JAVA Applications for FLASH

Elke Sombrowski,
Patrick Geßler
Content:

- Motivation
- **AlarmGUI**: Display for alarm- and info messages of DOOCS servers
- **jDTool**: Tool to display and change DOOCS values
- **jddd**: Editor for a graphical user interface of DOOCS + runtime engine
- How to start the Java applications
- Experience & Outlook
Motivation:

- We want to develop tools which meet XFEL requirements.
- We present these tools now because we want to get a feedback from the operators.
AlarmGUI

Display for alarm and info messages of DOOCS servers
The old xerror Tool

- server list
- device list
- server log files
- error messages

AlarmGUI

The old xerror Tool

The old xerror Tool is a tool used for monitoring and tracking errors in a system. It provides a list of subsystems, error messages, server lists, device lists, and server log files. This tool is particularly useful for tracking and analyzing errors in complex systems.

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Demands on the new Alarm & Info system:

- Flash: data from ~ 400 servers, ~ 300000 properties → needs a clearly arranged presentation
- Fast display of current error messages: less than 1 second from the occurrence of the error to the notification in the Alarm & Info display
- Display of histories

→ Solution: new Alarm & Info system with Java GUI, Java Message Service for data transfer
XML based Alarm and Info Server Architecture

AlarmGUI

XML backup

Central DOM Tree

Collect thread

JMS Server

Apache Tomcat Servlets

DOOCS device server

Fault

Device IO

Device Info

RPC call for device info

JMS Event & session

JMS Server

Collect thread

JMS

XML Req / resp.

XML

Central DOM Tree

XML device history

XML device history

Alarm and Info server

DOOCS device server

Info

error

status

Queue

Apache Tomcat

Servlets

DOM

Tree

Event& session

Collect thread

Alarm and Info server

JMS

RPC call for device info

JMS

DOM

Tree

XML device history

XML

Central DOM Tree

Collect thread

JMS

XML Req / resp.

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AlarmGUI

AlarmGUI flash movie:

http://ttfinfo2.desy.de/common/applications/AlarmGUI.htm
jDTtool

Java DOOCS Tool

Patrick Geßler

Tool to display and change DOOCS values
The rpc_test:

- Facility: TTF2.VAC, TTF2.RF, TTF2.DIAG, TTF2.DAQ, TTF2.MAGN
- Device: PIRANI_VALVE, PENNING, PUMP_STATION, MASS_SPECTR, LEAK_D
- Location: VMEVAC2_SVR, SPARE, TRANS_TTF, SMES, 1FEED
- Property: LEVEL Pg Threshold, FLOAT, P.HIST data, A_TDS, P.FILT history data filter, IFFF, P.EGU engineering units y-scale, A_USTR, P.pressure, FLOAT, SEDAC PG addr, IFFF, P.POLYPARA set correction coefficient, IFFF, HV_ON_REQ Req. switch HV on, BOOL, HV_ON_FORCE force HV on, BOOL

**Result:** 0.001

Send Value:
- Send Type: FLOAT
- Send Data: DOOCS host=vmevac2 (svr_mask=2 auth=15 opt=0 status=lost)
Demands on a new tool:

- Display of DOOCS data in a tree structure
- Display multiple properties and locations in one table, selection of properties and locations by drag & drop
- Simultaneous change of multiple properties
- Save & Restore of profiles

→ Java Tool with jdoocs as DOOCS interface
jDTool (developed by P. Geßler)

[jDTool screen shot with device tree and table]

device tree

<table>
<thead>
<tr>
<th>Locations</th>
<th>Z_POS_F</th>
<th>CH00_F</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>3GUN</td>
<td>1.125</td>
<td>0.670383</td>
<td>0</td>
</tr>
<tr>
<td>2UBC2</td>
<td>20.548</td>
<td>0.6039057</td>
<td>0</td>
</tr>
<tr>
<td>10DBC2</td>
<td>34.973</td>
<td>0.6781626</td>
<td>0</td>
</tr>
<tr>
<td>1UBC3</td>
<td>64.758</td>
<td>0.6872828</td>
<td>0</td>
</tr>
<tr>
<td>5DBC3</td>
<td>85.59</td>
<td>0.6851599</td>
<td>0</td>
</tr>
<tr>
<td>1TCOL</td>
<td>144.17</td>
<td>0.056933</td>
<td>0</td>
</tr>
</tbody>
</table>
jddd

Java DOOCS Data Display

Editor for a graphical user interface of DOOCS + runtime engine
jddd

The “old” ddd-Editor
**Screenshot**

Flash: ~ 1300 control panels
ddd:

+ Editor: simple creation of control panels with a set of standard components: text, buttons, graphical components, values, dials, plots, “If”
+ Save control panels in CAF-files, CAF-files are parsed at runtime
+ Creation of Finite State Machines
  - Open look library is no longer supported
What we need in Future:

- Improvement of ddd:
  - Editor: simple panel creation, modern look&feel
  - Improved components (plots with math functions, ...)
  - New components (TabbedPane, ...) and functions (drag&drop, ...)
  - Platform independency

- More flexible usage:
  - Reuse of standard jddd panels in other applications
  - Web interface (Applet)
  - Convertibility of the old CAF-files to a new format
jddd implementation:

- Use JAVA
- Standard JAVA technology (Swing, Java beans, xml)
- jddd editor with standard functionality, options:
  - use Eclipse or Netbeans with Matisse layout manager, write Plugins
  - develop a GUI Editor based on the Netbeans visual library
→ we decided to write a completely new editor
jdddEditor flash movie:

http://ttfinfo2.desy.de/common/applications/jddd.htm
jddd improvements:

- xml File format
- New components, improved components
- New Component Inspector
- Align, rotate components
- Undo & Redo functionality
- Drag & Drop functionality
- Layers
- Tooltips
- Applet
- Reuse of jddd panels in other Java applications
jddd improvements

jddd xml File Format:

```xml
<DOOCSLayeredPane name="Editor Panel" bounds="60,5,500,600">
    <border>false</border>
    <fillColor>255,255,204</fillColor>
    <transparent>false</transparent>
    <grid>10,10</grid>
    <DOOCSLabel name="Label1" bounds="95,34,295,55">
        <text>This is a Label</text>
        ..... 
    </DOOCSLabel>
    ..... 
</DOOCSLayeredPane>
```
jddd improvements

New Tabbed Pane:
jddd improvements

New Checkbox

Improved Dial
jddd improvements

New Slider and Progress Bar
New Audio Component
- plays .wav file
- plays dynamic beep

New ColouredIndicator
jddd improvements

New LocationChooser
jddd improvements

New Switch
jddd improvements

Improved plots with mathematical functions, autoscale
jddd improvements

New Component Inspector
jddd improvements

New rotated Components
jddd improvements

New Drag & Drop
jddd improvements

New Tooltips
jddd improvements

New Layers

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jddd improvements

jddd Applet:

http://ttfinfo.desy.de/ttf_apps/jClient:
jddd improvements

Reuse of jddd panels in other applications:

- Draw a DOOCS panel with jddd. This is the jddd thin client.
- Create a new java project and add the following lines to insert the jddd thin client:

```java
private void initComponents() {
    jdddPanel panel = new jdddPanel();
    panel.setXmlFile(new java.io.File("/home/ttflinac/jdddFileName.xml"));
    ...
}
```

- To access components of the jddd panel:

```java
DOOCSOval oval1 = (DOOCSOval)panel.getDoocsComponent("LayeredPane1/Oval1");
oval1.setDoocsFillColor(Color.orange);
```
How to start the Java Applications

In the BKR on Solaris machines:

- Use the start scripts: AlarmGUI, jDTool, jddd
- In ddd: main_select > DOOCS → there are start buttons for the AlarmGUI and the jDTool
How to start the Java Applications

Java Webstart on the DOOCS homepage:
http://ttfinfo2.desy.de/common/applications/index.jsp
General Experience:

- Java has proved to be a good choice for GUI development
- All Java Applications run stable
- Java / jdoocs API is fast enough
- Java Webstart works fine
AlarmGUI:
- Faster history access
- Improve server messages

jDTool:
- works fine

jddd:
- jdoocs API improvements
- Find bugs, improve existing components
- Save xml-files in a subversioning system
- Connect jddd to the DAQ system
- ... and many more ideas
Feedback

Please test the applications, report bugs and provide suggestions for improvements.

Thank you!