Open Digital Infrastructure in Astrophysics

Key findings

- There is not a one-size-fits-all answer for nurturing a culture of free, open source, open-knowledge software instrument sharing in astronomy.
- There is an important distinction between funding innovation-driven research and funding maintenance and community support, but both are needed.
- There are 21 questions that a potential funder will likely have in mind when considering support of a specific software project.
- The builders of digital infrastructure in stellar astrophysics are deeply interconnected to each other and technically very talented. The core platform they have built to power much of modern astronomy can be thought of as a machine that benefits from both innovation (new capabilities) and maintenance to prevent wear (upkeep of existing software). These twin pillars help developers continue doing what they do best.

"Figuring out how to support digital infrastructure may seem daunting, but there are plenty of reasons to see the road ahead as an opportunity."
-Nadia Eghbal, Roads And Bridges: The Unseen Labor Behind Our Digital Infrastructure

Recommendations

- Consider the creation of a "Digital Infrastructure Fellows" program.
- Each Fellow would be funded for 3-5 years at the institution that makes the most sense for the digital infrastructure project(s).
- A Fellows program is a direct and concrete solution to the questions and findings of the project report.

Guiding questions and approach

- What is the relationship between money and sustainability for community-driven, open knowledge software instruments that enable transformative research in stellar astrophysics?
- At what points in a software instrument's lifecycle does an injection of financial resources help or hurt?
- Are science driven software instruments sustainable for the long term (in this case, defined as the next 40 years)?
- In the project's report, 17 software projects cover questions on science capability, developer model, target community, bibliometrics, funding profile, and sustainability efforts.

Learn more

You can read the full report here. Please reach out to Frank Timmes at fxtimmes@gmail.com with any questions.

The "Open Digital Infrastructure in Astrophysics" workshop was held June 4 - 5, 2019 at the Kavli Institute for Theoretical Physics at UC Santa Barbara, http://cococubed.asu.edu/digital_infrastructure_astronomy/. This workshop formed the basis for a 21 page report published in January 2020 by the American Astronomical Society, HYPERLINK "https://ui.adsabs.harvard.edu/abs/2020BAAS...52a0201T/abstract" https://ui.adsabs.harvard.edu/abs/2020BAAS...52a0201T/abstract.

FORD FOUNDATION

ALFRED P. SLOAN FOUNDATION