Software Development Without Tears 👉🚫😭

… for pre-Ops and beyond

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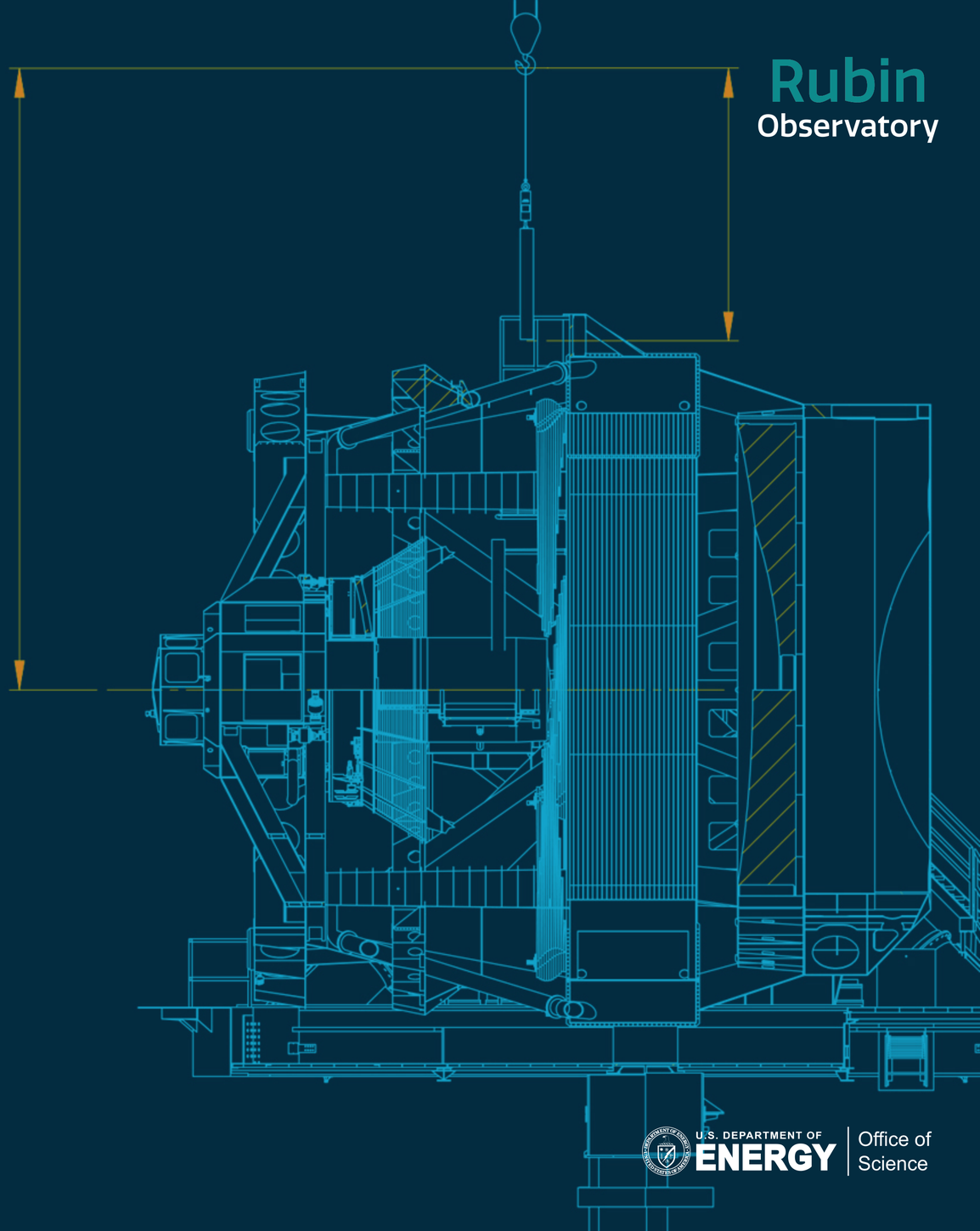

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New folks: welcome, we're excited to have you!

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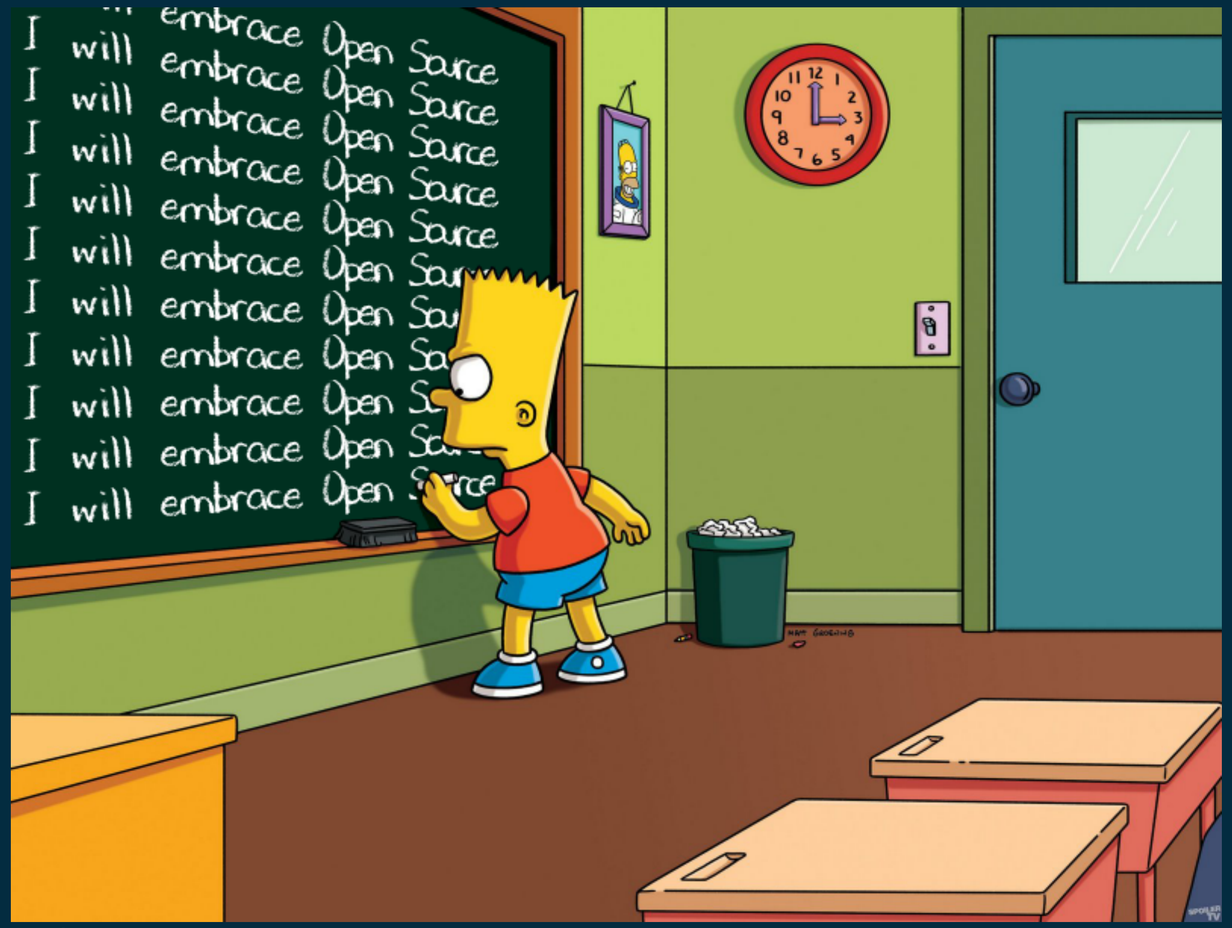
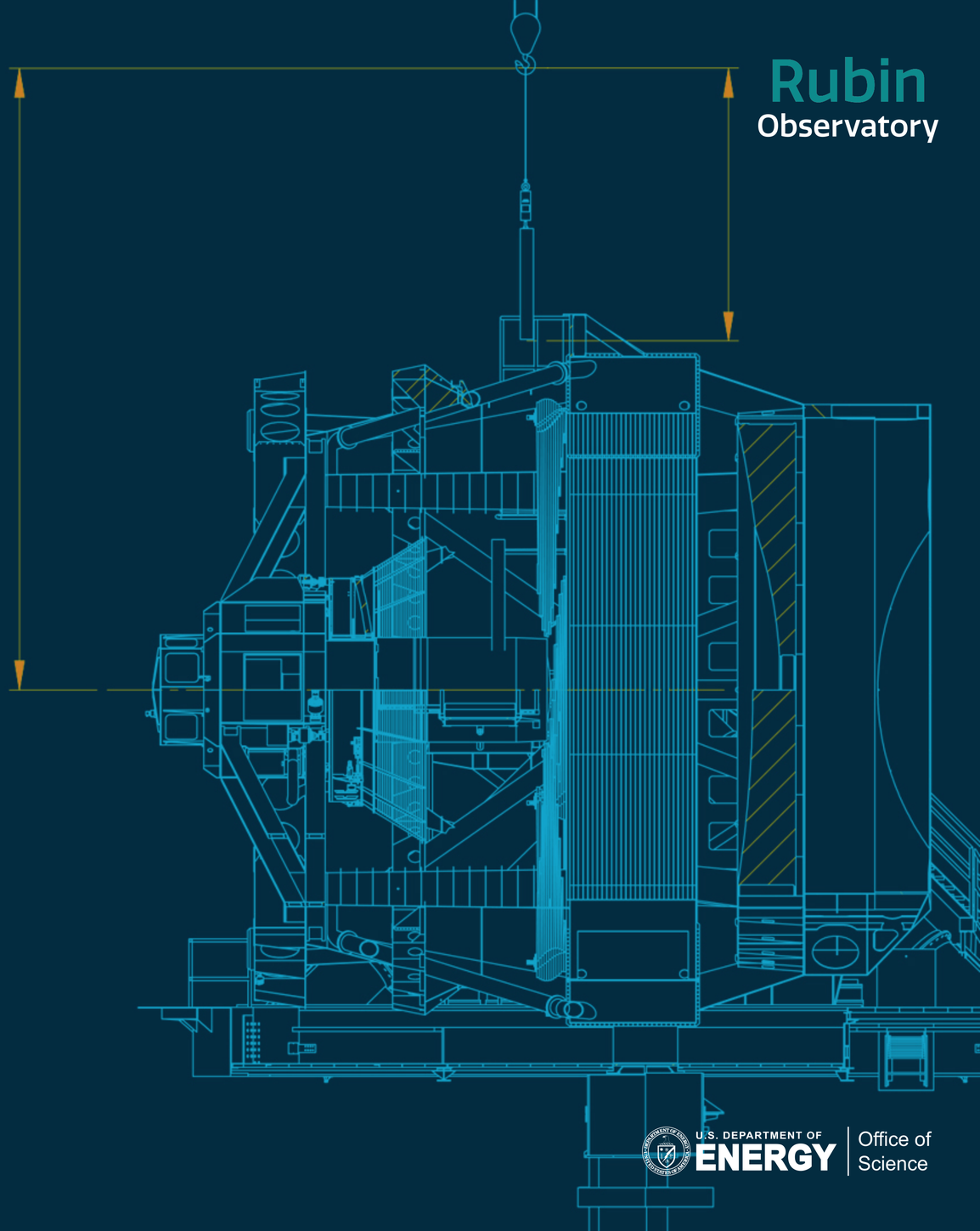
- After 6 years of Construction, we have a massive codebase that will be gradually transitioning to the Operation team. Many of our developers/ engineers will also be transitioning.
- Due to this critical mass most software development practices in Rubin Observatory will continue unabated in Operations - *many software systems will be continuously improved during operations*
- This talk will orient you in our most key practices - it is centered on current Data Management practices as they are well documented and followed even outside DM and we expect them to carry over and even extend into other Ops-era departments.
- You can find find anything I tell you in developer.lsst.io
- Individual teams and departments have their own micro-culture variations, if I contradict your Rubin team lead, your team lead is right.

Open Source Culture





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Welcome to one of the largest open source endeavours in astronomy

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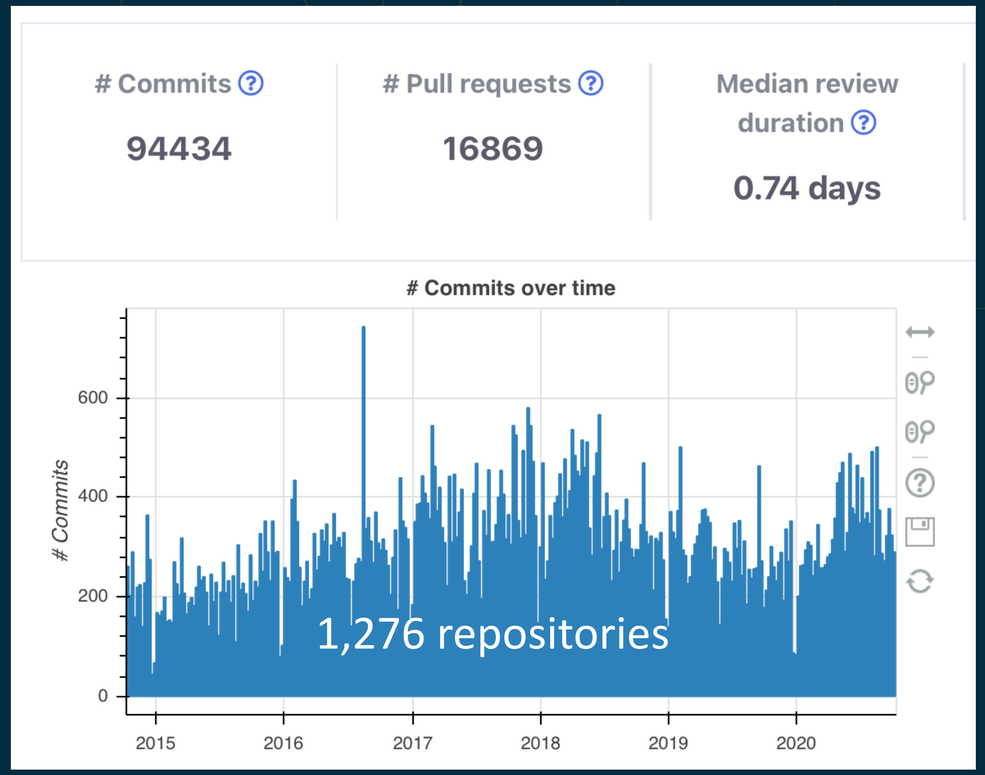
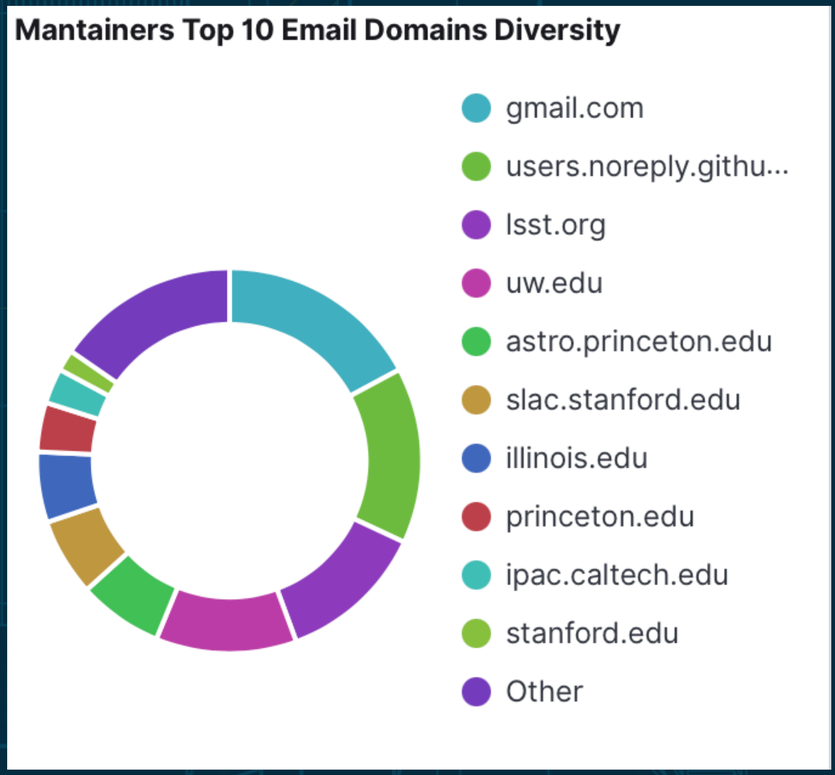


214

Total Contributors

Last year

Construction



(and that's just Data Management)

Open Source by requirement and by culture

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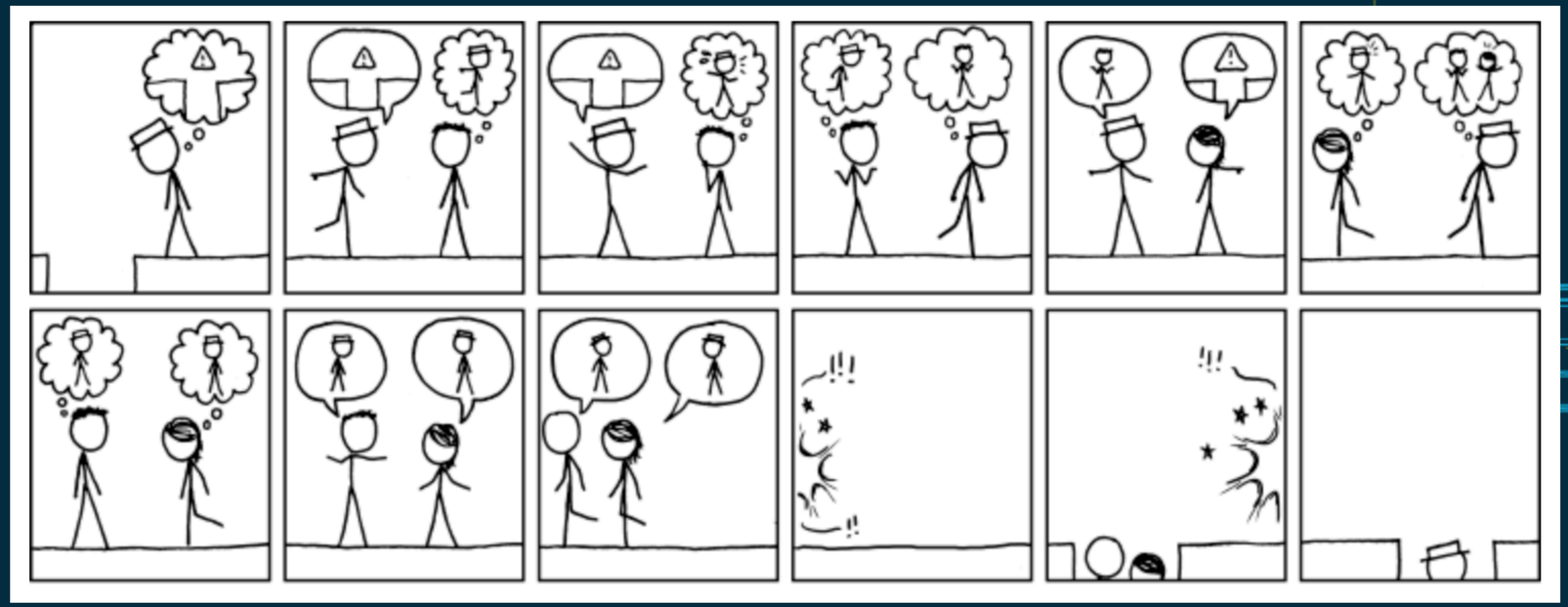
- OSS-REQ-121: “All LSST-written data processing software shall be released under an open-source license”
- Major OSI endorsed licences okay, Pipelines is mostly GPLv3 but MIT, Apache, BSD etc sometimes make more sense
- Our code is on Github (the project does not run an internal code repository) and is public
- github.com/lsst : main Github org, science-facing code and docs particularly, developer guide applies strictly
- Team orgs (lsst-dm, lsst-sqre etc) for experimental / prototype work, back-end services etc) but still public
- If you’re 😭: our experience in working this way has been nothing except positive - remember nobody out there cares about your code more than your coworkers and working in the open is good both for us *and* the field as it becomes a habit.

Communication



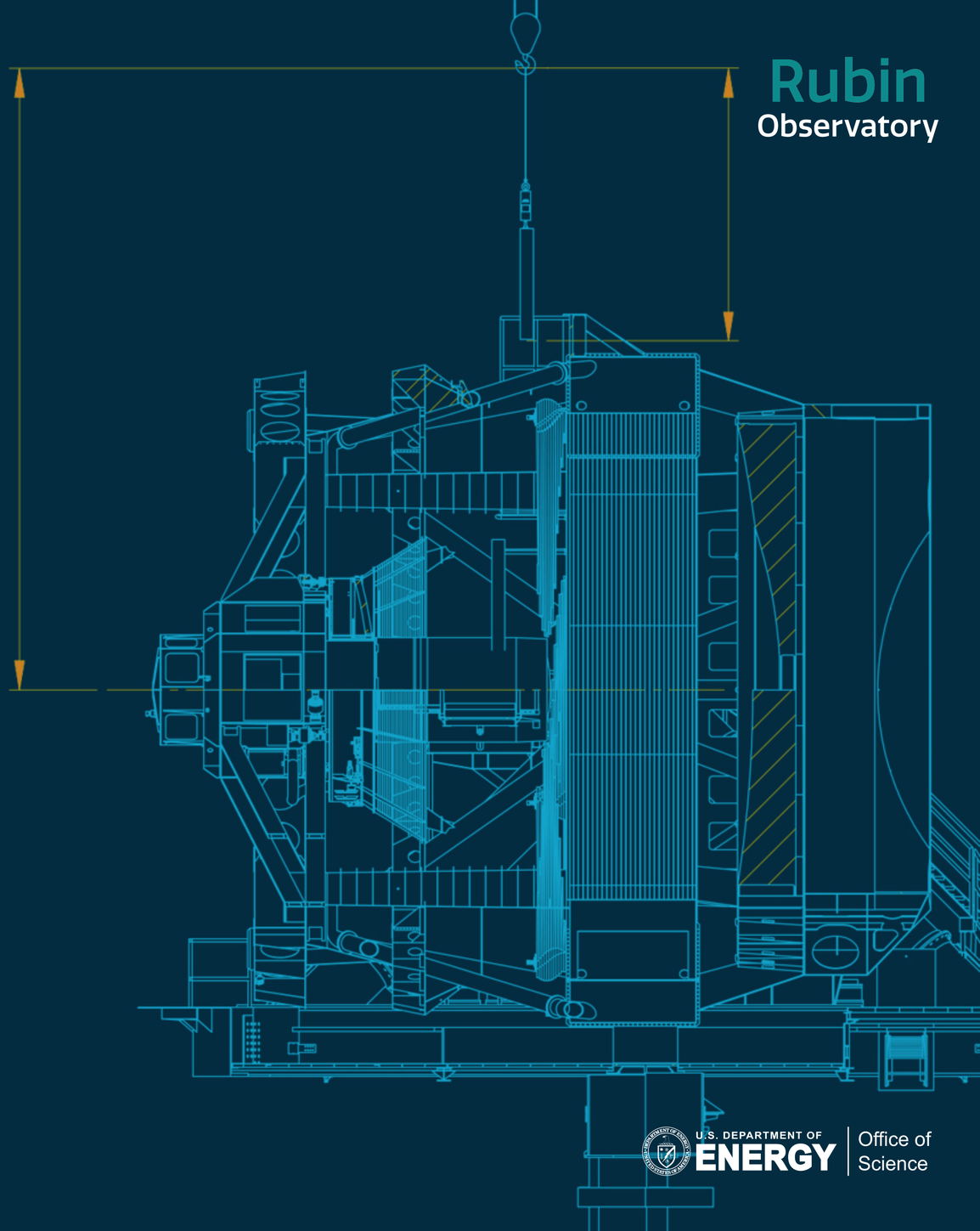
* [Mouseover] Anyone who says they're great at communicating but "people are bad at listening" is confused about how communication works

Now more important than ever…

- Most day-to-day interaction happens on Slack -> workplace norms apply
- Helper apps (bots etc) also post on or are available through Slack
- community.lsst.org web forum is used for less evanescent discussions, announcements and outward communication towards the scientific community -> this largely supersedes email
- “technotes” are our git-based documentation system capture analytical and explanatory thinking -> this largely supersedes wikis and they are so easy to start and work with!! *(see JSick’s talk tomorrow - highly recommended)*
- …. except for Confluence which is primarily used for meeting minutes
- Technical decision making is discussed, recorded and if necessary approved through the Request for Comments project in JIRA
- If you’re 😭 : managing the distraction of communication is an active challenge for team leads and has led to Focus Fridays

Technical Decision Making

👈😭



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Developer empowerment ✊ (and its limits)

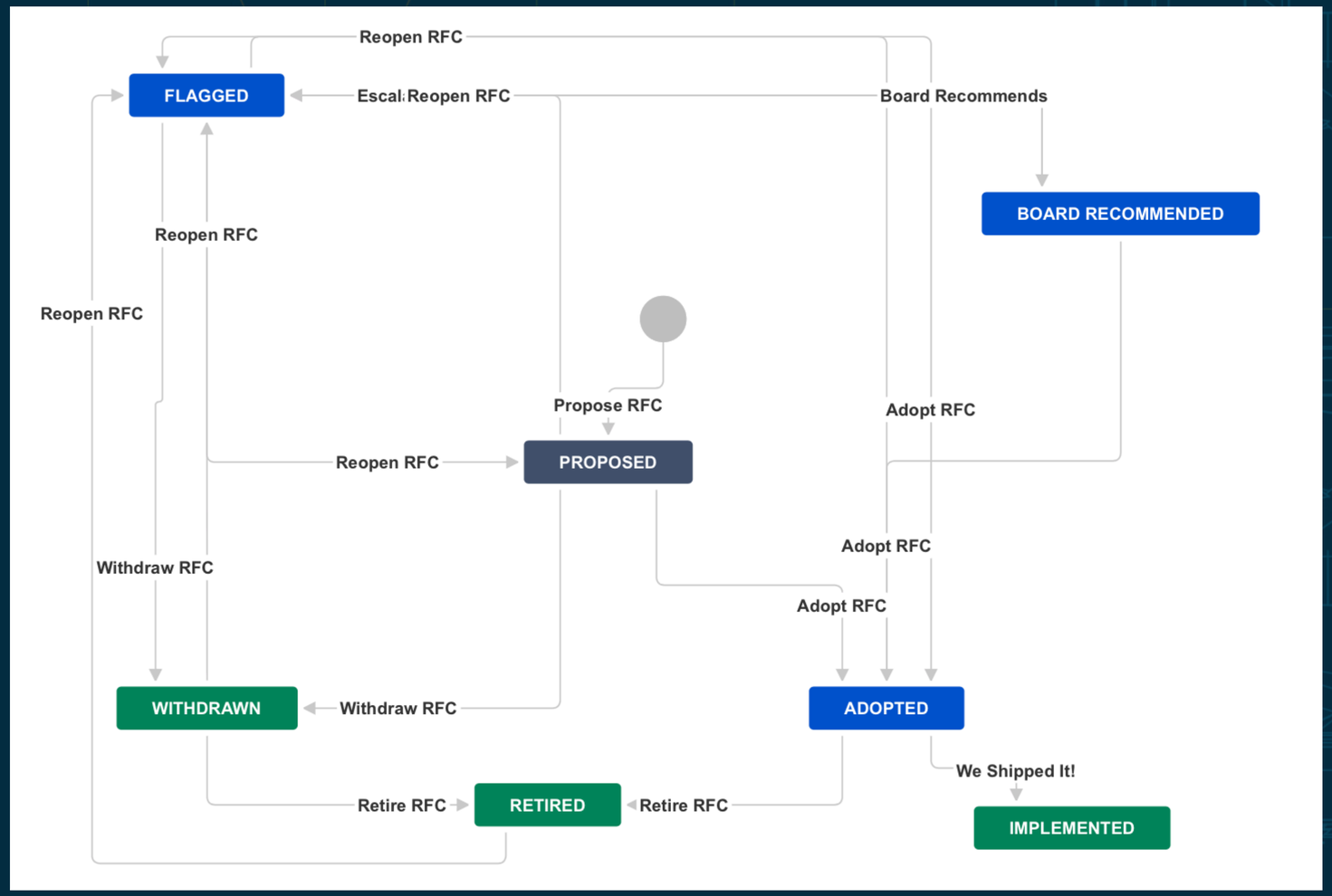
As a DM team member, you are empowered by the DM Project Manager (PM) and DM Subsystem Scientist (SS) to make decisions on any DM-internal matter — including technical/algorithm issues, process improvements, and tool choices — provided that **all** of these criteria are met:

1. You, or team members who agree with you, are willing and able to do the work to implement the decision,
2. You (collectively) are willing and able to fix any problems if it goes wrong.
3. You believe that all affected parties (including your immediate manager) would not seriously object to your decision and implementation.

If these criteria aren't satisfied, you can still promote your proposal by creating a Request for Comments.

developer.lsst.io

RFC ticket workflow



RFCs can be adopted by the proposer, or they can be ecalated to the change-control board

RFCs are commonly escalated because they affect APIs or are not cost neutral, or because they fail to converge satisfactorily

Request for Comments (RFC) JIRA Project

Request For Comments / RFC-725

Update baseline python to version 3.8

Edit | Comment | Assign | More | Retire RFC | We Shipped It! | Reopen RFC | Admin

Details

Type:	RFC	Status:	ADOPTED (View Workflow)
Component/s:	DM, TCT	Resolution:	Unresolved
Labels:	None		

Description

In March 2019 in ~~RFC-584~~ we updated python from v3.6 to 3.7. Before the next pipelines release in November I propose we update our baseline python to v3.8 so that we can be prepared for commissioning activities next year. The closer we get to commissioning the less willing we will be to change things and this will give us a solid base to work from.

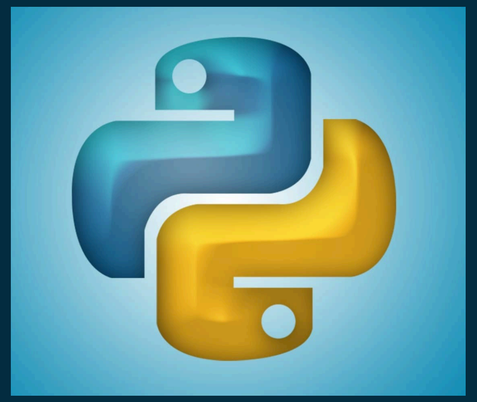
There are, of course, new features for 3.8 and they are listed at https://docs.python.org/3/whatsnew/3.8.html

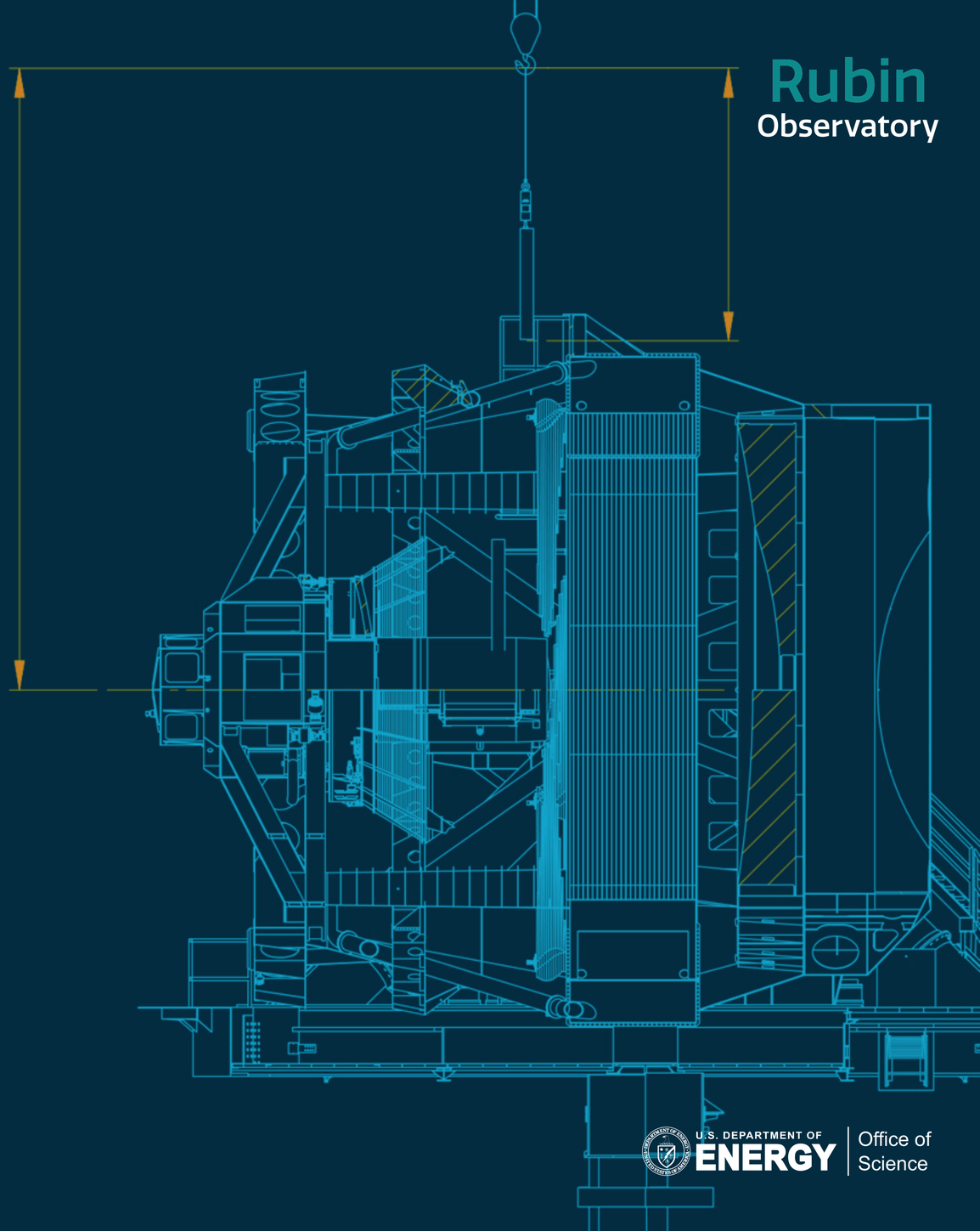
These include:

- "walrus" operator
- Improved type annotations
- Improved asyncio (I believe telescope and site are also interested in this)
- Some places that used to return OrderedDict now return a normal dict (because dicts are ordered)
- Speed ups for shutil.copy and shutil.move

This is the kind of RFC that gets escalated…

Python





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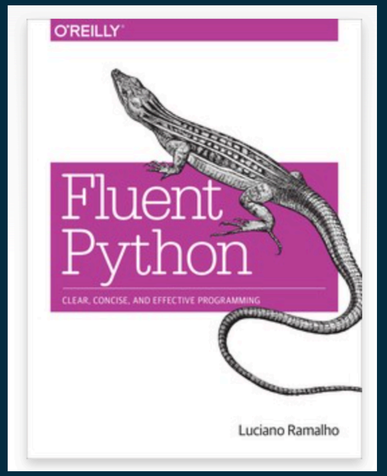
Python at Rubin Observatory

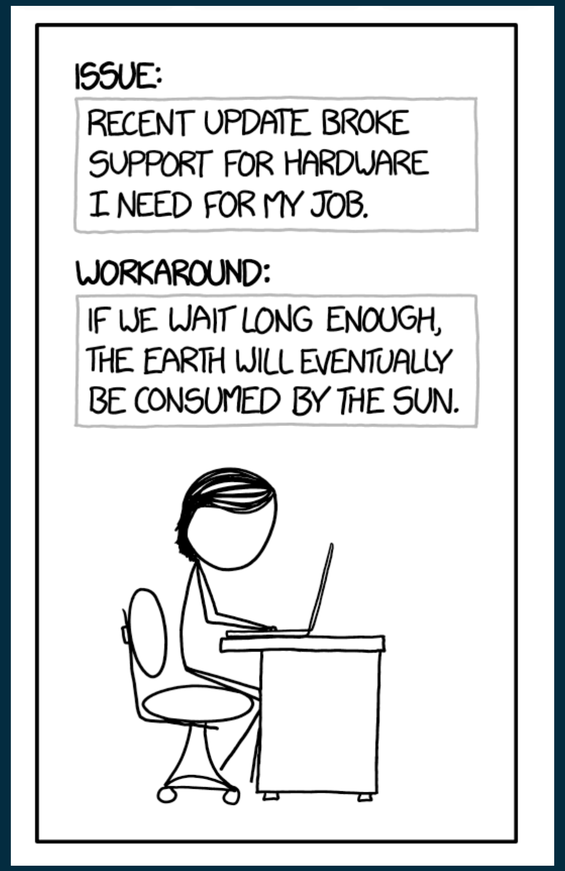
- Python is heavily favoured across the observatory. It is the lingua franca even in groups where other languages are required and has led to shared infrastructure across subsystems
- Python 3.x has been required in DM since 2017. We have been upping minor versions since then to take advantage of new, powerful language features
- It is a core skill sought in the majority of our recruitments
- If you're 😭: approach your team lead for help - we have supported people with bootcamps, book club, etc, again see developer guide



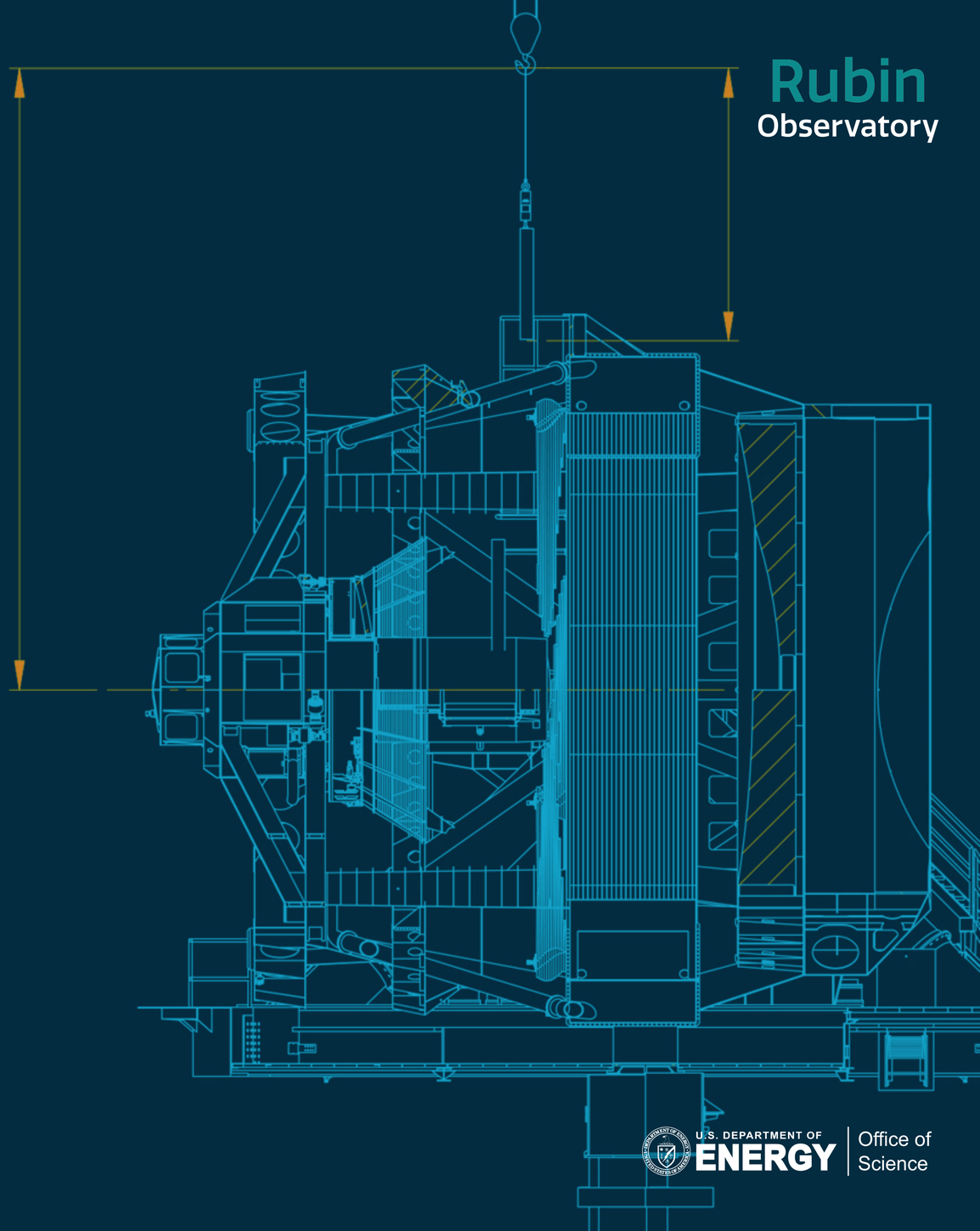
All DM Python code MUST work with our standard environment

All the Python code written by LSST Data Management must run under the version of Python provided in our standard environment. Any feature available in that version of Python may be used. There is no requirement to support Python 2 or earlier Python 3 versions.

Planning & Tracking Work



👉😭



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Data Management / DM-25189

Make sure that DCS handles 0/360 azimuth and 0/90 elevation boundaries properly

Edit | Comment | Assign | More | Review Complete | In Progress | Admin | Email | Pivot Report | Export

Details

Type:	Story	Status:	IN REVIEW (View Workflow)
		Resolution:	Unresolved
Component/s:	ts_dome	Fix Version/s:	None
Labels:	ts_Dome		
Story Points:	2		
Epic Link:	Dome Work Phase 5		
Sprint:	TSSW Sprint - Sep 28 - Oct 12		
Team:	Telescope and Site		
Urgent?:	No		

People

Assignee:	Wouter van Reeven
	Assign to me
Reporter:	Wouter van Reeven
Reviewers:	Russell Owen
Watchers:	Russell Owen, ... (1)
Votes:	0 Vote for this issue
Watchers:	2 Start watching this issue

Dates

Created:	02/Jun/20 8:30 AM
Updated:	5 days ago

Description

Currently the azimuth rotation doesn't handle the 0/360 azimuth and 0/90 elevation boundaries at all. It will just move to negative (in case of the 0 boundary) or too large (in case of the 360 and 90 boundaries) values. Please fix.

Development

1 branch

1 pull request OPEN Updated 3 days ago

Attachments

2 story points = 1 idealised day of work => ~ 7.5 SPs in realistic week (for 100%, 6 if you are designated as a scientist etc

pull requests are generally reviewed before merging

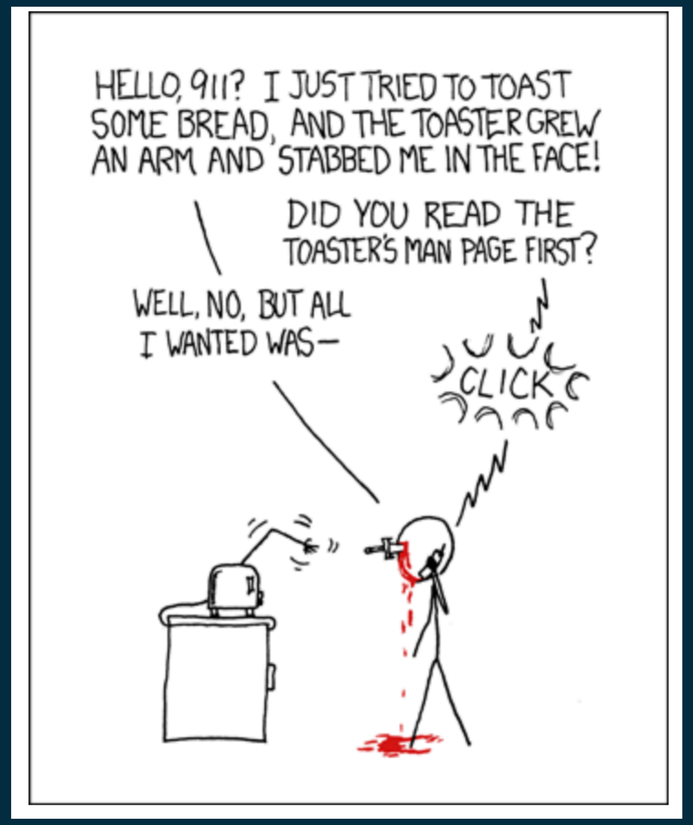
stories are contained in epics and possibly sprints

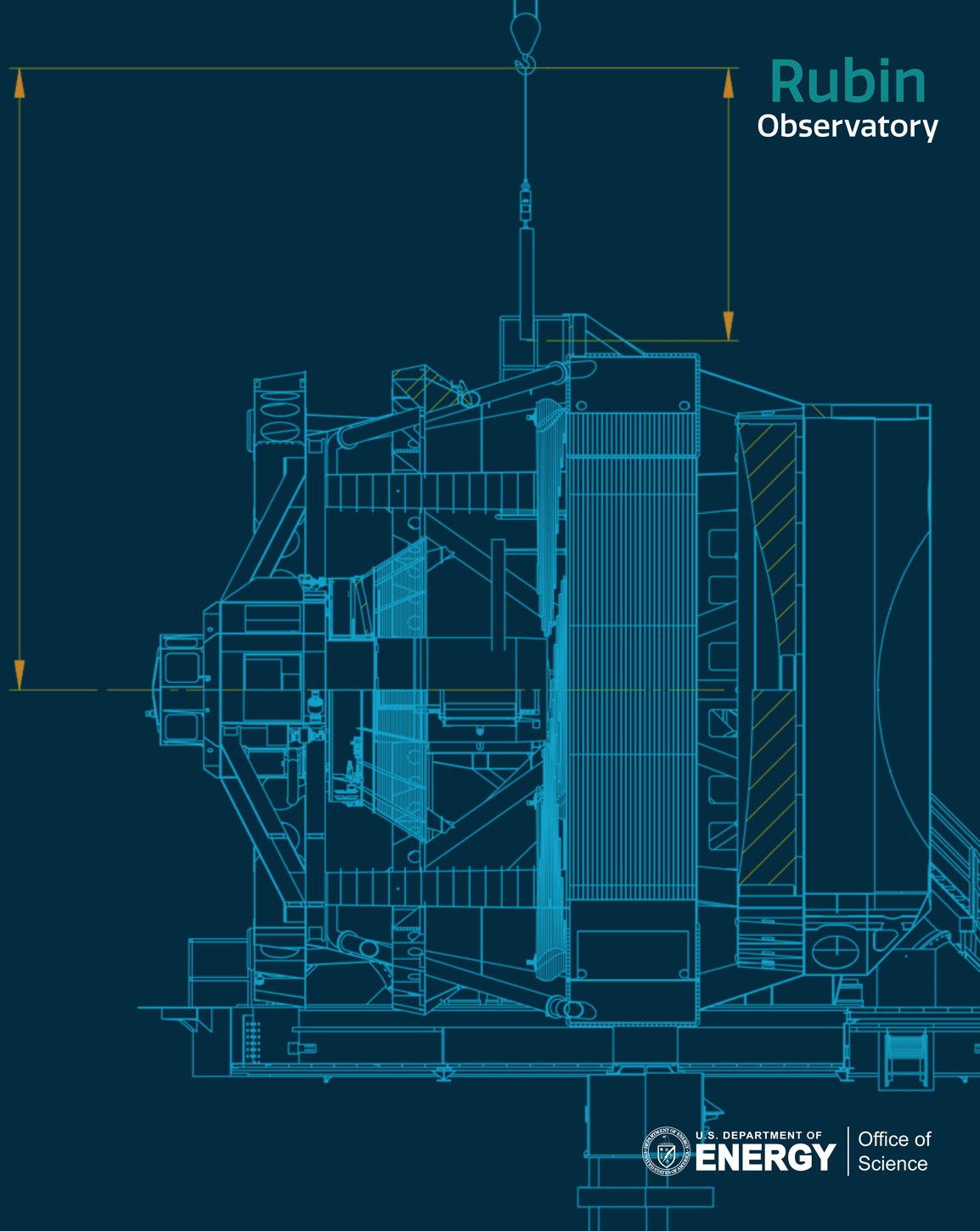
Code reviews without 😭

- If you're not used to a code review process it can be intimidating
- Code review is just a form of technical communication
- The infrastructure should take care of stylistic elements - *as a reviewer* you are there to mainly answer the questions:
  1. Do I understand what this code does?
  2. Is this code fit for purpose? (feature wise, performance wise, etc)
  - Things to avoid are nitpicking because you would have done it differently, and having a post-facto design review.
- If it is your code which is being reviewed:
  1. It's okay! Even our cleanest coders get comments most of the time!
  2. If your reviewer can't follow your code, that's not a draw…
- Code review not only makes the code more maintainable, it allows you to go on nice, uninterrupted vacations….

- For more information on how to develop with git, how to deal with pull requests, our stance on hot topics like rebasing, branch policies, as well as build and test processes *see Tim Jenness' talk in the Science Pipelines session tomorrow*
- If you are infrastructure engineers and interested in deployment of Kubernetes services the Rubin way, see the bonus event on Friday, *Christine Banek's talk on deploying Rubin Science Platform services with ArgoCD*
- To summarize: the best way to prepare for working with software in Rubin Operations without 😭 is to:
    - Develop your python fluency
    - Get comfortable working in git
    - Hit us up on Slack
    - Read the developer guide

This talk was not a substitute for reading the developer guide





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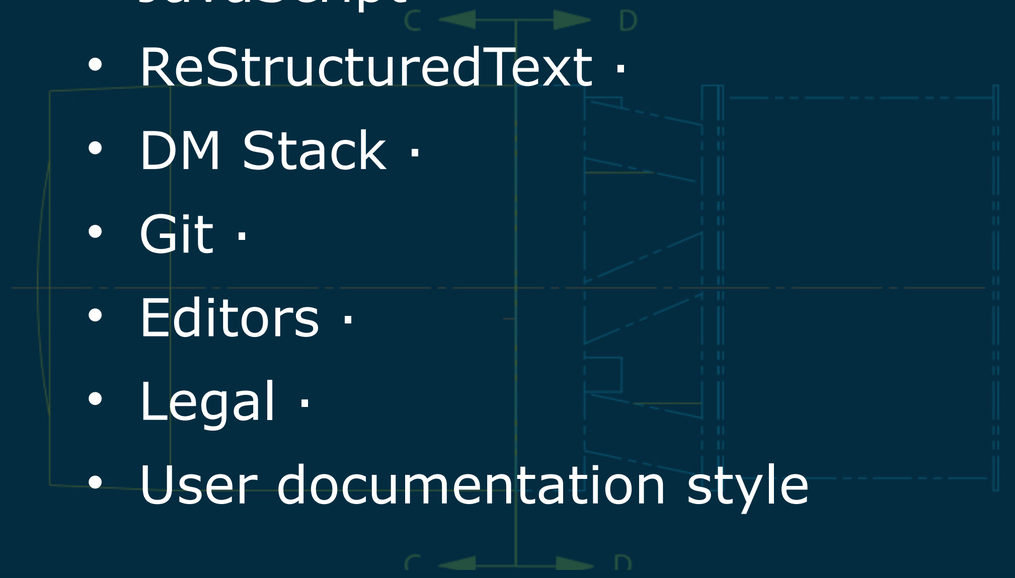
The developer guide is a live document

- Team
- Communications
- Project documentation
- Work management
- Services:
  - Jenkins
  - LSST Data Facility
- Development guides:
  - C++
  - Python
  - Pybind11
  - JavaScript
  - ReStructuredText ·
  - DM Stack ·
  - Git ·
  - Editors ·
  - Legal ·
  - User documentation style



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HAVE FUN!! 

Ops Bootcamp | 2020-10-13 | frossie@lsst.org

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