User Manual

CODAC Core System Version 6.2 CS-Studio Release

Notes

In CODAC Core System 6.2, CS-Studio 4.6.3 with some ITER specific add-ons has been released.

The purpose of the Release Notes document is to communicate major new features and changes in this release of the CS-Studio as integrated in CODAC Core System 6.2. It also documents known problems and workarounds.

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</tr>
<tr>
<td>Author</td>
</tr>
<tr>
<td>Co-Authors</td>
</tr>
<tr>
<td>Approver</td>
</tr>
</tbody>
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1 Introduction

1.1 CODAC Core System Context

In CODAC Core System 6.2, CS-Studio 4.6.3 with some ITER specific add-ons has been released.

1.2 Purpose

The purpose of the Release Notes document is to communicate major new features and changes in this release of the CS-Studio as integrated in CODAC Core System 6.2. It also documents known problems and workarounds.

1.3 Scope

This document describes CS-Studio 4.6.3 for ITER which includes:

- Operator Interface (OPI) – BOY - that connects to the control system, animates graphical widgets according to EPICS process Variable (PV) value, alarm status/severity and connection/RW status, shows PV’s range and alarm limits definition and allows the operator to interact with the process by providing input data and sending commands,
- Alarm System – BEAST - that monitors alarm triggers in the control system and provides essential support to the operator by warning him of situations that need his attention, showing guidance, allowing him to open dedicated displays, execute commands and acknowledge raised alarms,
- PON Archive System – BEAUTY - that monitors archived EPICS PVs in the control system and provides a graphical user interface for displaying live and historic data in a plot, making some computation, adding annotations and exporting samples into different file formats such as Excel spread sheet or Matlab,
- Electronic Logbook – OLOG - that registers events entered manually or generated automatically during operation to keep track of problems, human decisions or actions which were taken during the course of the activity and which may have had an impact on the outcome of the activity.
- Sequence of EPICS commands automation – SCAN.

From 6.2, full HD resources are frozen and no more maintained – only 4K resources will be maintained and enhanced for each release.

CS-Studio GUI console log file is from now on stored under:
/var/opt/codac/css/css/console.<user_name>.log

1.4 Related documents

[RD1] CODAC Core System CS-Studio User Guide (QVBYD8)
2 New Features

2.1 OPI runtime - The system should target a refresh rate of 300 ms

Based on ITER Human Factors requirements for HMI development (QEDG6L v1.1), the following performance requirements has been applied to OPI runtime:

6.4.4.2.1 The system shall have sufficient response time to provide feedback about the outcome of mimic control operations during or immediately following those operations. The system should target a refresh rate of 300 ms.

If a PV is updated faster than this cycle, it will be throttled.

2.2 Main ITER canvas includes the updated site map

The top level mimics of ITER canvas includes the site map:

![Figure 2-1 ITER Site Map (27X5FM v3.8)](image)

2.3 Simplification of the navigation within mimics

From 6.2, it is possible to reuse the navigation XML configuration in navigation buttons within mimics. Instead of specifying a button action Open OPI, the user can add a Write PV action to loc://$(DID)_LoadNavigation("") with the value specifying which OPI to open – for instance:

/UTIL-HV-S22/boy/ITER-UTIL-HV-S22-BUS7.opi LEVEL=ITER-UTIL-HV-S22-BUS7

To identify where to navigate, the LEVEL information is key. From there, the TITLE, ALARM_ROOT, and any other macros specified in the navigation xml will be automatically retrieved and added.

This new Write PV action is similar to the load faceplate action principle.

2.4 opibuilder.scriptUtil support of PV access security level

OPI runtime relies on the operating system to know the currently logged-in Linux user. Then the operator interface relies on EPICS security layer for PV read and write access authorisation.
PV control widget such as button or entry field behaviour: if the user is not authorised to write into the main PV (specified by PV Name property of the widget), the widget is disabled automatically and appears greyed.

Writing scripts, it is possible from 6.2 to check the authorisation before writing to a PV using PVUtil.isWriteAllowed() new function - if writing a PV is forbidden by EPICS security, an exception is thrown and shown in the console when setValue() is executed.

Example:
```java
importPackage(Packages.org.csstudio.opibuilder.scriptUtil);
importPackage(Packages.org.csstudio.platform.data);

var trigger_pv = pvs[0];
var request_value = PVUtil.getDouble(pvs[0]);

if (PVUtil.isWriteAllowed(trigger_pv))
{
    trigger_pv.setValue(request_value);
}
```

2.5 Trend XY Graph widget primary Y axis scaled according to main PV limits

To avoid having rules that update dynamically faceplate trend Y axis properties according to PV limits, a new option has been added to the XY graph widget.
From 6.2, it is recommended to remove such rules and use the new property `Limits from PV`:

```
- Primary Y Axis (1):
  Auto Scale [ ] yes
  Auto Scale Thresh [ ] 0.0
  Axis Color [ ] IO Input PV Fg
  Axis Title [ ] Value
  Dash Grid Line [ ] yes
  Grid Color [ ] IO Grid
  Limits from PV [ ] yes

- Log Scale [ ] yes
  Maximum 100.0
  Minimum 0.0
  Scale Font [ ] IO Label 3
  Scale Format [ ] 
```

Figure 2-3 Use case with rules updating the scale dynamically

2.6 **New Alarm Tree widget**

The Alarm Tree view has been integrated as a new widget in BOY and in ITER canvas as a new tab in the alarm pane and alarms list OPI. Alarm coding of the alarm tree view and widget is now compliant.
with ITER Human Factors requirements – i.e. alarm icons and alarm background sensitive.

Figure 2-4 Alarm tree widget integrated in the alarm pane

2.7 OPIs Map enhancements

News layouts have been introduced:

- Mosaic view filtered by CBS levels to monitor at once glance the alarm status of the CBS breakdown
- Text dump view for documentation purpose

Figure 2-5 Mosaic view of CBS3 statuses
Figure 2-6 Text view of CBS breakdown
2.8 Databrowser plot Mean and Count values added

In the Properties view of a plot, the Value Axes tab was already displaying the Min and Max of the plotted samples. In 6.2, two columns have been added to show the Mean and Count values too.

Figure 2-7 Plot properties value axes extended mean and count of plotted samples

2.9 css-dbmanager new options to manage databases

css-dbmanager tool helps managing CS-Studio databases such as archive database, alarm database, message history log database and logbook database. It can be used to re-initialise them, save and restore them.

Three new options have been added in 6.2:
- info information on database (row estimate, table size)
- analyze analyze tables one by one (super rdb_user required)
- vacuum vacuum tables one by one (super rdb_user required)

Examples:
# row estimate and table size of the archive database:
$ css-dbmanager -info archive
# update statistics of the alarm database
$ css-dbmanager -analyze alarm -rdb_user postgres -verbose
# vacuum all databases (TCR context with ETL in place)
$ css-dbmanager -vacuum all -rdb_user etl -nopassword
3 Main bug fixes

3.1 CS-Studio image buttons/icons scaling and refresh issues

Many Linux GTK 2 issues have been solved with the update of Eclipse.

3.2 OPI runtime issues and improvements

Loading a faceplate was first loading it without instantiated macro, and then a second time with instantiated macros. The first load has been removed.

Scripts from running OPI are prevented to write error messages in css console – the messages are written only in the Linux console.

Robustness of macros not instantiated in time (Error from pv connection layer) and script failing to be executed when one of the trigger PVs has no value have been improved.

3.3 Databrowser plot issues

Fonts used for the plot axis labels were not the Linux system ones and the Y axis labels were not scaled properly. These issues were fixed in 6.2.

The plot Edit Selected Items dialog allows now to modify any plot property and not just a subset of them.

3.4 Web OPI issues

Many Web OPI, Web Alarm and Web Databrowser issues were fixed, including connectors failing to be displayed on the mimics, navigation buttons not connected to BEAST alarm information, and plot toolbar zoom icons issue.
3.5 Other issues

PV Write log messages from running OPIs now indicate the new value and timestamp as well as the previous ones.

Fixes on ITER canvas including OPIs Map missing macros value, ITER alarm page wrong message history filter and ITER message history wrong filter.

JavaScript Editor unnecessary warning have been removed during css startup.

Exception when importing alarm configuration with automated action and no \texttt{<delay>} attribute specified is now managed and a delay is set to 0 by default.

\texttt{css-dbmanager} failed to restore a PostgreSQL \texttt{pg\_dump}. It is now fixed.
4 Known Bugs and Limitations

- The flash timing of symbols is not synchronised for all flashing states