



Renovating and Upgrading the Web2cToolkit Suite: A Status Report

R. Bacher

DESY, Hamburg, Germany

Introduction

The Web2cToolkit is a **collection of Web services**, i.e. servlet applications and the corresponding Web browser applications, including

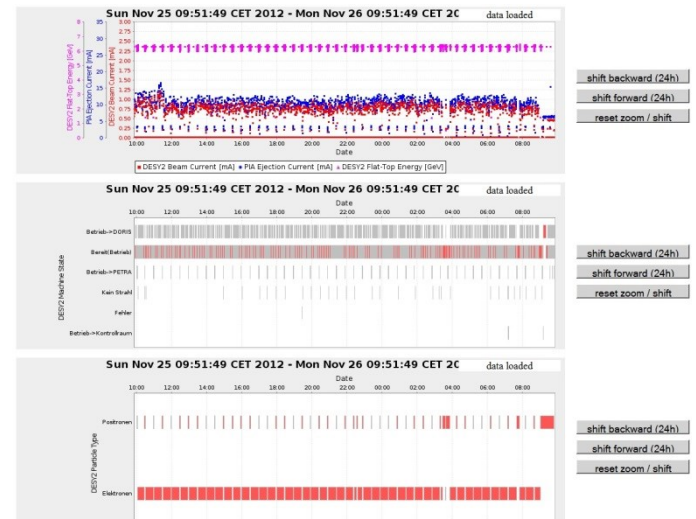
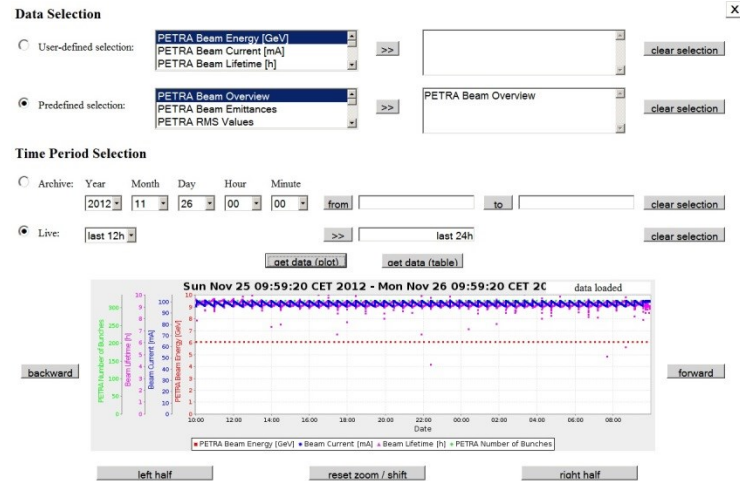
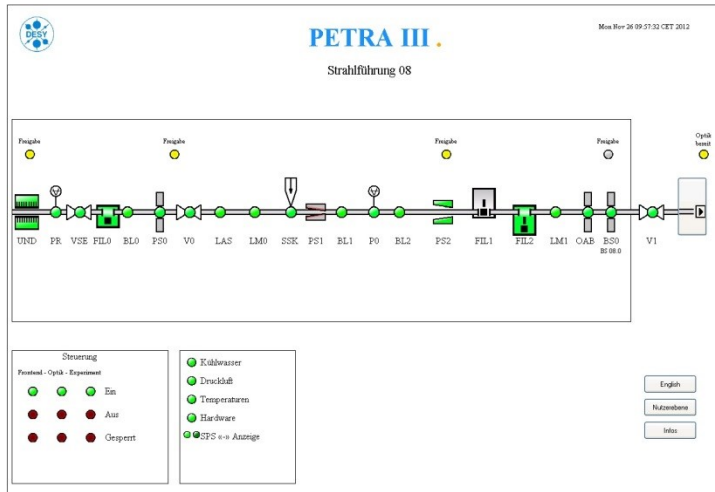
- **Web2cViewer:** Interactive synoptic live display to visualize and control accelerator or beam line equipment
- **Web2cViewerWizard:** Graphical WYSIWYG-editor to generate and configure synoptic displays **NEW**
- **Web2cArchiveViewer:** Web form to request data from a control system archive storage and to display the retrieved data as a chart or table
- **Web2cArchiveViewerWizard:** Graphical WYSIWYG-editor to generate and configure archive viewer displays **NEW**

Introduction (cont'd)

The Web2cToolkit is a collection of Web services, i.e. servlet applications and the corresponding Web browser applications, including

- **Web2cGateway:** Application programmer interface (HTTP-gateway) to all implemented control system interfaces
- **Web2cMessenger:** Interface to E-Mail, SMS and Twitter
- **Web2cLogbook:** Electronic logbook with auto-reporting capability
- **Web2cManager:** Administrator's interface to configure and manage the toolkit
- **Web2cToGo:** Interactive display especially designed for mobile devices embedding instances of all kinds of Web2cToolkit services

Sample Screenshots



Key Features

- **Web application:**
 - Client: Web browser, HTML5, CSS, AJAX, platform independent
 - Server: Web server, servlets, Java
 - Client-Server communication: HTTP / HTTPS, WebSockets **NEW**
 - Single-Sign-On user authentication
 - Role-based user authorization
- **Interfaces to major accelerator and beam line control systems:**
 - TINE
 - DOOCS (EPICS, TANGO)
- **Multi-Modal Human-Machine Interface:**
 - Mouse
 - Touch
 - Speech
 - 3D-Gestures **NEW**

Web2cViewerWizard



Web2cArchiveViewerWizard

The screenshot displays the Web2cArchiveViewerWizard interface, which is divided into several panels. On the left is the 'Configuration file explorer' showing a tree of XML files. In the center is the 'Resource outline' panel. On the right is the 'Attributes of selected configuration' panel. Below these is a 'Data Selection' dialog box with options for user-defined or predefined selections, time period selection, and a data plot. The plot shows 'DESY2 Beam Current [mA]' and 'PIA Ejection Current [mA]' over time. Annotations with arrows point to various parts of the interface: 'Select / Load a Page' points to the configuration file explorer; 'Define Archive Resources' points to the resource outline; 'Preview a Page' points to the top right; 'Configure a Chart' points to the data selection dialog and the plot.

Select / Load a Page

Define Archive Resources

Preview a Page

Configure a Chart

NEW

Improved and Novel Features

- **Secure client-server communication:**
 - HTTPS (SSL/TSL) **NEW**
 - Option: Enforced
- **Multi-Language support:**
 - Unicode compliant characters (UTF-8 encoded) fully supported **NEW**
- **User repository:**
 - user files not overwritten during application deployment, **NEW**
 - version history
- **User-Defined Widget Extension:**
 - API revised
- **User-Defined Interface Plugs:**
 - Control system API revised **NEW**
 - Archive system API implemented **NEW**
 - Video source API implemented **NEW**

Ongoing Developments

- **Web2cToGo:**
 - Supports user interaction by:
 - Mouse actions
 - Single- or multi-finger touch gestures
 - Spoken commands
 - Finger and hand 3D-gestures
 - Still experimental and incomplete
 - Gaze recognition?

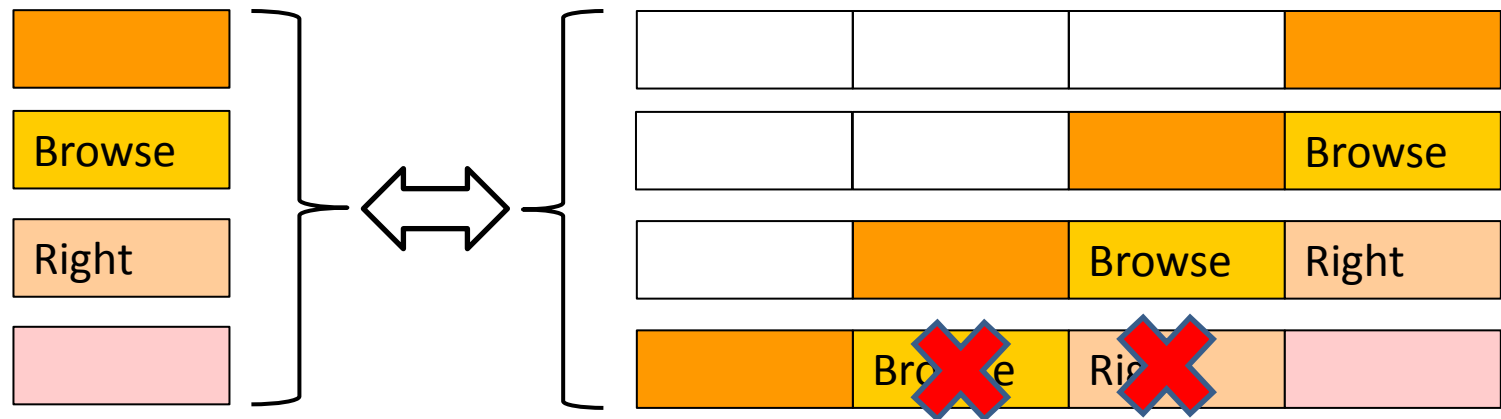
Speech Recognition

- Two stage procedure:
 - Client-side periodic audio recording
 - Server-side speech recognition
 - WebSocket-based client-server communication
- **Continuous recognition, short dead time to avoid double recognition**
- **Almost immediate response**

NEW

Web2cToGo Client: HTML5

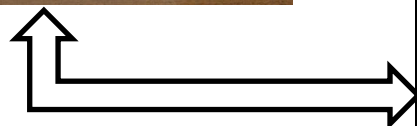
Web2cToGo Servlet: Sphinx



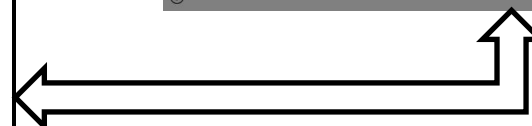
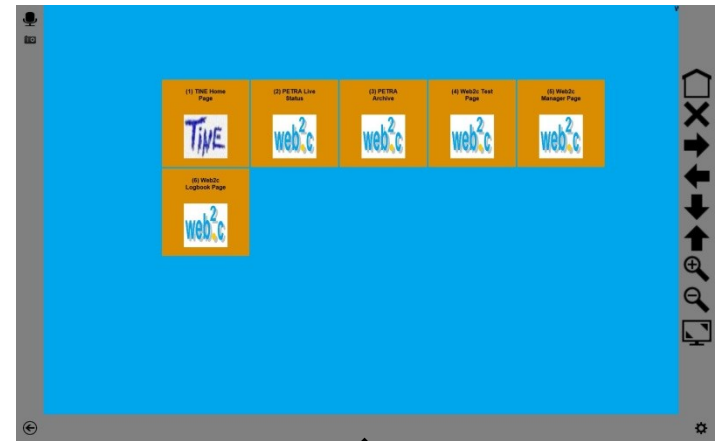
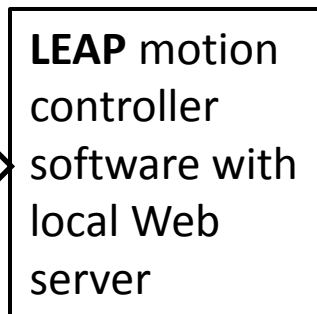
3D-Gesture Recognition

- **LEAP** motion controller
 - Standard gestures: swipe, circle, key-tap, screen-tap, grabbing, fist
 - Extensive API allows for complex user-defined gestures
 - One stage process: solely local client-side gesture recognition

→ **Immediate response**



USB



WebSocket

NEW

Further Reading



<http://web2cToolkit.desy.de>