CS-Studio & Phoebus Status
CS-Studio Collaboration

14 Sites which package site specific CS-Studio products

Additionally, many users who do not create their own products.
CS-Studio 4.6 requirements

“When it works, I like it.”

“right click -> send PV name to another plug-in saves me a lot of time”
“I like the concept of a well integrated set of tools that can share data.”
“Integration of the olog, channel navigator, and chart/archiver features are useful.”
“Everything in one place”
“Easy to create GUI’s that interact with EPICS PV’s”

“When it does not work, I hate it.”

“slow, clumsy, hard to understand”
“BOY leads to crashes way too often”
“I am having real problems building our own CSS distribution starting from Eclipse Mars RC2”
“Big labs seem to have their experts but I’m under the impression that smaller labs are struggling and so am I when "my expert" is not available.”
“Spend a long time to start a product in Eclipse and Export it.”

Feedback link:
https://docs.google.com/spreadsheets/d/11_nw2OiSJO4Zs71UJ5vD-SRLrHvmd__NjbFEzk_6js/edit#gid=0
CS-Studio 4.6

Summer 2019

Upgrades to the underlying infrastructure
  • OpenJDK 11.0.2
  • OpenJfx
  • Eclipse 2018-12

Phoebus framework
  • Development of phoebus services and new core modules
  • phoebus & eclipse integrations

New Application features and Bug fixes
“Phoebus”

• Phoebus (Greek for “bright”)
  As we step out of the shadow of Eclipse

To improve user experience
• A framework for well integrated control system tools and software

To reduce the barrier of entry for new developers
• A simple Build
• A development environment that is easy to setup and use
• Use generic tools and technologies available as part of the Java ecosystem
June 2019: CS-Studio on eclipse & phoebus

CS-Studio, 2010  Since ~2016  2019

- BOY
- Data Browser
- PV Tree
- Probe
- PV Table
- Alarms
- Channels
- Scan
- ... more ...
- Eclipse
- Java 8

- Display Builder
- Data Browser
- PV Tree
- Probe
- PV Table
- Alarms
- Channels
- Scan
- ... more ...
- Eclipse
- Java 9,10

- SWT
- JavaFX

- Java 8
- Since ~2016
- Java 9,10
- 2019

- BOY
- Data Browser
- PV Tree
- Probe
- PV Table
- Alarms
- Channels
- Scan
- ... more ...
- Eclipse
- Phoebus
- Java 11

- Display Builder
- Data Browser
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- BOY
- Java 11
Fast & Simple Build

# clone the sources
git clone https://github.com/shroffk/phoebus.git

# build using maven
mvn clean install

# or build using ant
ant clean run

Eclipse build:  30+ mins
Phoebus build:  ~3 mins
Less code

Phoebus based Channel Finder Tree w/t Lazy loading 4.5k Loc

Eclipse based Channel Finder Tree w/t Lazy loading 11.2k Loc
Better Performance

Phoebus: ¼ CPU, ½ Memory

CS-Studio with Eclipse
SWT vs. JavaFX

SWT used to be better than AWT

AWT/Swing caught up,
SWT now only used by Eclipse

➤ JavaFX is the latest Java-based UI
Development Activity

June 2018 to June 2019

https://github.com/ControlSystemStudio/cs-studio
• Issues 116 closed and 42 opened

https://github.com/shroffk/phoebus
• Issues 476 closed and 30 opened
ITER
European Spallation Source (ESS)

- Display Builder is the preferred OPI tool at ESS with existing BOY screens imported or manually upgraded.
- Display Builder essentially JavaFX-based.
  - Integration with SWT-based application like eclipse cs-studio has unwanted side effects.
- ESS will gradually migrate to Phoebus-based CS Studio applications, strong focus on Display Builder (edit mode and runtime).
  - Key driving factor is improved performance in Phoebus-based CS Studio applications.
- Current work includes migration of save-and-restore application to Phoebus
  - UI in Phoebus is a port of current save-and-restore in CS Studio, with some improvements and bug fixes. Adding a new Phoebus-based application is very easy.
save set application
Engineering Controls
- Created by controls engineers, each working on a specific system

Physics Pages
- Designed by a small number of people, prior to commissioning

Operations Controls
- Created by ‘operations controls’ (former operators) and current operators
SNS Accelerator

• RCP CS-Studio on 32 bit Linux for alarms & archive access (Displays: EDM)

SNS & HFIR Beamlines

• 21 Beam lines on CS-Studio for displays, archive, alarms, automation
ALS at LBL

• Building an ALS phoebus product

• Converting edm screens and created new opi screens using phoebus
ALS at LBL
Phoebus beyond EPICS

• Builds on MQTT support
• Custom Additions:
  • PV Name Completion
  • Context menu entries
  • Widgets

• Contributed numerous bug fixes to common repository!

Status: Evaluating, ~10 000 PVs

Pavel Charvat,
https://sourceforge.net/u/pavel-ch/profile/
https://github.com/pavel-ch
CS-Studio Developers meeting
Aix-en-provence 2019

• Meeting Highlights
  • *UI testing using Testfx*
  • *Java modules*
  • *Cs-studio product packaging*
    - *embedded jdk*
    - *eclipse + phoebus applications*
  • *EPICS 7 support*
    - *handling structured data*
    - *epicsJava libraries*

• Meeting Minutes :
  [https://docs.google.com/document/d/1lyfA1ZaL1xfFpJ972TTI2r_n4--V7tJuzLhp53ZOOg/edit#heading=h.7jjdypltu4f](https://docs.google.com/document/d/1lyfA1ZaL1xfFpJ972TTI2r_n4--V7tJuzLhp53ZOOg/edit#heading=h.7jjdypltu4f)
C-Studio using Eclipse & Phoebus

Minimize the disruption

• The migration from eclipse to Phoebus will be a multi year process
  • Each application will be migrated individually.
  • Both the eclipse and phoebus based applications will be supported by the cs-studio community.
  • Each site will have the flexibility to define their time lines
Moving from Eclipse to Phoebus
*A easy transition*

The Phoebus applications can be packaged with the existing eclipse applications into a single CS-Studio product.

Developers can package the appropriate versions of each application to satisfy their site needs.
Phoebus Integration in Existing eclipse products

Launch various phoebus applications via CS-Studio menu or toolbar actions
Phoebus Integration in Existing eclipse products

Launch various phoebus applications via CS-Studio context menu

The phoebus application is launched with the selection data.
Phoebus Integration in Existing eclipse products

phoebus applications can be registered as the editors for cs-studio configuration files like .opi, .bob, .plt
Phoebus Integration in Existing eclipse products

“Open Phoebus” action

BOY actions buttons, menu buttons, other widgets can open resources in cs-studio phoebus applications.
Phoebus Integration

Under the hood

• `org.csstudio.phoebus.integration`
A plugin which provides a service with methods for launching CS-Studio phoebus applications from inside existing CS-Studio/eclipse products
How to Contribute

• Fork us on Github
  • https://github.com/ControlSystemStudio/cs-studio
• Create Issue tickets for feature request / bugs
• Point out missing documentation
How to get free Beer

• Pick an issue/feature or make one
  • https://github.com/ControlSystemStudio/cs-studio/issues
• Create a branch in your fork with the fix or feature
• Make a Pull Request with the issue number in the title
• Attend meetings, know the release schedule, subscribe to mailing list
Attend Meetings

• We use Google Hangouts to share our progress and discuss issues
  • Meetings are posted (viewable after being added to group)
  • First Wednesday of the month (9am EST)
  • Project groups meet once a week when actively developing
Useful links

CS-Studio

• https://github.com/ControlSystemStudio/cs-studio
• https://github.com/shroffk/phoebus
• http://phoebus-doc.readthedocs.io/en/latest/

CS-Studio Phoebus Integration

• https://github.com/ControlSystemStudio/cs-studio/issues/2437
Questions?