Location: International Conference Center
Rooms : Conference 6 & Exhibits 5

Saturday, October 18, 2008 08:00-18:00
Sunday, October 19, 2008 08:30-17:00

Organizing committee:

Patrick Le Dû, DAPNIA CEA Saclay, France
Ray Larsen, SLAC, Stanford, USA
Margaret Votava, FNAL, Batavia, USA

The ATCA and µTCA system is a unique open standard card-modular hardware and software architecture that has attracted the attention of the physics community for application to machine controls and instrumentation as well as experiment controls and high speed data acquisition. ATCA (Advanced Telecommunications Computing Architecture or Advanced TCA) is a modular crate (or shelf as it is called in the Telco world) architecture the size of a VXI crate but with the unique feature that all inter-board backplane and inter-crate communications is via serial links with speeds as high as 2.5 Gbps for a single link and 10 Gbps combining four links. Micro-TCA (µTCA) is a smaller chassis embodiment which uses the ATCA standard daughter-cards, called AMCs (Advanced Mezzanine Card) which have similar features to the large carrier card in that they are hot-swappable and can employ N+1 redundancy in power systems, crate controllers and switching hubs for extremely high crate availability of 0.99999 (5-nines). This level of availability (equivalent to allowable average downtime of five minutes per year) is achieved by a combination of hardware redundancy Intelligent Platform Management (IPM) diagnostic hardware and software, and hot-swap capability at both Carrier and AMC card levels. Shelf availability of 5-nines is judged to be essential for the new ILC accelerator controls and instrument systems, a major factor spurring interest for machine controls. At the same time, the shelf design throughput of 2 TB/s has spurred interest in detector applications where tens of millions of data channels are becoming common, for preprocessing, real-time data processing and event builders.

ATCA and µTCA are attractive platforms even for systems not requiring high availability because of the modern serial link architecture and many packaging options. Less-demanding applications can be met economically by scaling back speed and redundancy as required for both the ATCA full carrier and µTCA cards.

ATCA/µTCA Workshop Program

Overall Goals:

1. Tutorials on ATCA, µTCA hardware, software platforms
2. Presentations on recent industry developments in areas of interest: Controls; High Throughput DAQ, Shelf Management, Hardware/Software Development Tools
3. Presentations on new physics and accelerator applications
4. Explore inter-laboratory standards collaboration for interoperability in physics applications

Preliminary Program

Saturday October 18, 2008

08:00-18:10	Introduction to Workshop	Organizing Team
08:10-09:00	Tutorial: Status, Plans for Hardware Standards	PICMG Speakers
09:00-09:40	Hardware Standards Issues for Physics	R. Downing, SLAC consultant
09:40-10:00	Discussion	
10:00-10:20	Coffee Break	Hallway
10:20-11:10	Tutorial: Status, Plans for Software Standards	PICMG Speakers
11:10-12:00	Software Standards Issues for Physics	C. Saunders, Argonne Nat'l Lab
12:00-13:30	Luncheon	Workshop Lunch Room
13:30-15:00	Industry Interactive Demo Presentations	Industry Speakers
	1. ATCA Platform Hardware for Controls, DAQ	
	2. ATCA Platform Software for Controls, DAQ	
15:00-15:30	Coffee Break	Hallway
15:30-17:00	Industry Interactive Demo Presentations	Industry Speakers
	3. Shelf Management on ATCA	
	4. Shelf Management on µTCA AMC	
17:00-18:00	Exhibits Open	Exhibit Hall
18:00-21:00	Dinner	Workshop Dinner Room

Sunday October 19, 2008

08:30-10:00	*Contributed Papers Session 1*	
	ACTA-1: xTCA for a Large Accelerator	K. Rehlich, DESY
	ATCA-2: Digital LLRF Control System for the Linear Accelerator –	W. Jalmuzna, Univ. Lodz
	ATCA-3: Low Level RF Controls for the European XFEL	T. Jezynski, Univ Lodz
	ATCA-4: Interfaces & Communication Protocols for LLRF	D. Makowski, Univ Lodz
	ATCA-5: Control System for Compensation SC Cavities	K. Przygoda, Univ Lodz
10:00-10:30	Coffee Break	Exhibit Hall
10:30-12:00	*Contributed Papers session 2*	
	ATCA-6: Redundant Controller Configuration Software	K. Furukawa, KEK
	ATCA-7: FPGA Compute Node for PANDA Experiment	Z. Liu, IHEP
	ATCA-8: Application of SysML for LLRF Control System	M.K. Grecki, DESY
	ATCA-9: Analog & Digital Signals Distribution in LLRF	K. Czuba, Univ. Warsaw
	ATCA-10: ATCA Carrier Board with 3 AMC Bays	A. Zawada, Univ. Lodz
12:00-13:00	Luncheon	Workshop Lunch Room
13:00-13:15	Collaboration Opportunities for ATCA for Physics Standard	R. Larsen, SLAC
13:15-14:00	Review of Draft ATCA for Physics Hardware Profile	R. Downing, SLAC Consultant
14:00-14:45	Review of Issues for Physics Software Profile	
	– Controls and Monitoring	C. Saunders, Argonne Nat'l Lab
	- High Speed Data Acquisition	TBD
14:45-15:15	Coffee Break	Exhibits Area
15:15-17:00	Open Discussion	Moderator TBD
	- Questions for Speakers	
	- Questions for Vendors	
	- Discussion of future collaboration opportunities, organization	
17:30	Adjourn to 2008 NSS-MIC Conference Welcoming Reception	

ATCA-1: **Evaluation and Developments of xTCA for a Large Accelerator**

K. Rehlich, *MCS, DESY, Hamburg, Germany*

ATCA-2: **ATCA-Based Digital LLRF Control System for the Linear Accelerator**

W. Jalmuzna, *D. Makowski*, *A. Napieralski*, Department of Microelectronics and Computer Science, Technical University of Lodz, Lodz, Poland

ATCA-3: **Low Level RF Control System Based on ATCA for the European X-FEL**

M. Grecki[1], W. Jalmuzna[2], T. Jezynski[1], W. Koprek[1], D. Makowski[2], S. Simrock[1]

[1]*MSK, DESY, Hamburg, Germany*
[2]*DMCS, Technical Univ. of Lodz, Lodz, Poland*

ATCA-4: **Interfaces and Communication Protocols in ATCA-based LLRF Control Systems**

D. Makowski[1], W. Koprek[2], T. Jezynski[2], A. Piotrowski[1], G. Jablonski[1], W. Jalmuzna[1], P. Pucyk[2], S. Simrock[2]

[1]*Dep. of Microelectronics and Computer Science, Technical University of Lodz, Lodz, Poland*
[2]*MSK, Deutsche Elektronen-Synchrotron DESY, Hamburg, Germany*

ATCA-5: **ATCA-Based Control System for Compensation of SC Cavities Detuning Using Piezoelectric Actuators**

K. Przygoda, A. Piotrowski, G. Jablonski, D. Makowski, T. Pozniak, A. Napieralski, Department of Microelectronics and Computer Science, Technical University of Lodz, Lodz, Poland

ATCA-6**: Redundant Controller Configuration Software for ATCA System at STF/KEK**

K. Furukawa[1], A. Kazakov[2], S. Michizono[1], M. Satoh[1]

[1]*Accelerator Laboratory, High Energy Accelerator Research Organization (KEK), Tsukuba, Ibaraki, Japan*
[2]*Graduate University for Advanced Studies (SOKENDAI), Hayama, Kanagawa, Japan*

ATCA-7: **Design and Implementation of a FPGA-Based Compute Node for the PANDA Experiment**

H. Xu[1], Z. Liu[1], D. Jin[1], Q. Wang[1], L. Li[1], M. Liu[2], T. Perez[2], J. Lang[2], W. Kuehn[2]

[1]*Experimental Physics Center, Inst. of High Energy Physics, Chinese Academy of Sciences, Beijing, China*
[2]*II.Physikalisches Institut, Justus-Liebig-Universitaet Giessen, Giessen, Germany*

ATCA-8: **Application of SysML for Design of ATCA Based LLRF System**

M. K. Grecki, Z. Geng, S. Simrock, MSK, DESY, Hamburg, Hamburg, Germany

ATCA-9: **Analog and Digital Signals Distribution in ATCA Crate for LLRF System for EU-XFEL**

K. Czuba[1], T. Jezynski[2], S. Simrock[2]

[1]*Faculty of Electronics and Information Technology, Warsaw Univ. of Technology, Warsaw, Poland*
[2]*MSK, DESY, Hamburg, Germany*

ATCA-10: **Prototype AdvancedTCA Carrier Board with Three AMC Bays**

A. Zawada[1], D. Makowski[1], T. Jezynski[2], S. Simrock[2], A. Napieralski[1]

[1]*Department of Electronics and Computer Science, Technical University of Lodz, Lodz, Poland*
[2]*Accelerator Division, Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany*