

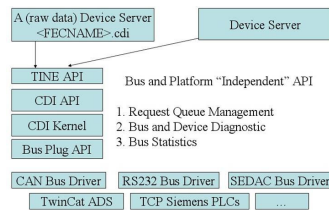
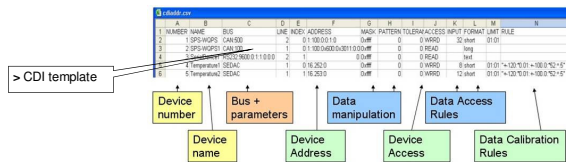
COMMISSIONING OF THE NEW PRE-ACCELERATOR CONTROL SYSTEM AT DESY



R.Bacher, Deutsches Elektronen-Synchrotron, Germany

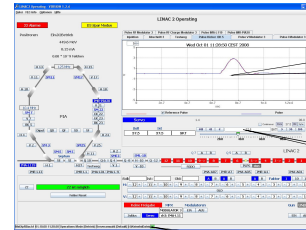
Front-End Electronics and Device Access

- > Implemented device interfaces: CANopen, SEDAC, RS232, SIMATIC PCS7/Ethernet, Beckhoff TwinCAT ADS
- > CANopen:
 - standard for new developments
 - generic controller modules and user-specific boards to connect to user equipment
- > PC104-like systems running embedded LINUX and acting as control system device servers and as CANopen bus master
- > Generic device access with the Common Device Interface (CDI):
 - common interface to all implemented device interfaces
 - integrated interface to TINE control system
 - no coding, devices are registered in database, configuring of bus and device access parameters
 - templates for devices of the same type
 - simple data manipulation parameters (masks, patterns, calibration rules)



JAVA Applications Dedicated for Device Control, Diagnostics and Accelerator Operation

- > Control room applications based on the rich-client model to provide optimum visualization and performance
- > Framework classes for client and server applications to ensure design conformity and to handle initialization data
- > ACOP toolbox for simple data access and rendition
- > Integrated laymen and expert views, integrated web links to help documents
- > Permanent supervision of client-to-server connections and notification of link error to operators



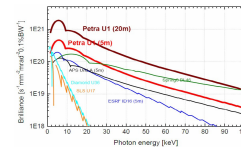
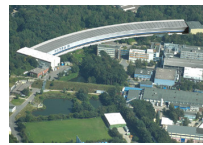
- > Scope-like pulse traces
- > Synchronous with DESY 2 accelerator cycle (6 1/4 Hz)

> ACOP Slider

> Live video image stream

> Status indicator for all client-to-server connections (ACOP Spider)

The PETRA 3 Project



- > High-brilliance 3rd-generation light source
- > Storage ring: E = 6 GeV, I = 100 mA, $\epsilon_{transverse}$ = 1 mm mrad
- > 14 undulator beam lines operated by HASYLAB, EMBL and GKSS
- > Start of beam operation: January 2009
- > Control system:

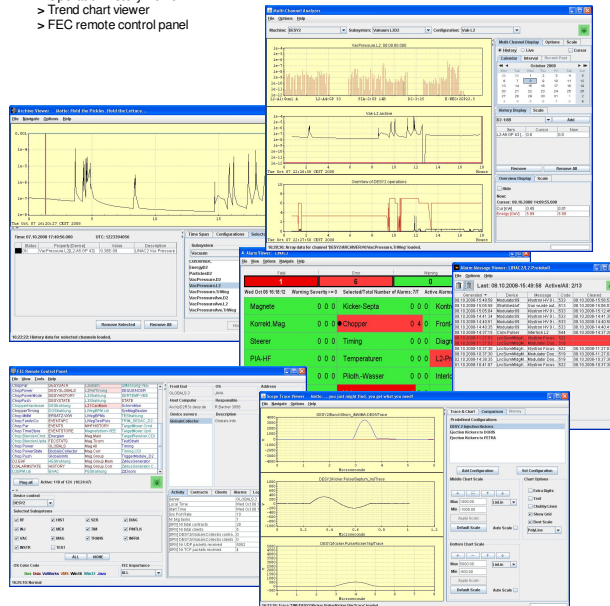
Upgrade of the control systems and attached front-end electronics of PETRA and the electron/positron pre-accelerators LINAC 2 and DESY 2

Save & Restore Tools

- > XML-like templates to describe single accelerator states and sequences
- > Various check and filter methods
- > Routines to compare different accelerator states or to detect differences between set and read-back values
- > Continuous progress and success monitoring
- > Setting of machine state

Generic JAVA Applications

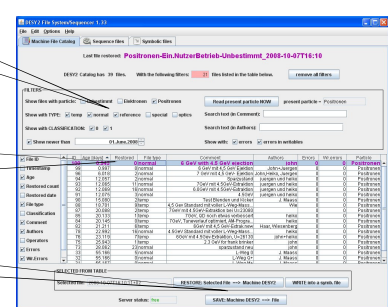
- > Alarm viewers
- > Archive viewers (for time series or event-triggered data structures, correlation plots)
- > Multi-channel analyzer
- > Scope-trace viewer
- > Operation history viewer
- > Trend chart viewer
- > FEC remote control panel



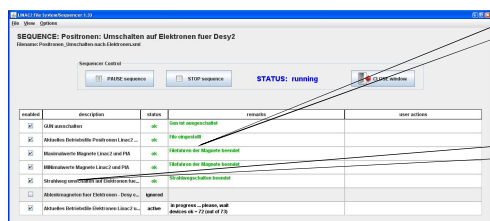
> Filter mask to search for specific machine states

> Link to a template describing a specific accelerator state
> Includes options for data comparison

> Save and restore a specific machine state



> Progress and success monitoring



> List of machine states established and passed sequentially