May 16, 2022

To: EPICS Community  
From: Daniel Flath, Event Organizer  
RE: EPICS Codeathon, May 9-13, 2022

Dear EPICS contributors & users,

Following the codeathon last week, I’d like to extend my appreciation to those that participated, and the facilities and programs that supported their attendance whether virtual or in person. I’d especially like to thank those who braved the ongoing pandemic with the associated restrictions and logistical challenges to travel long distances to participate onsite here at SLAC. My thanks also to Cosylab and Osprey DCS for donating the time of representatives to participate in person. I’d like to also recognize the session chairs for doing the heavy lifting and keeping the sessions productive: Andrew Johnson for the Core team, Kunal Shroff for the Java team, and Ken Lauer for the Python team. And of course, the event would not have been possible without the incredible support of the local organizing team from the LCLS user office and admin groups, including: Leilani Conradson, Brittany Lemesh, Jessica Troxel, Paul Jones, Siony Matni, Nina Lui, Ji Kim, and Anna Balmori; THANK YOU!

This event had 53 registered participants from 20 institutions. Below are some details of the event that you may find interesting.
Onsite participants on Monday, May 9th

Remote participants on Monday, May 9th
Map of participating facilities, interactive version available here: https://www.google.com/maps/d/edit?mid=1ajviVstpUkFMELEXc5AszbuHOqGfdTpd&usp=sharing

The three session tracks captured their work and progress in the following github discussion fora:

<table>
<thead>
<tr>
<th>Track</th>
<th>Total</th>
<th>Onsite</th>
<th>Remote</th>
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<tr>
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<td>5</td>
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<tr>
<td>Python</td>
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<td>13</td>
<td>3</td>
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<tr>
<td><strong>Totals</strong></td>
<td><strong>53</strong></td>
<td><strong>28</strong></td>
<td><strong>25</strong></td>
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</table>

And finally, here are the summary data related to the participants:

Participants by focus area and location
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<th></th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
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Number of participants by day and location

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<th>Java</th>
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<tr>
<td><strong>Total</strong></td>
<td><strong>28</strong></td>
<td><strong>25</strong></td>
<td><strong>30</strong></td>
<td><strong>7</strong></td>
<td><strong>16</strong></td>
<td><strong>53</strong></td>
</tr>
</tbody>
</table>

Number of participants by institution, location, and focus area
Following are Andrew Johnson’s closeout slides summarizing the Core group goals, progress, and outstanding items:

- 13 registered on-site, 17 registered remote
  - On-site participants from ANL, CEA (2), Cosylab, Fermilab, FRIB, Osprey DCS and SLAC (many)
  - Remote participants from Ankara-U/TARLA, ANL (3), BNL, CFEL/ASU, FHI, ESS (3), PSI (2), SLAC (many), U-Chicago (2)
- Some SLAC attendees were on-site on some days and remote on others
- Some attendees moved between sessions
- A few remote attendees may not have connected at all, or tried but failed to connect with us
  - PST/PDT is not an ideal timezone for remote-work with Europeans

**Pull Requests for EPICS Base at 11pm PDT, 2022/05/11**

- [](#) 10 Open, 3 Closed
- 1 Codethion22 deadline sleep
- 1 Improve compress record
- 1 Fix compile warnings
- 1 Use GNU-Readline if the header file is installed for linux-xarch64
- 1 In-memory filesystem
- 1 Add debug annotations for ibCom headers
- 1 Define C lang version variables for use in makefiles
- 1 Added oxygen comments
- 1 Added oxygen comments
- 1 Make Perl hash iteration reproducible
- 1 treewide: add usage help to various locosh functions
- Merge --doug-murray/epics-base:fix-1943245 into epics-base:7.0
# Pull Requests for synApps EPICS modules

- **Update .gitignore**
  - #7 opened 2 days ago by justinsilac
  - Created 17 commits in 17 repositories:
    - epics-modules/git 1 commit
    - epics-modules/symt 1 commit
    - epics-modules/pac 1 commit
    - epics-modules/softGlueZynq 1 commit
    - epics-modules/fokogawa_DAS 1 commit
    - epics-modules/cal 1 commit
    - epics-modules/cppGitRecorder 1 commit
    - epics-modules/alive 1 commit
    - epics-modules/optics 1 commit
    - epics-modules/softGlue 1 commit
    - epics-modules/smcan 1 commit
    - epics-modules/labs 1 commit
    - epics-modules/cstd 1 commit
    - epics-modules/xpp 1 commit
    - epics-modules/autosave 1 commit
    - epics-modules/uia 1 commit
    - epics-modules/trmact 1 commit

- **Extra Linux cross-compilation targets**
  - #69 opened 2 days ago by minjackson

# Other EPICS Base-related Projects

**stephane-cea** 13 hours ago

Here are the results:

- https://github.com/stephane-cea/epics-containers
- https://hub.docker.com/repository/registry-1.docker.io/stephane-cea/epics/tags?page=1

As suggested by @mdavidsaver:

- I will create some centos7 based containers (if you want other distros, then please ask)
- I will also produce both arm64 and arm64 containers
- I will try to find a way to run arm containers on amd host
• It’s only Thursday morning here at SLAC, we still have several hours left to work on more projects, and some people may still be here tomorrow.

• Special thanks to everyone who added review comments to other participants’ Pull Requests, this is how we grow as a community (and reduce the workload on the EPICS Core Developers Group).

Friday Final Summary

• As of 2pm on Friday afternoon in the SLAC time-zone, this week we have 22 GitHub Pull Requests to epics-base, one from Launchpad, 17 PRs to epics-modules, 5 to the Base sub-modules, 5 to the ca-gateway, and 1 to epics-docs. Other work has also been done not resulting in any PRs.

• Communication between the sessions has been productive too, we agreed on ways forward with the Java group, and Ken Lauer is contributing a major update to the ca-gateway testing framework.

• This is not the end! Just because the Codeathon has ended that doesn’t mean the work on EPICS is finished. Please consider whether you could contribute more in the future (preferably on your employer’s time if you can justify it).

• Many thanks to everyone who took part, to Michael and Osprey DCS for the snacks, and to Daniel Flath and his staff for their hospitality, for organizing the event, and for providing us with Coffee and refreshments.
Following are Kunal Shroff’s closeout slides summarizing the Java group goals, progress, and outstanding items:

**EPICS core**

- CAJ workaround patches for ITER
- Agreements on the roadmap for CAJ/JCA and CA support
  - Mostly bug fixes, emphasizing stability
  - New features will go into PVA
- Prototype for NameServer using the core-pva PV Access Server lib
  - Listens to name searches via UDP or TCP, IPv4 or IPv6
  - Replies with TCP address & port of actual PVA server
  - For now, manual config, plan to eventually use e.g. Channel Finder

**EPICS Services**

- Elastic 6 (→7) → 8 upgrade
  - Documentation of process to migrate data
  - Testing with ChannelFinder index migration
- Channel Finder improvements/maintenance
  - Publish “ENGINEER”, “LOCATION” or configurable env. vars from IOC (working on an IOC shell command to configure this list on each IOC)
  - Display errors in GUI
  - Refresh GUI when editing channel data
- Save Restore
  - Complete documentation of the REST API
- pvInfo web project
  - Displays ChannelFinder information
  - Adds live data from PV web socket
  - Adds history data from Archive Appliance
EPICS tools

• Improvement to the databrowser
  • Better indication of ‘disconnect’

• Fixing Javadoc errors and warnings
  • ChannelFinder
  • Display Builder

• Epics tools and services Releases
  • A release mechanism for all org.phoebus projects
    • PV Web Socket now uses released core-pv module (ca, pva, sim, …)
  • Phoebus Olog release 2.0.5
  • ChannelFinder release 4.0.4
  • Phoebus Core modules

EPICS tools

• What was good:
  • Great to meet people
  • Effective way to address issues that usually impact a lot of
e.g. release process, important tech upgrades
  • Plan roadmap
  • Collectively devote time to the Channel Finder ecosystem:
    GUI, recsync, javadoc, Elasticsearch update, …
  • Fast internet generally allows smooth audio, video and
screen sharing

• What was bad:
  • Time zone differences still matter
Following are Ken Lauer’s closeout slides summarizing the Python group goals, progress, and outstanding items:

**EPICS Codeathon 2022**
**Python Session**
Friday, May 13th, 2022

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### Overview

- 17 participants joined for at least one day
  - 13 on-site: SLAC (12), APS (1)
  - 4 remote: SLAC (1), CNPEM (1), BNL (2)

- Project ideas and status were captured in GitHub discussions:
  

- Existing issues and new functionality were our primary focus
  - 10 different repositories and 47 (!) pull requests
  - We also found (and resolved!) new issues
## Contributions by the numbers

<table>
<thead>
<tr>
<th>Project</th>
<th>Contributors</th>
<th>Total Issues</th>
<th>Total PRs</th>
<th>Merged/Resolved</th>
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<td><strong>Grand Total</strong></td>
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<td><strong>47</strong></td>
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</table>


## Screenshots - PyDM

- Irregular polygon support
- PVAccess support + better alarm handling for Channel Access
- Entrypoints support for user-supplied extensions + improved documentation
Screenshots - PyDM

EDM-inspired macro inspector dialog

Simplified confirmation dialogs

Qt Designer improvements: “PyDM Basic Settings”

Screenshots - PyDM

Analog scale indicators with intuitive warning/error alarm limits: PyDMAlogIndicator

MEDM-style on-demand automatic resizing layouts: PyDMAbsoluteGeometry
Other repository contributions were less photogenic but just as significant:

- **ophyd**
  - New positioner and signal type enhancements
  - A variety of fixes
- **happi**
  - Longstanding bugs fixed
  - Packaging improvements
- **pyca**
  - Deadlock/threading fixes
- **adl2pydm**
  - Better display conversion + conda-forge recipe
- Miscellaneous package releases, documentation, and more...

Thank you to all attendees and collaborators!
Once again, I’d like to thank the participants for the incredible turnout. The most significant complaint was that the local timezone was a complication for remote attendance. Conversely, the on-site attendees were very positive about the benefits that in-person participation afforded. I hope that the next chapter of this series sees a stronger on-site presence to maximize productive time spent together collaborating and building or renewing relationships to support the EPICS platform.

Sincerely,

Daniel Flath
Director, LCLS Experiment Controls Division
SLAC / Stanford University