15

Workshop program Tu / We/ Th

➔ Abstract book

14th MicroTCA Workshop for Industry and Research

Dec 1 – 4, 2025
Europe/Berlin timezone

Overview

Registration

Timetable

Book of Abstracts

Contribution List

Payment

Preworkshop

Participant List

The 14th MicroTCA Workshop for Industry and Research will take place at DESY with a Preworkshop on 1 December.

The main topics of the workshop are:

- Applications in research facilities
- Applications in industry
- New Products
- New Technologies
- Future of standard and interoperability
- Software and firmware
- Industry Exhibition – presentation of modules and systems



14th MicroTCA Workshop for Industry and Research

2th - 4th December 2025

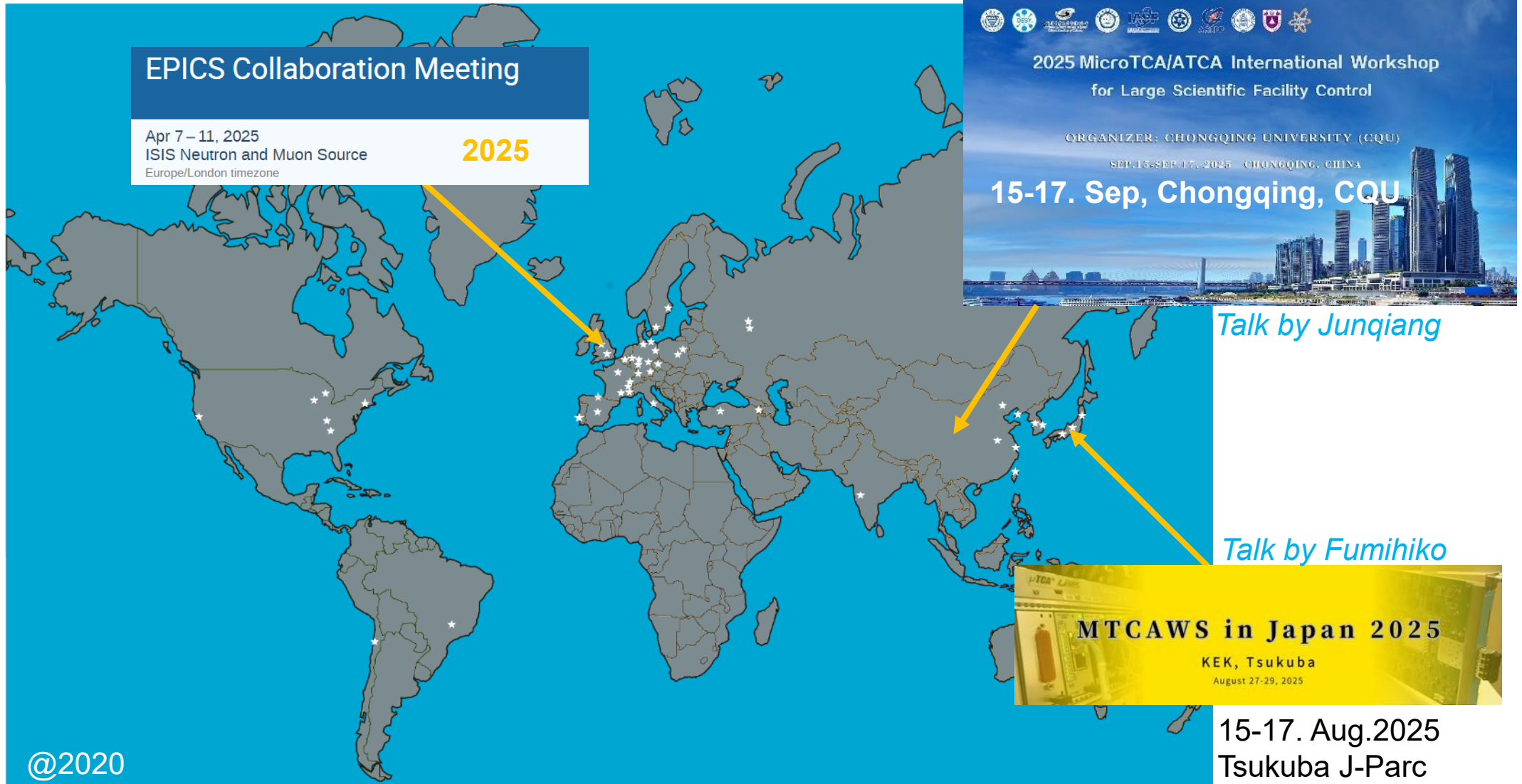
Deutsches Elektronen-Synchrotron DESY

Hamburg, Germany

Book of Abstracts

Topical & Regional Workshops, UK/Japan/China

<https://indico.ihep.ac.cn/event/25908/>



The image features a world map with a blue background and grey landmasses. Three yellow arrows point from specific regions to event callouts. The first arrow points to Europe, the second to China, and the third to Japan. Each callout contains event details and logos. The Japan callout also includes a photograph of a particle accelerator facility.

EPICS Collaboration Meeting
Apr 7 – 11, 2025
ISIS Neutron and Muon Source
Europe/London timezone
2025

2025 MicroTCA/ATCA International Workshop
for Large Scientific Facility Control
ORGANIZER: CHONGQING UNIVERSITY (CQU)
SEP.15-SEP.17, 2025 CHONGQING, CHINA
15-17. Sep, Chongqing, CQU

Talk by Junqiang

Talk by Fumihiko

MTCAWS in Japan 2025
KEK, Tsukuba
August 27-29, 2025

15-17. Aug.2025
Tsukuba J-Parc

@2020

<https://conference-indico.kek.jp/event/326/>

New DESY MicroTCA Webpage

➔ <https://mtca.desy.de>



DESY MicroTCA Product Catalog



 Search

Overview

AMC

RTM

eRTM

FMC

DESY MMC

RTM Backplanes

Tools and Templates

Coming soon

Overview

Welcome to our MicroTCA Board Portfolio

Table of contents

What is MicroTCA?

AMC

DAMC-TCK7

DAMC-FMC20

DAMC-FMC25

DAMC-FMC2ZUP

DAMC-FMC1Z7IO

DAMC-X2TIMER

DAMC-X3TIMER

DAMC-DS5014DR

DAMC-DS812ZUP

DAMC-UNIZUP

DAMC-MOTCTRL

DAMC-FMC2ZUP-HB

For over a decade, DESY has been building electronics working in close collaboration with industry partners.

Through our developments and partnerships, we have offers users access to a large catalog of ready-made c on their specific application needs while utilizing comm

Tools and Templates

Tools

AMC Template

RTM Template

Bringup Adapter

Bringup Adapter SFP

Bringup Adapter Mechanics

FMC

DFMC-MD22

DFMC-AD16

DFMC-SFP4

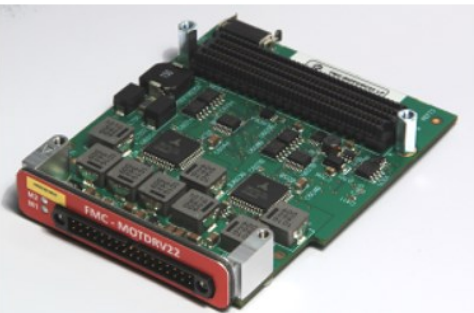
DFMC-TESTADP

DFMC-DS800

DFMC-UNI-IO

DFMC-SIO

DFMC-MD22



MicroTCA Support



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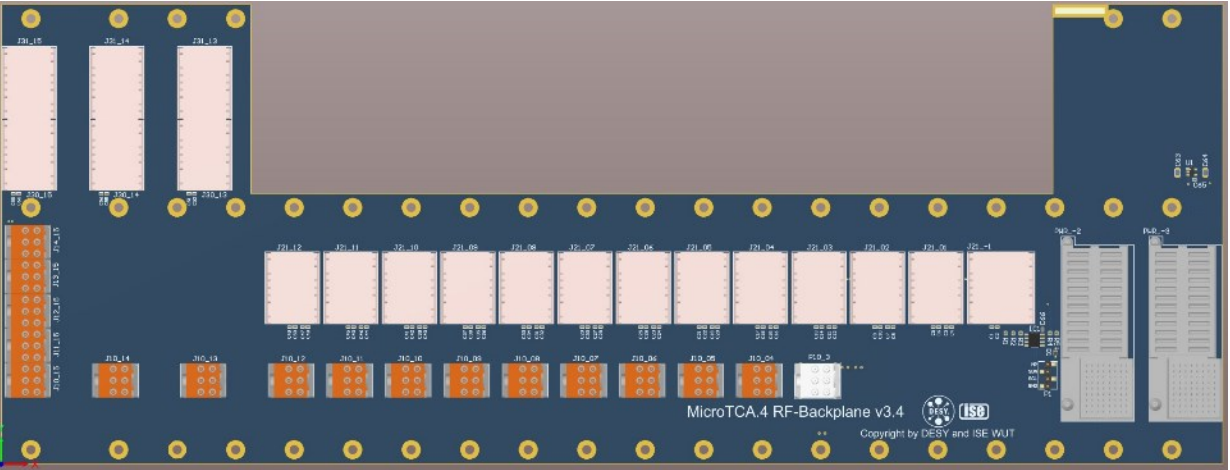
- frugy – FRU-Generator YAML
- XDMA-DKMS- XDMA PCI Express Driver
- mmcterm – Terminal for the DESY MMC-STAMP
- Zone 3 Recommendations
 - Class A1
 - Class A2
 - Class RF1.0
 - Class D1.x



standard. To support
ts, making them

Discussions (2024 slide) → : Design almost done

Improved RF Backplane design ... (LISA)



- Length matched RF traces
- #3 with RF Radial connector

For interested colleagues please contract
→ Johannes Zink, Frank Ludwig or Michael Pawelzik



MTCA.4 Phase-matched RF-Backplane

uRFB-PM

A photograph of the MicroTCA.4 RF-Backplane PM v1.0 printed circuit board. It is green with gold-plated connectors and features a dense array of integrated circuits and components. The text "MicroTCA.4 RF-Backplane PM v1.0" is visible on the board.

FEATURES

- Distributes **phase-matched** signals in range of DC to 6 GHz (30 single-ended channels, star topology)
- Provides **phase-matched** Clocks (CLK) to RTMs
- Has one additional **RTM-slot** with RF signals

The Phase-Matched Radio Frequency Backplane (PM-RF-Backplane) is an extension for MicroTCA.4 chassis, designed for customers needing various RF signals supplied to their rear transition module (RTM). It ensures full compatibility with existing MicroTCA.4 crates. The PM-RF-Backplane is a passive RTM backplane with phase-matched interconnection for precise RF and clock signals. It provides the

If you have any other topic, may prepare
1 – 2 slides and make use of the
discussion slots
...

Workshop Organization

Workshop organized by

Advisory committee:

Kay Rehlich (Chair)	DESY
Holger Schlarb (Chair)	DESY
Christian Ganninger	nVent - Schroff GmbH
Tobias Hoffmann	GSI
Thomas Holzapfel	powerBridge
Timo Korhonen	ESS
Heiko Koerte	N.A.T.
Augusto Fraga Giachero	LNLS
Rong Liu	Beijing DAQ Technology Co. Ltd
Alex Malcom	Vadatech
Paul Chu	Nanjing University
Alan Justice	ORNL
Jan Marjanovic	Atom Computing
Fumihiko Tamura	J-PARC Center, Japan
Axel Winter	MPI Plasmaphysik

Local organization:

Hanna Kunze	DESY
Gohar Ayvazyan	DESY



Hanna Kunze

Valuable input for shaping the workshop!!!

Workshop Dinner

Wednesday, 03th of December



- Harbour Cruise with “**MS HAMMONIA**”
- Shuttle buses start at **6.15 pm** in front of the CFEL
- Departure of **MS HAMMONIA**: 7.30 pm, Überseebrücke Hamburg
- Returning around 11:00 pm to DESY (main gate)
- **Please inform the registration desk if you can not attend**

General Information

Speaker info

- 12-minute slot for each talk plus 3 min. for questions
- Presentations need to be handed to the organization team before the session starts
- Magic presenter (please do not use your own laptop)

SCHEDULE

- DESY Tour #1: Tue, 02 Dec, 12:30-13:30
- DESY Tour #2: Wed, 03 Dec, 12:30-13:30

WLAN

- Name: **Science Hotspot**



Thank you! Let's get started...

**Wish you an informative
and pleasant
14th MicroTCA Workshop!**