

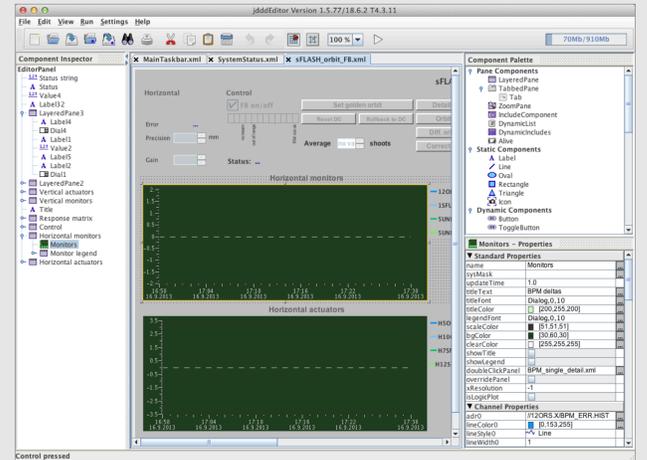
Abstract

jddd, a graphical tool for control system panel design, has been developed at DESY to allow machine operators and experts the design of complex panels [1-5]. No knowledge of a programming language nor compiling steps are required to generate highly dynamic panels with the jddd editor. After 5 years of development and implementing requirements for DESY-specific accelerator operations, jddd has become mature and is now commonly used for graphical controls. The focus meanwhile has changed from pure feature development to new tasks as archiving/managing a huge number of control panels, finding panel dependencies, book keeping/evaluation of panel usage and collecting possible failures in an automatic manner. Therefore technologies of the existing control system infrastructure like **Servlets**, **JMS**, **Lucene**, **SQL**, **SVN** are used. The concepts and technologies to further improve the quality and robustness of the tool are presented in this paper.

What is jddd?

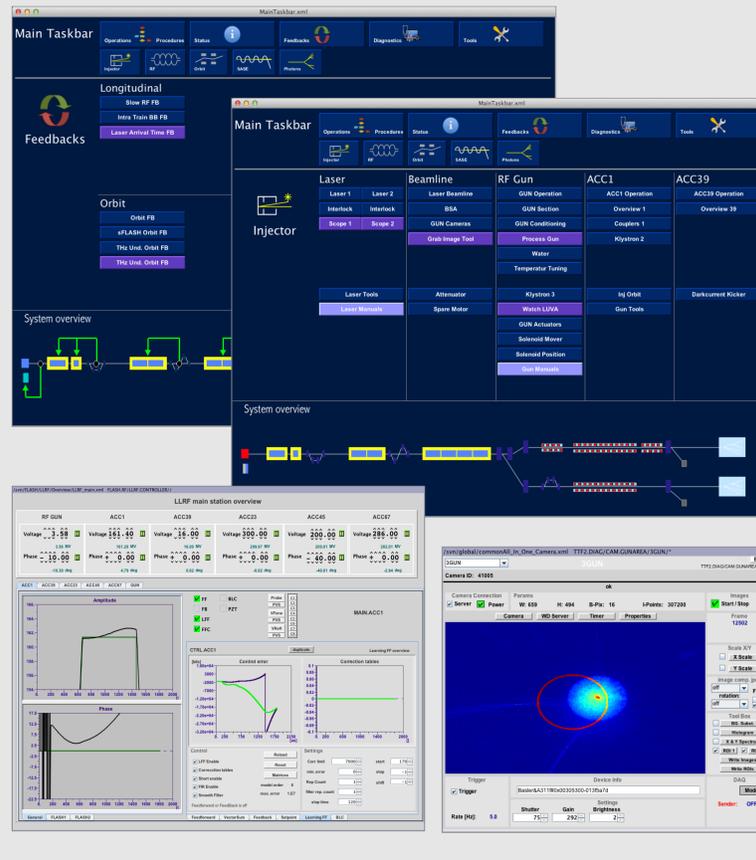
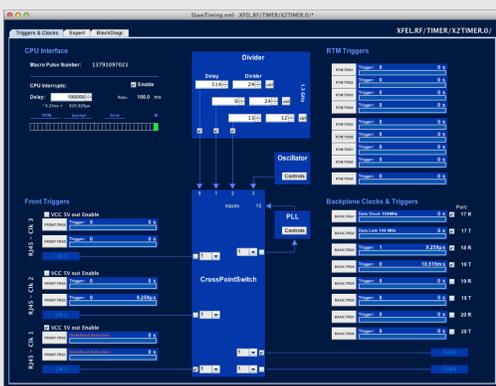
Jddd is a synoptic display editor and runtime engine for control system panels. The editor is designed similar to other standard graphical editors used in NetBeans or Eclipse. It offers many predefined widgets for control panel design. Jddd has an interface which supports many control systems used at Desy: **DOOCS**, **Tine**, **Tango** and **Epics**.

Currently more than 110 people working in different groups at Desy are designing panels with the jddd editor. More than 3600 jddd panels have already been developed, approximately 1100 of them for FLASH (Free-electron-LASER in Hamburg).



Screenshots

- Slave Timing panel (THPPC093 The New Timing System for the European XFEL)
- Main Taskbar operator panel
- LLRF main station overview
- Universal camera display



Evaluation of panel usage

To collect panel usage statistics, the start and stop times of all panels are sent via **JMS** (Java Messaging Service) to an Oracle Database. These time stamps are evaluated using **SQL** and can be retrieved in the "About" dialog of each panel.

This dialog provides **general information** about the jddd display like file path, creation date, author name and description.

The **statistical information** is read from the database:

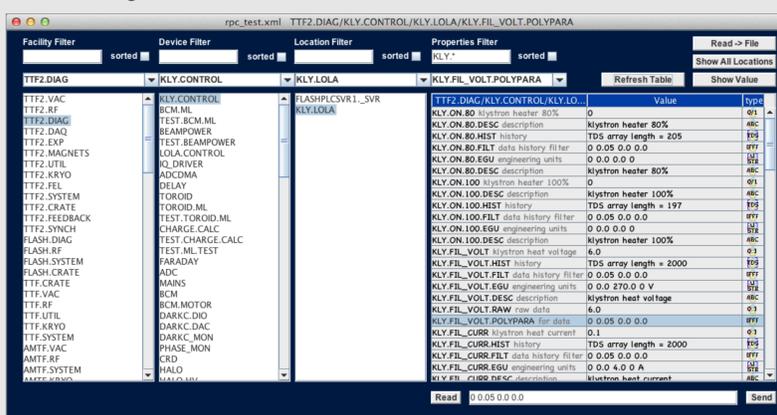
- Number of runs
- Total runtime in hours during the last 365 days
- Date of the last known usage

These data help to find out which panels are no more used at all and can be removed from the file system.



The new control system browser

Jddd provides all widgets needed for a simple DOOCS control system browser. Figure 4 shows a screenshot of this browser. It displays the address structure and allows the setting of single control system values. Regular expression filters help to sort and find a dedicated address. A mouse click on the properties name opens a special display for the value, for example a spectrum or history plot window or a camera image.

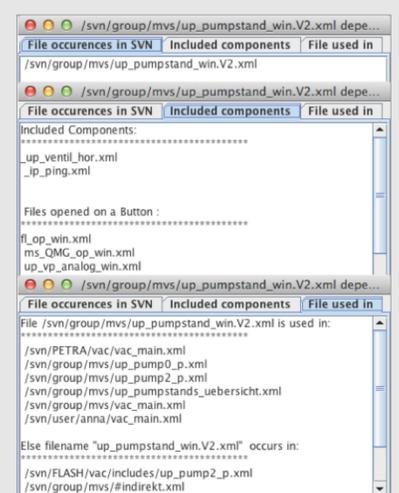


Panel Archiving

All panels are stored as XML files in a central revision control system (Apache **SVN** repository). The text search engine library Apache **Lucene** is used as a powerful file search engine. The search result is provided via a Java **Servlet**.

Lucene indexes not only the file names but also the file dependencies. In the jddd editor a file dependencies dialog is available. It provides all information for a panel designer to check whether a change in a certain panel affects other panels:

- Location(s) of a panel name in the SVN repository
- Filenames of included panels and panels opened on a button click
- Occurrence of filename in other panels



References

- http://jddd.desy.de
- E. Sombrowski, A. Petrosyan, K. Rehlich, W. Schütte, "jddd, a state-of-the-art solution for control panel development", ICALPECS'11, Grenoble, France, October 2011.
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