Table of Contents

Please note that the page numbers appearing here are for citation purposes only. These page numbers do not appear on the CD-ROM but are included in the printed version. When citing papers on this CD-ROM, please use the page numbers from the print version.

Conference Organizations i
Preface iii
Conference Highlights Photo Collection vi
List of Participants x
Acronyms and Abbreviations xvii

How Can Operations Get the Applications Software that They Want?*
R. Bailey 1

Who Gets to Specify the Control System?*
E. McCrory, J-F. Ostiguy and S. Mishra 8

Adaptation of a Synchrotron Control System for Heavy Ion Tumor Therapy*
U. Krause and R. Steiner 14

CICERO: Control Information Systems Concepts based on Encapsulated Real-time Objects*
R. Barillere et al. 20

The Engines that Drive Collaboration*
R. Stevens 29

Using SNMP for Creating Distributed Diagnostic Tools*
O. Reisacher, P. Ribeiro and H.P. Christiansen 50

FDL, a Deterministic 100 Mbytes/sec Data Link*
J. Bovier and J-F. Gilot 57

Using World-Wide-Web for Control Systems
F. Momal and C. Pinto-Pereira 62

The APS Control System Network
K.V. Sidorowicz and W.P. McDowell 68

Panel Discussion on EPICS
W. McDowell 73

The New Generation of PowerPC VMEbus Front End Computers for the CERN SPS and LEP Accelerators Control System*
A. Bland et al. 74

Interfacing to Accelerator Instrumentation*
T.J. Shea 80

Status, Experiences and Trends of Fieldbus Standardization
M. Patz 86

The XC6200 FastMap™ Processor Interface
S. Churcher, T. Kean and B. Wilkie 91

CDEV: An Object-Oriented Class Library for Developing Device Control Applications*
J. Chen et al. 97

Towards a Common Object Model and API for Accelerator Controls
F. Di Maio, J. Meyer and A. Götz 105

An Object-Oriented Approach to Low-Level Instrumentation Control and Support
J.B. Kowalkowski 113

An Object-Oriented Event-Driven Architecture for the VLT Telescope Control Software
G. Chiozzi 121

Gathering Data from the Fermilab Linac Using Object-Oriented Methodology
E. McCrory 128

Distributed Computing Environment in the ESnet Community*
R. Roy Whitney 132

A Server-Level API for EPICS*
J.O. Hill 136

Client-Server Design and Implementation Issues in the Accelerator Control System Environment
S. Sathe, L. Hoff and T. Clifford 142

Automatic Generation of Configuration Files for a Distributed Control System
J. Cuperus and A. Gagnaire 148

The Technical Data Server for the Control of 100 000 Points of the Technical Infrastructure at CERN
P. Ninin et al. 154

Status of ESO Very Large Telescope Control Software*
G. Raffi 162

The Gemini Control System*
R.J. McGonegal and S.B. Wampler 167

The DØ Experiment Significant Event System
S. Fuess et al. 176

Alarms and Limits at the Collider Detector at Fermilab
N.S. Lockyer 181

Beamline Control and Data Acquisition at the Advanced Photon Source*
M. Rivers 184

Overview of Beamline Control and Data Acquisition at ESRF
F. Epaud (On Behalf of the ESRF Computing Services) 185

A Proposal to Move from the LEP Topological to an LHC Functional Control System Architecture*
M. Rabany 191

20 MeV Microtron Control System
J.S. Adhikari, Y. Seth and B.J. Vaidya 197

Control System of the SPring-8 Storage Ring
R. Tanaka et al. 201

Family of Smart Devices on the Basis of DSP for Accelerator Control
A.S. Chepurnov et al. 209

Proton Storage Ring Control System Upgrade--Interim Status
M.A. Oothoudt et al. 217

The Case for Commercial Software*
R.T. Westervelt, R.B. Rothrock and P.N. Clout 223

Integrating the Commercial Software Package LabVIEW with Fermilab's Accelerator Control NETwork*
W. Blokland 226

STATUS of DANTE, the Control System for DAFNE
L. Trasatti 234

The Architecture of Vaccess Version 3.0
M.D. Geib 237

Outsourcing the Development of Specific Application Software Using the ESA Software Engineering Standards: The SPS Software Interlock System
B. Denis 244

Control Theory with Applications to Accelerators*
J.D. Fox and H. Hindi 248

Adaptive, Predictive Controller for Optimal Process Control*
S.K. Brown et al. 249

Digital Feedback System for Orbit Stabilization at the SIBERIA-2 Light Source
A. Batrakov et al. 258

Digital Closed Orbit Feedback System for the Advanced Photon Source Storage Ring
Y. Chung et al. 263

Optimization of Synchrotron Beam Alignment using a Linguistic Control Scheme
R. Pugliese and R. Poboni 269

Software Engineering Techniques in the CERN RD-38 (CICERO) Project*
R. McClatchey et al. 278

Managing an Internationally Distributed Software Project*
R.J. McGonegal and S.B. Wampler 284

The MECCA Source Code Capture Utility
A.M. Waller 293

Writing Easily Portable Code
M.D. Geib 299

Using Software Quality Analysis Tools in the Development of an Equipment Access Library
C.-H. Sicard and O. Walter 305

Development of Operator Requested Control System Applications: Experience with the SLC Control System at SLAC*
M. Stanek 312

What Constitutes a Good Control System for Operations?*
M. Lamont 316

Operational Experience from a Large EPICS-Based Accelerator Facility*
D.J. Ciarlette and R. Gerig 322

The Fermilab Sequencer Use in Collider Operations*
J. Annala 328

The Interface Between Operations and Controls: Brief Summary of the Lunchtime Discussion
R. Bailey 333

PowerPC and High Speed Interconnection Technologies Applied to Distributed Real-Time Data Acquisition and Computing*
J. Bovier and F-H. Worm 335

The Advanced Photon Source Event System
F.R. Lenkszus and R. Laird 345

Evolution in Controls Methods for the SPS Power Converters
A.H. Dinius, J.G. Pett and J.C.L. Brazier 351

Distributed Software Development in the EPICS Collaboration*
L.R. Dalesio et al. 360

Summary of the Workshop on a Software Bus Common to Accelerator and Large Experimental Physics Control Systems*
F. Perriollat 367

Communication in Support of Software Sharing and Collaborative Development
M.J. Knott 370

An Approach to Portable Machine Physics Applications
M. Plesko 376

Doing Accelerator Physics Using SDDS, UNIX and EPICS
M. Borland, L. Emery and N. Sereno 382

Industrial Control Solutions in Research Laboratories*
M. Rabany 392

Experiences with Industrial Controls at DESY and Perspectives
M. Clausen et al. 397

The Control and Data Acquisition of the LHC Test String
R. Saban et al. 398

Use of LabVIEW as Local Supervision for the LEP Cooling and Ventilation Control System
Ch. Bertuzzi et al. 405

Embedded On-line Accelerator Models*
J.A. Holt 413

A Comparative Study of Fuzzy Logic and Classical Control with EPICS
J. Tang and H. Shoaee 414

Open Access Front Ends, Models and Data Acquisition Redirection
K. Cahill 420

Integration of the Modeling Program with Accelerator Control Systems in TRISTAN
A. Akiyama et al. 423

A Fast Feedback System for CEBAF
M.P. Chowdhary et al. 429

Managment of Control System Data in an Object-Oriented Database*
M. Bickley, B. Bowling and S. Witherspoon 435

Mission Critical Database for SPS Accelerator Measurements*
R. Billen et al. 440

A Survey of the Use of Database Managment Systems in Accelerator Projects
J. Poole and P.M. Strubin 446

A History Database for the ESRF Accelerator Control System
E. Taurel 450

SPS and LEP Controls, Status and Evolution towards the LHC Era*
R.J. Lauckner and R. Rausch 457

Commercial Applications of Large Accelerator Control Systems Products*
V. Alferov and A. Vaguine 464

Conference Summary Talk*
W. von Rüden 466

The DØ High Voltage System
S. Ahn et al. 469

Model Based, Detailed Fault Analysis in the CERN PS Complex Equipment
M. Beharrell et al. 474

The Use of ARTEMIS with High-Level Applications
B.A. Bowling et al. 481

New Waveform Surveillance and Diagnostics for the LEP Injection Kickers
E. Carlier, V. Mertens and H. Verhagen 485

An Introduction to Plant Monitoring through the EPICS Control System
J.A. Carwardine 489

Upgrade of the RF Control System in BEPC
H. Cheng, T. Zhai and M. Zhan 497

Computer System for Diagnostic of Electron Beam Using Transition Radiation
A.S. Chepurnov et al. 501

New High Level Application Software for the Control of the SPS-LEP Beam Transfer Lines
F. Chevrier et al. 504

Control of Total Voltage in the Large Distributed RF System of LEP
E. Ciapala and L. Arnaudon 508

Large Scale Experience with Industrial Stepping Motor Controllers and Resolver Read-Out Systems at SPS and LEP
R.J. Colchester et al. 514

Remote Control of a Streak Camera for Real Time Bunch Size Measurements in LEP
A.J. Burns, J.J. Savioz and J.C. de Vries 524

Charging Control System of the Energy Capacitor Storage of the Laser Device Iskra-5
A.N. Gascheev et al. 534

The New Vacuum Control System of the CERN PS Complex
R. Gavaggio and P.M. Strubin 538

Controls Upgrade of the RF Systems of the CERN PS
R. Garoby et al. 543

Experimental Results on the Design for the APS PID Global Orbit Control System
J.A. Kirchman, Y. Chung, and J.P. Bobis 547

New SWIC Scanner/Controller System
W. Kissel, B. Lublinsky and A. Franck 558

Use of an INGRES Database to Implement the Beam Parameter Management at GANIL
P. Gillette et al. 561

The Advanced Photon Source Injection Timing System
F.R. Lenkszus and R. Laird 567

Finite State Machine Data Acquisition at Fermilab
D.A. Herrup, B. Lublinsky and J. Wang 572

Network Server/Consolidator
B. Lublinsky 576

Multiple Alarms, Major Goals and Implementation
B. Lublinsky 580

Development of Device Drivers on Real-Time UNIX for the SPring-8 Storage Ring Control System
T. Masuda et al. 584

Automatic High Voltage Conditioning of the Electrostatic LEP Separators without Conventional Programming
B. Balhan et al. 589

Design of the Beam Orbit Feedback System for the TRISTAN Light Source Study
T. Mimashi et al. 593

Monitoring Commercial Conventional Facilities Control with the APS Control System -The Metasys-to-EPICS Interface
G.J. Nawrocki, C.L. Seaver and J.B. Kowalkowski 598

The Control System Database for the DØ Detector
L. Paterno et al. 602

A Generalized Correlation Plot Package for the CEBAF Control System
D. Wu et al. 607

Database Requirements for the Vacuum Systems of LHC
M. Steffensen and P.M. Strubin 612

Personnel Safety System Status Reporting via EPICS at the Advanced Photon Source
S.J. Stein 615

Data Exchange from Allen-Bradley PLC-Based Systems to EPICS at the Advanced Photon Source
S.J. Stein et al. 620

Magnet Power Supply Controls of the SPring-8 Storage Ring
H. Takebe et al. 625

Fast Bunch Integrator: A System for Measuring Bunch Intensities in the Fermilab Main Ring
J. Utterback and G. Vogel 628

Drift-Chamber Gas System Controls Development for the CEBAF Large Acceptance Spectrometer
M.F. Vineyard, T.J. Carroll and M.N. Lack 633

Software Project for SPring-8 Linac Control
H. Yoshikawa et al. 639

Class Analysis and the Object Model in the KEK PF Linac Console
I. Abe and K. Nakahara 645

Object Oriented API Layers Improve the Modularity of Applications Controlling Accelerator Physics
T. Birke, R. Lange and R. Muller 648

The Self-Describing Data Sets File Protocol and Toolkit
M. Borland and L. Emery 653

Migrating the CERN PS Control System to IBM Workstations
N. de Metz-Noblat 663

Migrating from X-Window Workstations to Windows NT PCs
D.E. Eisert 667

Equipment Manager of the VME Control System for the SPring-8 Storage Ring
A. Taketani et al. 672

Data Format Design for Heterogeneous Environments
M.D. Geib 676

Real-Time Scheduling of Software Tasks
L.T. Hoff 680

Presentation of Data from the Fermilab Datalogging System
I. Ivanov, K. Cahill and B. Hendricks 684

XCON - A Motif Based Toolkit for Graphical User Interface Design for Control Applications
L. Kopylov and M. Mikheev and B. Hendricks 689

A Data Driven Graphical User Interface for Vacuum Control Applications
L. Kopylov et al. 693

C++ Library for Accelerator Control and On-Line Modeling
S. Kuznetsov 698

A Rule-Based Consultant for Accelerator Beam Scheduling Used in the CERN PS Complex
J. Lewis, P. Skarek and L. Varga 703

Good Screen Design
R. Rothrock and V. Martz 707

Object-Oriented Control System Development Using the Smalltalk Language
I. Mejuev, I. Abe and K. Nakahara 713

Code Generation of RHIC Accelerator Device Objects
R.H. Olsen, L. Hoff and T. Clifford 718

Use of an Expert System for Beam Diagnostics
V.M. Rybin and G.V. Rybina 722

Conditioning of the SPring-8 Linac RF System Using Fuzzy Logic
H. Sakaki et al. 726

XUIMS: The X-Window User Interface Management System at CERN
M. Vanden Eynden 733

An Experiment with Electronic Logs
A.M. Waller 739

An Architecture for Intelligent Control of Particle Accelerators
W.B. Klein, R.T. Westervelt and G.F. Luger 746

New Man-Machine Interface at the BEPC
J. Zhao et al. 751

Simulation Using Xorbit with EPICS
K. Evans, Jr. 756

The Acquisition and Display of Beam Profiles
L. David et al. 763

Integrating Industrial Control Systems into the Control Environment of the Technical Infrastructure of CERN
P. Sollander, D. Blanc and A. Swift 770

Data Logging for Technical Services at CERN
R. Martini et al. 775

WWW for Information on CERN Energy Consumption
H. Laeger and S. Lechner 780

Control of VEPP-4M Magnetic System
S. Karnaev et al. 786

The PIAFE Project - Command and Controls of PIAFE Phase 1
S. Albrand et al. (The PIAFE Collaboration) 791

VEPP-4 Control System
A. Aleshaev et al. 799

Control of the QUENCH Protection System at HERA
R. Bacher et al. 805

Controlling Telescope Observations from the Astronomer's Own Desk: The Case of TNG
A. Balestra et al. 808

Status Report of the PSI Accelerator Control System
T. Blumer et al. 814

Control System for an Industrial Accelerator Technological Complex
V.N. Boriskin et al. 821

Controls in the Past Year of ELETTRA Operation
D. Bulfone et al. 823

The New Controls Infrastructure for the SPS
P. Charrue and M.J. Clayton 828

A Versatile Modular Radiation Monitoring System
D. Dale et al. 837

Implementation of PCs in the HERA Control System
P. Duval 843

Using a Public Domain Real-Time Kernel on a VME/Ethernet Based Control System
D.E. Eisert 851

NSLS Beamline Control and Data Acquisition Computer-System Upgrade
S.K. Feng et al. 857

Integration Feasibility of the Existing Linac Control System and Ring EPICS System at KEKB
K. Furukawa et al. 863

A Control System Upgrade of the SPEAR Synchrotron and Injector
R. Garrett et al. 867

Data Acquisition and Management in BEPC
X. Geng et al. 874

The IHEP Accelerator Utilities Control System
S. Goloborodko et al. 877

The TESLA Test Facility Injector Controls
F. Gougnaud, J.F. Gournay, and Y. Lussigonal 881

Accelerator Magnet Control from an SMP Workstation:
S. Herb and H.G. Wu 887

The Control System for HIRFL
T. Huang 890

Design for the Control and Data-Acquisition System for the TAMA300 300m Laser Interferometer
N. Kamikubota et al. 894

Status of the KEKB Accelerator Control System Development
T. Katoh et al. 899

Current Status of the Control System for the PLS 2 GeV Linac
I.S. Ko et al. 903

Control System of Laser for Plasma Diagnostics
I.M. Koltsov et al. 908

Control System of SR Source SIBERIA Commissioning and Future Plans
V. Fransev et al. 910

Distributed Memory in a Heterogeneous Network, as Used in the CERN PS-Complex Timing System
V. Kovaltsov and J. Lewis 915

STAR Controls System
J. Meier et al. 922

A New Approach to Control Systems for Medium-Scale Accelerators
M. Mutoh, Y. Shibasaki and I. Abe 926

Upgrading of the U-70 Complex Controls
V. Komarov et al. 930

Managing an Evolving Control Environment
G. Neu et al. 937

Generalized Control and Data Access at the LANSCE Accelerator Complex -- Gateways and Migrators
S.C. Schaller and M.A. Oothoudt 943

Commissioning and Operation Applications of ELETTRA
M. Plesko et al. 949

Electron Accelerator Control System Based on Radiation-Acoustic Effects
G.F. Popov et al. 954

The PETRA Archive System
W. Schutte 958

Accelerator Study System Based on RISC/UNIX
M. Shirakata et al. 963

Bus and Ring System Interconnections for Data Acquisition and Control
V.I. Vinogradov 970

The Adaptation of Control System Software According to Experimental Characteristic Features at the Pulsed Thermonuclear Installation ANGARA-5.
V.I. Zaitsev et al. 977

Microcontrollers Applications for IHEP Accelerator Control
Yu. Bardik et al. 980

Distributed Signal Multiplexor at Fermilab
C. Briegel and D. Still 983

Application of a TMS320C31 Chip for DSP/Embedded System
S.K. Feng et al. 988

Beam Dynamic Interlock and Beam Abort Triggering Systems of the IHEP Accelerator Complex
V.V. Gotsev et al. 994

A New LAN Concept for LEP Machine Networks: A Step towards LHC
L. Guerrero and P. Lienard 998

CANDIDE: A Fieldbus System to Control Detector Front-End Electronics
W.P.J. Heubers et al. 1007

The Timing System of the IHEP Accelerator Complex
V.V. Komarov et al. 1012

Controller Area Network (CAN)--a Field Bus Gives Access to the Bulk of BESSY II Devices
J. Bergl et al. 1017

A Cost-Effective Way to Operate Instrumentation Using the Motorola MVME162 Industry Pack Bus and HiDEOS
J.B. Kowalkowski 1022

Optic Data Link for Tevatron Synchronization System
A. Mason and V. Rytchenkov 1027

The Integrated High Speed Communication System for IHEP Accelerating and Experimental Complex
B.V. Prosin et al. 1030

High Performance DSP Data Acquisition Engine for Accelerator Instrumentation and Control
K. Woodbury et al. 1035

Integrated Finite State Machine and RF Timing Modules for VMEbus and VXIbus Instrumentation
K. Woodbury and C. McClure 1040

Control System Data Management from an Operational Point of View
B. Dunham 1046

Improvements to Realize a Higher Reliability of the KEK Linac Control System
N. Kamikubota et al. 1052

Experience in the Exploitation of a Large Control System
G. Daems, F. Perriollat and Ch. Serre 1056

Operational Experience with the CEBAF Control System
K. White and D. Kehne 1063

Development of Fast Output VME Modules with External Clocks
E. Takada et al. 1068

Status Report of the HIMAC Control System-- Reliable Beam Supply for Cancer Radiotherapy with Carbon Beam
E. Takada et al. 1074

Author Index 1077

Subject Index

Index by Institution

* Invited Papers