

8th International Workshop on Personal Computers and Particle Accelerators

(PCaPAC 2010)

**Saskatoon, Saskatchewan, Ecpcc
5-8 October 2010**

ISBN: 978-1-63266-483-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

License

This work is licensed under a Creative Commons Attribution 3.0 Unported license:
<http://creativecommons.org/licenses/by/3.0/>

You are free to:

Share - Copy and redistribute the material in any medium or format.
Adapt – Remix, transform, and build upon the material for any purpose, even commercially.
The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution – You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

Printed by Curran Associates, Inc. (2014)

Published by:

JACoW - Joint Accelerator Conferences Website
c/o Christine Petit-Jean-Genaz
CERN BE
CH - 1211 Geneva 23

Phone: 41 22 767 32 75
christine.petit-jean-genaz@cern.ch

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Contents

Preface	i
Foreword	iii
Contents	v
Committees	vii
Pictures	viii
WETA01 – Wednesday Welcome by Josef Hormes	p <small>ro</small> e
WETA02 – Wednesday Welcome By Elder Matias, PCaPAC 2010 Chair	p <small>ro</small> e
WERA01 – Control System Studio Workshop Report	p <small>ro</small> e
WECOMA01 – Use of the Cell Accelerator Platform for Synchrotron Data Analysis	4
WECOMA02 – Fast Orbit Correction at the Canadian Light Source	9
WECOMA03 – High-Level Application Protocols	p <small>ro</small> e
WECOMA04 – What's behind an Accelerator-Control-System?	13
WECOAA01 – Tango Collaboration News	16
WECOAA02 – The TINE Control System Protocol: How to Achieve High Scalability and Performance	19
WECOAA03 – FESA3 – The New Front-End Software Framework at CERN and the FAIR Facility	22
WECOAA04 – Employing RTEMS and FPGAs for Beamline Applications at the APS	27
WEPL002 – UVÖ ÄÖ^ç^[]{}^ää^ ^ [\]	30
WEPL003 – The Beamline Experiments Scheduling Software	33
WEPL004 – Accurate Measurement of the Beam Energy in the CLS Storage Ring	36
WEPL006 – Status of the future SPIRAL2 Control System	38
WEPL008 – Settings Management within the FAIR Control System based on the CERN LSA Framework	41
WEPL009 – Integration of Programmable Logic Controllers into the FAIR Control System using FESA	44
WEPL010 – FESA Based Data Acquisition for Beam Diagnostics at GSI	47
WEPL011 – FAIR Timing Master	50
WEPL012 – From an Empty PC to a Running Control System: A KNOPPIX Live-CD for DOOCS	53
WEPL014 – Consolidating the FLASH LLRF System Using DOOCS Standard Server and the FLASH DAQ	55
WEPL015 – An orbit feedback for the Free Electron Laser in Hamburg (FLASH)	58
WEPL016 – Status, Applicability and Perspective of TINE-powered Video System, Release 3	61
WEPL018 – The FERMI@Elettra CCD image acquisition system	64
WEPL020 – EPICS applications in the control of SPES Target Laboratory	67
WEPL021 – Soft real-time control with client/server control system	70
WEPL022 – STARS on PLC	73
WEPL023 – Improvements for Simple Operation at SAGA-LS Accelerator	76
WEPL025 – Control and Timing System Design of CPHS Project	79
WEPL028 – TINE/ACOP state-of-the-art Video Controls at Petra III	82
WEPL029 – Applicability of XAL for ESS	85
WEPL031 – CCCP - Cosylab common control platform	88
WEPL032 – Programming Interfaces for Reconfigurable Instruments	91
WEPL033 – EPICS IOCcore Real-Time Performance Measurements on Coldfire Module*	94
WEPL035 – High Level Matlab Applications for SPEAR3	97
WEPL037 – A Novel Approach for Beam Commissioning Software using Service Oriented Architecture	100
THIOA01 – PC –Based Technologies for Diagnostics, Measurement and Control	p <small>ro</small> e
THRA01 – MatLab Workshop Report	p <small>ro</small> e
THCOMA01 – Progress status for the Petra3 EMBL Beamlines	p <small>ro</small> e
THCOMA02 – synApps: EPICS-Application Software for Synchrotron Beamlines and Laboratories	106
THCOMA03 – Using ezcalIDL to connect to EPICS Channel Access from SHADOWVUI for Dynamic X-ray Tracing	109
THCOMA04 – A simple DAQ system based on LabVIEW, php and MySQL	112
THCOAA01 – Web Services Cyber-Security Issues	115
THCOAA02 – Remote Access to the VESPERS Beamline using Science Studio	118
THCOAA03 – Research Metadata Management at the Australian Synchrotron and ANSTO	121
THCOAA04 – Diamond's transition from VME to fieldbus based distributed control	124
THPL004 – A Discrete Hysteresis Model for Piezoelectric Actuator and its Parameter Identification	127
THPL005 – Automation of the Macromolecular Crystallography Beamlines at the Canadian Light Source	130
THPL006 – Mechanical Vibration Measurement System at the Canadian Light Source	133

THPL007 – Remote Access to a Scanning Electron Microscope using Science Studio	136
THPL008 – CLS User Services Web Portal	139
THPL009 – EPICS Data Acquisition Software at the CLS	142
THPL010 – CLS LINAC Safety System Upgrade	144
THPL011 – FEC in Deterministic Control Systems over Gigabit Ethernet	147
THPL012 – LLRF Control System Upgrade at FLASH	150
THPL013 – Scripting tools for beamline commissioning and operation	153
THPL014 – The ANKA B-Field Test Facility Control System, based on a SPEC Macro Package Enhanced Setup	156
THPL015 – Macro package based Enhancement of SPEC controlled Experimental Setups	159
THPL017 – Study case of a collaboration portal for an international scientific project	162
THPL018 – Development of Image Processing System on Embedded EPICS for Beam Diagnostics	165
THPL020 – Control and Acquisition Software Complex for TBTS Experiments	168
THPL021 – Estimation of the Response Time and Data Flows in the TOTEM DCS	171
THPL022 – Plans for monitoring TPS control system infrastructure using SNMP and EPICS	174
THPL023 – Data Acquisition and Studies of Vibration Motion in TLS Beamlines	177
THPL024 – Computational Strategies in Optimizing a Real-Time Grad-Shafranov PDE Solver using High-Level Graphical Programming and COTS Technology	180
THPL026 – ESS Controls Strategy and Control Box Concept	183
FRIOA01 – Control systems for new large projects	186
FRRA01 – RTEMS Workshop Report	P <small>DF</small> E
FRCOMA01 – ‘WhiteRabbit’ - A novel, high precision timing system	192
FRCOMA02 – FLASH DAQ Data Management and Access Tools	195
FRCOMA03 – Beam Profile Monitoring System for XFEL/SPring-8	198
FRCOMA04 – Embedded Controller for Industrial CT trigger module	201
FRCOAA01 – ITER control system development environment	P <small>DF</small> E
FRCOAA02 – Database-driven Status Analysis in Beam Operation at the Heidelberg Ion Therapy Center	205
FRCOAA03 – Quark: A Dynamic SDLC Methodology	208
FRCOAA04 – Experiment Based User Software	211
FRCOAA05 – Data Acquisition from heterogeneous sensor networks: the case of NEPTUNE Canada, the world largest cabled ocean observatory.	214
FRTA01 – Friday Closeout Presentation	P <small>DF</small> E
FRTA02 – PCaPAC 2012 Announcement	P <small>DF</small> E
Appendices	221
List of Authors	221
Institutes List	225
Participants List	229