CS-Studio Collaboration Status

Eric Berryman
Controls Engineer

MICHIGAN STATE
UNIVERSITY

U.S. DEPARTMENT OF ENERGY | Office of Science
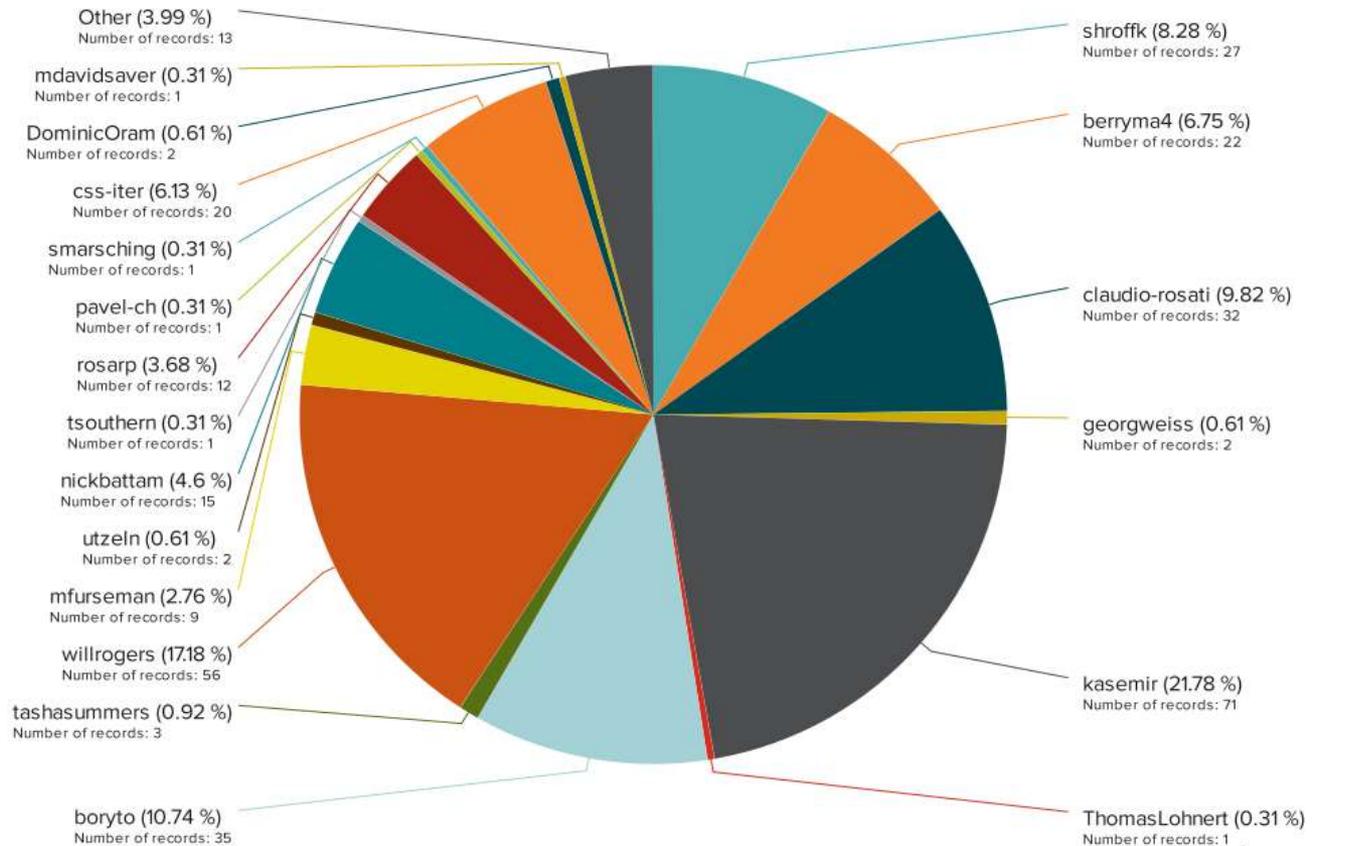
Overview

- **Collaboration Statistics**
  - Feedback from Issues
  - Comments Activity
  - Issues Activity
  - Milestone Activity

- **Management Review**
  - Customer Feedback
  - Follow-up from past Management Reviews
  - Recommendations for improvement / Actions for improvement

- **Milestones Status**
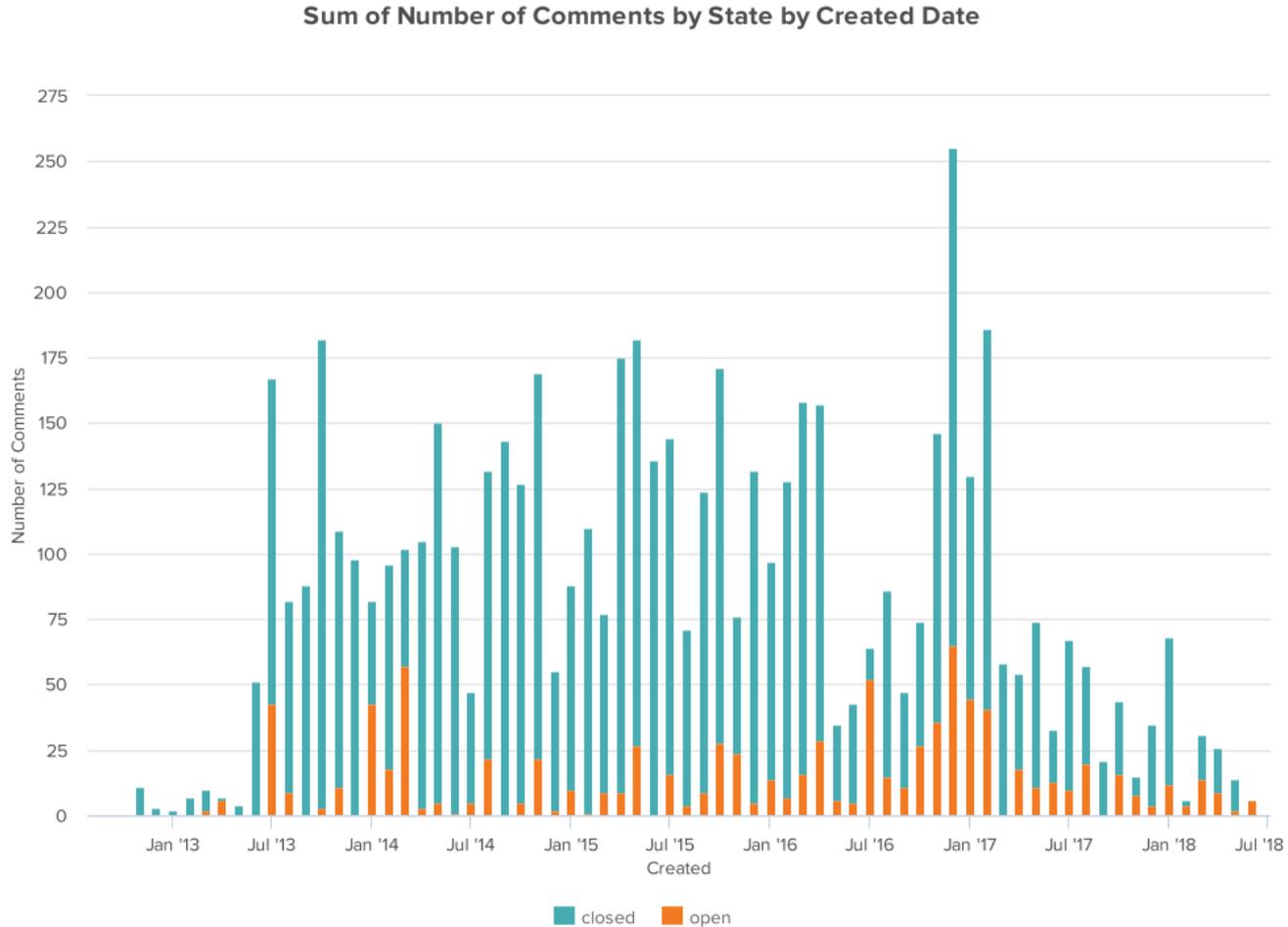 - 4.5.x (stable)
  - 4.6.x (testing)

Feedback from Issues

Issue Creation Breakdown by Person (4.5.x release branch)

[Total : 2,443]

Other (3.99 %)
Number of records: 13

mdavidsaver (0.31 %)
Number of records: 1

DominicOram (0.61 %)
Number of records: 2

css-iter (6.13 %)
Number of records: 20

smarsching (0.31 %)
Number of records: 1

pavel-ch (0.31 %)
Number of records: 1

rosarp (3.68 %)
Number of records: 12

tsouthern (0.31 %)
Number of records: 1

nickbattam (4.6 %)
Number of records: 15

utzeln (0.61 %)
Number of records: 2

mfurseman (2.76 %)
Number of records: 9

willrogers (17.18 %)
Number of records: 56

tashasummers (0.92 %)
Number of records: 3

boryto (10.74 %)
Number of records: 35

shroffk (8.28 %)
Number of records: 27

berryma4 (6.75 %)
Number of records: 22

claudio-rosati (9.82 %)
Number of records: 32

georgweiss (0.61 %)
Number of records: 2

kasemir (21.78 %)
Number of records: 71

ThomasLohnert (0.31 %)
Number of records: 1

DataHero

Comments Activity

Sum of Number of Comments by State by Created Date

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Issues Activity

Issue Created Date by Number of Issues
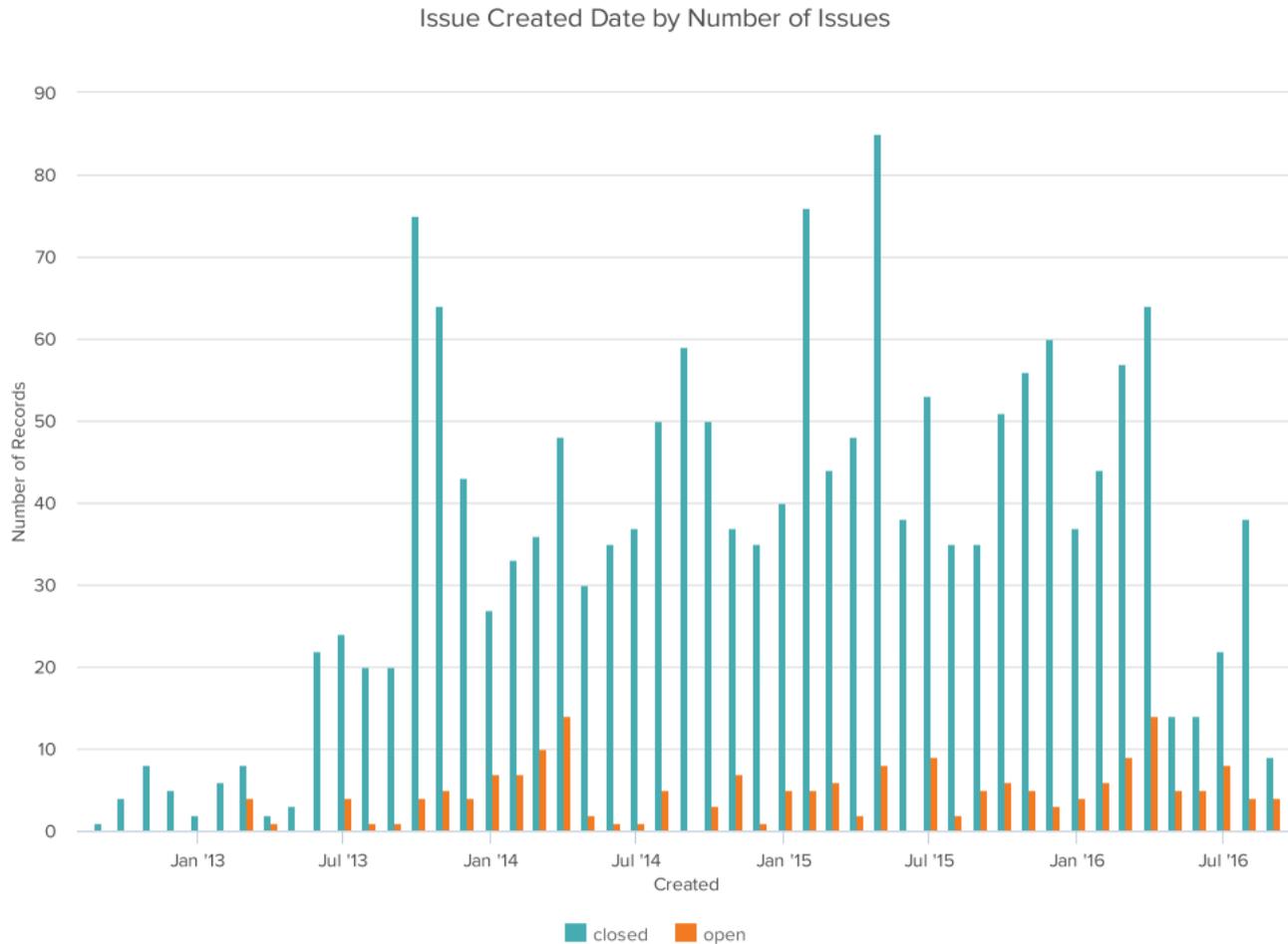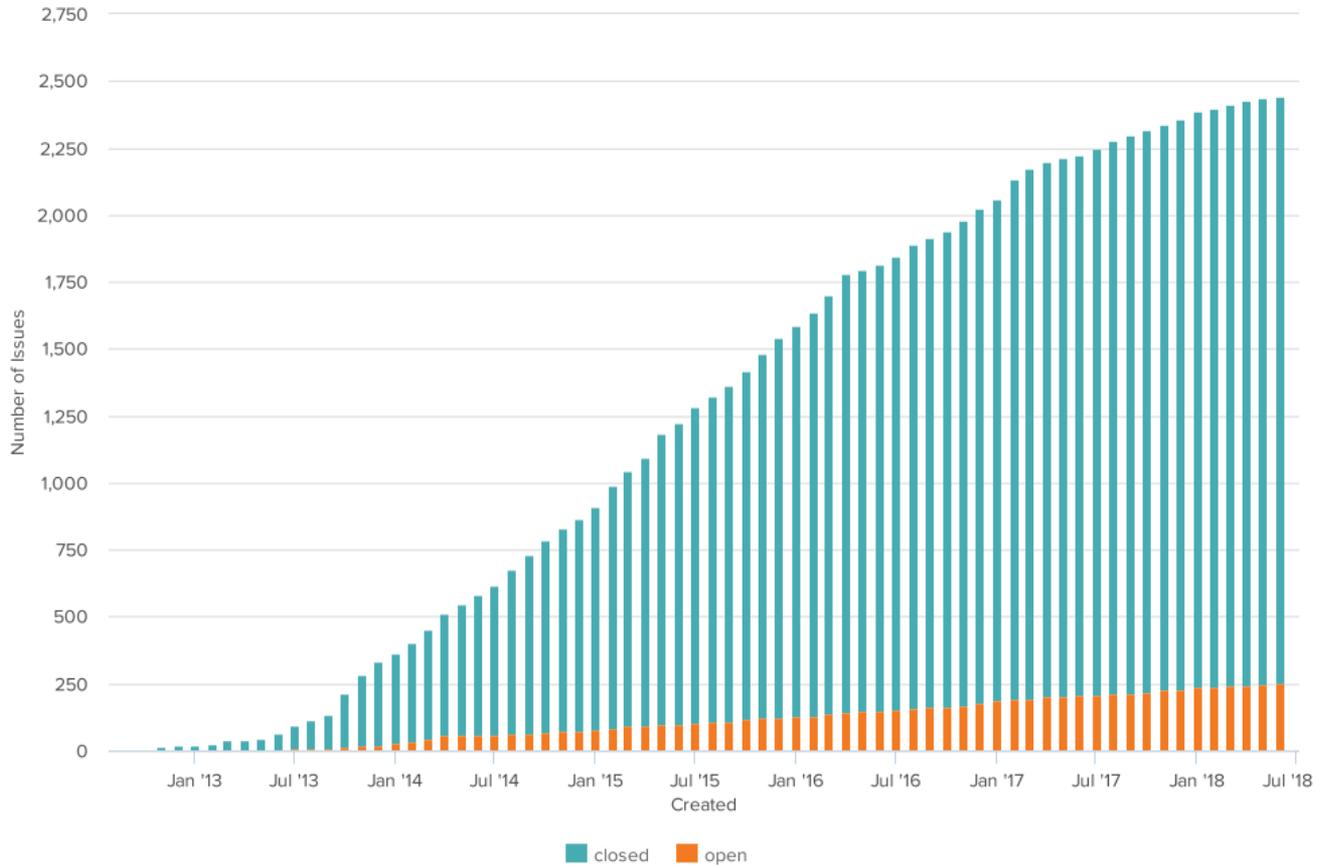
Issues Activity
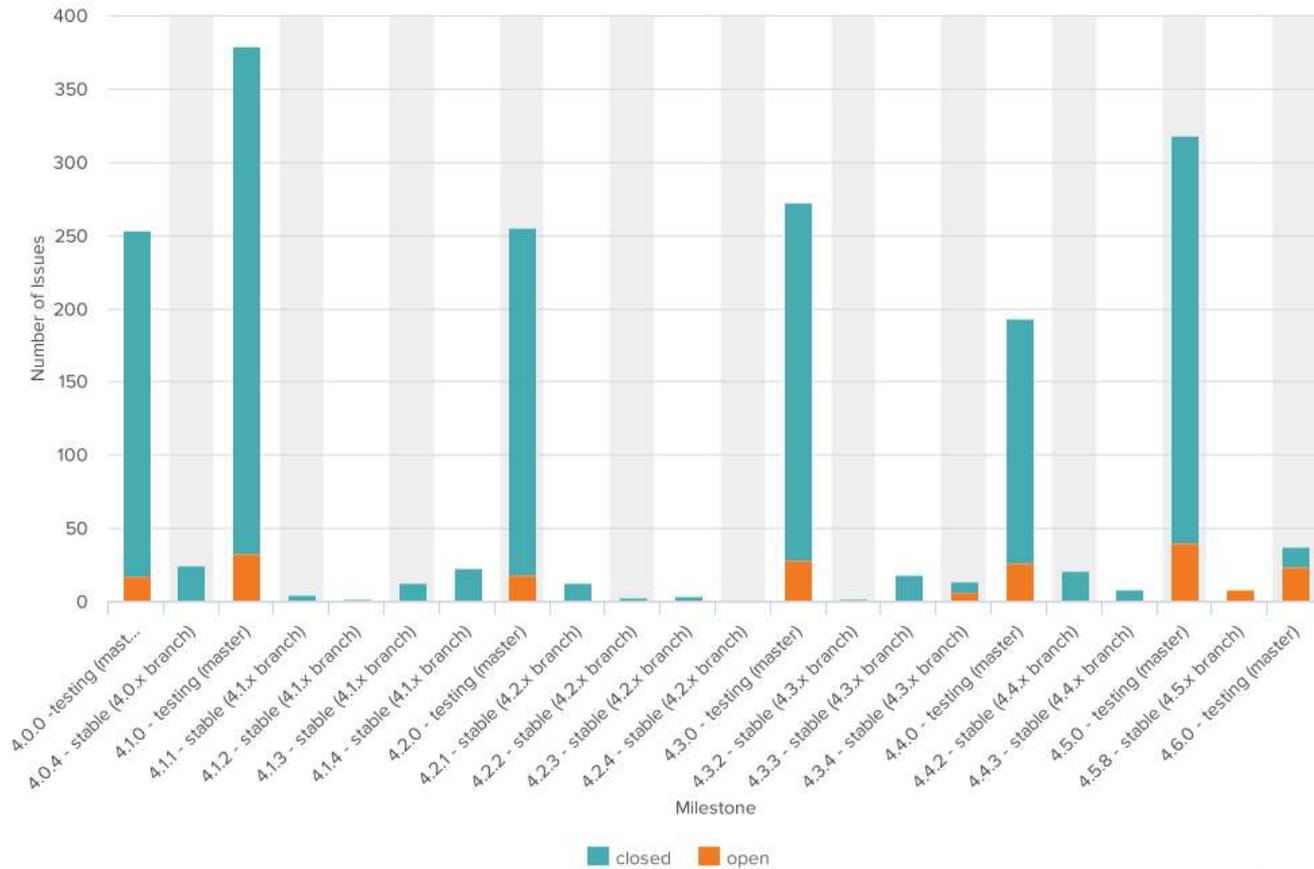

Issue Created Date by Number of Issues (Cumulative)

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Milestone Activity

Number of Issues by Milestone

ISO 9001 Quality Standard

- Following the ISO 9001 Quality Standard for past 5 years
  - Processes for continuous improvement are well defined
  - Finished our fourth Management Review (June 11 2018)
  - FRIB Quality Engineer will perform audit in October
  - Code base has gone from 3.8 to ~0.8 million lines of code
  - Over 500 unit tests, and code format checks, all passing
  - Collaboration now includes 14 labs that have registered site representatives

Lines of Code

	Code	Comments	Blanks

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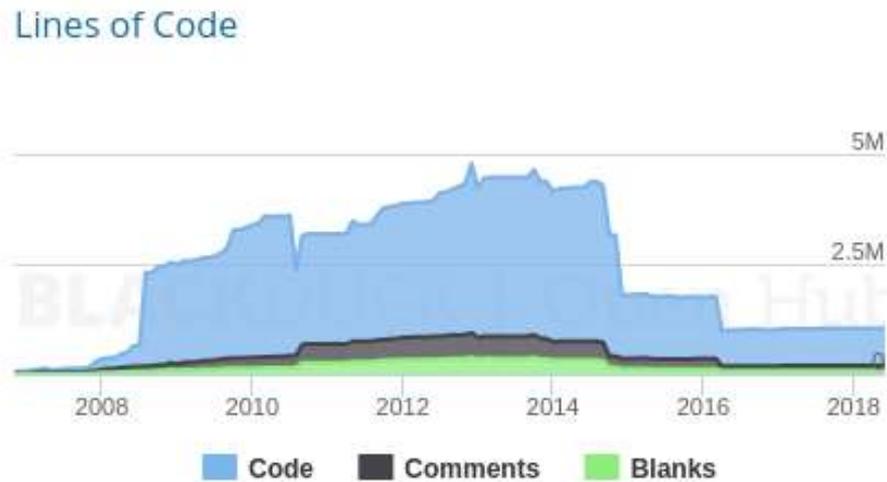
Registered Sites

Meet Our Team

Eric Berryman
Community Manager
Facility for Rare Isotope Beams (FRIB) at MSU

Kay Kasemir
Site Representative
Spallation Neutron Source (ORNL)

Kunal Shroff
Site Representative
National Synchrotron Light Source II (NSLSII) at BNL

Will Rogers
Site Representative
Diamond

Nadine Utzel
Site Representative
ITER

Dominic Oram
Site Representative
ISIS

Charles-Henry Patard
Site Representative
GANIL/Spiral2

Joerg Penning
Site Representative
DESY

Yongxiang Qiu
Site Representative
CSNS

Xinyu Wu
Site Representative
CSIRO

Claudio Rosati
Site Representative
European Spallation Source (ESS)

Gustavo Ciotto Pinton
Site Representative
Laboratório Nacional de Luz Sincrotron (LNLS)

손창욱 (C.W. Son)
Site Representative
Korean Heavy Ion Accelerator (RAON)
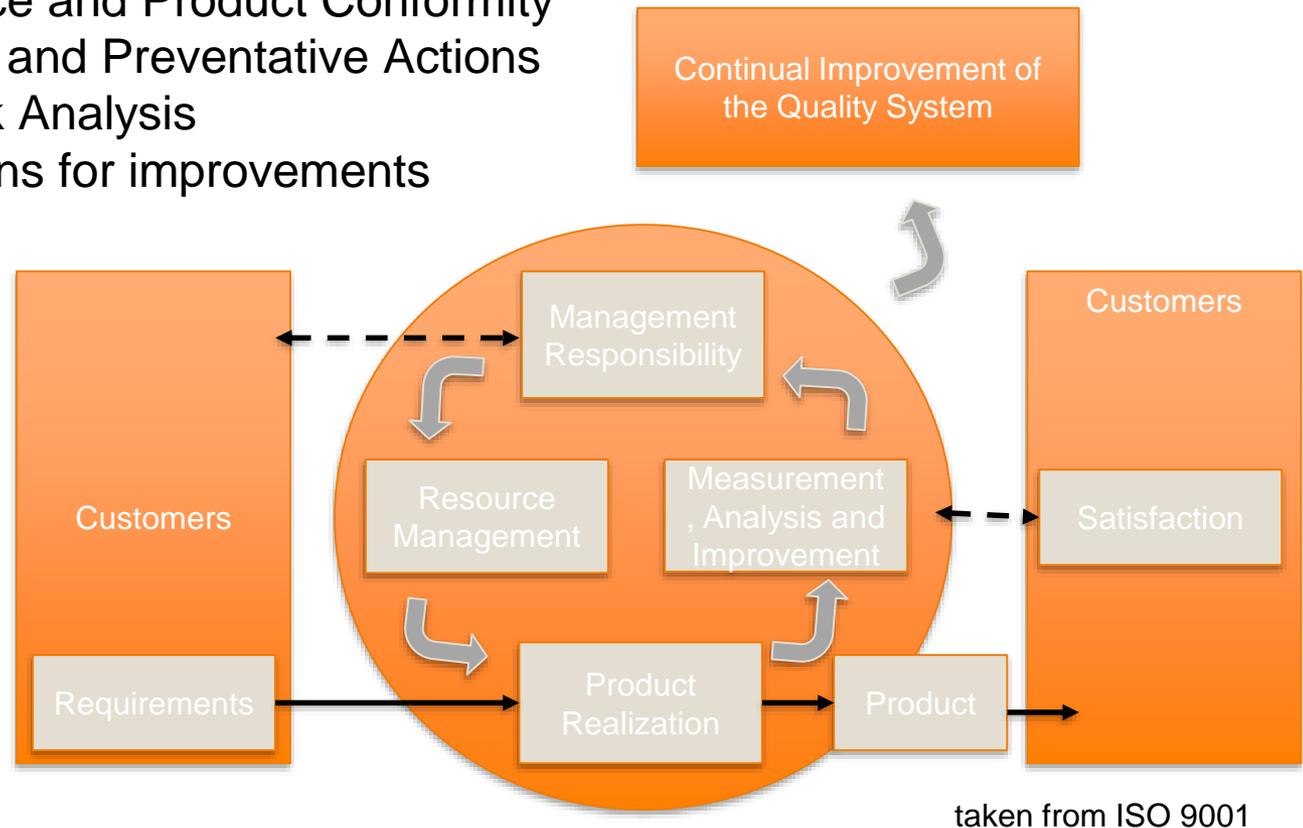
Wesley Moore
Site Representative
Jefferson Lab (JLab)

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ISO 9001 Quality Standard

- Following as a guideline to improve quality
  - » Management Review
  - » Quality Policy and Objectives
  - » Process Performance and Product Conformity
  - » Status of Corrective and Preventative Actions
  - » Customer Feedback Analysis
  - » Decisions and Actions for improvements
  - » Resource needs

Continual Improvement of the Quality System

Customers

Management Responsibility

Resource Management

Measurement, Analysis and Improvement

Satisfaction

Customers

Customers

Requirements

Product Realization

Product

← - - → information

←——→ activities

taken from ISO 9001

Management Review

- **Quality Policy and Objectives**

  Through a strategy of continuous improvement and teamwork, the Control System Studio Collaboration is dedicated to supplying control system tools for machine and experiment operator interfaces, automation and service integration to enable our users to achieve their scientific objectives.

  The foundation for achieving our commitment is based on:
  - understanding and meeting the requirements of our users,
  - continuously improving all processes related to the Control System Studio product,
  - effectively utilizing the creative talents in the collaboration,
  - and meeting statutory, regulatory, and other requirements.

- **Objective:**
  - 90% User satisfaction from registered sites with a site representative
  - 90% Developer satisfaction from registered sites with a site representative

Customer Feedback
When it works, I like it

- **Summary of quotes from feedback**
  - Integrated environment
    - » 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
  - Applications
    - » The editor is really useful. CSS makes it really easy and fast to create prototype UIs
    - » source code free creation of GUIs (we use BOY)
    - » Easy to create GUI's that interact with EPICS PV's
    - » easy access to PVs, easy search engine, well integrated with archiver and logbook

Customer Feedback
When it does not work, I hate it

- **Summary of quotes from feedback**
  - Managing the Product
    - » 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. RCP is really hard and sometimes misunderstood technology
    - » Pretty steep learning curve if you want to make code changes yourself, but I guess that is to be expected with such a large product
  - Slow and crashes
    - » BOY leads to crashes way too often
    - » In general CSS also needs too much resources (disk space, RAM, CPU)
  - Workspaces and windows
    - » Workspace management is haphazard and inconsistent
    - » The CS-Studio interface is usually larger than the screens being displayed, which wastes monitor space for other applications
  - Training
    - » There needs to be a better self-guided training process for those that are new to CS-Studio so that the full potential of the tool can be realized more in depth
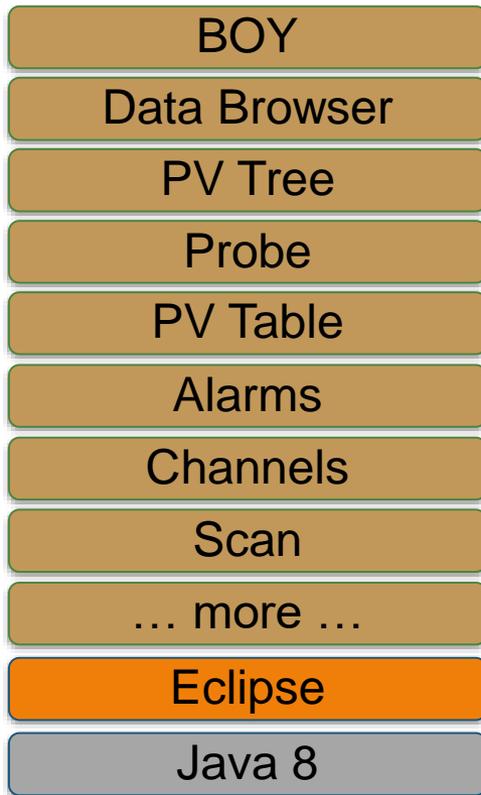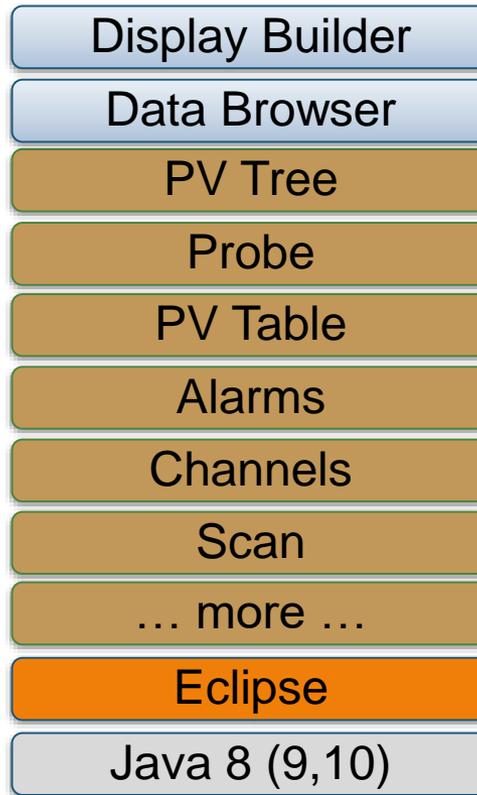
Follow up from Past Reviews

- Management Review 2016
  - Improvement Actions included investigate Boy replacement (Display Builder), prototype started June 2015
  - Project made to improve build environment
- Management Review 2017
  - Eclipse issues a constant theme; development/build and unsolved Github issues from users
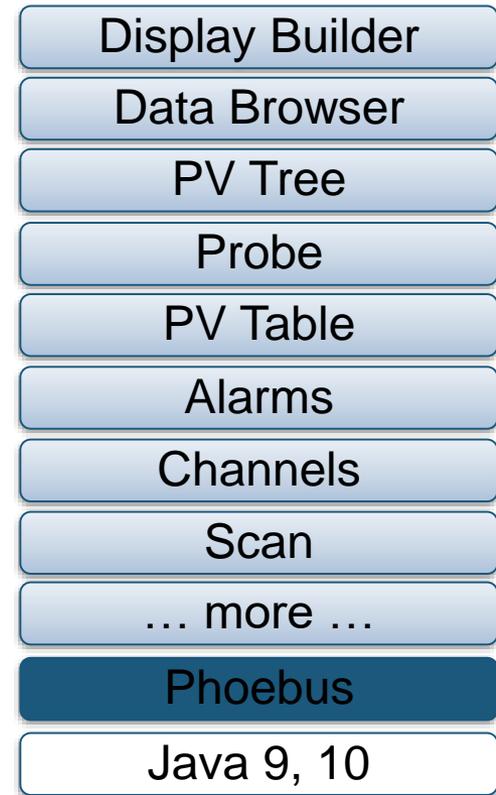 - Improvement Actions included investigate Eclipse replacement (Phoebus)

Evolution

BOY	Display Builder	Display Builder
Data Browser	Data Browser	Data Browser
PV Tree	PV Tree	PV Tree
Probe	Probe	Probe
PV Table	PV Table	PV Table
Alarms	Alarms	Alarms
Channels	Channels	Channels
Scan	Scan	Scan
… more …	… more …	… more …
Eclipse	Eclipse	Phoebus
Java 8	Java 8 (9,10)	Java 9, 10
Since ~2010	Since 2016	End of 2018

SWT

JavaFX

Phoebus vs Eclipse

Recommendations and Actions for Improvement

- ▪ Improve Customer related processes
  - • 66% of customer feedback has been from programmers
  - • Product Realization (requirements) need to be clearer to customer

- ▪ Actions for improvement
  - • Open project to investigate improvements to customer related processes
  - • Continue with Phoebus as a replacement for Eclipse
  - • Provide single CS-Studio distribution with both Eclipse and Phoebus applications assembled by site developers
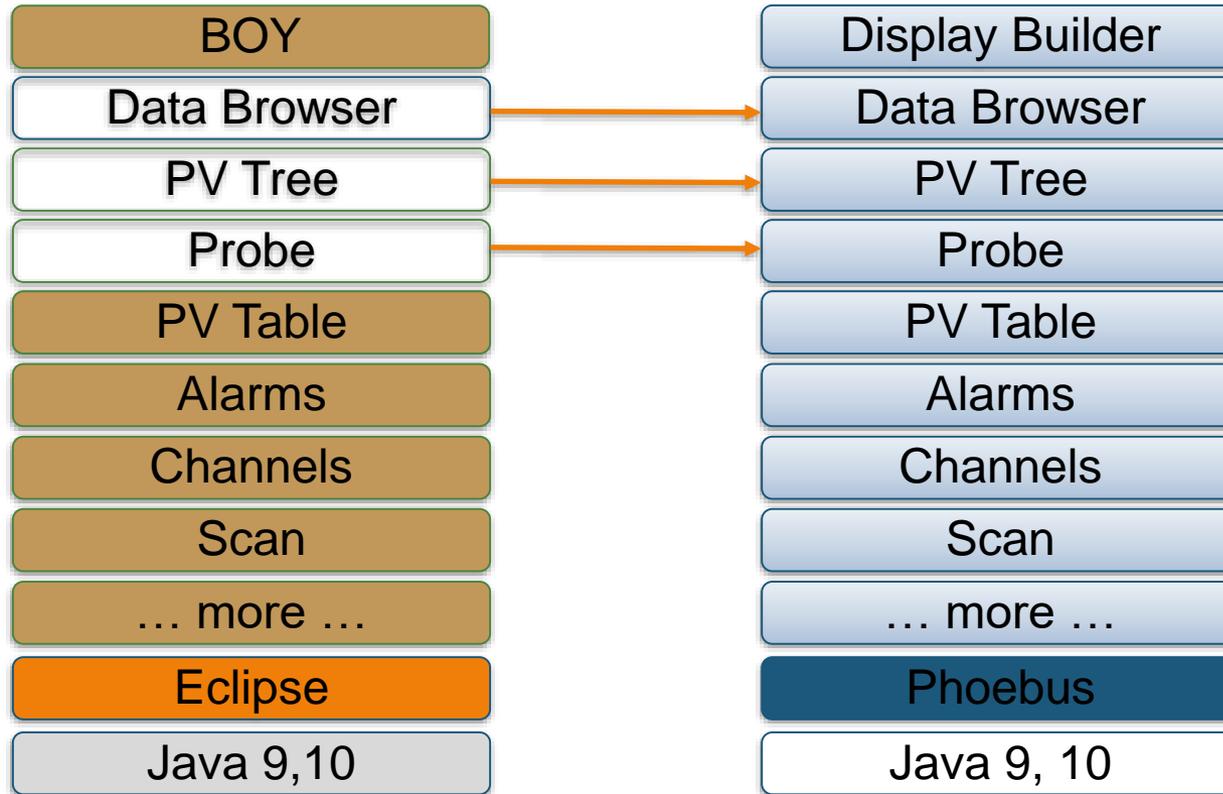
4.5.x (stable)

- 4.5.x release last December
  - Display Builder available
  - Databrowser 3 (JavaFX) available
  - BOY font scaling corrected
  - Eclipse 4.6 Neon / Tycho 1.0.0
  - 175 closed pull requests
  - 103 closed issues

4.6.x (testing)

- 4.6.x due date October 2018, projects so far
  - Java 10
  - Eclipse Oxygen
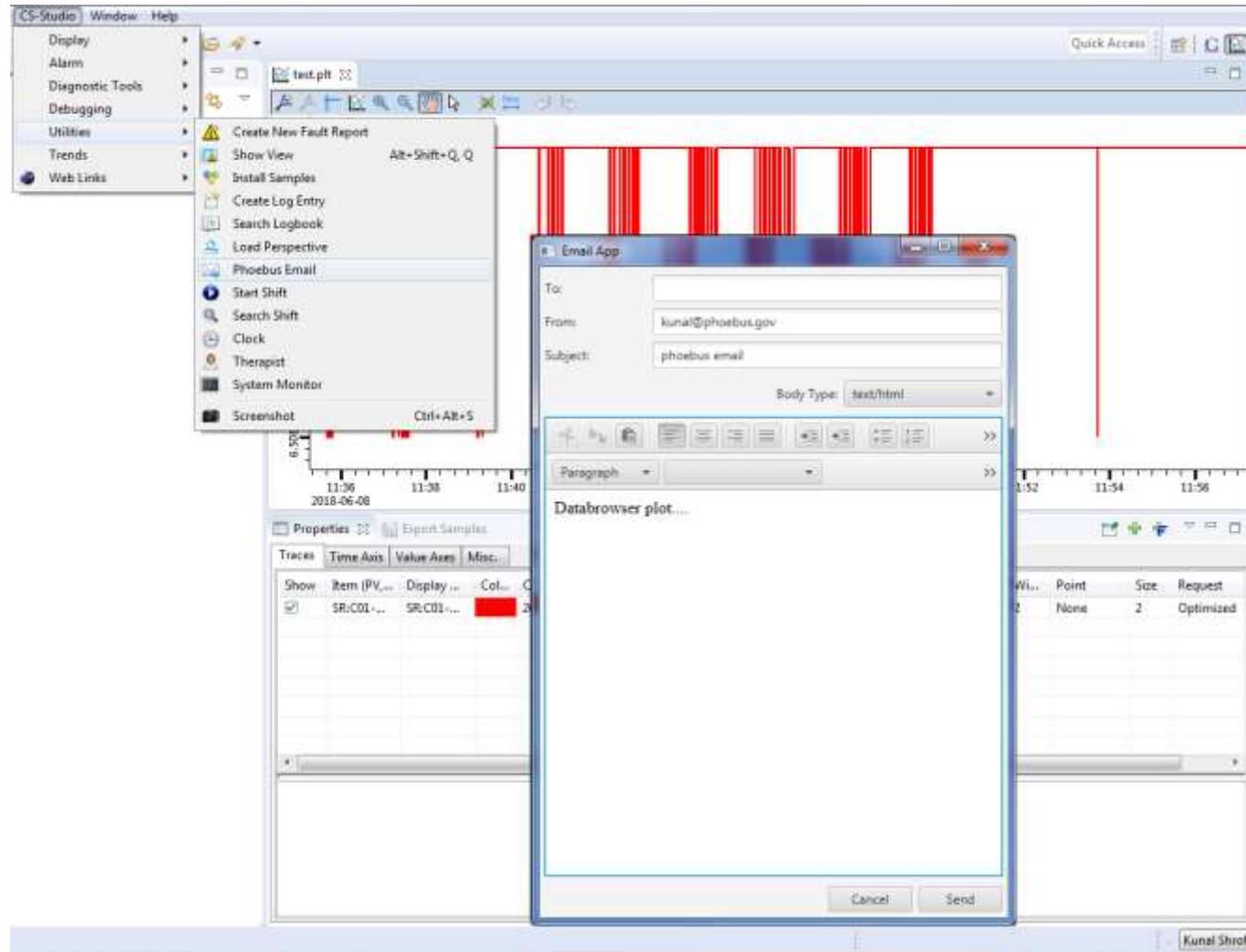 - Phoebus Integration

Phoebus integration with Eclipse

BOY	Display Builder
Data Browser	Data Browser
PV Tree	PV Tree
Probe	Probe
PV Table	PV Table
Alarms	Alarms
Channels	Channels
Scan	Scan
… more …	… more …
Eclipse	Phoebus
Java 9,10	Java 9, 10

Eclipse product opens specific applications in Pheobus

SWT

JavaFX

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Phoebus with Eclipse

How to Contribute

- Fork us on Github
  - https://github.com/ControlSystemStudio/cs-studio

- 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
  - Follow us on Google Plus
  - https://plus.google.com/101349549663920375487/posts
  - Meetings are posted (viewable after being added to group)
  - First Wednesday of the month (9am EST)
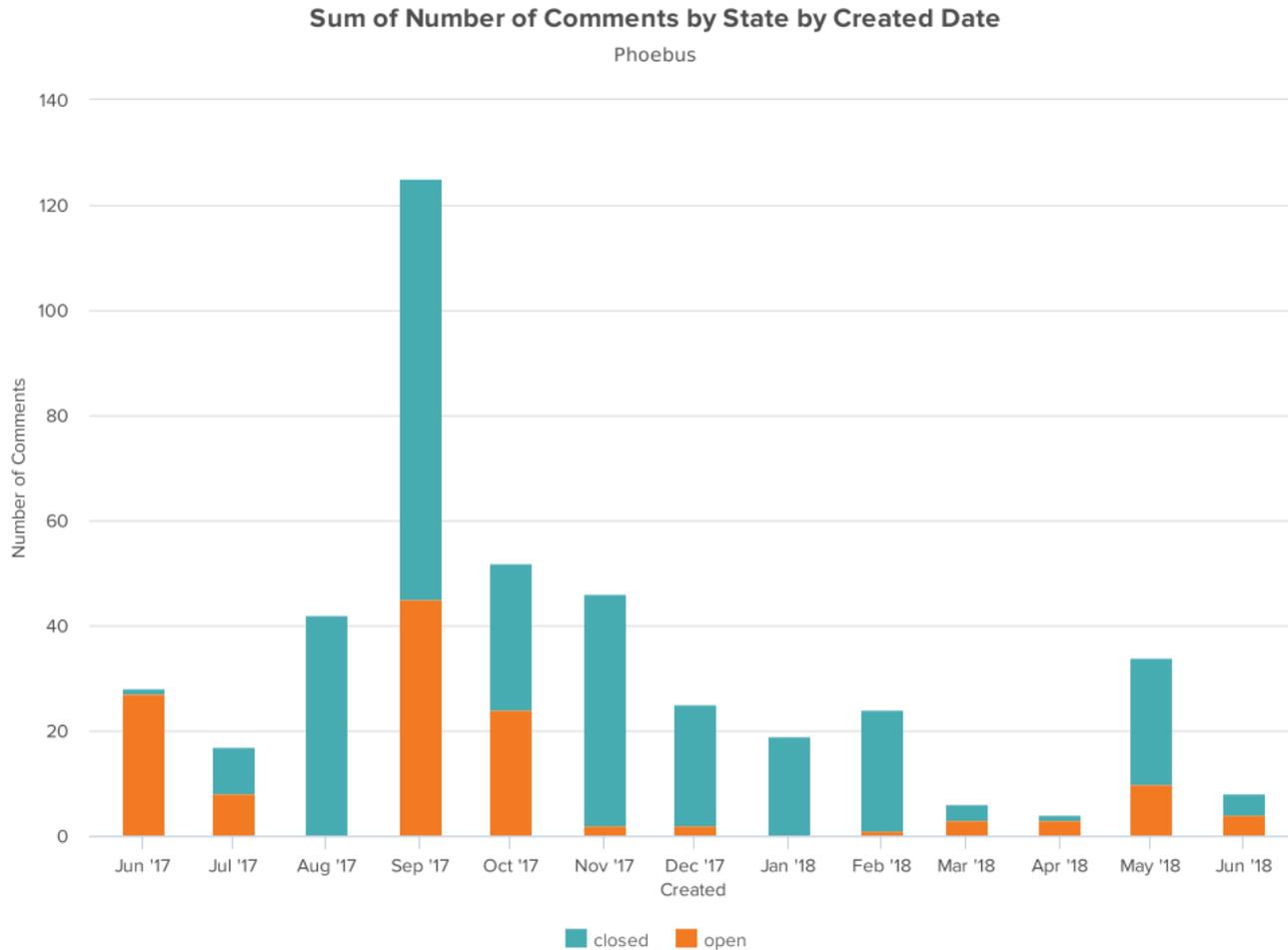 - Project groups meet once a week when actively developing

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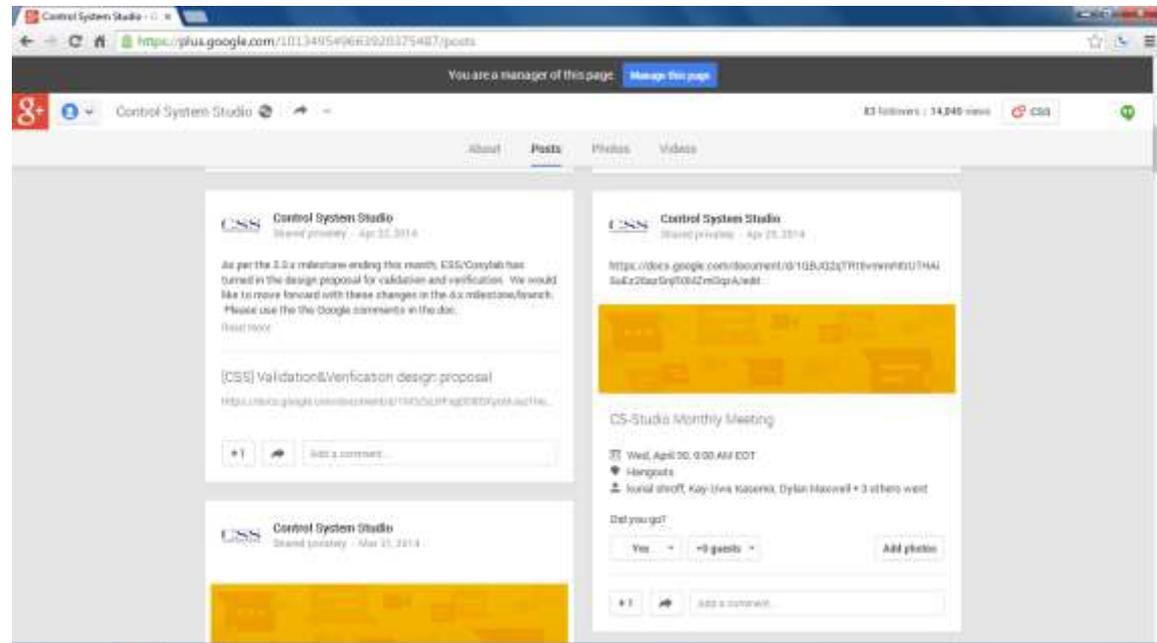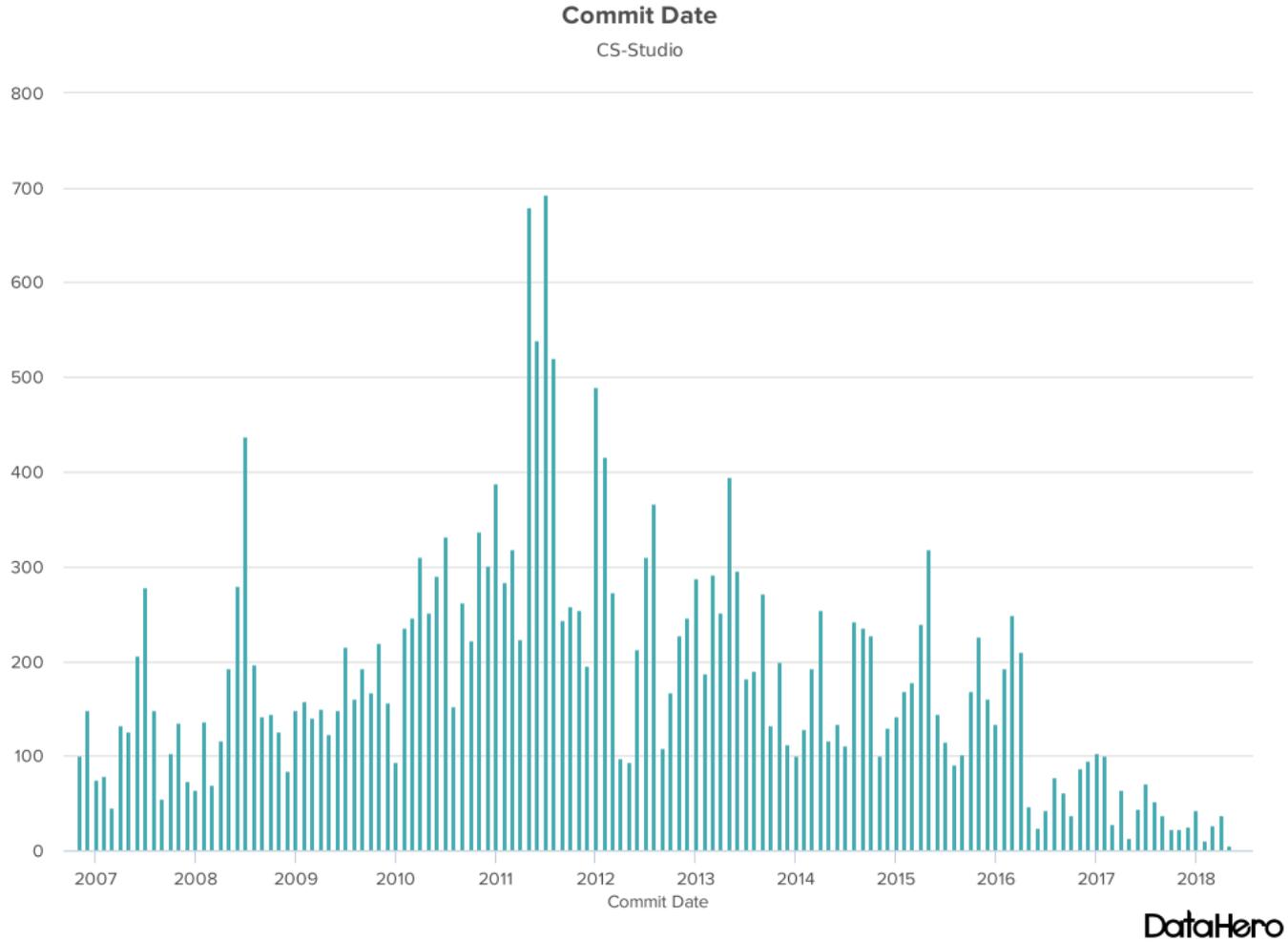
Code a thon

- May 7-11 2018 at Brookhaven National Lab

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Comments Activity

Sum of Number of Comments by State by Created Date

Phoebus

Commits Activity

Commit Date
CS-Studio

Commits Activity