

The Web2cToolkit: A Framework for Thin Ajaxian Control System Clients

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Outline

- Introduction
- Conceptual design and basic features
- Web2c tools
 - Synoptic display
 - Synoptic display editor
 - Archive viewer

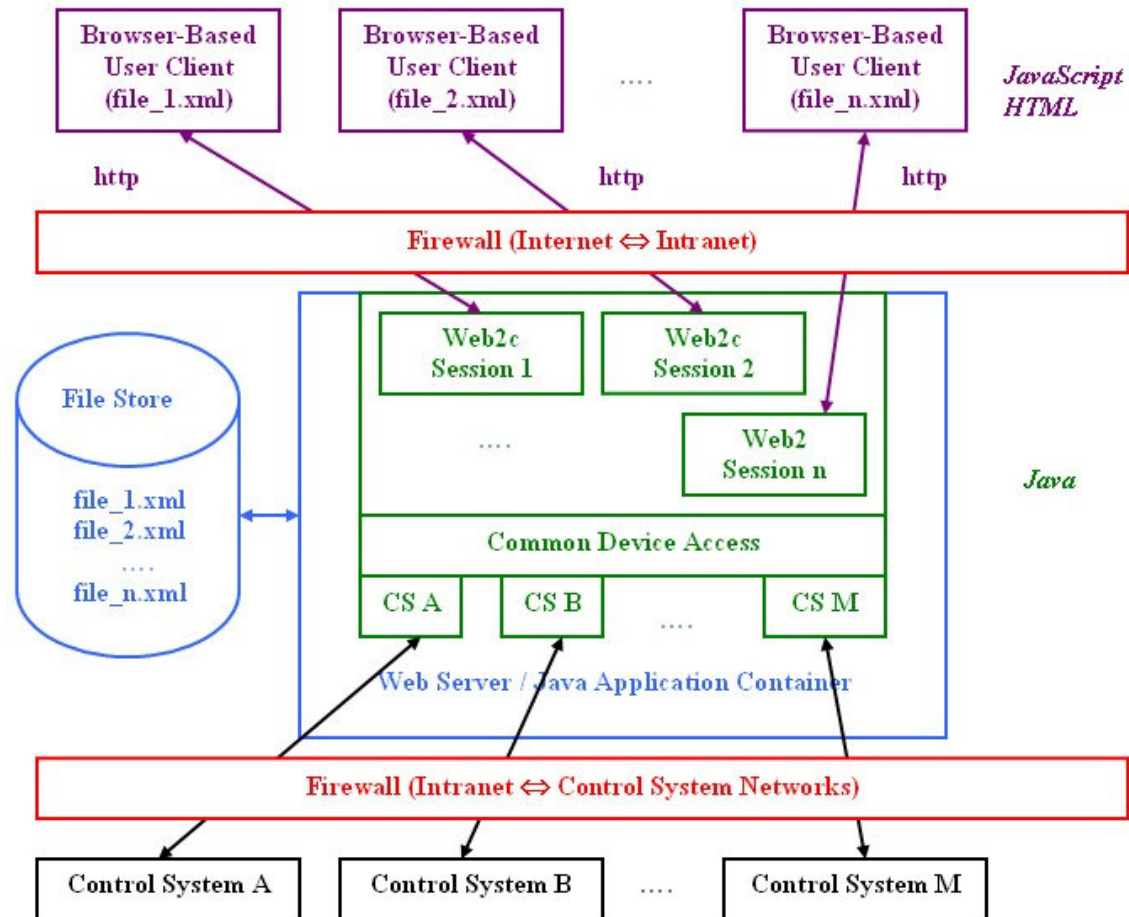
Introduction

- The Web2cToolkit is a collection of web-based tools to configure and visualize customer-specific client applications for accelerator control.
- Web2c applications run as server-side JAVA applications and are published as dynamic web pages to the client browser.
- Web2c applications are platform independent.
- Web2c applications are accessible from every valid network address.
- Web2c applications are not bound to any specific control system implementation.

Conceptual Design

- ***Technologies involved***
 - Server-side:
 - JAVA servlet
 - JFreeChart (for chart generation)
 - Client-Side:
 - AJAX (**A**synchronous **J**avaScript **A**nd **X**ML)
 - HTML
- ***Client-to-server communication***
 - asynchronous, client driven
 - no general re-loading of the complete page
 - through http protocol using XMLHttpRequest / XMLHttpRequest method

Conceptual Design



Basic Features

- **Security**
 - User authentication:
 - user name is checked prior to page download
 - password transmission is encrypted (MD5)
 - only registered users can log in
 - User authorization:
 - user privilege is checked during page generation
 - implemented user roles: layman, expert and supervisor
 - user name is checked against a page-specific list of expert and supervisor names
 - only expert or supervisor users can issue a set command
 - Separation of networks:
 - firewall between internet and intranet
 - firewall between intranet and control system network

Basic Features

- *Communication with attached control systems*
 - through common interface with control-system specific plugs:
 - TINE (native)
 - DOOCS (via TINE gateway)
 - EPICS (via TINE gateway)
 - Tango (via TINE gateway)
 - other native plugs are not yet provided
 - methods to be implemented:
 - monitor (registerMonitor(), getMonitorData())
 - set (execute())
 - history (getHistory())

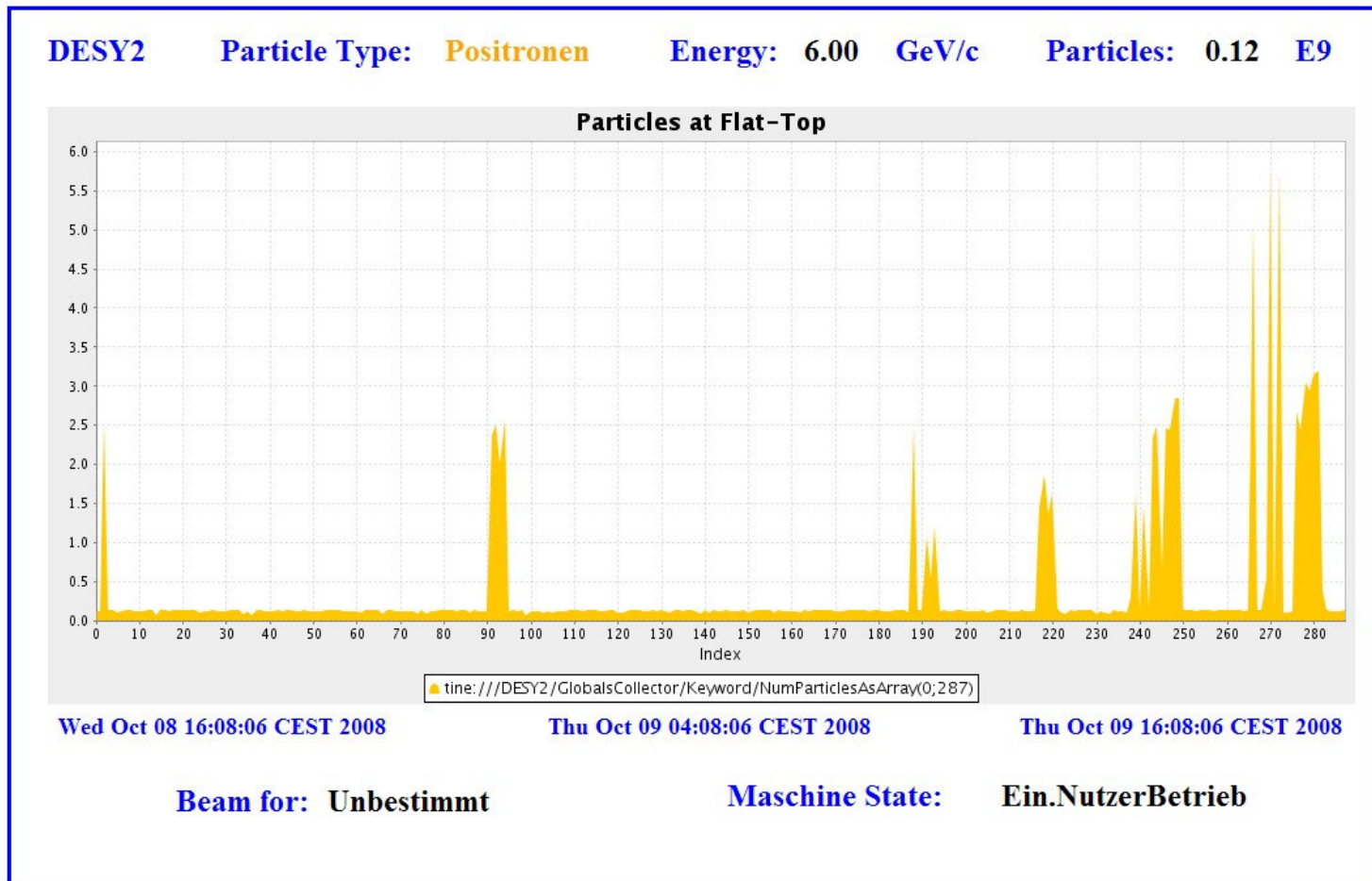
Basic Features

- ***Tested compatibility***
 - Server-side:
 - Apache Tomcat 5.x (Windows, Linux)
 - JAVA VM 1.6.0_xx
 - Client-side:
 - MS Internet Explorer 7.0.x.x (Windows)
 - Mozilla Firefox 3.0.x (Windows, Linux)
 - Safari 3.1.x (Windows)
 - Opera 9.5x (Windows)

Tools

- ***Synoptic Display***
 - frame for simple applications described by configuration file (.xml)
 - page content is periodically updated
 - real-data and simulated-data mode
 - implemented components:
 - Web2cSection
 - Web2cEmbeddedPage
 - Web2cLabel
 - Web2cLabelList
 - Web2cValue
 - Web2cValueList
 - Web2cIndicator
 - Web2cIndicatorList
 - Web2cText
 - Web2cTextList
 - Web2cImage
 - Web2cAnimatedImage
 - Web2cButton
 - Web2cSlider
 - Web2cWheelSwitch
 - Web2cTicker
 - Web2cTime
 - Web2cTrend
 - Web2cHisto

Tools: Synoptic Display



Tools

- ***Synoptic Display Editor***
 - web-based editor to configure synoptic display pages graphically
 - limited WYSIWYG capability at design time
 - “Show Preview” button
 - only experts can modify or save page configurations

Tools: Synoptic Display Editor

Section

- EmbeddedPage
- Label
- LabelList
- Text

Add Component

Remove Component

Attribute	Value
type	Text
section	section1
id	particleTypeText
bounds	888 602 1032 650
tooltipText	Particle type
color	orange
backgroundColor	white
fontSize	medium
fontThickness	bold
border	none
borderColor	black
alignment	center
uri	tine:///DORIS/DOTVDATA

Attribute	Value
type	Text
section	section1
id	particleTypeText
bounds	888 602 1032 650
tooltipText	Particle type
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alignment	center
uri	tine:///DORIS/DOTVDATA

Toggle among components

Reset page

Confirm attribute changes

Show Preview

doris/DORISTV.xml

Save to file

Read from file

Tools

- ***Archive Viewer***
 - web-based form to request data from a control system archive system and to display the retrieved data as a plot chart or a table
 - maximum 3600 data points per chart
 - on-line zooming capability (“optical zoom”)
 - user modes:
 - manual: user selects data channels and time interval
 - automatic: preconfigured data channels and time interval

Tools: Archive Viewer

Data Selection

User-defined selection:

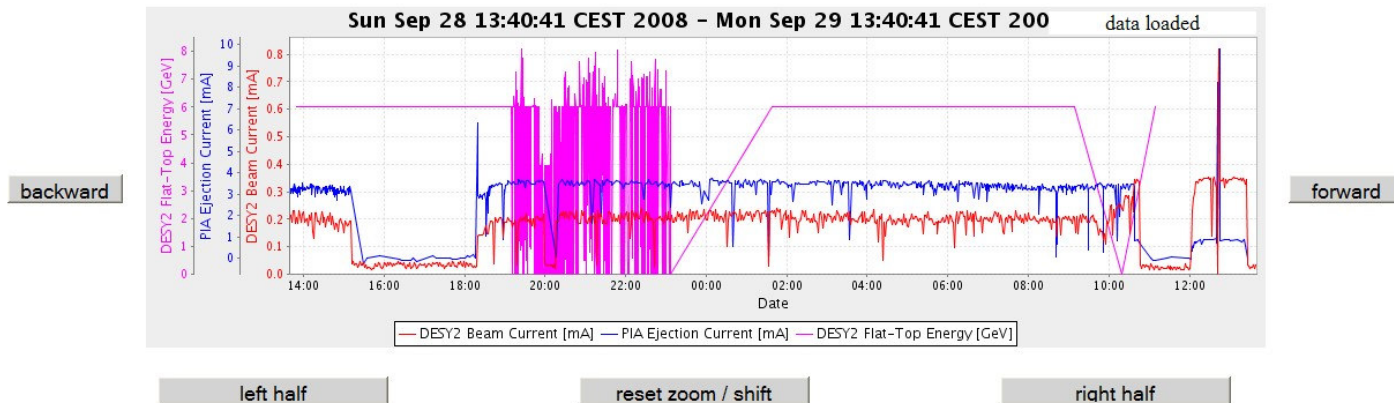
 >> clear selection

Predefined selection: >> clear selection

Time Period Selection

Archive: Year Month Day Hour Minute
 from to clear selection

Live: >> clear selection



Use Cases

- To provide accelerator operation overviews and histories
- To provide beam line information panels
- To visualize the status of the beam line vacuum systems and to control the corresponding devices
- To remotely control beam line experiments
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Documentation

- *Home page*

<http://web2cToolkit.desy.de>