“jddd” a Java DOOCS Data Display for the XFEL

Editor for a Graphical User Interface of DOOCS & TINE and Runtime Engine

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Content

- Motivation
- The “old” ddd (DOOCS Data Display)
- Considerations about what we need in future
- The new jddd (Java DOOCS Data Display)
  - The jddd editor
  - Reusable components in jddd
  - Special features of jddd
  - How to start jddd
- Experience & Outlook
Motivation

- We don't want to design all panels in the controls group
  - Non-programmers/subsystem experts should develop graphical controls panels

- We already have ddd (C++) since 10 years
  - Synapical displays editor
  - But ddd needs an “update”
The “old” ddd-Editor
ddd Screenshot
Flash: ~ 1300 control panels
UNIX / C++ version:

+ Editor: simple creation of control panels with a set of standard components: text, buttons, graphical components, values, dials, plots, “If”, animated components
+ Control panels are saved in text-files and parsed at runtime
  - Some new editor features are difficult to implement (e.g. undo functionality)
  - Open look library is no longer supported
What we need in Future:

- Keep the good things of ddd: simple Editor
- Editor with modern look&feel and functionality
- Improved components (plots with math functions, ...)
- New components (TabbedPane, ...)
- Platform independence
- More flexible usage:
  - Reuse of displays in other applications
  - Web interface (Applet)
- Convertibility of the old text-files to a new format
jddd implementation:

- Use JAVA
- Standard JAVA technology (Swing, Java Beans)
- Save panels in standard xml file format
- Options for jddd editor:
  - use Eclipse or Netbeans and write Plugins
  - develop a GUI Editor based on the Netbeans visual library

→ we decided to write a completely new editor, because we want to be independent of external libraries and we want to have the highest flexibility
jddd Editor
jddd Editor

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jddd Editor

Component Properties

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 Pane Components:
  - TabbedPane
  - LayeredPane
  - IncludeComponent
  - DynamicList

 Static Components:
  - Label
  - Line
  - Oval
  - Rectangle
  - Triangle
  - Icon

 Dynamic Components:
  - Button
  - Value
  - Dial
  - CheckBox
  - ProgressBar
  - Slider
  - StatusRegister
  - Audio
  - ColouredIndicator
  - LocationChooser
  - CameralImage
  - TextArea

 Logic Components:
  - If
  - Switch

 Plot Component:
  - PlotSpectrum

 New Components
jddd components

Pane Components

TabbedPane
Pane Components

**IncludeComponent**
Library component which can be used in multiple panels

steerer.xml
Dynamic Components

Checkbox
Dial
Slider
ProgressBar
StatusRegister
Dynamic Components

Audio Component
- plays .wav file
- plays dynamic beep
  f(variable in contr. sys)
Dynamic Components

ColouredIndicator
- colour(variable in contr. sys)
Dynamic Component LocationChooser: changes the base address of the whole panel
jddd components

Logic Component
Switch: selects one of multiple layers
jddd components

Logic Component
Switch: selects one of multiple layers

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jddd components

Plot Component
Plots with mathematical functions, autoscale
jddd special features

Special Features:
- Rotated components
- Drag & Drop
- Tooltips
- Layers
- Applet
- Use jddd for high level applications
- Convert old text-files to new xml file format
jddd special features

Rotated Components
Drag & Drop
A control system address can be dragged & dropped from one component to another.
Layers
jddd special features

jddd for high level applications:

1) Export jddd panels as Java source code:
   - Export as JFrame or JPanel
   - Disadvantage: Panels can't be revised with the jddd editor after the export.

2) Use jddd panels as Java Beans:
   - Create a java application and add the following lines to insert a jddd panel as Java Bean:
     jdddPanel panel = new jdddPanel();
     panel.setXmlFile(new java.io.File("/home/ttflinac/jdddFileName.xml");
   - To access components of the jddd panel:
     DOOCOSOval oval1 =
     (DOOCOSOval)panel.getDooCsComponent("LayeredPane1/Oval1");
     oval1.setDooCsFillColor(Color.orange);
Import FLASH Panels

Old ddd panel converted to new jddd panel.
How to start jddd

http://jddd.desy.de/

Java Web Start

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Experience & Outlook

General Experience:
- Java has proved to be a good choice for GUI development
- Java / jdoocs API is fast enough
- Java Webstart works fine

Outlook:
- Replace ddd by jddd as fast as possible
- Save xml-files in a subversioning system
- and many more ideas...

Thank you for your attention!