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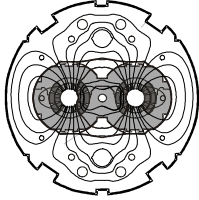
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Functional Requirements

THE WEB FIXED DISPLAYS REQUIREMENTS

Abstract

The required elements for the Web Fixed Display are listed, described and explained here.

Prepared by :

T. Bolshakov, Fermilab
E. McCrory, Fermilab
J. Wozniak, AB/CO

Checked by :

M. Albert, AB/OP
P. Charrue, AB/CO
E. Hatziangeli, AB/CO
M. Lamont, AB/OP
J. Wenninger, AB/OP
D. McGinnis, Fermilab
J. Patrick, Fermilab
E. McCrory, Fermilab
S. Gysin, Fermilab

Approved by:

H. Schmickler, AB/CO
E. Hatziangeli, SL/CO

History of Changes

Rev. No.	Date	Pages	Description of Changes
0.1	22-May-2007	7	First draft
0.2	23-May-2007	7	After comments from J. Wozniak
0.3	29-May-2007	6	After extraction of Architecture into separate document.
0.4	05-Jun-2007	6	Incorporating final comments from Authors

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1. INTRODUCTION AND OVERVIEW

1.1 OBJECTIVES

CERN operators will face a need for remote monitoring. "Fixed Display" applications are routinely used for monitoring in CERN and in many other HEP laboratories. These applications read and visually represent the current state of a variety of aspects of the complex, including hardware devices, synchronization clocks, beam status, etc.

It is anticipated that those Fixed Displays will be written in Java and comply with some a simple set of restrictions. The goal of Web Fixed Displays is to represent those applications on a web page. There will be no user interaction with the application being displayed through this mechanism.

It is anticipated that the Web Fixed Displays will be a web-based Java application used by AB/OP and others in the CERN Control Centre and elsewhere during the commissioning and the operation of the LHC at CERN.

1.2 ABOUT THIS DOCUMENT

First, we present the objectives, the roles and the responsibilities. Then we present the formal requirements. A proposed architecture is discussed in a separate document.

The priorities of the requirements are listed as either "Critical", "Expected." The former means that the application absolutely must have this feature. The latter means that the application should have it, but it will not be necessary in the initial version(s) of the application.

In this document, we use the abbreviation **WFD** for "Web Fixed Display"

2. ASSUMPTIONS, ROLES AND RESPONSIBILITIES

2.1 ASSUMPTIONS

For the sake of these requirements, the following general assumptions are made:

1. The server will be implemented in Java.
2. The WFD client will be implemented as a web page using a technology like Ajax.
3. The web page display of the available web fixed displays will be implemented in Java and served through a standard Java servlet engine like Tomcat.
4. The different web fixed display instances do not need to interact with each other.

2.2 ROLES AND RESPONSIBILITIES

There several intersecting roles in the usage of **WFD**:

1. **General public** – anybody in the World. Should be able to watch the Fixed Displays as Web pages (with some restrictions – the number of possible applications and the traffic may be limited).
2. **Operator** – has some priority with respect to the World for bandwidth for viewing **WFD**.
3. **Fixed Displays Developer(s)** – as the name suggests, the developers of specific WFD instances.
4. **WFD administrator** – manages the WFD index pages by changing the appropriate WFD property files.

3. FUNCTIONAL REQUIREMENTS

The functionality, scope, performance and concurrency of the WFD are discussed and presented in this section.

The requirements are divided into three sections: requirements on the WFD server, requirements on the WFD client and requirements that encompass both the server and the client.

3.1 SERVER REQUIREMENTS

It is imagined that any graphical application can be incorporated into WFD. However, it is assumed that the applications will be Java-base, although this is not strictly required.

Num	Description	Priority
1.10	An existing graphical application shall require no changes in order to incorporate it into the WFD environment.	Critical
1.20	A single configuration file for an application shall contain all the information the WFD server needs to pull in an application.	Critical
1.30	The server shall be able to start several fixed displays and have them run simultaneously.	Critical
1.40	The server shall launch each fixed display in such a way that they cannot interfere accidentally with each other.	Critical
1.50	The server shall save the messages generated from each client using a common logging mechanism.	Expected
1.60	The server shall update the visual representation of a FD at a fixed rate. This image shall represent the current state of the fixed display (if it is dynamic).	Critical
1.70	The update rate of the FD image on the web page shall be configurable.	Expected
1.80	The server shall present up to sixteen different fixed displays.	Critical

3.2 CLIENT REQUIREMENTS

The client is the web page that displays the various fixed displays that the user has selected to be available. This web page should not be overly cluttered or

cumbersome. Each individual web display on the web page should present itself as a small, web displayed image that represents accurately the present state of the application (if it is changing). The user will be able to select the various applications to display on the client web page.

It is imagined that monitoring the grid index page will be the main mode of monitoring and that large, complex individual pages will be opened rarely.

We state these general ideas in the following requirements.

Num	Description	Priority
2.10	The presentation of the available fixed displays shall be in a standard web browser.	Critical
2.20	The presentation of the available fixed displays shall take advantage of the representation from the fixed display and the available screen real estate on the browser.	Critical
2.30	The size and layout of the fixed displays shall be configurable by the user.	Expected
2.40	Small representations of separate Fixed Displays in the index grid shall be readable and shall be as big as possible.	Critical
2.50	The client web page shall be able to launch several fixed displays simultaneously.	Expected
2.60	Client side script should use differences for updating the representation.	Expected

3.3 SERVER AND CLIENT JOINT REQUIREMENTS

Num	Description	Priority
3.10	Static images used in Fixed Displays shall be supported in WFD.	Critical
3.20	WFD shall be designed so that it can be a web-tier component of the proposed Drag and Drop Display and Builder[1].	Expected
3.30	The source code for WFD shall be maintained at Fermilab. When a production release of WFD is created, the source code shall be distributed with the binaries.	Expected

4. DISCUSSION

A companion document, "Architecture of Web Fixed Displays", is being written and will be published soon.

The source code is kept at Fermilab. But a copy is provided with each production release so that emergency repairs can be affected at CERN.

5. REFERENCES

[1] "Synoptic display – a client-server system for Graphical Data Representation", proceedings of ICALEPCS'03, <http://synoptic.fnal.gov>. This has been renamed to

:Drag and Drop Display and Builder” for integration into the AB/CO suite of applications at CERN.