

May 16, 2022

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

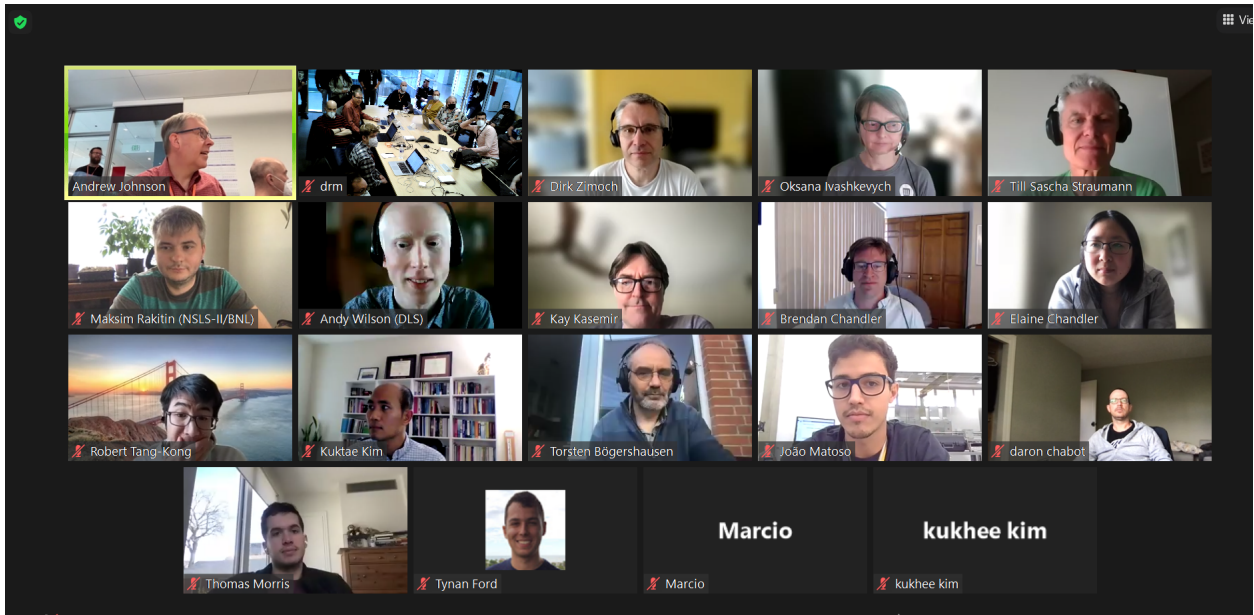
Dear EPICS contributors & users,

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!

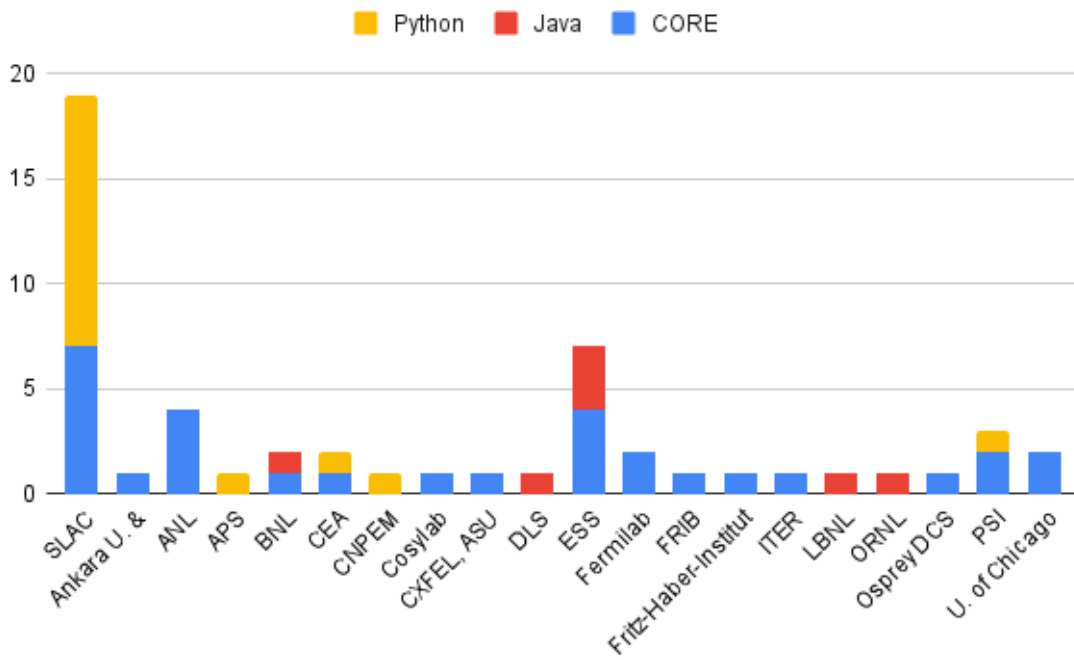
This event had 53 registered participants from 20 institutions. Below are some details of the event that you may find interesting.



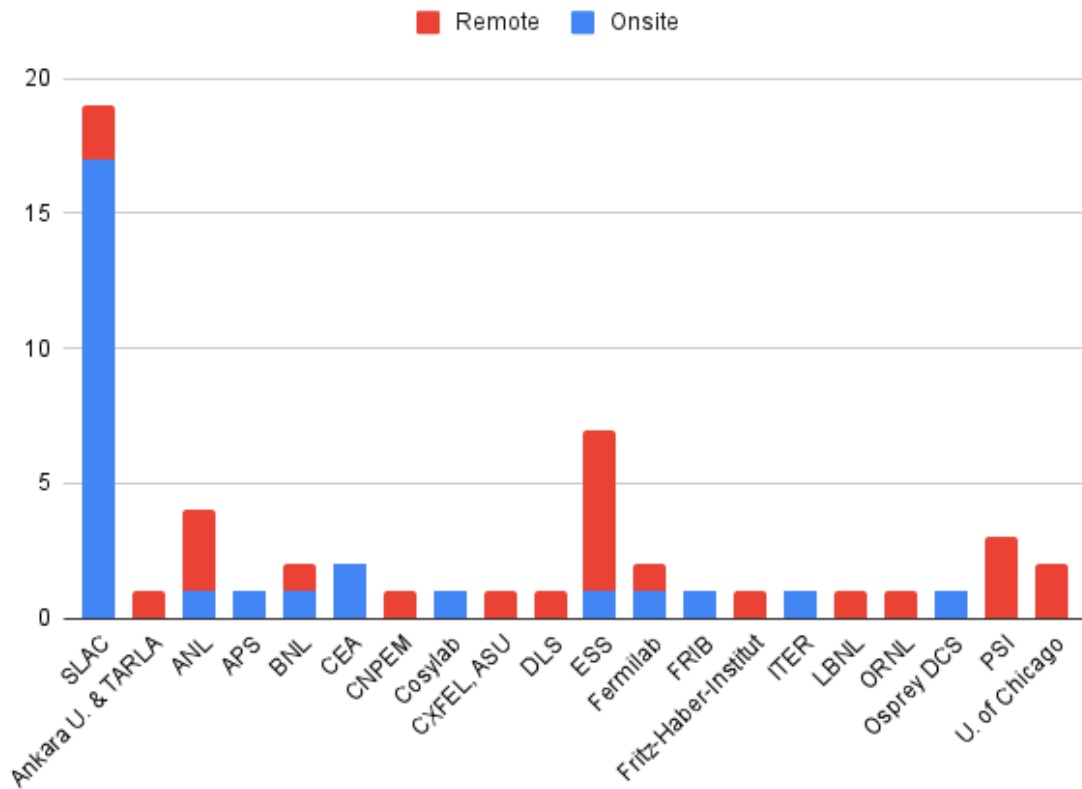
Onsite participants on Monday, May 9th



Remote participants on Monday, May 9th



Participants by institution and focus area



Participants by institution and location (onsite or remote)



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:

CORE Discussion	https://github.com/epics-base/epics-base/discussions
Java Discussion	https://github.com/ControlSystemStudio/epics-codeathon-2022/discussions
Python Discussion	https://github.com/pcdshub/epics-codeathon-2022-python/discussions

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

Track	Total	Onsite	Remote
CORE	30	13	17
Java	7	2	5
Python	16	13	3
Totals	53	28	25

Participants by focus area and location

	Mon	Tue	Wed	Thu	Fri
Onsite	27	27	24	23	24
Remote	23	24	25	20	19
Total	50	51	49	43	43

Number of participants by day and location

	Onsite	Remote	CORE	Java	Python	Total
SLAC	17	2	7	0	12	19
Ankara U. & TARLA	0	1	1	0	0	1
ANL	1	3	4	0	0	4
APS	1	0	0	0	1	1
BNL	1	1	1	1	0	2
CEA	2	0	1	0	1	2
CNPEM	0	1	0	0	1	1
Cosylab	1	0	1	0	0	1
CXFEL, ASU	0	1	1	0	0	1
DLS	0	1	0	1	0	1
ESS	1	6	4	3	0	7
Fermilab	1	1	2	0	0	2
FRIB	1	0	1	0	0	1
Fritz-Haber-Institut	0	1	1	0	0	1
ITER	1	0	1	0	0	1
LBNL	0	1	0	1	0	1
ORNL	0	1	0	1	0	1
Osprey DCS	1	0	1	0	0	1
PSI	0	3	2	0	1	3
U. of Chicago	0	2	2	0	0	2
Total	28	25	30	7	16	53

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, CXFEL/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



10 Open ✓ 1 Closed Author ▾

- Codeathon22 deadline sleep • #253 opened 10 hours ago by till-s - Draft
- Improve compress record • #252 opened 16 hours ago by simon-ess
- Fix compiler warnings • #250 opened 21 hours ago by dirk-zimoch - Draft
- Use GNU Readline if the header file is installed for linux-aarch64 • #249 opened 22 hours ago by fheldbauer
- In-memory filesystem × enhancement #248 opened yesterday by mdavidsaver - Draft 2 tasks
- Add doxygen annotations for libCom headers • #247 opened yesterday by brendanrhandler
- Define Clang version variables for use in Makefiles ✓ #246 opened 2 days ago by anjohnson
- Codeathon 2022 Header annotations project dbChannel.h × #245 opened 2 days ago by oksanagit - Draft
- Added doxygen comments • #244 opened 2 days ago by ehandler-arl
- make Perl hash iteration reproducible × Approved #243 by minijackson was closed 11 hours ago - Approved
- treewide: add usage help to various locsh functions × #242 opened 2 days ago by minijackson

Merge ~dougurray/epics-base:fix-1943245 into epics-base:7.0

CA + [y] - dougurray/epics-base - fix-1943245 - Merge into 7.0

Proposed by Doug Murray 11 hours ago

Status: Needs review

Pull Requests for synApps EPICS modules



Other EPICS Base-related Projects



Update .gitignore
#7 opened 2 days ago by justinclsac

May 2022

Created 17 commits in 17 repositories

epics-modules/gtr	1 commit	●
epics-modules/symb	1 commit	●
epics-modules/jpac	1 commit	●
epics-modules/softGlueZynq	1 commit	●
epics-modules/Yokogawa_DAS	1 commit	●
epics-modules/calc	1 commit	●
epics-modules/caputRecorder	1 commit	●
epics-modules/alive	1 commit	●
epics-modules/optics	1 commit	●
epics-modules/softGlue	1 commit	●
epics-modules/sscan	1 commit	●
epics-modules/fp	1 commit	●
epics-modules/std	1 commit	●
epics-modules/xxx	1 commit	●
epics-modules/autosave	1 commit	●
epics-modules/lua	1 commit	●
epics-modules/tpmac	1 commit	●

Extra Linux cross-compilation targets ✕
#69 opened 2 days ago by minijackson

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/stephanecea/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 amd64 and arm64 containers
- I will try to find a way to run arm containers on amd host

We aren't
finished Yet!

EPICS
TULI

- 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

EPICS
TULI

- 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 Tools
Phoebus
CS-Studio

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 Service
Olog
ChannelFinder
Save Restore

EPICS
TOOLS

EPICS Tools
Phoebus
CS-Studio

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 Service
Olog
ChannelFinder
Save Restore

EPICS
TOOLS

EPICS Tools
Phoebus
CS-Studio

EPICS tools

EPICS Service
Olog
ChannelFinder
Save Restore

- 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

EPICS Tools
Phoebus
CS-Studio

EPICS tools

EPICS Service
Olog
ChannelFinder
Save Restore

- 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

EPICS
TOOLS

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



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:
<https://github.com/pcdshub/epics-codeathon-2022-python/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

SLAC

Project	Contributors	Total Issues	Total PRs	Merged/Resolved
adl2pydm	1	2	2	1
happi	1	4	4	3
ophyd	4	7	7	6
pmps-ui	1	1	1	1
pyca	1	1	1	1
pydm	9	19	19	14
pythonSoftloc	1	1	0	0
timechart	3	10	10	10
typhos	1	3	2	3
whatrecord	1	1	1	1
Grand Total	15	49	47	40

<https://github.com/pcdshub/epics-codeathon-2022-python/discussions/25>

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Screenshots - PyDM

SLAC

Irregular polygon support



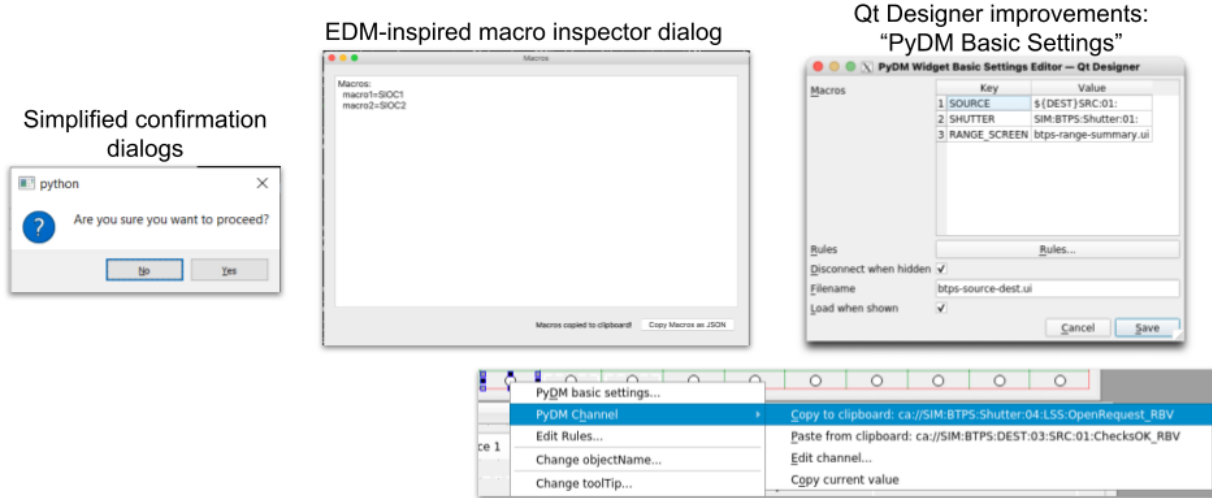
PVAccess support + better
alarm handling for Channel
Access



Entrypoints support for user-supplied
extensions + improved
documentation

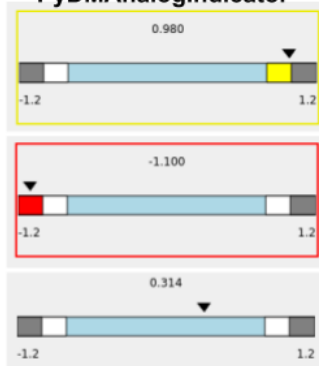


Screenshots - PyDM

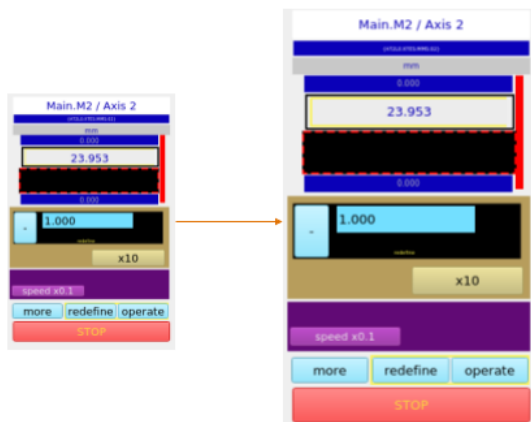


Screenshots - PyDM

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



MEDM-style on-demand automatic resizing layouts:
PyDMAbsoluteGeometry

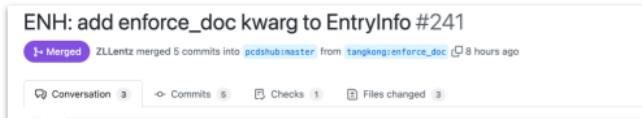


Last, but not least

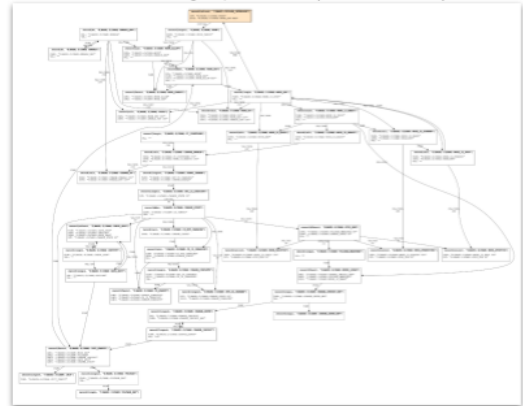
SLAC

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...



PV relation graph fixes (whatrecord)



SLAC

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