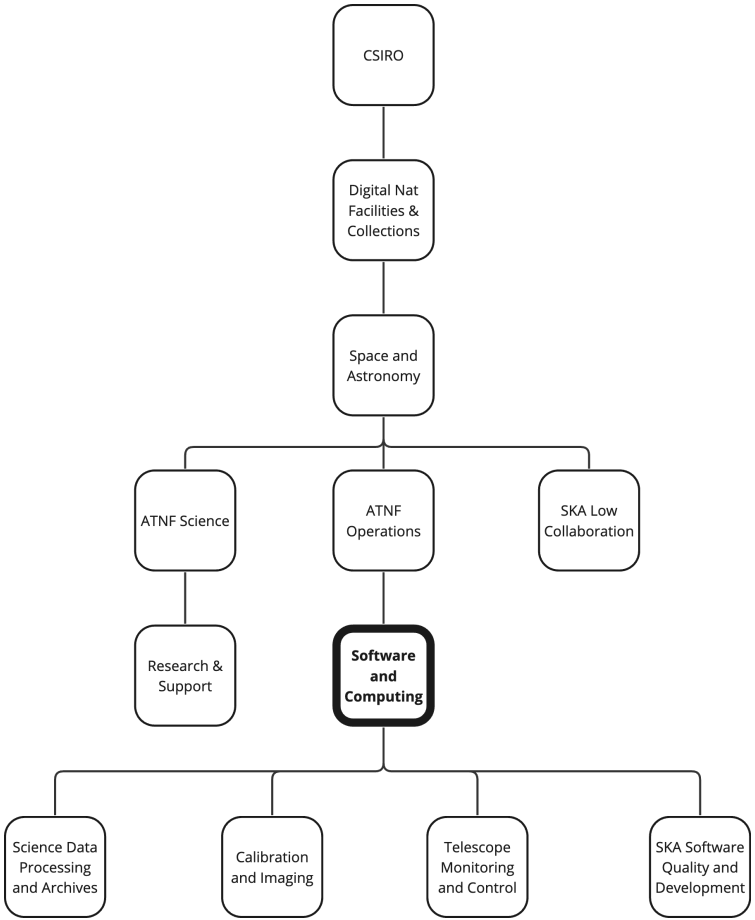
Working together on software

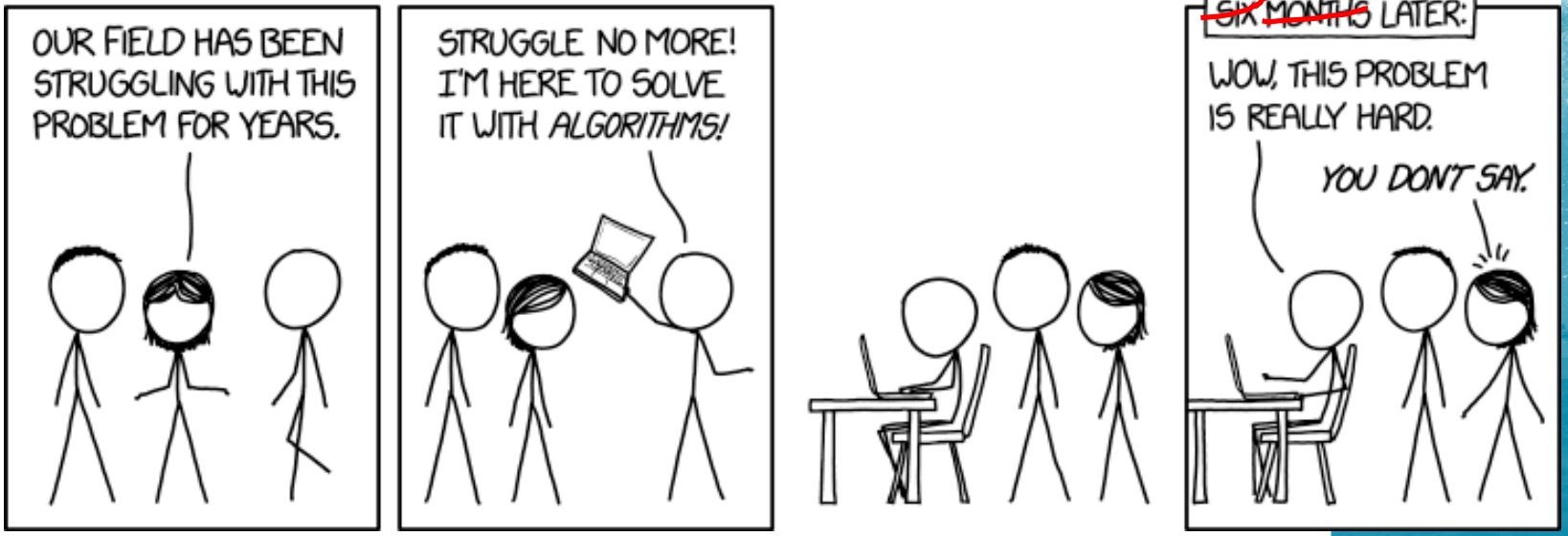
Eric Bastholm | ATUC 10 April 2024
Software and Computing group, Space and Astronomy


CSIRO
Digital Nat Facilities & Collections
Space and Astronomy
ATNF Science
ATNF Operations
SKA Low Collaboration
Research & Support
Software and Computing
Science Data Processing and Archives
Calibration and Imaging
Telescope Monitoring and Control
SKA Software Quality and Development

Software development at ATNF

- Highly domain specific
- Novel problem space
- Non-trivial deployment targets
- Small teams
- Diverse developer background (RSE dichotomy)
- How can we improve outcomes?

Software is … um … challenging



YEARS!

~~10~~ ~~A year~~

https://xkcd.com/1831/

Challenges planning work

- Demands from multiple projects
- Overlapping timelines and coinciding deadlines
- Increasing support footprint
- Technical debt and “Us” as a project
- Finite developer resources
- Highly silo-ed
- Difficult to estimate effort and scope – when is it finished?
- Dependencies on third parties
- Hidden work

First steps in planning software effort

- Talk to us early
- Conversation will reveal what effort is required
- Try not to make assumptions about complexity or effort
- Use our team's expertise – they have been doing this for ages!
- Chat with our team leads and include them in planning and progress catchups
- "Thinking time" (planning, analysis, design) is always a good investment

Considerations

- Priorities
- Prototype vs Production
- Concept, or is this going to be a “facility”?
- When does it transition from one to another?
- There’s more to just writing the code – devops, operations, maintenance, enhancements, documentation, testing, bug fixing, support and training, data, backups, publishing
- We are also CSIRO - cybersecurity, export controls, standards, international collab constraints, etc

Working together

- We’d like to develop more tools and interfaces to help develop, integrate and interoperate with other Astro codes both within and outside ATNF
- We’d like to increase awareness of the need for software development planning across ATNF, and the software development resourcing impacts of starting new projects
- Software development, improvement and ongoing support are critical to science outcomes
- We plan to initiate some catchups in future to encourage collaboration – so watch this space!
- Thoughts? Feedback? Comments?

Thank you

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