

LHC Dashboard

Applications on top of the Broadcasting Mechanism

BE Web Development Workshop 2016
Prevessin, 4 October 2016

Eleni Mandilara
BE-ICS-CIC

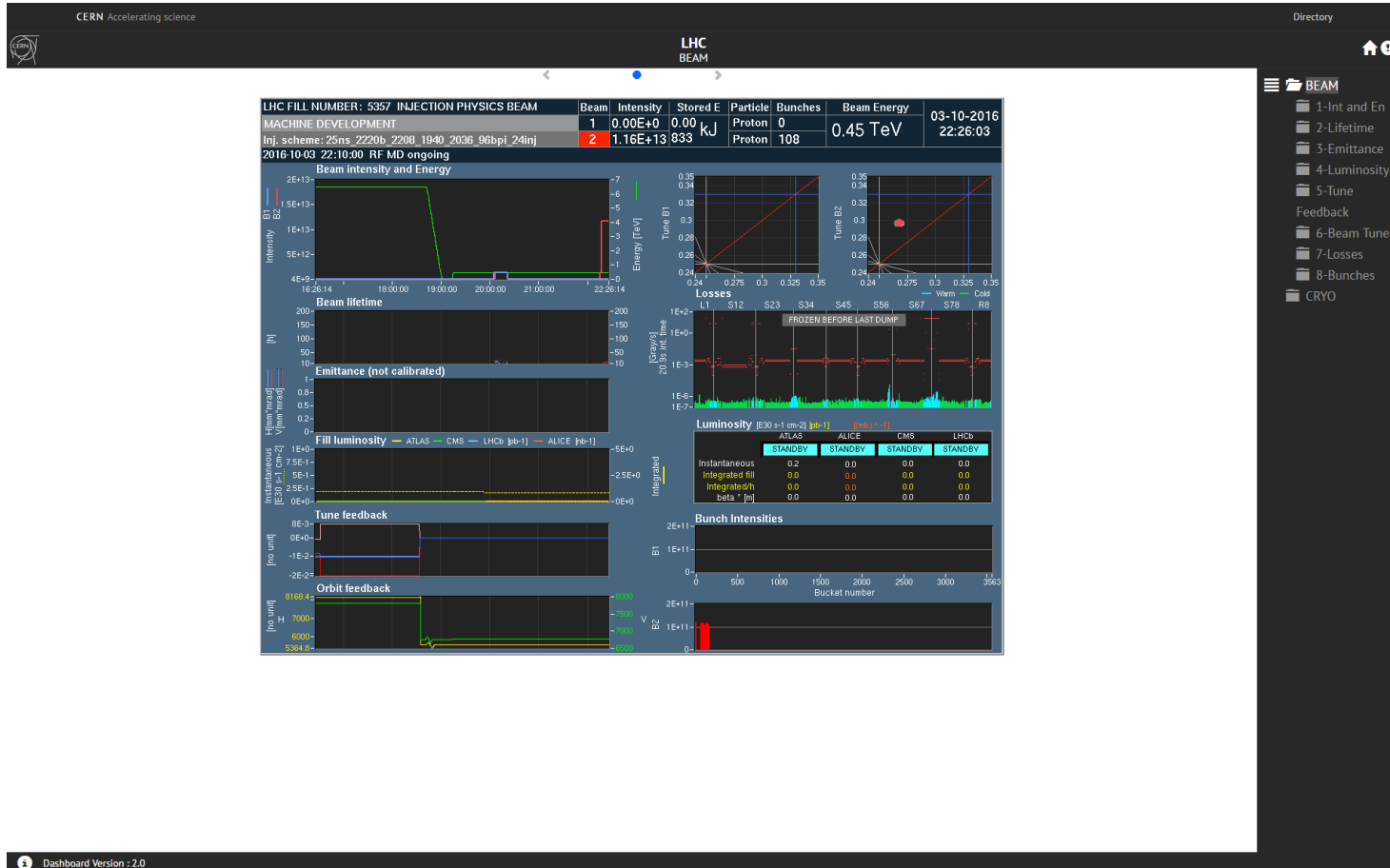


Overview

- **LHC Dashboard**
- **Polymer Web Components**
- **Applications with Web Components**
 - **DIP Web Browser**
 - **MOON Web Browser**
 - **DIP DIM Map**
- **Technologies**

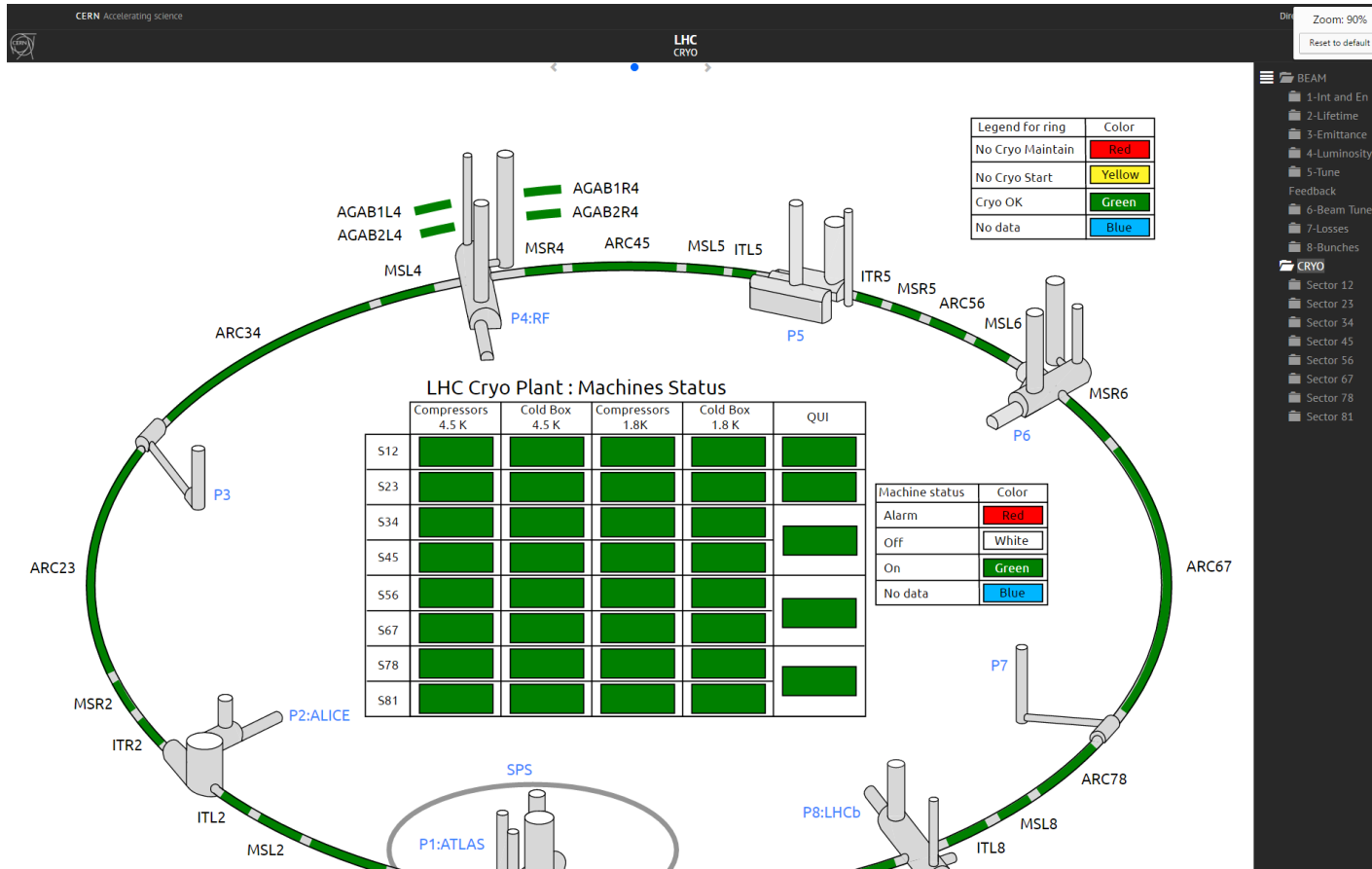
LHC Dashboard

LHC Dashboard (1/3)



<http://dashboard.web.cern.ch/LHC/>

LHC Dashboard (2/3)



<http://dashboard.web.cern.ch/LHC/>

LHC Dashboard (3/3)



<http://dashboard.web.cern.ch/LHC/>

Polymer Web Components

Polymer Web Components

- Set of standards produced by Google as a W3C specification
- Reusable widgets or components
- Encapsulation & interoperability of individual HTML elements
- 4 main elements:
 - Custom Elements
 - Shadow DOM
 - HTML Imports
 - HTML Templates

Reusable components

- Possibility to reuse the same components in other webpages simply by adding HTML tags
- Possibility to create and customize **dashboards on the fly**

DIP Web Browser

DIP Web Browser (1/3)

Motivation :

Easy access to DIP data from anywhere

- Get rid of the trusted machines to run Java DIP Browser → Web browser
- Dependency with Java Runtime libraries and even native libraries (Windows or Linux)

DIP Web Browser (2/3)

- **Composition of four web components**

- **Iron-ajax component**

- Requests the names of all the available publications in DIP

- **Impact tree component**

- Creates the impact tree with all the available publications

- **Broadcast Data Source component**

- Subscribes to broadcast publications and forwards them as DOM events. Updates for:

- **Gridstack component**

- Visualizes data updates received as events from broadcast subscriptions in Gridstack panels.

DIP Web Browser (3/3)

CERN Accelerating science Directory

DIP Hierarchy

Filter

- DIP
- acc
- LHC
- Beam
- BLM
- BLMBCM2
- PostMortemStatus
- PostMortemData
- Timing
- PostMortem

CMS

DIP Web Browser

Publication: dip/acc/LHC/Beam/BLM/BLMBCM2/PostMortemStatus

Quality: Error from device: subscription 'HC.BLMCMS.BCM2/PostMortemStatus/' disconnected

Filter

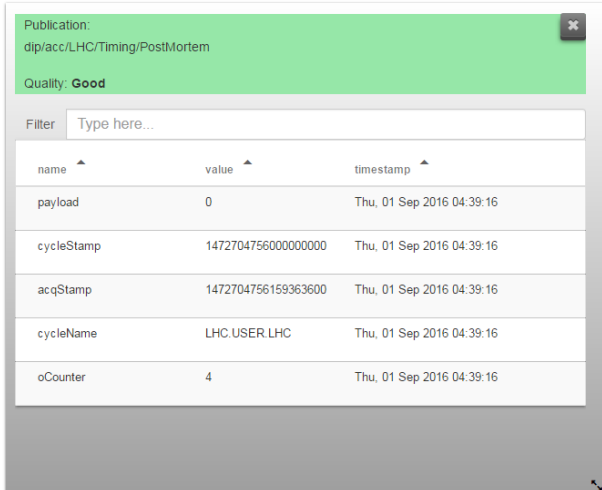
name	value	timestamp
------	-------	-----------

Publication: dip/TNproxy/LHCb/LHC/Handshake/LHCb_ADJUST

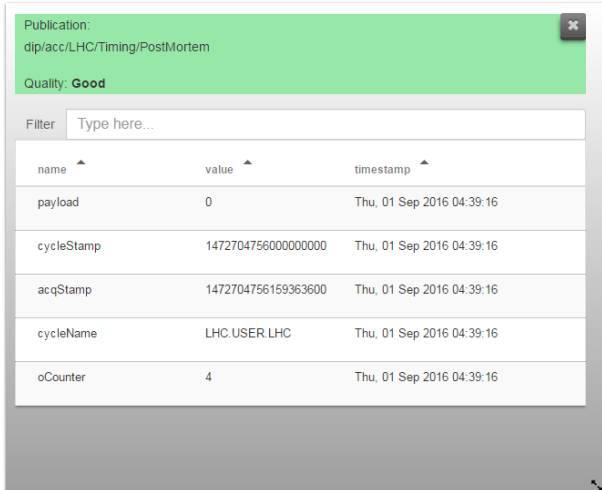
Quality: Good

Filter

name	value	timestamp
cycleStamp	0	Thu, 01 Sep 2016 07:20:24
cycleName		Thu, 01 Sep 2016 07:20:24



Impact Tree



Visualization Panels

- Filtering via external component
- Resizable
- Relocatable
- Tables:
 - Filtering
 - Sorting

<http://dashboard.web.cern.ch/dipbrowser/>

MOON Web Browser

MOON Web Browser

- **Composition of two web components**

- **Broadcast Data Source component**

- Subscribes to Broadcast publications of the OPC-UA and forwards them as DOM events

- **Impact tree component**

- Creates the impact tree with all the available publications

DIP DIM Map

DIP DIM Map (1/4)

○ Application 1

- Visualize the information of all servers in DIP/DIM
- Show the connectivity map of a server
- Show the availability history of a server

○ Application 2

- Visualize the connectivity map of all publishers (e.g. of ATLAS)
- Show a table with the information of this server
- Show the availability history of a server

DIP DIM Map (2/4)

- **Composition of four web components**
 - **Broadcast component Data Source**
 - Subscribes to broadcast publications and forwards them as DOM events
 - **Connectivity Map component (D3.js)**
 - Subscribes to broadcast publications and forwards them as DOM events
 - **Chart component (Highcharts.js)**
 - Creates a chart for the availability history of a publisher in DIP/DIM
 - **Tables component (Material Design Lite & D3.js)**
 - Visualizes data updates received as events from broadcast subscriptions in Gridstack panels.

Technologies

Technologies

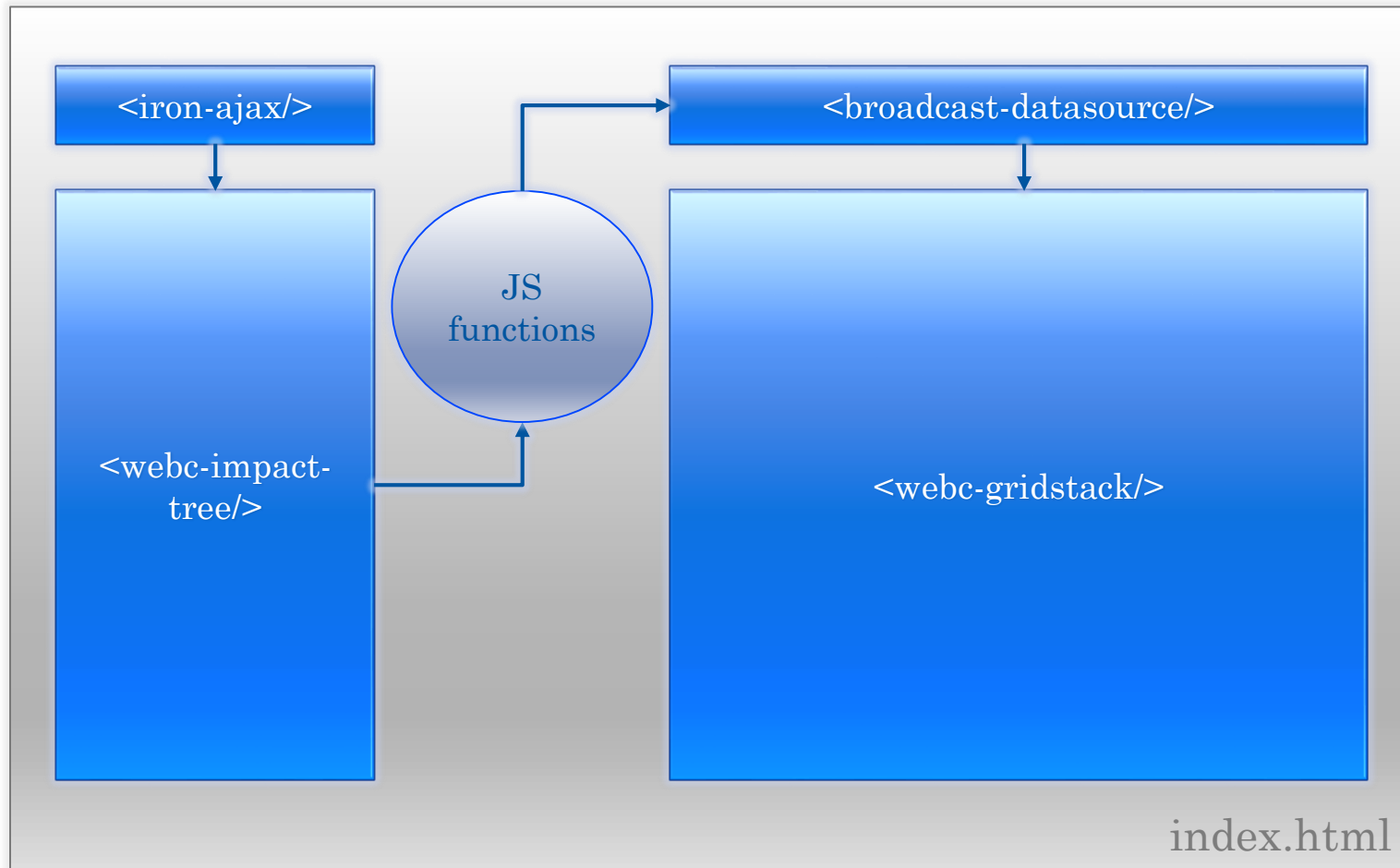
- **Polymer Web Components**
- **D3.js**
 - JS library
 - Manipulation of documents based on data
 - HTML, SVG & CSS
- **Gridstack.js**
 - jQuery plugin for widget layout
 - Drag & drop multi-column grid
 - Draggable responsive bootstrap friendly layouts
- **Highcharts.js**
 - JS charting library
 - Interactive charts
- **Material-Design-Lite**
 - Library of components
 - Material Design (set of design rules developed by Google) look & feel

Thank you, any questions ?



Extra Material

DIP Web Browser



MOON Web Browser

