

10th International Workshop on Personal Computers and Particle Accelerator Control (PCaPAC 2014)

Karlsruhe, Germany
14-17 October 2014

ISBN: 978-1-5108-2038-8

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. (2016)

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
Committees	iv
Contents	v
Papers	1
WCO101 – Drivers and Software for MicroTCA.4	1
WCO102 – Controls Middleware for FAIR	4
WCO103 – Integration of New Power Supply Controllers in the Existing Elettra Control System	7
WCO201 – Computing Infrastructure for Online Monitoring and Control of High-throughput DAQ Electronics	10
WCO202 – Data Management at the Synchrotron Radiation Facility ANKA	13
WCO203 – Profibus in Process Controls	16
WCO204 – A Prototype Data Acquisition System of Abnormal RF Waveform at SACLA	19
WCO205 – Upgrade of SACLA DAQ System Adapts to Multi-Beamline Operation	22
WCO206 – Sardana – A Python Based Software Package for Building Scientific Scada Applications	25
WCO207 – A New Data Acquisition Software and Analysis for Accurate Magnetic Field Integral Measurement at BNL Insertion Devices Laboratory	28
WPO001 – Integrating Siemens PLCs and EPICS over Ethernet at the Canadian Light Source	31
WPO003 – Setup of a History Storage Engine Based on a Non-Relational Database at ELSA	34
WPO004 – News from the FAIR Control System under Development	37
WPO005 – Progress and Challenges during the Development of the Settings Management System for FAIR	40
WPO006 – FESA3 Integration in GSI for FAIR	43
WPO007 – The FAIR R ³ B Prototype Cryogenics Control System	46
WPO008 – An Extensible Equipment Control Library for Hardware Interfacing in the FAIR Control System	49
WPO009 – An Optics-Suite and -Server for the European XFEL	52
WPO010 – A Unified Matlab API for TINE and DOOCS Control Systems at DESY	55
WPO011 – Vacuum Interlock Control System for EMBL Beamlines at PETRA III	57
WPO012 – The EMBL Beamline Control Framework BICFROCK	60
WPO013 – Status of the FLUTE Control System	63
WPO016 – Magnet Power Supply Control Mockup for the SPES Project	66
WPO017 – IFMIF EVEDA RFQ Local Control System to Power Tests	69
WPO018 – Upgrade of Beam Diagnostics System of ALPI-PIAVE Accelerator's Complex at LNL	72
WPO019 – STARS: Current Development Status	75
WPO020 – Development and Application of the STARS-based Beamline Control System and Softwares at the KEK Photon Factory	78
WPO021 – Renovation of PC-based Console System for J-PARC Main Ring	81
WPO022 – Control System of Two Superconducting Wigglers and Compensation Magnets in The SAGA Light Source	84
WPO023 – Personnel Safety System in SESAME	87
WPO024 – Clients Development of SESAME's Control System based on CSS	90
WPO026 – The Applications of OPC UA Technology in Motion Control System	93
WPO027 – The Measurement and Monitoring of Spectrum and Wavelength of Coherent Radiation at Novosibirsk Free Electron Laser	96
WPO028 – EPICS BEAST Alarm System Happily Purrs at ANKA Synchrotron Light Source	99
WPO029 – Implementation of the Distributed Alarm System for the Particle Accelerator FAIR Using an Actor Concurrent Programming Model and the Concept of an Agent	102
WPO030 – Vacuum Pumping Group Controls Based on PLC	105
WPO031 – Diagnostics Test Stand Setup at PSI and its Controls in Light of the Future SwissFEL	108
WPO032 – Magnet Measurement System Upgrade at PSI	111
WPO033 – Status of Control System for the TPS Commissioning	114
WPO034 – Network Architecture at Taiwan Photon Source of NSRRC	117
WPO035 – BPM Control, Monitor, and Configuration Environments for TPS Booster	120
WPO038 – A Modular Personnel Safety System for VELA based on Commercial Safety Network Controllers	123
TCO101 – Benefits, Drawbacks and Challenges During a Collaborative Development of a Settings Management System for CERN and GSI	126
Contents	v

TCO102 – Eplanner Software for Machine Activities Management	129
TCO103 – Recent Highlights from Cosylab	132
TCO201 – Managing the FAIR Control System Development	135
TCO202 – Status of Indus-2 Control System	138
TCO204 – First Operational Experience of the ICHAOS Framework	141
TCO205 – Conceptual Design of the Control System for SPring-8-II	144
TCO207 – Common Device Interface 2.0	147
TCO301 – Inexpensive Scheduling in FPGAs	150
TCO303 – TestBed - Automated Hardware-in-the-Loop Test Framework	153
TCO304 – Launching the FAIR Timing System with CRYRING	155
TCO305 – TCP/IP Control System Interface Development Using Microchip* Brand Microcontrollers	158
FCO106 – The Role of the CEBAF Element Database in Commissioning the 12 GeV Accelerator Upgrade	161
FPO001 – InfiniBand interconnects for high-throughput data acquisition in a TANGO environment	164
FPO002 – Picosecond Sampling Electronics for Terahertz Synchrotron Radiation	167
FPO006 – Integration of Independent Radiation Monitoring System with Main Accelerator Control	170
FPO008 – LabVIEW PCAS Interface for NI CompactRIO	173
FPO009 – HLS Power Supply Control System Based on Virtual Machine	176
FPO010 – The Software Tools and Capabilities of Diagnostic System for Stability of Magnet Power Supplies at Novosibirsk Free Electron Laser	179
FPO011 – PyPLC, a Versatile PLC-to-PC Python Interface	182
FPO012 – A Real-Time Data Logger for the MICE Superconducting Magnets	185
FPO013 – Beam Data Logging System Base on NoSQL Database at SSRF	188
FPO014 – New Data Archive System for SPES Project Based on EPICS RDB Archiver with PostgreSQL Backend	191
FPO015 – Device Control Database Tool (DCDB)	194
FPO016 – Status of Operation Data Archiving System Using Hadoop/HBase for J-PARC	196
FPO017 – Managing Multiple Function Generators for FAIR	199
FPO018 – Setup and Diagnostics of Motion Control at ANKA Beamlines	201
FPO019 – FPGA Utilization in the Accelerator Interlock System (About the MPS Development in the LIPAc)	204
FPO022 – New developments on the FAIR Data Master	207
FPO024 – First Idea on Bunch to Bucket Transfer for FAIR	210
FPO026 – ADEI and Tango Archiving System – A Convenient Way to Archive and Represent Data	213
FPO028 – Web Based Machine Status Display for the Siam Photon Source	216
FPO029 – Redesign of Alarm Monitoring System Application "BeamlineAlarmInfoClient" at DESY	219
FPO030 – Control System Software Environment and Integration for the TPS	222
FPO031 – Power Supplies Transient Recorders for Post-Mortem Analysis of BPM Orbit Dumps at Petra-III	225
FPO032 – TPS Screen Monitor User Control Interface	228
FPO034 – Beamline Data Management at the Synchrotron ANKA	231
FCO201 – Renovating and Upgrading the Web2cToolkit Suite: A Status Report	234
FCO202 – OpenGL-Based Data Analysis in Virtualized Self-Service Environments	237
FCO203 – Making it all Work for Operators	240
FCO204 – How the COMETE Framework Enables the Development of GUI Applications Connected to Multiple Data Sources	243
FCO206 – PANIC, a Suite for Visualization, Logging and Notification of Incidents	246
Appendices	249
List of Authors	249
Institutes List	253