

# The Conceptualization of URSSI – How You Can Engage

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# Conceptualizing a US Research Software Sustainability Institute (URSSI)



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### Award Abstract #1743188

#### SI2-S2I2 Conceptualization: Conceptualizing a US Research Software Sustainability Institute (URSSI)

NSF Org: [OAC](#)  
[Office of Advanced Cyberinfrastructure \(OAC\)](#)

**Initial Amendment Date:** December 21, 2017

**Latest Amendment Date:** December 21, 2017

**Award Number:** 1743188

**Award Instrument:** Standard Grant

**Program Manager:** Vipin Chaudhary  
OAC Office of Advanced Cyberinfrastructure (OAC)  
CSE Direct For Computer & Info Scie & Enginr

**Start Date:** December 15, 2017

**End Date:** June 30, 2019 (Estimated)

**Awarded Amount to Date:** \$499,999.00

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# URSSI Team



**Karthik Ram**

UC Berkeley



**Sandra Gesing**

Notre Dame



**Jeff Carver**

University of Alabama



**Daniel S. Katz**

UIUC



**Nic Weber**

U. Washington



## Senior Personnel

Wolfgang **Bangerth** · Anshu **Dubey** · Melissa **Haendel** · Michael A **Heroux** · Kathryn **Huff** · Suresh **Marru** · Kate **Mueller** · Jarek **Nabrzyski** · Kyle **Niemeyer** · Marlon **Pierce** · Ariel **Rokem** · Arfon **Smith** · Tracy **Teal** · Matthew **Turk** · Rick **Wagner** · Michael **Zentner**

## Advisory Board

Richard **Arthur** · Michelle **Barker** · Philip E. **Bourne** · Neil **Chue Hong** · Daniel **Crawford** · James **Howison** · Kurt **Schwehr** · Jeff **Spies** · Nancy **Wilkins-Diehr**

# Research Software



Use

90%

Can't  
continue  
without

70%



95%

63%

<http://doi.org/10.5281/zenodo.843607>

# Research Software

> 50% neither formal nor informal training  
in software engineering

Use

90%

95%

Can't  
continue  
without

70%

63%

# Research Software



Use

90%

95%

Can't  
continue  
without

70%

63%



# Research Software



How to cite software?

Use

90%

95%

Can't  
continue  
without

70%

63%

<http://doi.org/10.5281/zenodo.843607>

# Areas of Concern

- Functioning of the individual and team
- Functioning of the research software
- Functioning of the research field itself



Developing a pathway to  
research software sustainability

# Functioning of the Individual and Team

- Training & education
- Ensuring appropriate credit for software development
- Enabling publication pathways for research software
- Fostering satisfactory and rewarding career paths for people who develop and maintain software
- Increasing the participation of underrepresented groups in software engineering

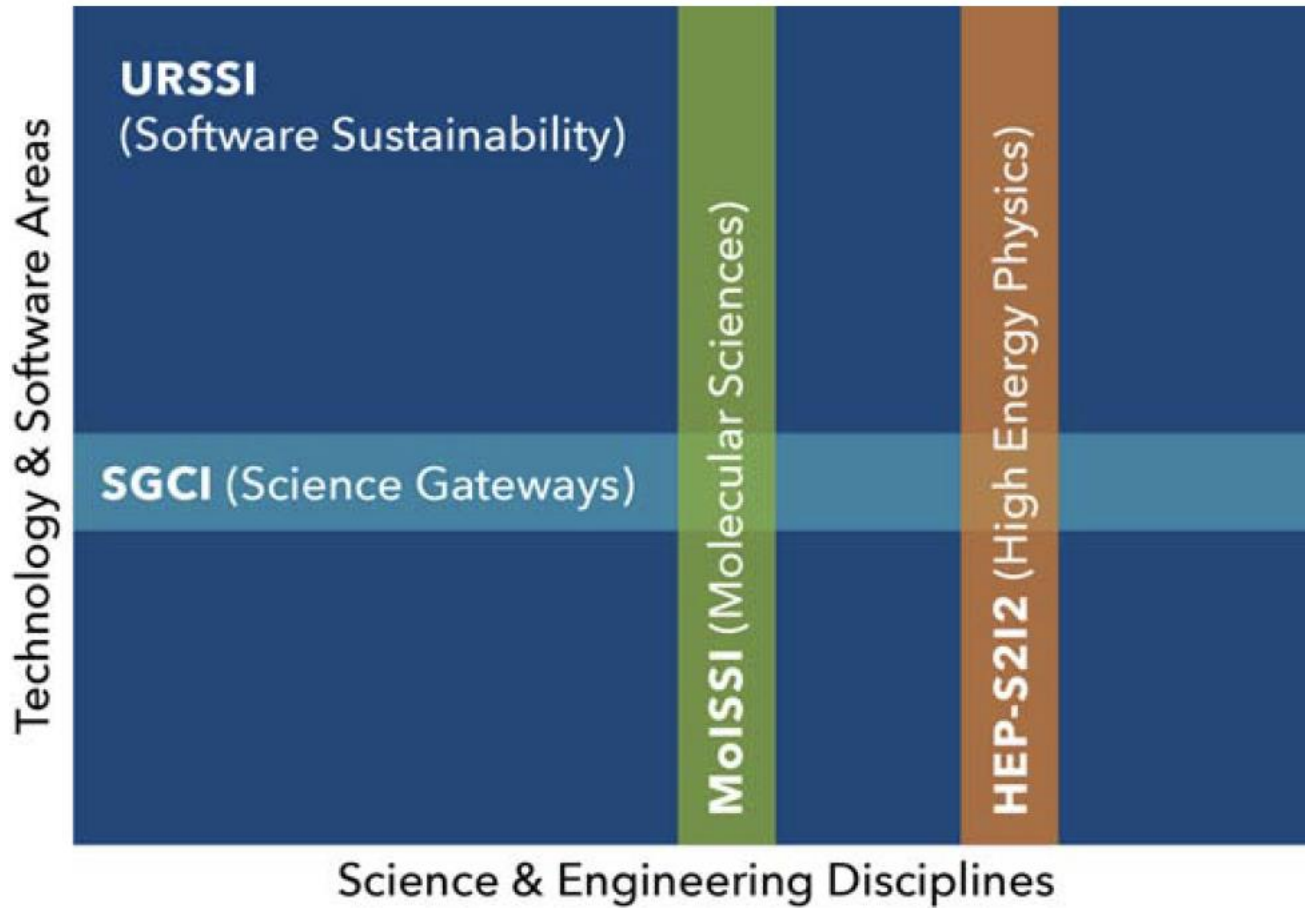
# Functioning of Research Software

- Supporting sustainability of the software
- Growing community, evolving governance, and developing relationships between organizations, both academic and industrial
- Fostering both testing and reproducibility
- Supporting new models and developments (e.g., agile web frameworks, Software-as-a-Service)
- Supporting contributions of transient contributors (e.g., students)

# Functioning of the Research Field Itself

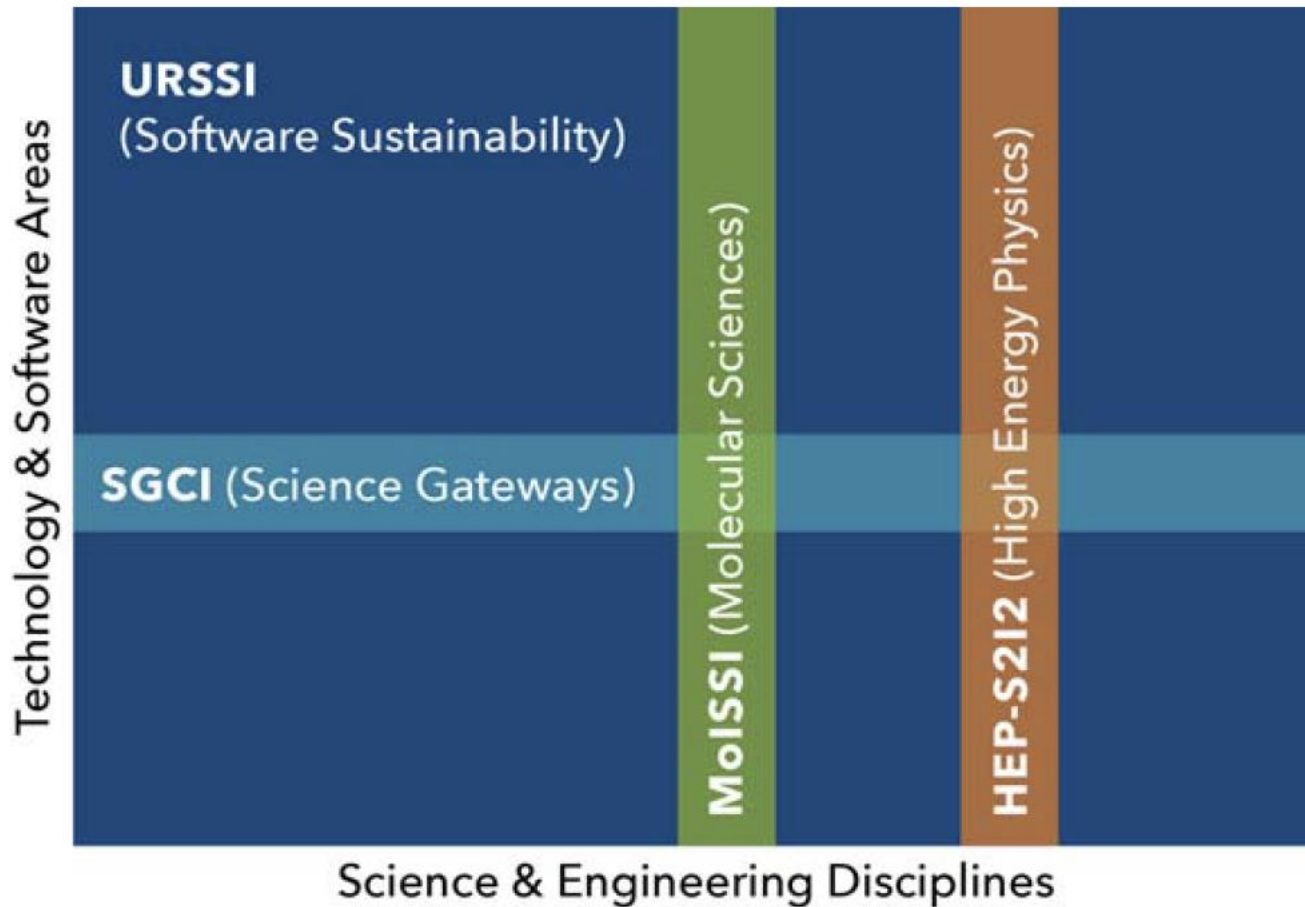
- Growing communities around research software and disparate user requirements
- Cataloging extant and necessary software
- Disseminating new developments
- Training researchers in the usage of software
- Understanding and improving pipelines of diverse developers and maintainers

# URSSI and Other S2I2 Projects





# URSSI and Other S2I2 Projects



**Goal: Close collaboration and  
fill in gaps on each axis**

# Conceptualization

- Workshops
  - First workshop took place in April in Berkeley



# Conceptualization

- Workshops
  - First workshop took place in April in Berkeley
  - Next workshop will take place in October in Chicago
  - Software credit workshop
  - Incubator workshop
- Survey
- Ethnographic studies
- Mission and vision working group

# Initial Straw Man

	Supporting software	Supporting science	Supporting community	Science Impact
Development support	x			x
Incubator	x			x
Training	x	x		x
Policy		x	x	x
Community	x	x	x	x

# How to Connect

- Website <http://urssi.us/>



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Developing a pathway to  
research software sustainability

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- Materials <https://github.com/si2-urssi>

The screenshot shows the GitHub profile page for the US Research Software Sustainability Institute (URSSI). The header includes the GitHub logo, a search bar, and navigation links for Pull requests, Issues, Marketplace, and Explore. The profile section features the URSSI logo, the organization name, and a description: "Org repo for the NSF funded conceptualization on making research software sustainable". It also lists the location (Berkeley, CA), website (<http://urssi.us/>), and contact email ([contact@urssi.us](mailto:contact@urssi.us)). Below this, there are tabs for Repositories (4), People (6), Teams (2), and Projects (0). The "Pinned repositories" section displays two repositories: "website" (Website for US Research Software Sustainability Institute (URSSI), CSS, 2 forks) and "berkeley\_workshop" (Repo for the April 10-12 workshop to be held in Berkeley, CA, 10 stars, 18 forks). A search bar and filters (Type: All, Language: All) are present. The main repository list shows "berkeley\_workshop" (10 stars, 18 forks, updated 5 days ago) and "website" (2 forks, updated 9 days ago). A "mission-vision" repository is also listed (updated 14 days ago). On the right, the "Top languages" section shows CSS, and the "People" section shows 6 members.



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## Results from a US survey about Research Software Engineers

Daniel S. Katz, Sandra Gesing, Olivier Philippe, and Simon Hettrick, *June 21, 2018*

In 2016, the UK Software Sustainability Institute (SSI) ran a first survey of Research Software Engineers (RSEs): the people who write code in academia. This produced the first insight into the demographics, job satisfaction, and practices of RSEs. To support and broaden this work, the Institute planned to run the survey every year in the UK and an ever-expanding number of countries so that insight and comparison can be made across the globe. Ultimately, the SSI hopes that these results, the anonymized version of which are open licensed, will act as a valuable resource to understand and improve the working conditions for RSEs.

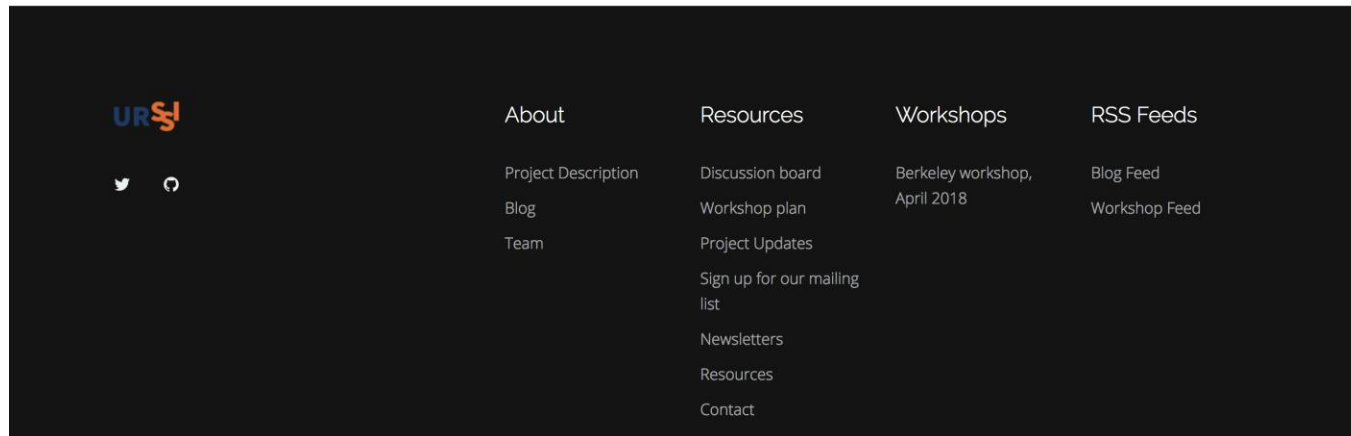
In 2017, led by Olivier Philippe and Simon Hettrick from the SSI, a set of such surveys were run across the the UK, Canada, Germany, the Netherlands, South Africa, and the US. One or more people from each non-UK country “translated” the questions so that they made sense in the local language and culture. The UK team ran the surveys, with the collaborators from the other countries—Scott Henwood (Canada), Stephan Janosch and Martin Hammitzsch (Germany), Ben van Werkhoven and Tom Bakker (Netherlands), Anelda van der Walt (South Africa), and Daniel S. Katz and Sandra Gesing (USA)—helping to publicize the survey in their countries. When the surveys were complete, the UK team analyzed the

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<div><div><div><div></div><div></div></div><div>Welcome to URSSI discourse</div></div></div>					
Research software is critical to supporting science. This research software is essential to progress in almost all research fields, but it's often not developed in an efficient or sustainable way, and knowledge is often ... <a href="#">read more</a>		<div><div><div></div><div></div></div><div><div></div><div></div></div></div>	1	76	Apr 26
US RSE Community: any existing efforts?		<div><div><div></div><div></div></div><div><div></div><div></div></div></div>	1	15	6d
Software project management for people with backgrounds in other research disciplines		<div><div><div></div><div></div></div><div><div></div><div></div></div></div>	1	26	15d
Teaching RSE skills		<div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div>	4	72	20d

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# Thanks!

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**Join us for our next workshop in October in Chicago!**