Memorandum / Note

CODAC Core System Version 6.0 CS-Studio Release Notes

In CODAC Core System 6.0, CS-Studio 4.5.2 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 6.0. It also documents known problems and workarounds.

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1 Introduction

1.1 CODAC Core System Context

In CODAC Core System 6.0, CS-Studio 4.5.2 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 6.0. It also documents known problems and workarounds.

1.3 Scope

This document describes CS-Studio 4.5.2 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.

1.4 Related documents

[RD1] CODAC Core System CS-Studio User Guide (QVBYD8)
[RD2] CSS all in one (BFGP5Q)
2 New Features

2.1 Date & Time ISO Format

Complete syntax of UTC date plus hours, minutes, seconds and a decimal fraction of a second:

YYY-MM-DDThh:mm:ss.ssZ

eg 2018-02-12T12:35:39.45Z

where:

YYY = four-digit year
MM = two-digit month (01=January, etc.)
DD = two-digit day of month (01 through 31)
hh = two digits of hour (00 through 23) (am/pm NOT allowed)
mm = two digits of minute (00 through 59)
ss = two digits of second (00 through 59)
s = one or more digits representing a decimal fraction of a second
Z = UTC time zone designator

Hereafter some examples of date and time format in cs-studio:
2.2 **Linking Container resize behaviour defaulted to "Don't resize anything"**

Human factors require not to resize any area of the screen, particularly the mimic and faceplate area. As a consequence, the Linking Container resize behaviour is now defaulted to "Don't resize anything".

2.3 **The navigation pane repeats the last level of mimic buttons**

To avoid using the global navigation to go up and then go down when the mimic navigation is empty, the last level of mimic buttons is repeated with the shown level disabled.
2.4 Alarm acknowledge button action

The alarm control pane or faceplate includes an ACKNOWLEDGE and DISABLE buttons. The syntax used is

beast://<full_path_to_alarm_pv>.Acknowledge
beast://<alarm_pv>.Acknowledge

Figure 2-4 Alarm Faceplate to Acknowledge and Disable an alarm

The syntax used is

beast://<full_path_to_alarm_pv>.Acknowledge
beast://<alarm_pv>.Acknowledge

Figure 2-5 Example of a full path beast:/// to an alarm PV

2.5 BOY folders reorganisation in order to use only 1 canvas

CODAC provides under boy/templates a generic canvas that can load dynamically the plant system I&C mimics according to a new BOY folder organisation:

m-<I&C Project Software Unit>/boy (shortcut in development - folder at runtime)

and

m-<I&C Project Software Unit>/src/main/boy

- ITER opi (shortcut)
- SymbolLibrary (shortcut)
- templates (shortcut)
- faceplates
- pictures
- scripts
- navigation
- ITER.xml (shortcut at runtime)
- ITER-CBS1.xml
- ITER-CBS1-CBS2.xml
- ITER-CBS1-CBS2-CBS3.xml

- mimics
- pictures
- scripts
- ITER-CBS1_Mimic opi
- ITER-CBS1-CBS2_Mimic opi
mvn migrate will re-organise automatically exiting projects.

If control widgets within a mimic are used to open a new mimic, then the OPI to be opened shall be the ITER canvas and the macro MIMIC_FILE shall specify which mimic has to be loaded by the canvas:

```
<widget typeId="org.csstudio.opibuilder.widgets.ActionButton" version="2.6.0">
  <actions hook="false" hook_all="false">
    <path>../ITERopi/path</path>
  </actions>
  <macro>
    <include_parent_macros>True</include_parent_macros>
    <MIMIC_FILE>minics/ITER-CTRL-SUP-B0Y-L1B-FLUID_Mimic</MIMIC_FILE>
  </macro>
</widget>
```

Figure 2-6 Action Button to load a specific mimic

Note: if the mimic to load belongs to a different CBS level, then the macro ALARM_ROOT and LEVEL shall be specified too.

### 2.6 Javascript Editor

A new fast Javascript LiClipse editor has been integrated in cs-studio with syntax highlighting and autocompletion.

![Figure 2-7 Javascript Editor in CS-Studio](image-url)
2.7 CS-Studio online Help

CS-Studio online help is now opened using the default web browser.

2.8 Operator PV Write from BOY are logged

It is now possible to check in the message history the last PV Write executed though the operator interface.

2.9 css-dbmanager utility improvement

During the init and restore phases, previously used disk space is reclaimed immediately, rather than requiring a subsequent VACUUM operation.

2.10 Symbols Library Update

Valves, motors, pumps, fans, heaters and dampers symbols states have been standardised:

0 Closed/Off (white body)
1 Open/On (grey body)
2 Opening/Starting (flashing grey)
3 Closing/Stopping (flashing white)
4 Half-open/Travel position between 0% and 100% (white/grey)

The size of the damper symbol has also been reduced – it fits now the valve and pump symbols size:

Before

Updated symbol

The symbols library has been extended for CODAC components as well:

Figure 2-8 Main symbol states

Figure 2-9 Updated damper symbol

Figure 2-10 CODAC symbols for monitoring and control
In addition to new and updated symbols, the piping coding has been extended to gas and fluid.

![Gas and Fluid piping coding]

**Figure 2-11 Gas and Fluid piping coding**

### 2.11 Bigger icons on 4k operator terminal

At runtime, alarm icons and tick box for acknowledgement are bigger by a factor x 2. During edition, most of the icons are bigger too.
3 Main bug fixes

3.1 css-dbmanager save/restore issue with logbook entry attachments

Logbook entry attachments were not saved and restored properly. It has been fixed.

3.2 Create Log Entry >> Details bar was too small on 4k configuration

The entry form has been adjusted for 4K operator terminal.

3.3 OPI Editor zoom issue on connector

Connectors displayed properly with a zoom of 100% started to become invisible when zoom factor was increased to 150%. The issue has been fixed.

3.4 Connectors issues

Many issues have been fixed regarding BOY connectors.

3.5 Clicking on empty space in a faceplate will select another object from the mimic

It has been fixed.
4 Known Bugs and Limitations

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

This issue will be solved for the next release.

4.2 The archive engine runs out of memory

The archive engine allocates one ring buffer for each PV -

\[
\text{memory buffer for each PV size in number of samples = } \frac{\text{buffer\_reserve} \times \text{write\_period}}{\text{estimated\_time\_period}}
\]

with \(\text{buffer\_reserve}=2\) and \(\text{write\_period}=30\ \text{seconds}\)

At startup time, it can runs out of memory as the default JAVA settings are:

-\(\text{-Xms64m}\)
-\(\text{-Xmx256m}\)

With:

-\(\text{-Xms}\) set initial Java heap size
-\(\text{-Xmx}\) set maximum Java heap size

which means that the maximum memory for JAVA is 256 MB.

The solution is to alter the default JVM launch configuration and increase the parameters in the startup scripts to:

-\(\text{-Xms128m}\)
-\(\text{-Xmx512m}\)

The default settings are defined in:

\[/opt/codac/css/archive-engine/archive-engine.ini\]

root privileges or sudo rights are required to make the change.