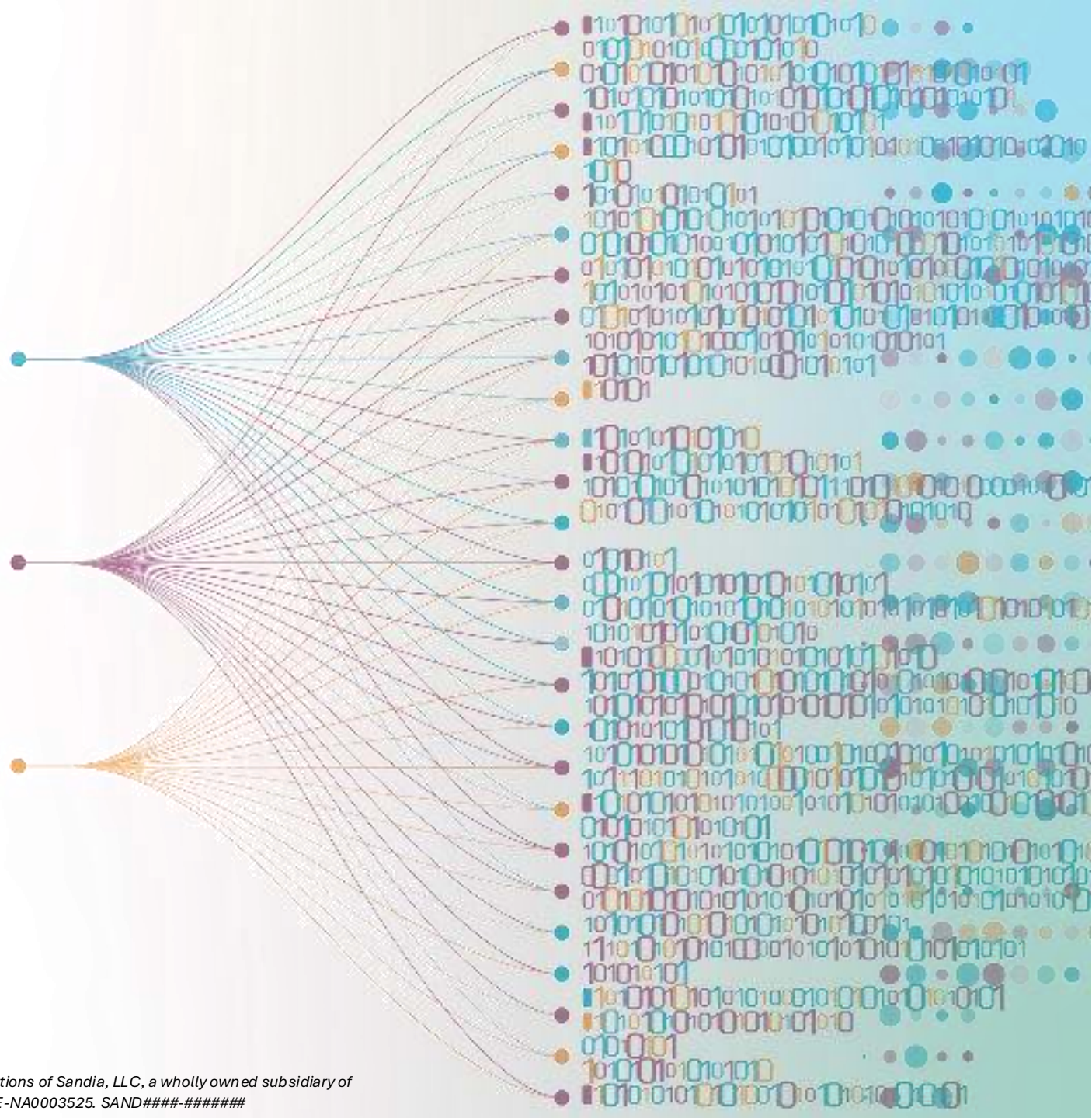

NLS³C CoP

Like-Minded Organizations

U.S. DEPARTMENT of ENERGY

National Nuclear Security Administration

Sandia National Laboratories

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Check Out Our Wiki: https://tiny.sandia.gov/nls3c-cop

- Suggest topics for, or volunteer to lead, a future webinar
- Request content be added, or add it yourself
- Volunteer to join the leadership team

Date	Topic	Presenter	Institution
January 13th	Clean Code	Jason M. Gates	Sandia
February 10th	Test-Driven Development	Robert Kahler	Sandia
March 10th	SOLID Principles by Example	Nathaniel Roehrig	Sandia
April 14th	Agile Development	Ryan Shaw	Sandia
May 12th	Working Effectively with Legacy Code	Nathaniel Roehrig	Sandia
June 9th	Like-Minded Organizations	Rinku Gupta, Elaine Raybourn, Ian Cosden, Dan Katz, Keith Beattie	ANL, Sandia, Princeton, U of I, LBNL
July 14th	Conference Recap	YOUR NAME HERE	?

Agenda

- **Better Scientific Software** (BSSw)
  Rinku Gupta, Argonne National Laboratory
- **The Consortium for the Advancement of Scientific Software** (CASS)
  Elaine Raybourn, Sandia National Laboratories (retired)
- **Innovative Training Enabled by Research Software Engineer Community of Trainers** (INTERSECT)
  Ian Cosden, Princeton University
- **The Research Software Alliance** (ReSA)
  Daniel S. Katz, University of Illinois
- **The US Research Software Engineer Association** (US-RSE)
  Keith Beattie, Lawrence Berkeley National Laboratory

better scientific software

A Short Introduction to BSSw.io

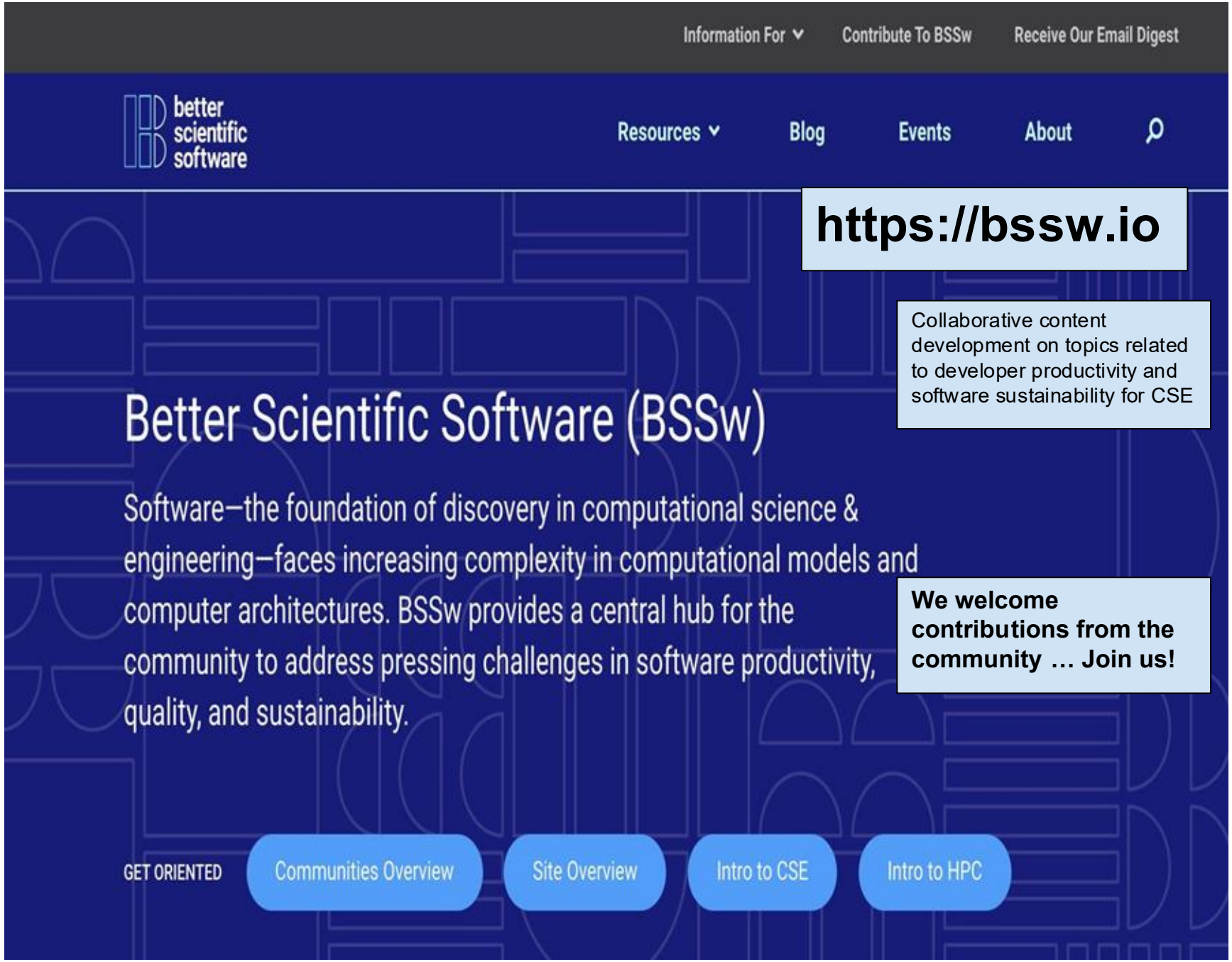
https://bssw.io

So your code will see the future

Rinku Gupta
Editor-in-Chief, BSSw.
June 2026

Agenda

- **BSSw.io overview**
- **How to contribute**



Dedicated to improving developer productivity and software sustainability for CSE

https://bssw.io

- **Community-based resource for scientific software improvement**
- Hub to gather, write, and disseminate experiences, techniques, tools, and other resources

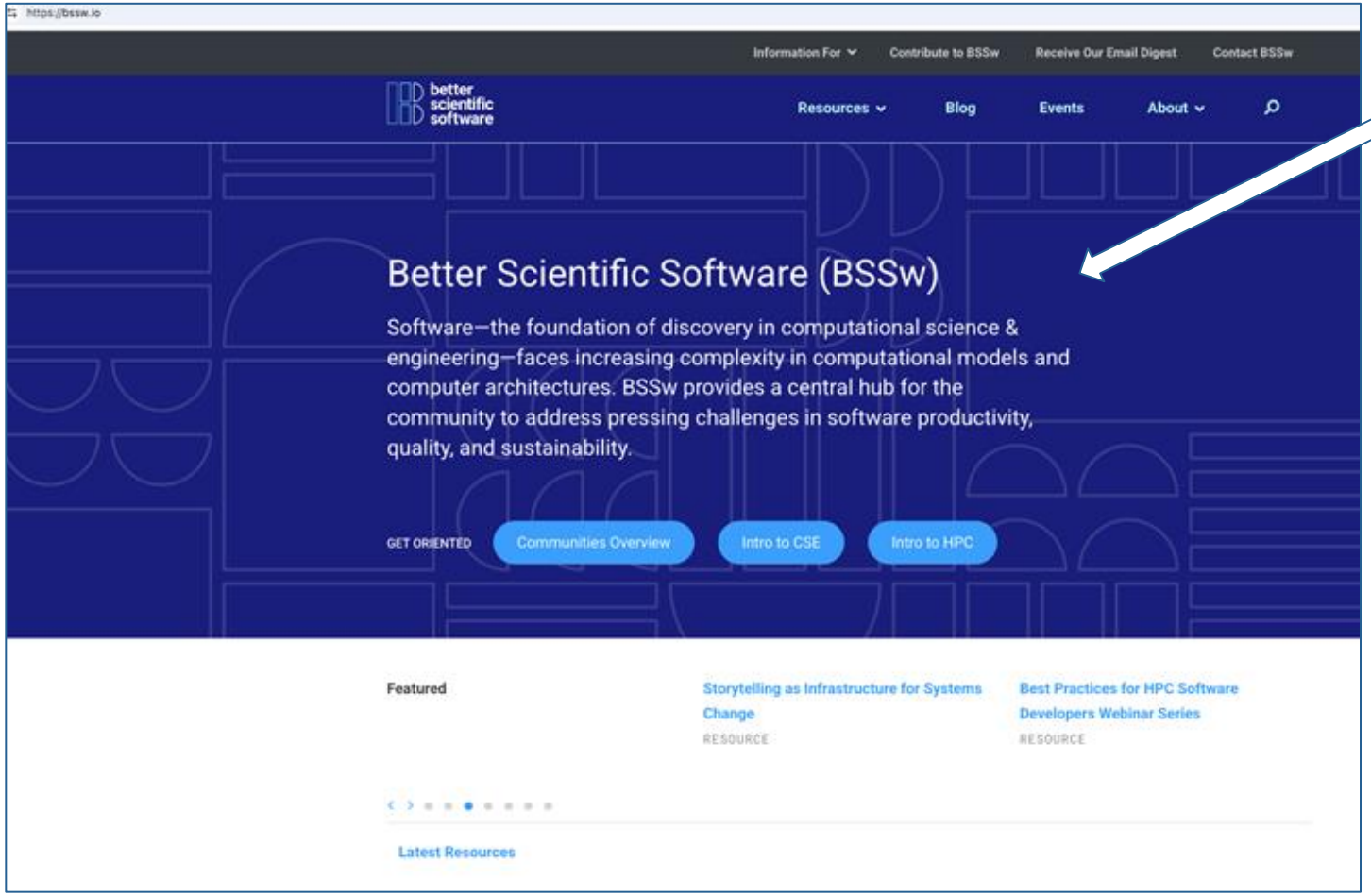
Goals:

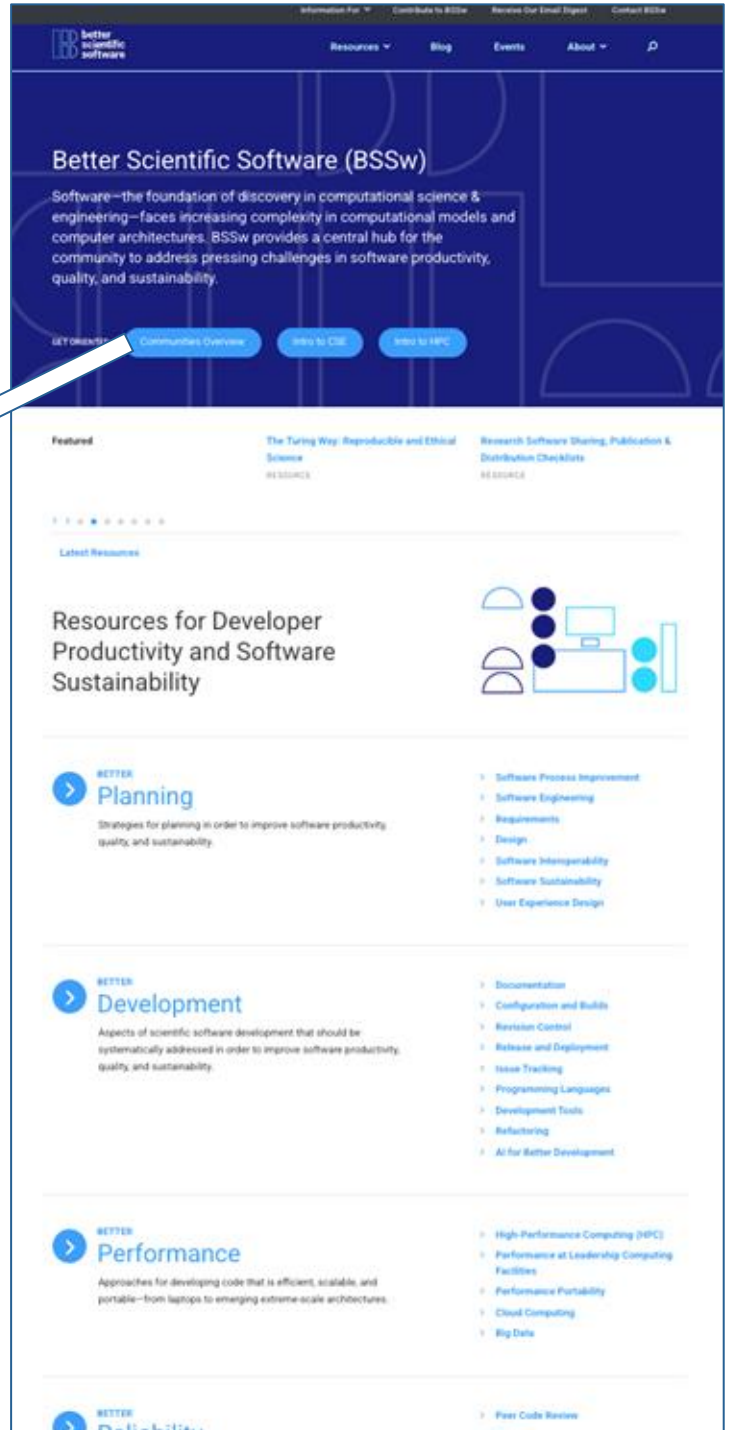
- *Raise awareness of best practices* to scientific productivity and to the *quality and reliability* of computationally-based *scientific results*
- *Raise awareness of the increasing challenges* facing HPC/CSE software developers

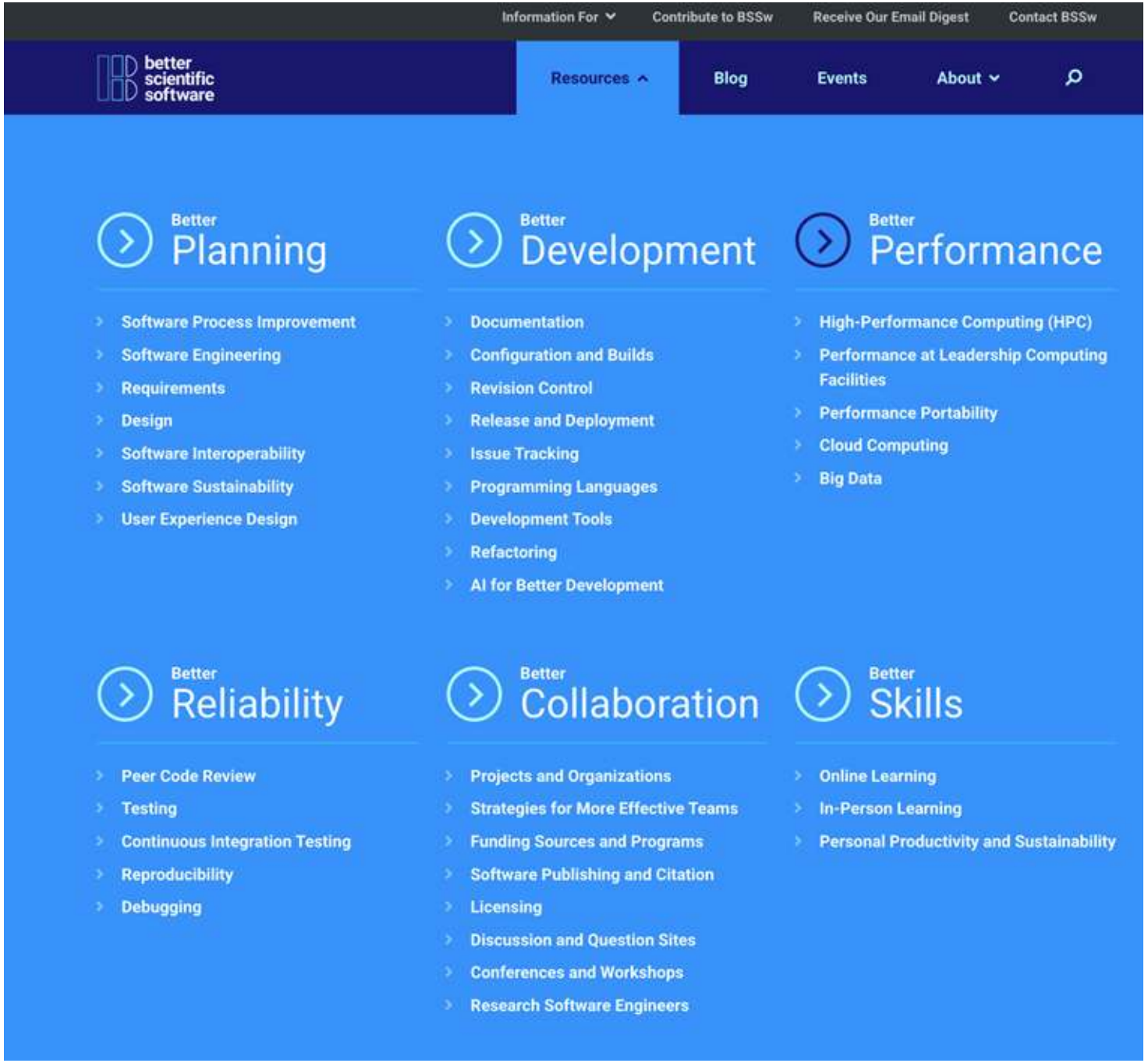
Site users can:

- **Find information** on scientific software topics
- **Curate or create new content** based on their own experiences.

Front Page of https://bssw.io/







BSSw.io Content Map

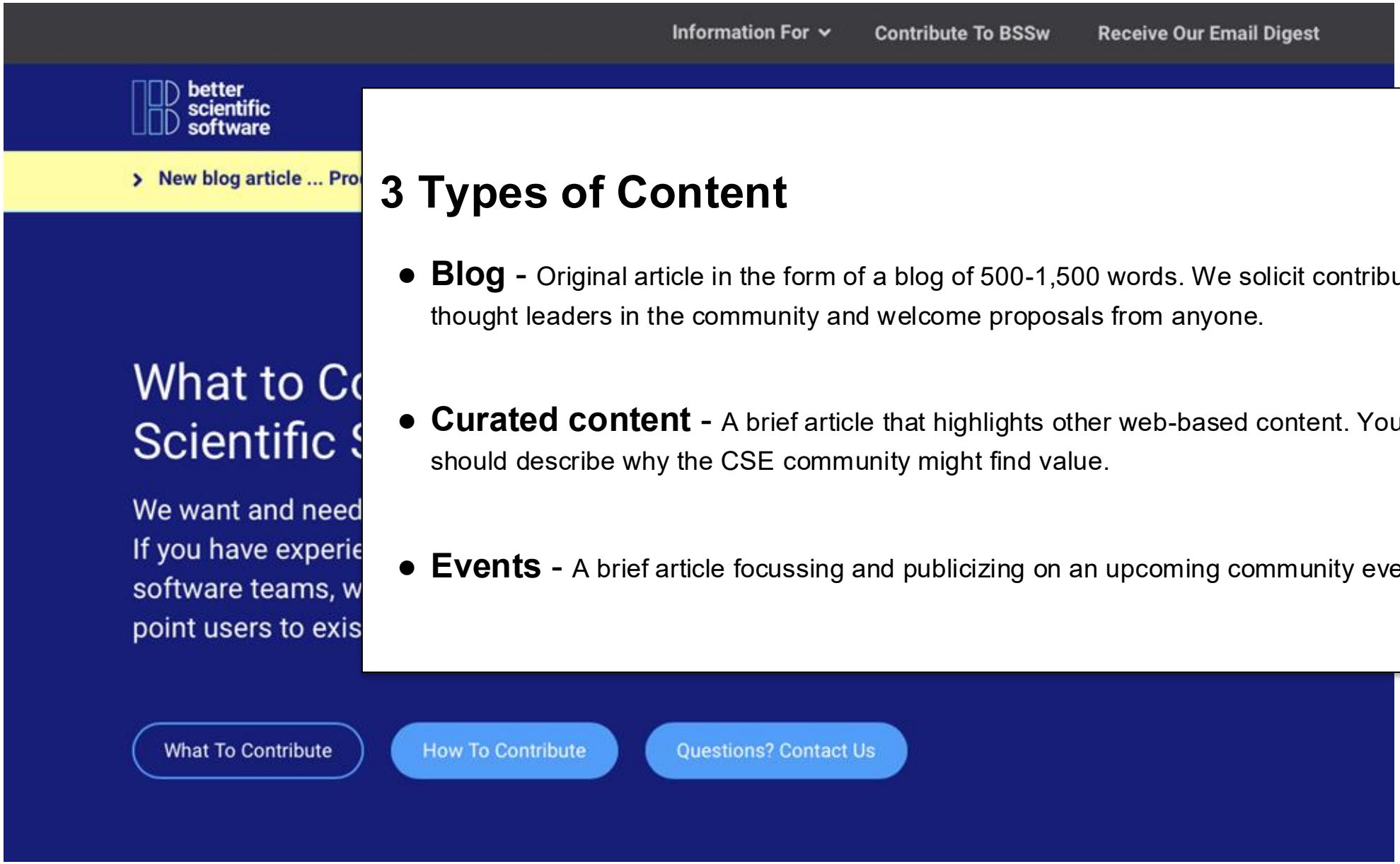
Focuses on six broad categories

Each category has many topics of interest

For every topic, there could be three types of content:

- blog
- curated content
- events

Types of Contributions



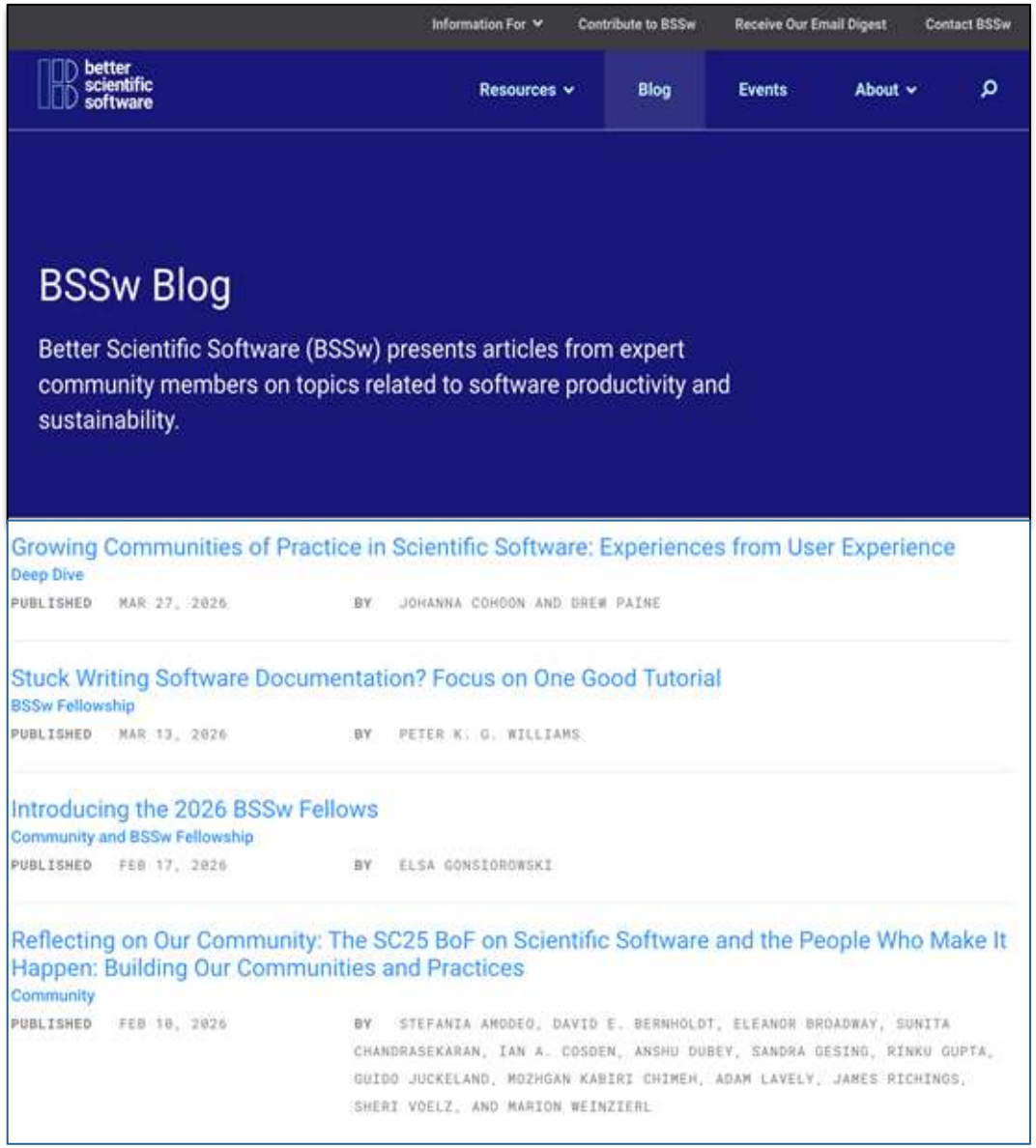
3 Types of Content

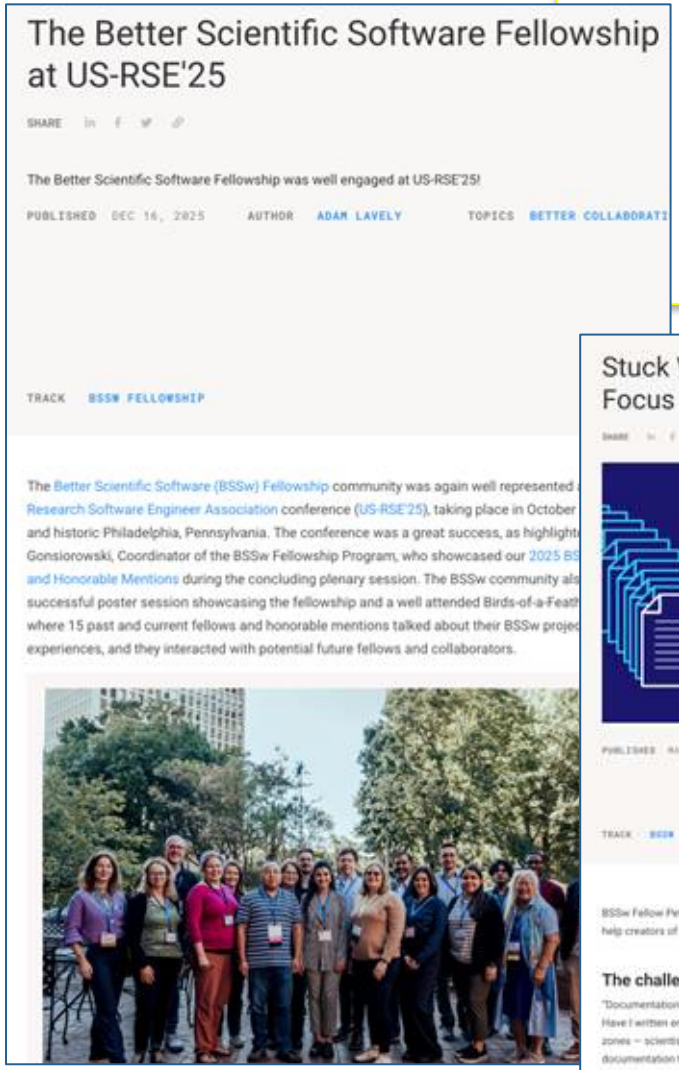
- **Blog -** Original article in the form of a blog of 500-1,500 words. We solicit contributions from thought leaders in the community and welcome proposals from anyone.
- **Curated content -** A brief article that highlights other web-based content. Your article should describe why the CSE community might find value.
- **Events -** A brief article focussing and publicizing on an upcoming community event

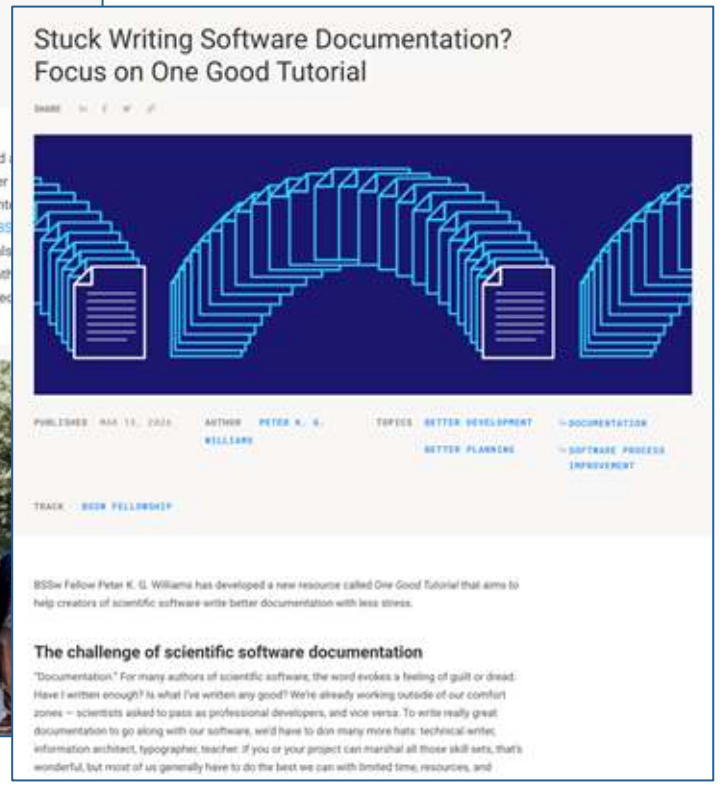
Blogs and Blog Tracks

Blog Tracks

- **Blogs can have different tracks:**
  - **BSSW Fellowship**
  - **Deep Dive**
  - **Experience**
  - **Community**
  - **How-To**

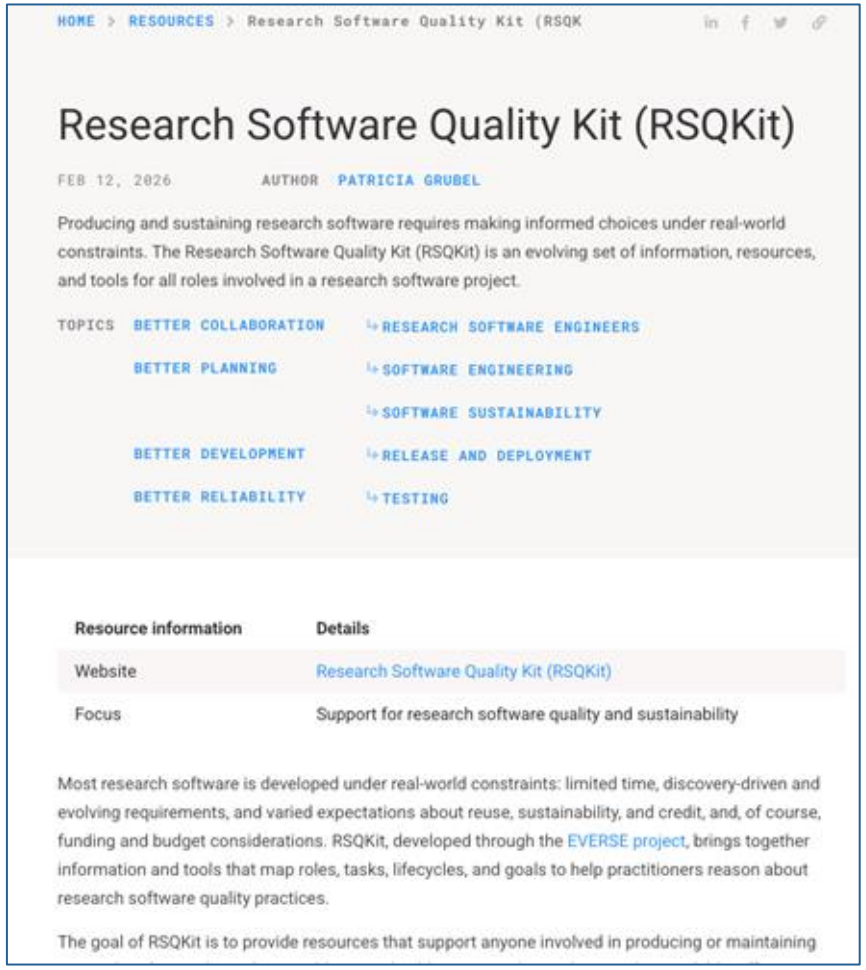






Curated Content

- **Easiest contribution to create!**
- A brief article to reference other content.
- Explains why the CSE community might find value.



HOME > RESOURCES > Research Software Quality Kit (RSQK

Research Software Quality Kit (RSQKit)

FEB 12, 2026 AUTHOR PATRICIA GRUBEL

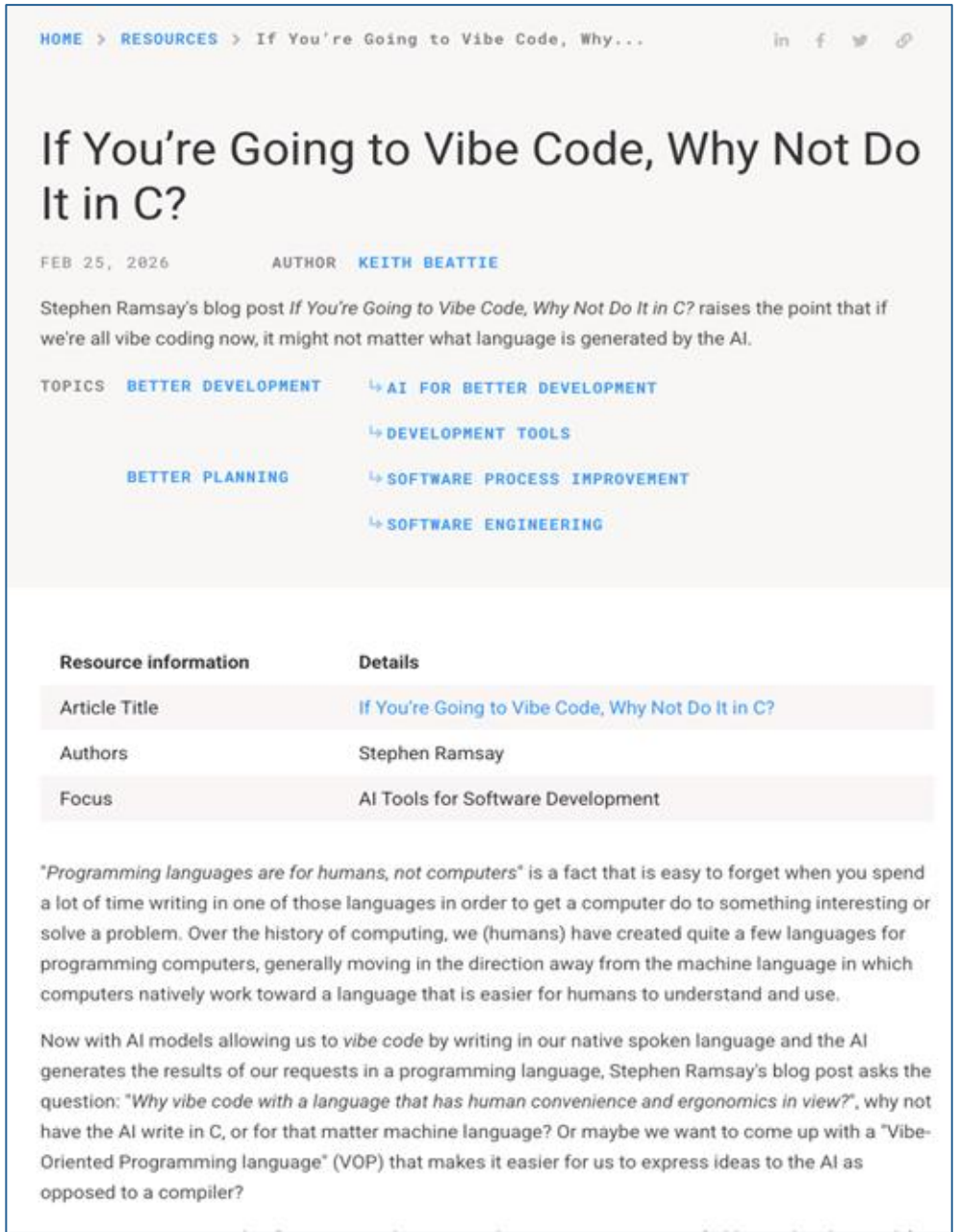
Producing and sustaining research software requires making informed choices under real-world constraints. The Research Software Quality Kit (RSQKit) is an evolving set of information, resources, and tools for all roles involved in a research software project.

TOPICS BETTER COLLABORATION → RESEARCH SOFTWARE ENGINEERS
BETTER PLANNING → SOFTWARE ENGINEERING
→ SOFTWARE SUSTAINABILITY
BETTER DEVELOPMENT → RELEASE AND DEPLOYMENT
BETTER RELIABILITY → TESTING

Resource information	Details
Website	Research Software Quality Kit (RSQKit)
Focus	Support for research software quality and sustainability

Most research software is developed under real-world constraints: limited time, discovery-driven and evolving requirements, and varied expectations about reuse, sustainability, and credit, and, of course, funding and budget considerations. RSQKit, developed through the EVERSE project, brings together information and tools that map roles, tasks, lifecycles, and goals to help practitioners reason about research software quality practices.

The goal of RSQKit is to provide resources that support anyone involved in producing or maintaining



HOME > RESOURCES > If You're Going to Vibe Code, Why...

If You're Going to Vibe Code, Why Not Do It in C?

FEB 25, 2026 AUTHOR KEITH BEATTIE

Stephen Ramsay's blog post *If You're Going to Vibe Code, Why Not Do It in C?* raises the point that if we're all vibe coding now, it might not matter what language is generated by the AI.

TOPICS BETTER DEVELOPMENT → AI FOR BETTER DEVELOPMENT
→ DEVELOPMENT TOOLS
BETTER PLANNING → SOFTWARE PROCESS IMPROVEMENT
→ SOFTWARE ENGINEERING

Resource information	Details
Article Title	If You're Going to Vibe Code, Why Not Do It in C?
Authors	Stephen Ramsay
Focus	AI Tools for Software Development

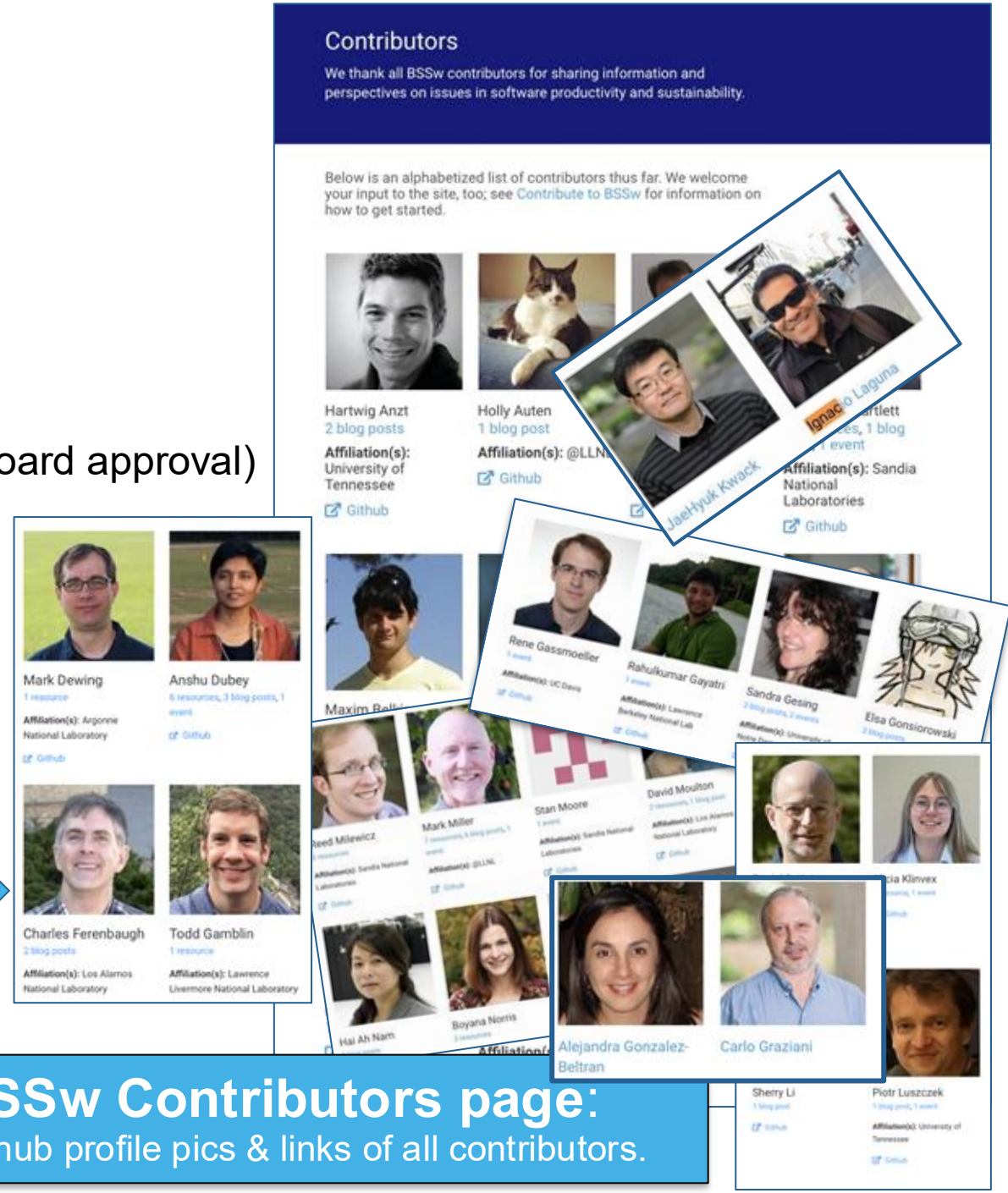
"*Programming languages are for humans, not computers*" is a fact that is easy to forget when you spend a lot of time writing in one of those languages in order to get a computer do to something interesting or solve a problem. Over the history of computing, we (humans) have created quite a few languages for programming computers, generally moving in the direction away from the machine language in which computers natively work toward a language that is easier for humans to understand and use.

Now with AI models allowing us to *vibe code* by writing in our native spoken language and the AI generates the results of our requests in a programming language, Stephen Ramsay's blog post asks the question: "*Why vibe code with a language that has human convenience and ergonomics in view?*", why not have the AI write in C, or for that matter machine language? Or maybe we want to come up with a "Vibe-Oriented Programming language" (VOP) that makes it easier for us to express ideas to the AI as opposed to a compiler?

Thank you to BSSw contributors!

- BSSw approaching 1000+ resources
  - Steady increase of contributors and articles
  - We have new topic areas being added (with editorial board approval)
  - Topics need content!
- We have over 350+ contributors
- Over time, build up rich content resources

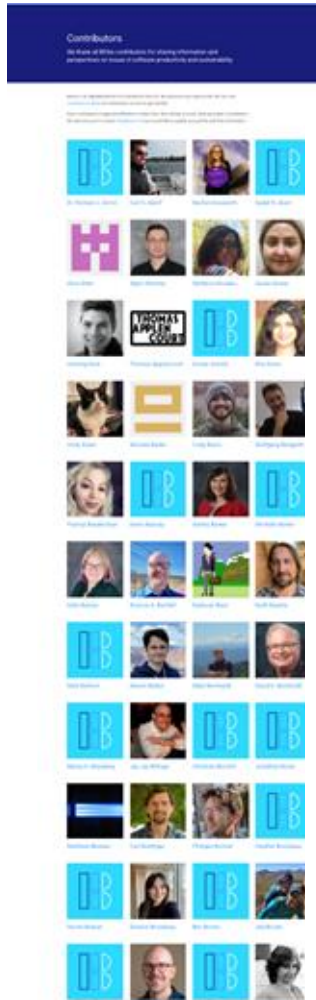
We welcome YOUR contributions!



BSSw Contributors page:
Github profile pics & links of all contributors.

Writing an article for BSSw.io is simple!

- 15 mins for event, 15-30 mins for curated content, >30min for blogs
- **Excellent visibility to HPC/CSE community**
  - **Your github photo, name and article list is displayed on Bssw.io**
  - **Your new article is highlighted in bssw.io monthly digest as well as front page carousel**



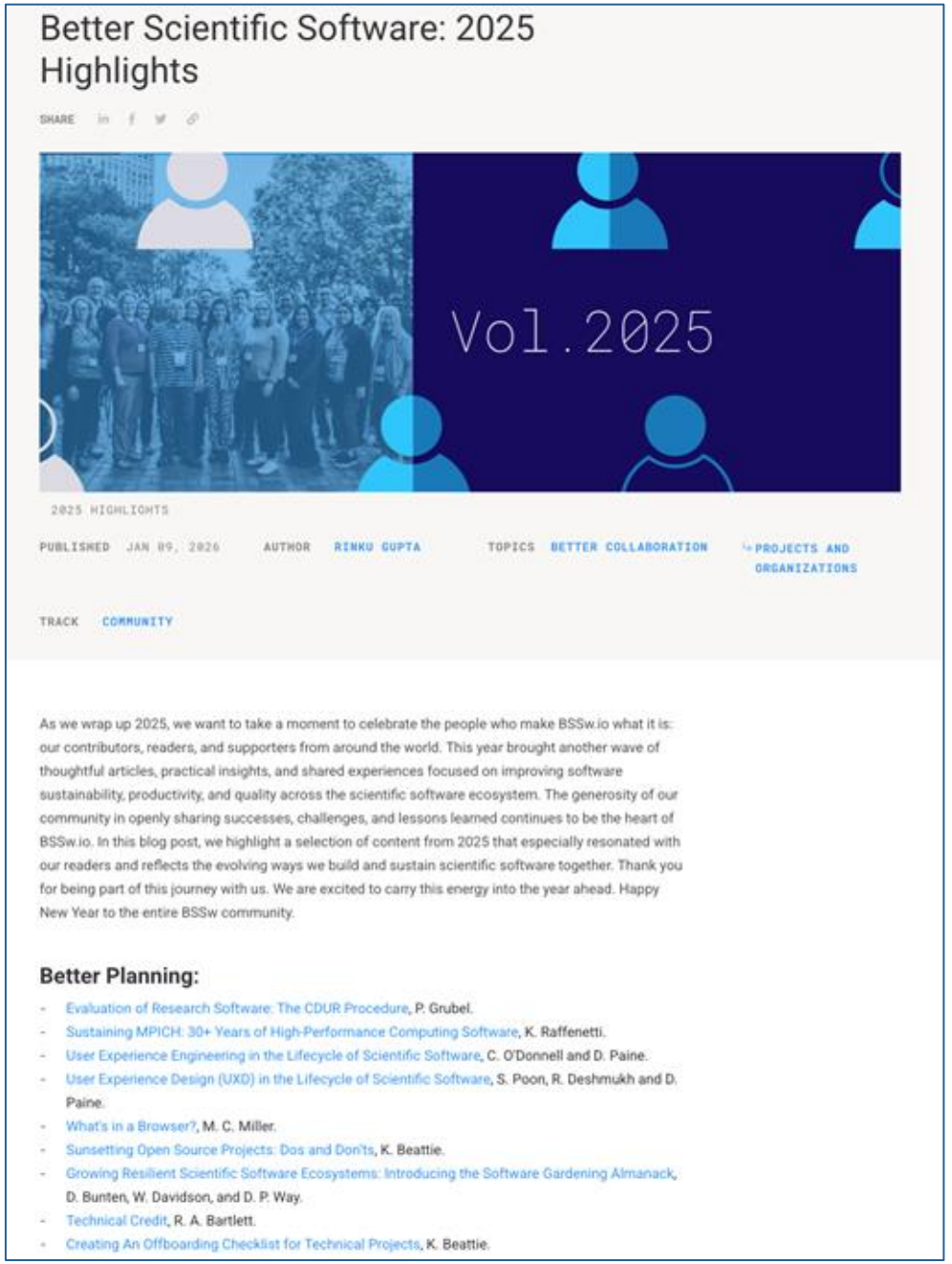
BSSw invitation: Join us!

- **We need <u>your</u> contributions!**
  - Share your resources, experiences, etc.
- **Over time: Collaborate to build the site into a vibrant community resource**
  - Content and editorial processes provided by volunteers throughout the HPC/CSE community

Many contributions from the community

Initiative of the <u>IDEAS Productivity Project</u>

- Support from DOE Office of Advanced Scientific Computing Research, DOE Exascale Computing Project
- Launched at SC17



Community Landing Pages

Communities Overview

The Better Scientific Software umbrella encompasses a rich variety of communities who are working to advance the methods, practices, and processes of CSE software.

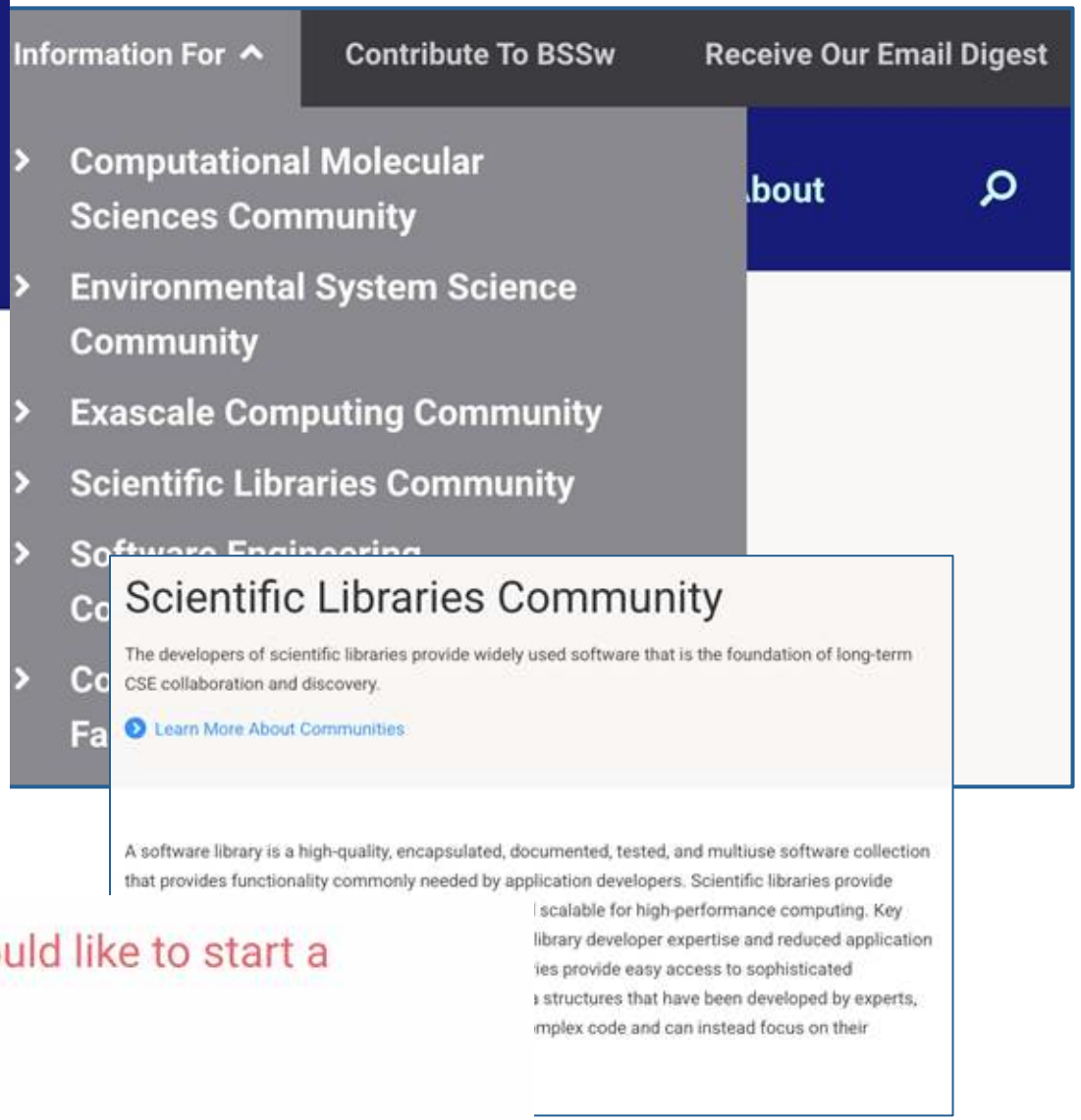
GET ORIENTED | Communities Overview | Site Overview | Intro to CSE | Intro to HPC

Community-specific landing pages, tailored to unique perspectives and priorities, provide a variety of starting points for using the BSSw site and promote a shared understanding of CSE software issues. Curators of a community landing page can customize content to serve the needs community members through highlighted resources and other custom content.

Better Scientific Software Communities:

- Community of Supercomputing Facilities and Their Users
- Computational Molecular Sciences
- Environmental System Science Community
- Exascale Computing Community
- Scientific Libraries Community
- Software Engineering Community

We want your input and perspectives. Please contact us if you would like to start a community-specific landing page.



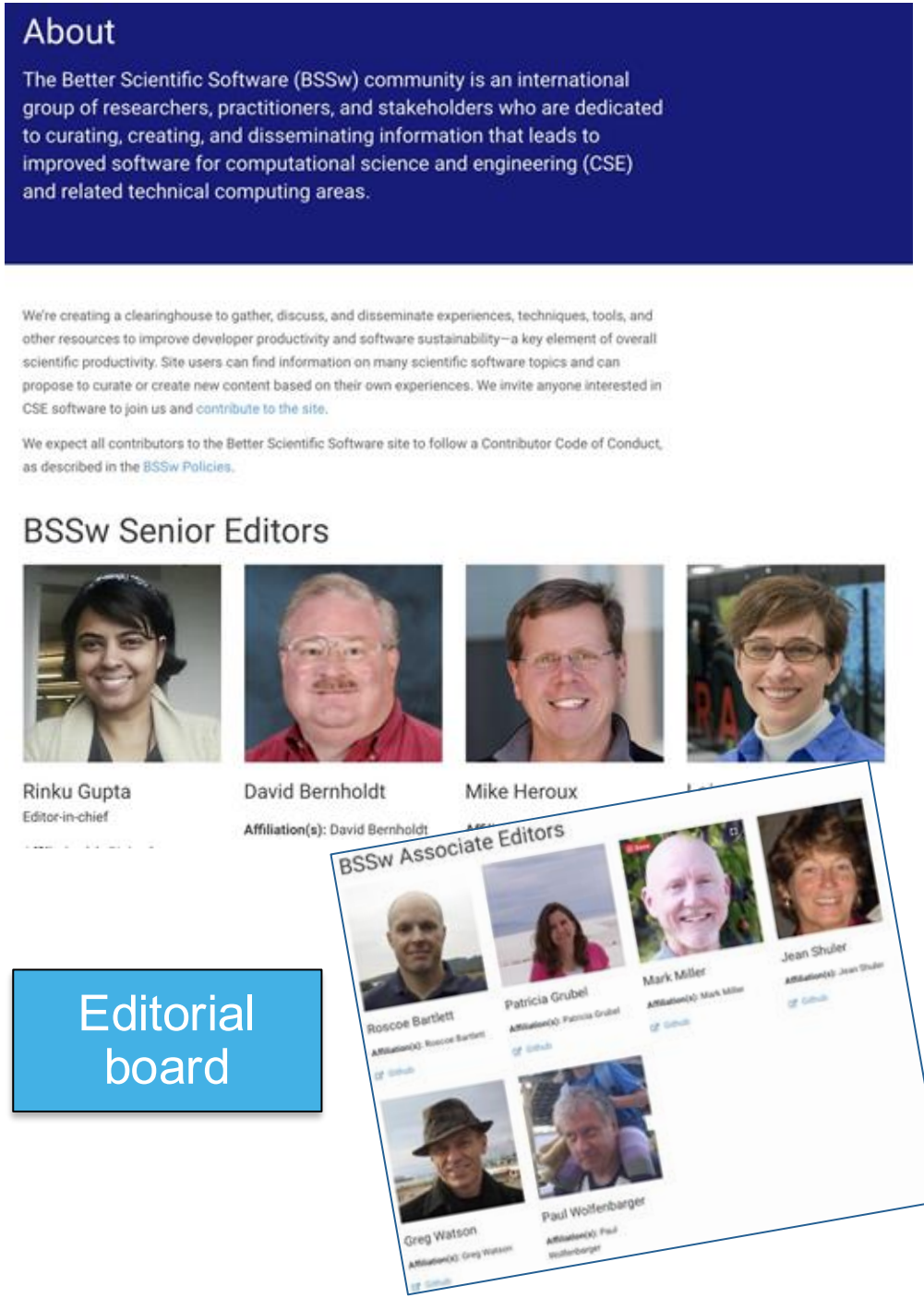
Promoting collaborative content creation through Github back-end

BSSw Software Platform			
Component Technology	**Backend**		**Frontend**
	Google Docs	**GitHub**	**Ruby on Rails**
Location	Google Drive	betterscientificsoftware GitHub organization	https://bssw.io
Purpose	• Rapid collaborative content development • Multi-user typing, suggest edits, comments	• Content creation, refinement, management • Content packaging for use with bssw.io	• User-facing portal • Polished backend content • Curated content, articles, events
Contributors	Community subject matter experts	Community subject matter experts, BSSw editorial team	BSSw editorial team. Web development experts
Consumers	BSSw GitHub Backend	BSSw Frontend	CSE community
Content Notes	Content migrates to GitHub after it stabilizes	Content managed in git repos, markdown	Content from Backend

Contribute! Share your insights on CSE software practices and processes:

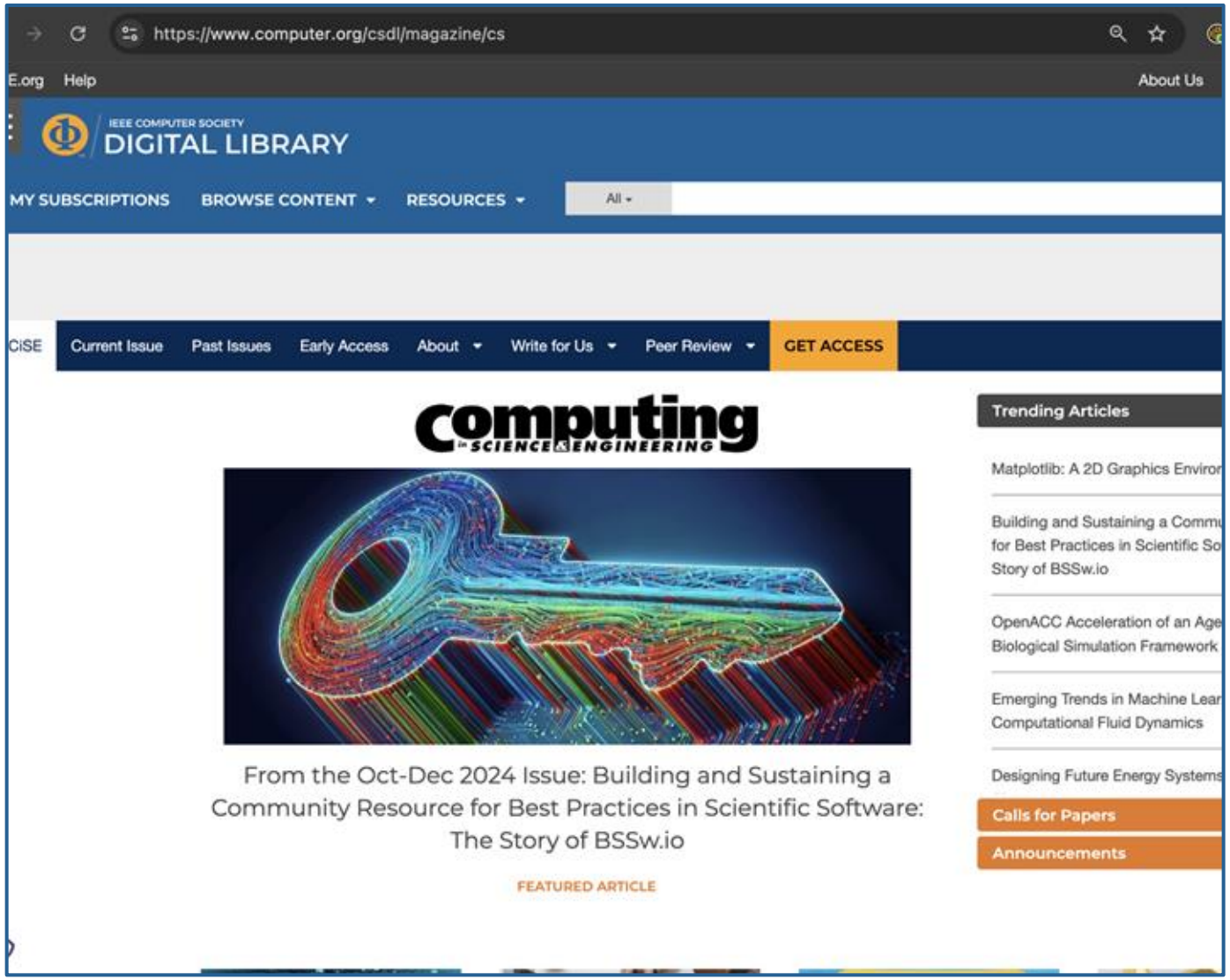
BSSw current status

- Current site is one of the **central points for HPC/CSE community collaboration** to share information on developer productivity and software sustainability
- Established BSSw.io editorial board
- Streamlined processes for article contributions



Editorial board

BSSw Recognition



Surprise Mentions

- Cited organically in multiple recent talks and presentations across the HPC, DOE, and academic communities.
- Demonstrates BSSw.io's growing influence and reach.

Community Engagement

- Increasing number of contributors and submissions from new institutions and early-career researchers.
- Signals a healthy, growing ecosystem around best practices in scientific software.

Agenda

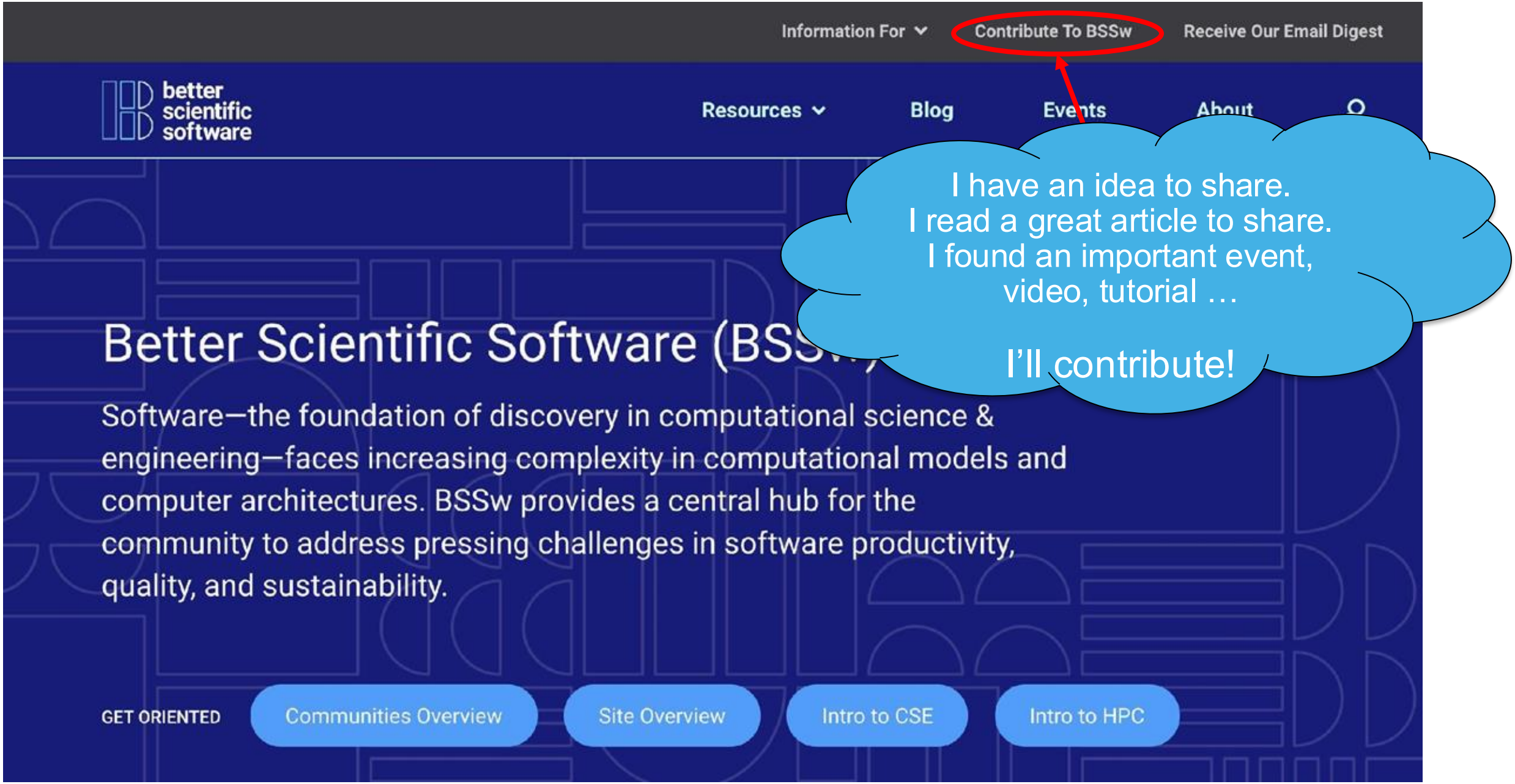
- **BSSw.io overview**
- **How to contribute**

How to build the site into a vibrant community resource

- Content and editorial processes provided by volunteers throughout the HPC/CSE community

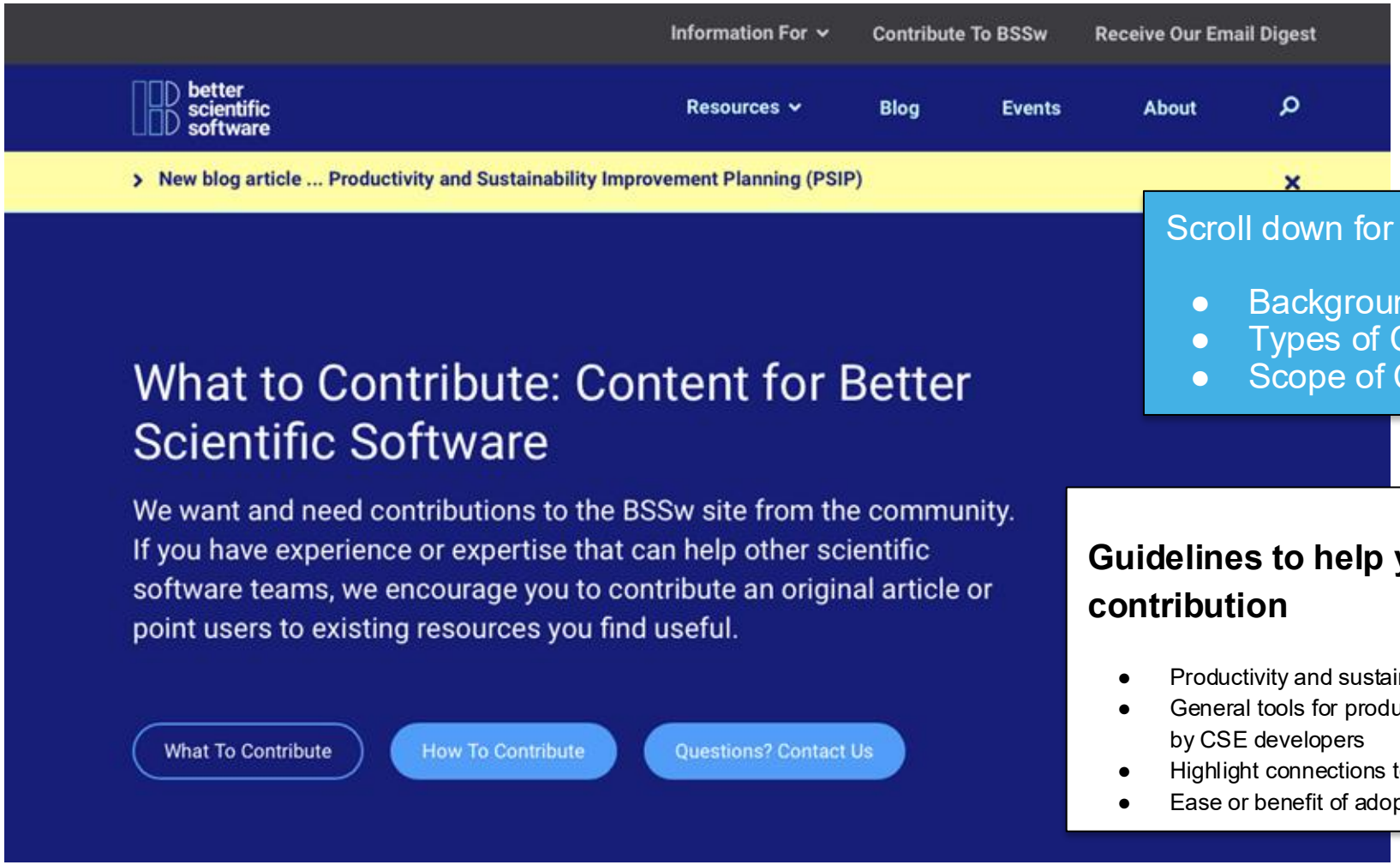
Your ideas are welcome!

Grow the CSE community resource!



First: Is my idea a good fit?

Second: What type of content do I want to contribute (blog, curated content, event?



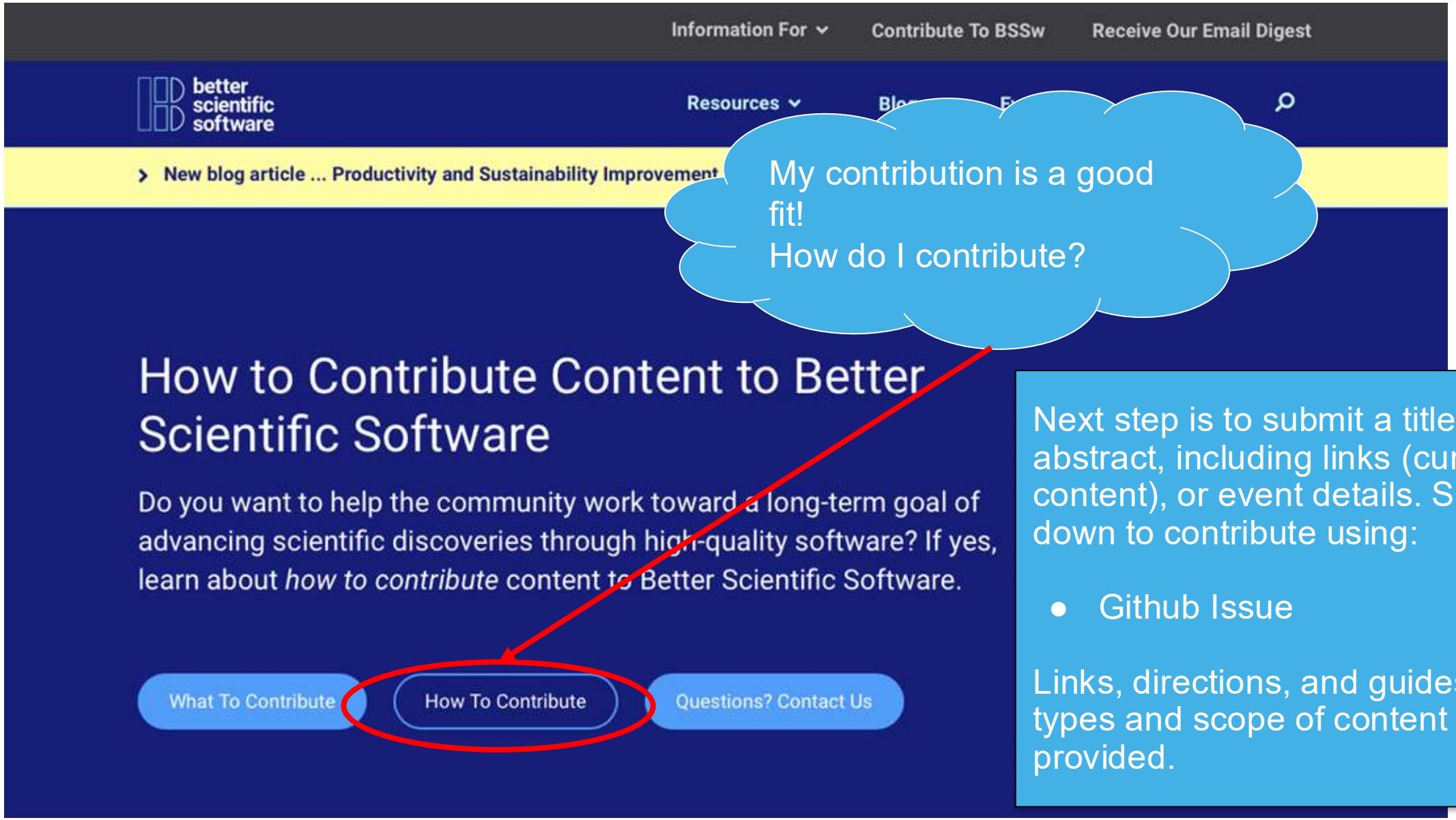
Scroll down for Guidelines:

- Background Info
- Types of Content
- Scope of Content

Guidelines to help you with the scope of your contribution

- Productivity and sustainability challenges in CSE
- General tools for productivity and sustainability that can be widely used by CSE developers
- Highlight connections to the CSE community
- Ease or benefit of adoption

How to Contribute:



Next step is to submit a title, short abstract, including links (curated content), or event details. Scroll down to contribute using:

- Github Issue

Links, directions, and guides for types and scope of content are provided.

How to Write an article

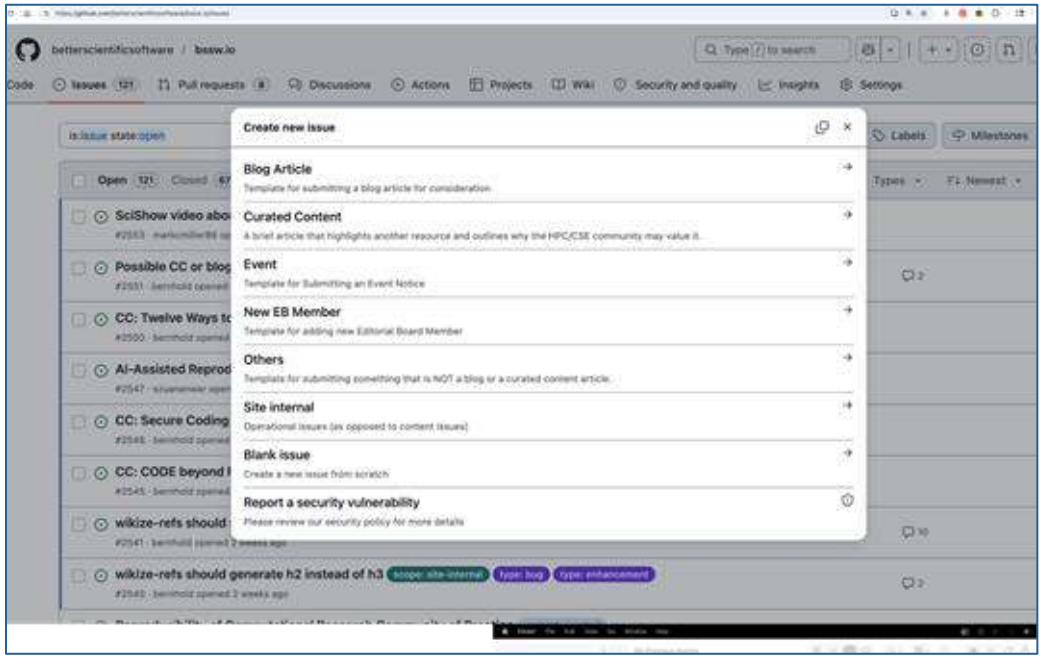
- **Submit a Github Issue on** https://github.com/betterscientificsoftware/bssw.io/issues
  - Discuss scope and time frame
  - Create PR and write

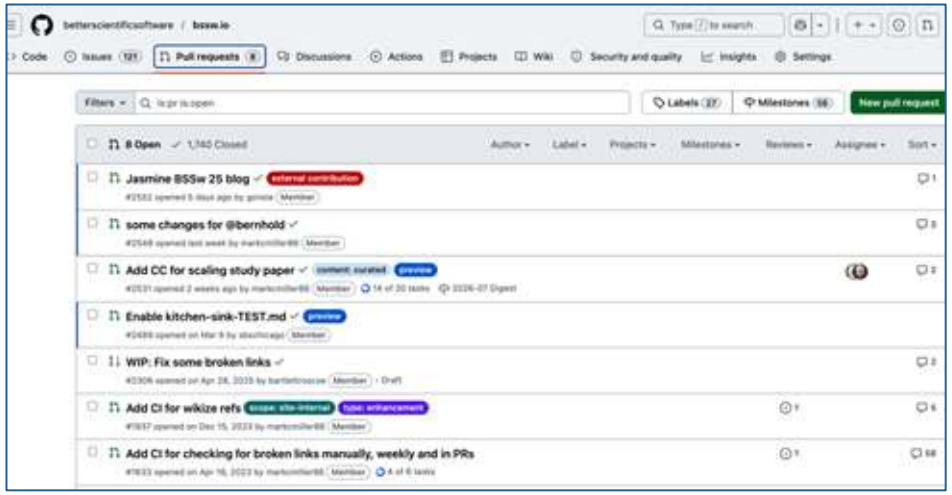
OR

- Submit a Github PR
  - Since BSSw fellowship articles are usually within scope

OR

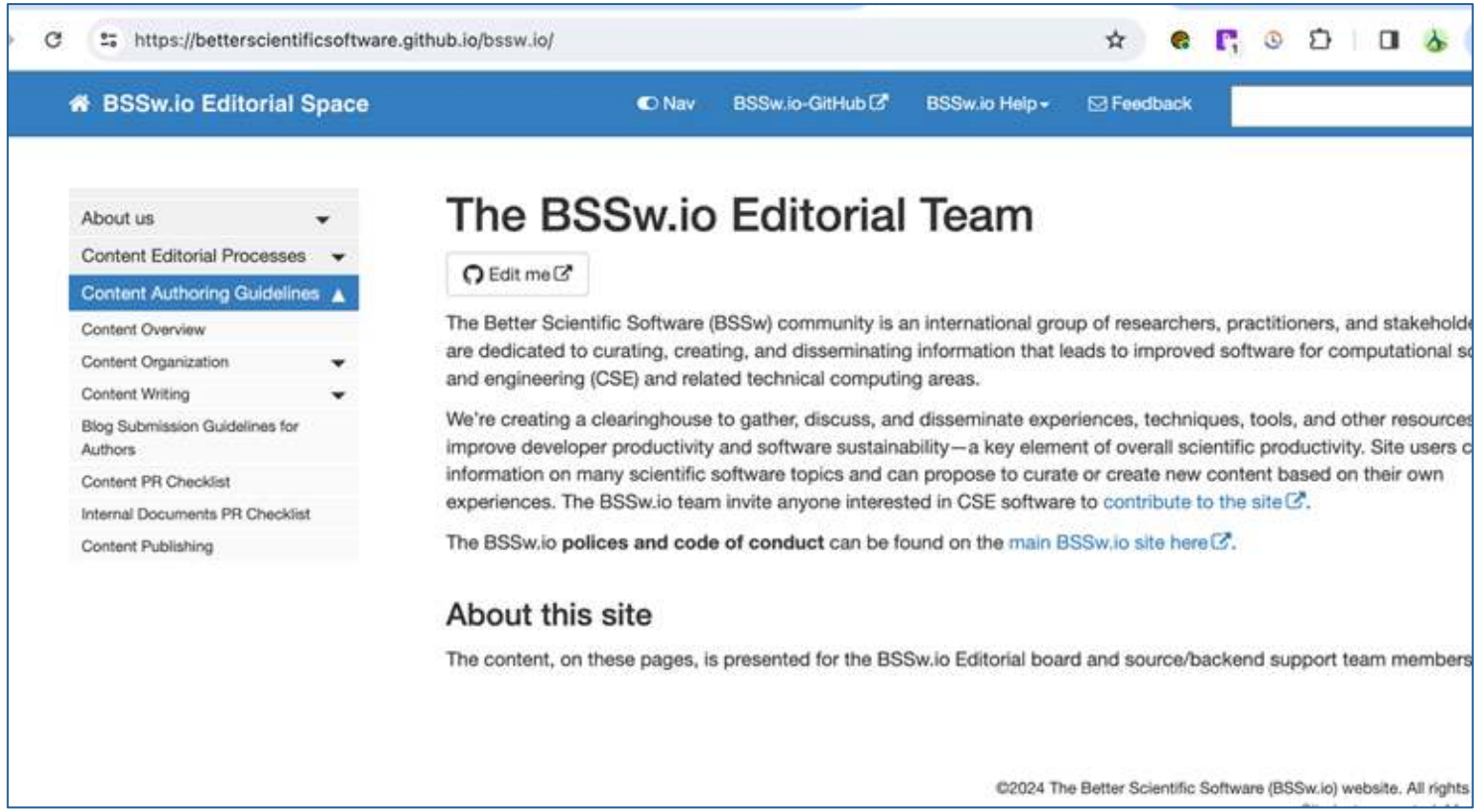
- Submit via google docs/email
- EB member will do the Issue/PR creation
- This process could take a little longer due to communication overhead





Documentation on Authoring

- Guidelines present at https://betterscientificsoftware.github.io/bssw.io/



Process Overview (contributor side)

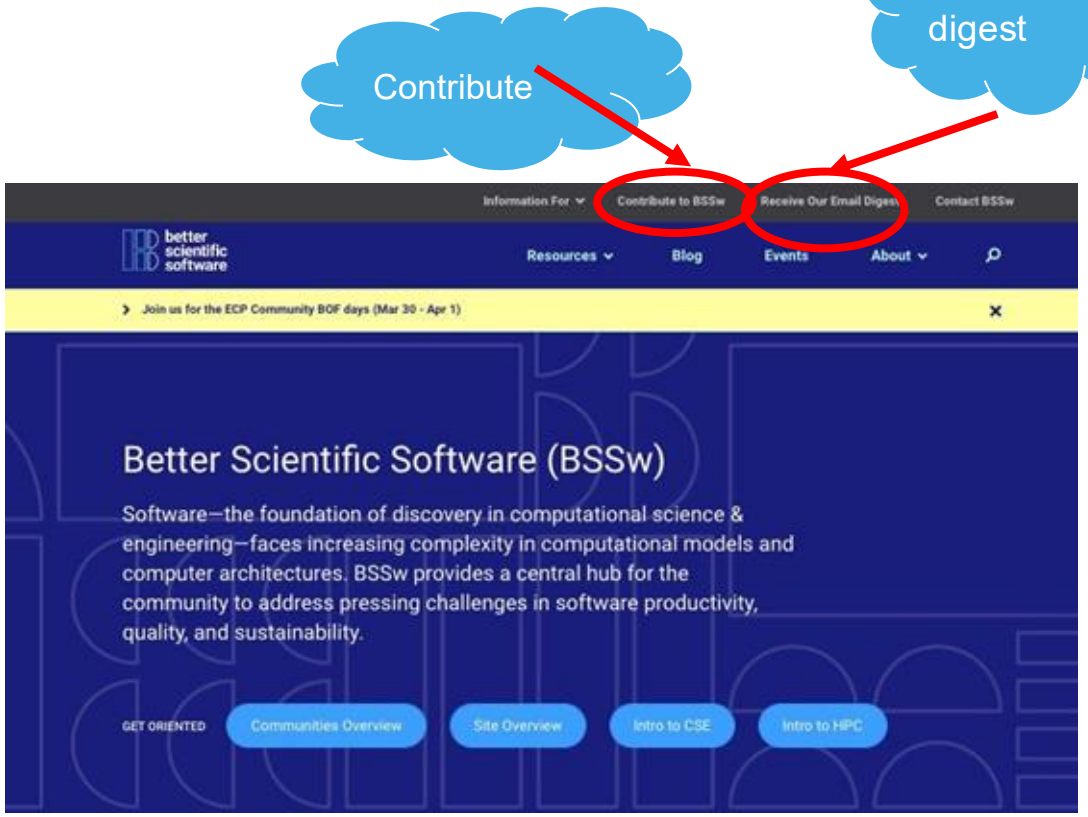
1. Submit a draft on github.
   a. If not familiar with github, then submission in any format in ok (google docs, email etc.)
2. BSSw Editorial Board Member will communicate with you on github
3. BSSw EB member is assigned to shepherd the process
4. If blog, then EB members helps you refine the article and set a timeline. Sometimes we may work with you to define a deck image (highlight image for the article)
5. If event → lightweight submission. EB member will monitor and help. Quick turnaround time.
6. If curated content → lightweight submission. EB member will monitor and help. Quick turnaround time.

Process Overview (EB side)

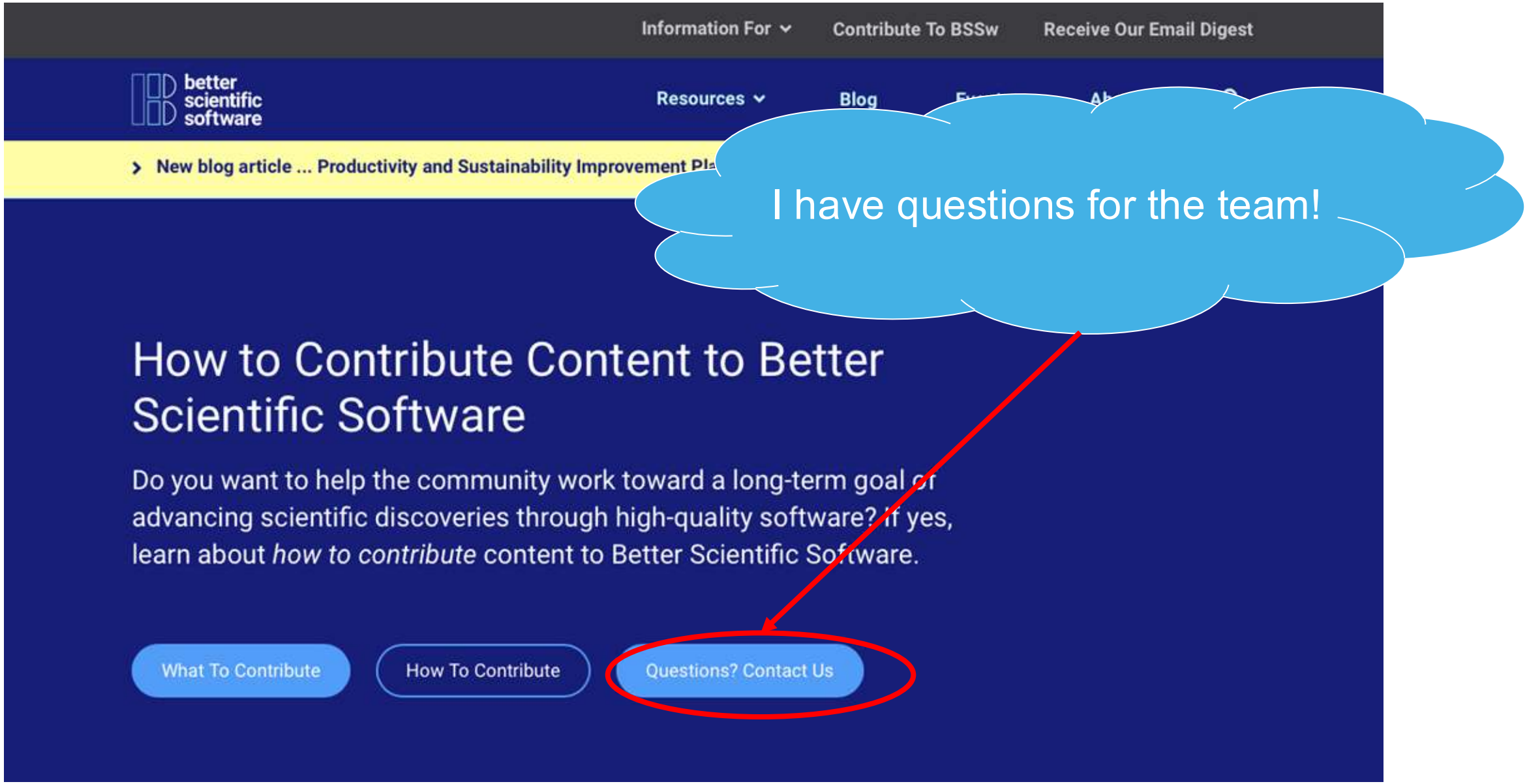
1. EB team gets submission on github
2. Submission gets add to content board, backlog column
   - https://github.com/betterscientificsoftware/bssw.io/projects/3
3. Members vote to check if topic is in scope and of interest and then it moves to “Ready to Write” phase.
   - For BSSw Fellows → mostly articles are expected to be in-scope.
4. EB shepherding member is assigned and articles moves to “In Progress” phase
5. EB member works with author to finish article and publish preview.bssw.io ← preview site when article is in progress (password protected

THANK YOU!

- **Better Scientific Software Site: bssw.io Is Your Community Resource**
- **Your contributions needed!**
  - Share your resources, experiences, etc.
- **Subscribe to BSSw monthly digest**
  - Email us and we can add you



If you have questions, contact us.



Consortium for the Advancement of Scientific Software

cass-steering-committee@email.ornl.gov

https://cass.community

Elaine M. Raybourn, CASS Sec'y

Dept. of Computer Science, University of Central Florida

This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Advanced Scientific Computing Research, Next-Generation Scientific Software Technologies (NGSST) and Scientific Discovery through Advanced Computing (SciDAC) programs.

CASS: Consortium for the Advancement of Scientific Software

- A **federation of member organizations** supporting specific communities or providing crosscutting capabilities related to **scientific software stewardship**
  - Software stewardship organizations (SSOs), for short
- CASS is a vehicle for SSOs to **coordinate and collaborate** on activities that benefit the scientific software community, including developers, users, and other stakeholders
  - Common identity/"brand" gives greater visibility to our efforts in the larger community
- Currently targeting the ASCR scientific software ecosystem
  - Especially software developed/enhanced through the ECP
  - Current CASS software portfolio: https://cass.community/software/

Current Core Members and Focus Areas

SciDAC Institutes	Other Software Areas	Ecosystem and Crosscutting
FASTMATH Scalable mathematical libraries	**S4PST** Programming models and runtimes	**PESO** Fostering, curating, and delivering a scientific software ecosystem
RAPIDS Platform readiness, data management / understanding, and AI tools	**STEP** Performance and correctness tools	**CORSA** Pathways to foundations, sw sustainability metrics
LEADS Scalable, customized scientific machine learning		

Current members supported by DOE/ASCR Next-Generation Scientific Software Technologies (NGSST) and SciDAC programs

We are open to new members from DOE or elsewhere

CASS Activities

More about the Better Scientific Software (BSSw) resource site in Rinku Gupta's presentation!

Inward-facing activities to support and enhance specific software products

- Improving software development practices, sustainability, quality, trustworthiness, impact
- Improving user experience, integration into the larger ecosystem

Stakeholder-facing activities to

- Facilitate the deployment of CASS software products via E4S and Spack through engagement with computing facilities
- Engage with HPC hardware, software, and service vendors to increase awareness and adoption of CASS software products
- Working groups bring together interested parties on various topics

Outward-facing activities to

- Curate the collection of software products (e.g., through E4S)
- Help the community find and use software that might benefit them
- Help teams find and engage with users (e.g., CASS Community BoF Days, CASS at SC25, etc.)

Supportive and crosscutting activities, including

- Resources to improve software development practices through: HPC Best Practices webinar series, User/Developer Experience webinar series, Better Scientific Software information site, etc.
- Advancing the multidisciplinary community and workforce for next-generation computing sciences
- The Better Scientific Software Fellowship program

Engage with CASS @ SC25

Expect more CASS-related events at SC26!

CASS, CASS members, and software teams are participating in more than 50 events throughout the week at SC25!

Day/Time (CST)	Event Type	Event (program link)	CASS Member(s)
Sun. Nov. 16 8:30am-12:00pm	Tutorial	Better Software for Reproducible Science	PESO, RAPIDS
Sun. Nov. 16 8:30am-12:00pm	Tutorial	Tools To Detect and Diagnose Floating-Point Errors in Heterogeneous Computing Hardware and Software	S4PST
Sun. Nov. 16 8:30am-5:00pm	Tutorial	Using Containers to Accelerate HPC	PESO
Sun. Nov. 16 9:00am-12:30pm	Workshop	ExHetAI: Extreme Heterogeneity and AI Convergence in HPC	S4PST
Sun. Nov. 16 9:00am-5:30pm	Workshop	Research Software Engineers in HPC (RSE-HPC-2025)	CORSA
Sun. Nov. 16 1:30pm-5:00pm	Tutorial	Julia for HPC	S4PST
Sun. Nov. 16 3:30pm-4:00pm	Presentation	MPI at Exascale and Beyond: Challenges and Progress from MPICH	S4PST
Sun. Nov. 16 3:30pm-4:10pm	Presentation	To Join or Not to Join - RSE Feedback on the Perceived Value of Joining an Open Source Software Foundation	CORSA
Sun. Nov. 16 4:10pm-5:30pm	Panel	RSEs and Research Culture	CORSA
Sun. Nov. 16 4:10pm-4:30pm	Paper	KDRSolvers: Scalable, Flexible, Task-Oriented Krylov Solvers	S4PST

CASS BOF Days, February 10 – 12, 2026

What

- Community-led Birds-of-a-Feathers sessions, organized by CASS
- Teams and stakeholders **meet, learn, discuss**
- BOFs on CASS-member **scientific libraries, tools**
- BOFs on **community development efforts**
- *Not limited to CASS software teams or communities*

Details

- 15 BoF events over three days
- 780 total registrations
- Held via Zoom

Future Plans

- Annual event, probably in February
- Join our mailing list for updates
- If you'd like to organize a BoF in the BoF Days, email the CASS Steering Committee

CASS Working Groups

- Working groups are the primary means by which we organize members of the CASS community to advance our stewardship efforts
- Most CASS working groups welcome public participation
- Request to join: *cass.community/working-groups*

Active Working Groups

Impact Framework
Curating the CASS Impact Framework process

Integration
Improving quality, sustainability, and interoperability across the scientific software ecosystem

Metrics
Curating and developing metrics for understanding software sustainability, quality and impact

Software Ecosystem
Planning and executing activities that support and enhance holistic collaboration across the breadth of the CASS community member organizations to sustain and advance our software libraries and tools usage as a curated portfolio

User-Developer Experience
Promote improved user-developer experiences

Workforce
Advancing the multidisciplinary community and workforce for next-generation computing sciences, with emphasis on scientific software

Engage with CASS!

- **Participate!**
  - HPC Best Practices webinar series, UDX webinar series
  - Community BoF Days, CASS @ Supercomputing
  - Read and contribute to the Better Scientific Software resource site
  - Apply for the Better Scientific Software Fellowship
- Join our **announcement mailing list** to follow our activities and our **Slack** to engage with the CASS community
- Find out more about our **software products**
- Reach out to **member organizations** in your communities of interest
- Participate in (or start!) **working groups**, building throughout the ecosystem
- If you're a commercial vendor in the scientific computing space, join our **Vendor Forum**
- **Join CASS** and help us reach a larger portion of the scientific software ecosystem!

https://cass.community

https://cass.community

cass-steering-committee@email.ornl.gov

INTERSECT

Research Software Engineering Training

https://intersect-training.org

Ian A. Cosden

Sr. Director, Research Software Engineering

Princeton University

Jeffrey C. Carver

James R. Cudworth Professor of Computer Science

University of Alabama

PRINCETON UNIVERSITY

THE UNIVERSITY OF ALABAMA

Supported by NSF Awards: 2017424, 2017259, 2519563 & 2519564

INTERSECT

- Innovative Training Enabled by a Research Software Engineering Community of Trainers
  - NSF-Funded CyberTraining project 2020-2025
- 3 main goals:
  - Develop an open-source modular training framework conducive to community contribution
  - Deliver RSE-led research software engineering training targeting developers
  - Deepen the connection within the national community of Research Software Engineers
- Sponsored events:
  - Workshop for RSEs to develop/refine material
  - 3x RSE-led bootcamps for intermediate/advanced research software developers
- INTERSECT 2.0
  - New NSF CyberTraining project 2025-2029

https://intersect-training.org

Project Timeline

- 2020 - Project funded
- 2021 - Collect and publish links to existing training material

https://intersect-training.org

Project Timeline

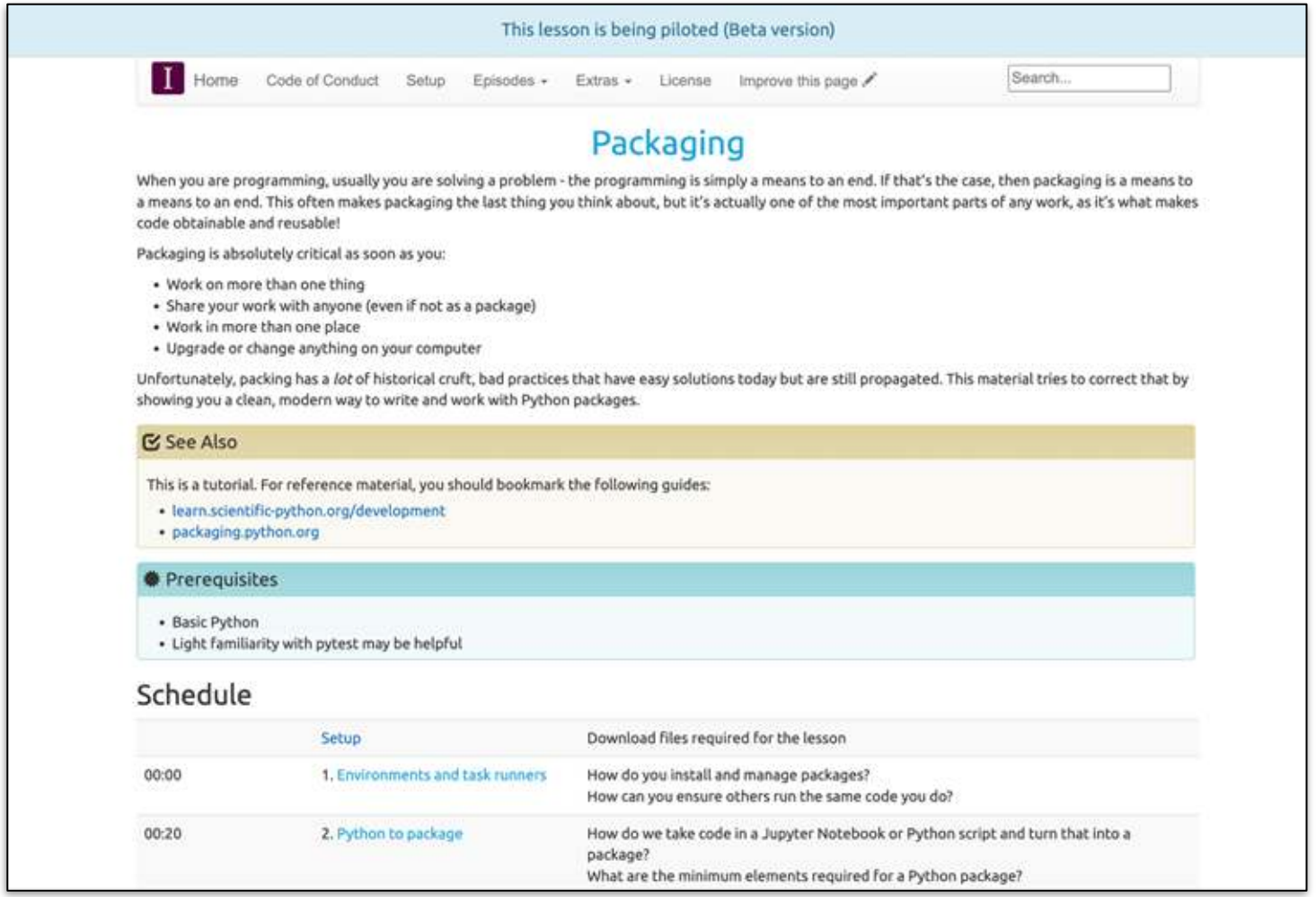
- August 2022: 1st Workshop - 2 days @Princeton
- Brought together practitioners, experts, instructors and researchers
- Conceptualized key curriculum elements
  - Design
  - Working Collaboratively
  - Testing
  - Packaging & Distribution

INTERSECT Workshop - Aug 2022

https://intersect-training.org

Project Timeline

- 2022 Sept - 2023 June: Bootcamp Planning & Lesson Development
  - Refined Curriculum “modules”
  - Primary instructors identified
  - Carpentries-style lesson format



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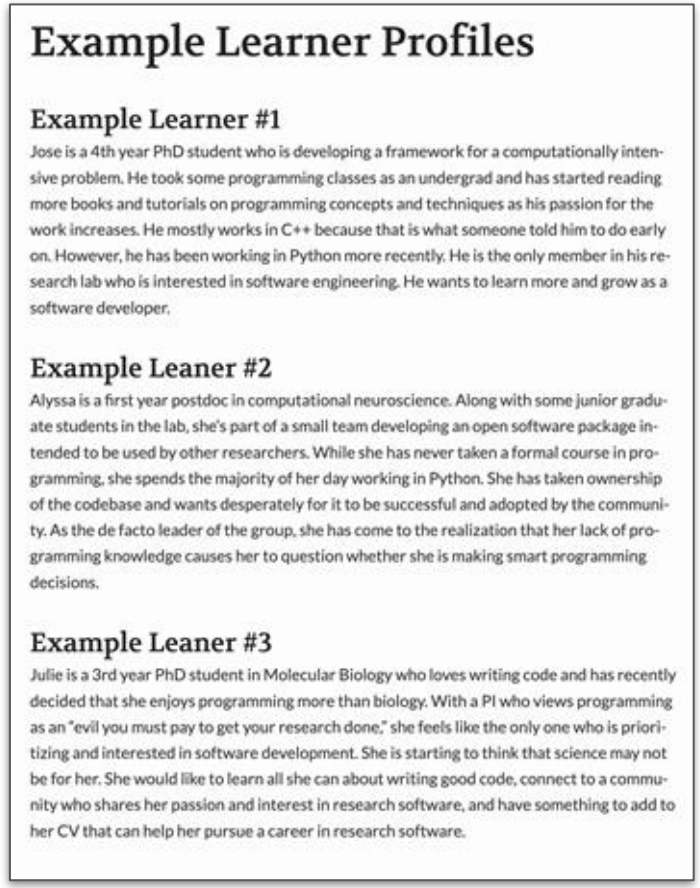
Curriculum Refinement

- Expanded from workshop
  - (Design, Working Collaboratively, Testing, Packaging & Distribution)
- Split Working Collaboratively into smaller modules
  - Collaborative Git
  - Issue Tracking
  - Documentation
  - Licensing
  - Project Management
  - Code Review & Pair Programming
- Add CI/CD

https://intersect-training.org

Target Audience for Bootcamp

- Developed “Learner Profiles”
  - Domain researchers with some experience with programming and research code
  - Graduate students; post docs; early career
  - But not computer science backgrounds
- Some may be RSEs or want to be RSEs
  - Prioritize those that self-express desire to do RSEng



Example Learner Profiles

Example Learner #1

Jose is a 4th year PhD student who is developing a framework for a computationally intensive problem. He took some programming classes as an undergrad and has started reading more books and tutorials on programming concepts and techniques as his passion for the work increases. He mostly works in C++ because that is what someone told him to do early on. However, he has been working in Python more recently. He is the only member in his research lab who is interested in software engineering. He wants to learn more and grow as a software developer.

Example Leaner #2

Alyssa is a first year postdoc in computational neuroscience. Along with some junior graduate students in the lab, she's part of a small team developing an open software package intended to be used by other researchers. While she has never taken a formal course in programming, she spends the majority of her day working in Python. She has taken ownership of the codebase and wants desperately for it to be successful and adopted by the community. As the de facto leader of the group, she has come to the realization that her lack of programming knowledge causes her to question whether she is making smart programming decisions.

Example Leaner #3

Julie is a 3rd year PhD student in Molecular Biology who loves writing code and has recently decided that she enjoys programming more than biology. With a PI who views programming as an "evil you must pay to get your research done," she feels like the only one who is prioritizing and interested in software development. She is starting to think that science may not be for her. She would like to learn all she can about writing good code, connect to a community who shares her passion and interest in research software, and have something to add to her CV that can help her pursue a career in research software.

https://intersect-training.org

Bootcamp Advertising and Selection

- Primarily advertised through US-RSE, professional networks, & social media
- Funding (via NSF) available to support participant travel
- Consistently 3x more applicants than space/funding

- Questions on application included:
  - Please describe any programming/computing background and experience you have.
  - What are you long term research software plans?
  - Why are you applying to attend this bootcamp?

Bootcamp Participant Profile

- 105 total participants across 3 cohorts
  - Undergraduate Students, Graduate Students, Research Software Engineers, Researchers, Postdocs, Staff Scientists, Faculty
  - Representing more than 50 unique institutions
  - Self-reported research domains include:

Biology/ecology
Scientific Computing
Public Policy
Astronomy
Materials Science
Humanities - Textual Criticism of the Greek New Testament
Physics, CS(Machine Learning)
Biology-Genomics
(Space/plasma) physics
Biophysical Chemistry, Biophysics,
Bioinorganic Chemistry
Engineering
Systems Neuroscience
Environmental Engineering
Materials engineering
Electric Vehicles modelling
Physics, HPC Scientific Applications
Computational Neuroscience
Literature, Science, and Arts (primarily psychology)
Information Science
Biodiversity science, natural history
Biomedical science, public health
Data visualization
Humanities - art history and cultural studies in East Asia
Nuclear Engineering
Biology and engineering
Cosmology & Astrophysics
Neuroscience
Physics/Engineering
Climate change, Energy, Infrastructure
Physics, sociology, biology
Helio-physics
Genetics, Neuroscience, Bioinformatics
Biomedical Data Science

Bootcamp Curriculum & Agenda

- Monday
  - Intro
  - Project Management - Part 1
  - Project Management - Part 2
  - Design - Part 1
  - Design - Part 2
  - Licensing
  - *Welcome Reception & Dinner*
- Tuesday
  - Working Collaboratively - Intro
  - Collaborative Git - Part 1
  - Collaborative Git - Part 2
  - Issue Tracking
  - Making good PRs
  - Better Documentation
  - *Reception Dinner*
- Wednesday (half day)
  - Code Review - Part 1
  - Code Review - Part 2
- Thursday
  - Packaging & Distribution - Part 1
  - Packaging & Distribution - Part 2
  - Testing - Part 1
  - Testing - Part 2
- Friday (half day)
  - CI/CD - Part 1
  - CI/CD - Part 2

https://intersect-training.org

Bootcamp Cohort Community Building

- Intro slides
- Slack channel
- Collaborative hands-on exercises
- Breakfast, lunch, & breaks
- Mon & Tues night organized dinner/receptions
  - Sponsored by local campus partners

https://intersect-training.org

Broad Impressions and Lessons Learned

- Technical subject matter would be hard to find elsewhere
- Format of material is useful
  - Self study
  - Bring to others to justify/explain best practices
- Modularity of subjects was a positive
  - Those who were lost in one section, quickly came back
  - Variety of instructors
- Value in community/cohort connections
  - Found “people like me”
  - Diversity of attendees was a positive
  - Potential collaborations
  - Impossible to replicate remotely

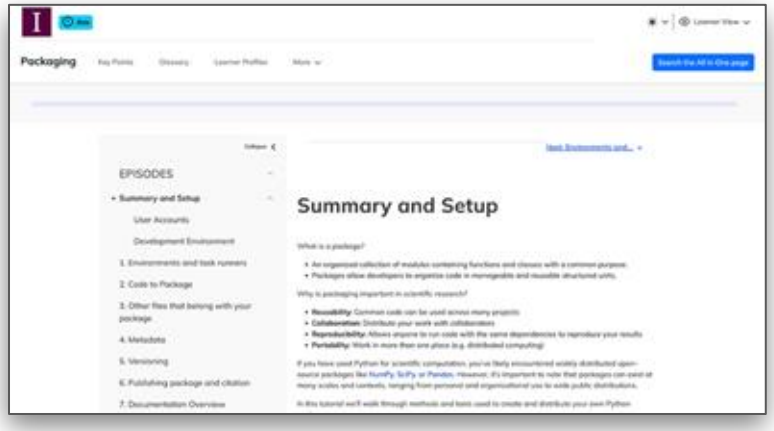
2023 INTERSECT Cohort

https://intersect-training.org

Lessons Learned Cont.

2024 INTERSECT Cohort

- Pacing and half day are well received
- Diverse backgrounds means vastly different entry points
  - Some struggle in places
    - Python
    - Git (especially for CI/CD)
  - Some would like different/extra material
    - C++, Cloud, ML



- Would benefit from more instruction time on some modules (testing, CI/CD)
- Reliant on volunteer instructors
- Carpentries format is time consuming and doesn't always work well live

2025 INTERSECT Cohort

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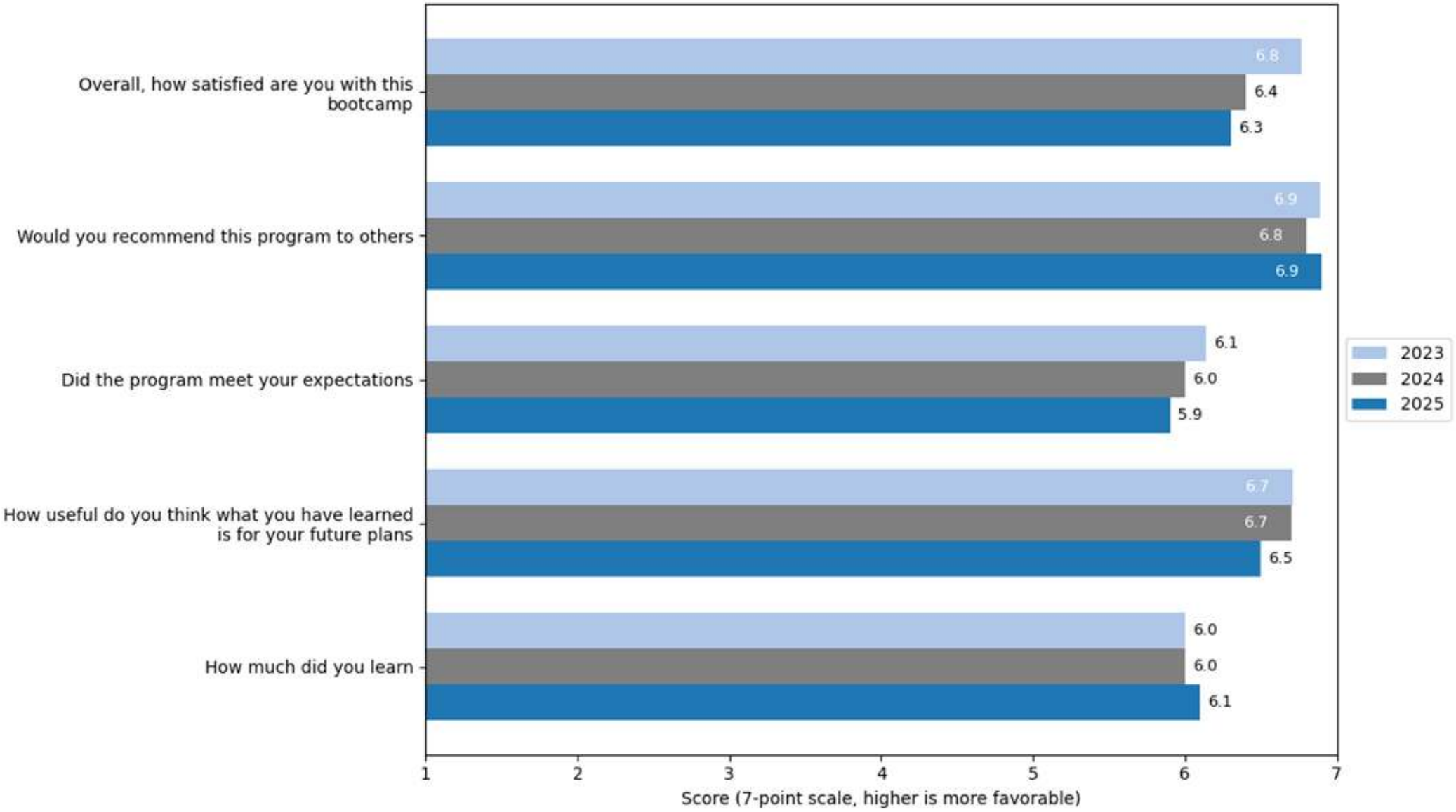
Snapshot of Overall Survey Results: Years 1-3



Direct Feedback

- “I am so grateful for the opportunity to be able to attend a bootcamp like this, as I cannot think of how I would have gotten exposure to all these important concepts we've learned otherwise.”
- “This is the single most influential program I have attended in grad school, and maybe even my whole college career.”
- “Attending in person is 200% better over zoom.”
- “This boot camp has been, hands down, the best experience in my self-taught programming journey by far.”

Thank you INTERSECT Instructors!


David Bernholdt


Abhishek Biswas


Troy Comi


Julia Damerow


George Dang


Anshu Dubey


John Holland


Upulee Kanewala


Lauren Milechin


Marshall McDonnell


Miranda Mundt


Gabe Perez-Giz


Abbey Roelofs


Dave Rumph


Henry Schreiner

Next Steps

- Annual Bootcamps through summer of 2029
- Evolution of material
  - GenAI & Agentic Software Development Tools and Techinques
- Considering future possibilities
  - “Road Show”
  - (Inter)national collaboration with similar projects
  - We welcome local reuse

https://intersect-training.org/participate

The Research Software Alliance (ReSA)

Daniel S. Katz

University of Illinois Urbana-Champaign

https://www.researchsoft.org

About ReSA

- Founded in 2019
- A fiscally sponsored project of Code for Science & Society
- Led by the ReSA Steering Committee
- Financial information online

Dr Michelle Barker
Director

Kim Hartley
Program Manager

CS&S
Code for Science & Society

Code for Science & Society
Fiscal Sponsor

ReSA Steering Committee

Chair: Daniel S. Katz
Chief Scientist, National Center for Supercomputing Applications (NCSA), University of Illinois

Caxton Murira
Product Specialist, Team Lead, Clinical Research and Trials Community (CRTC) programme at the Science for Africa Foundation

Colette Bos
Programme Director, Netherlands eScience Center

Juan Bicarregui
Head of the Data Division, Science and Technology Facilities Council (STFC)

Neil Chue Hong
Director, Software Sustainability Institute, University of Edinburgh

Nicolás Palopoli
Adjunct Researcher, National Research Council in Argentina (CONICET)

Shurui Zhou
Assistant Professor, The University of Toronto

NLS³C
NATIONAL LABORATORIES SUSTAINABLE SCIENTIFIC SOFTWARE CONSORTIUM

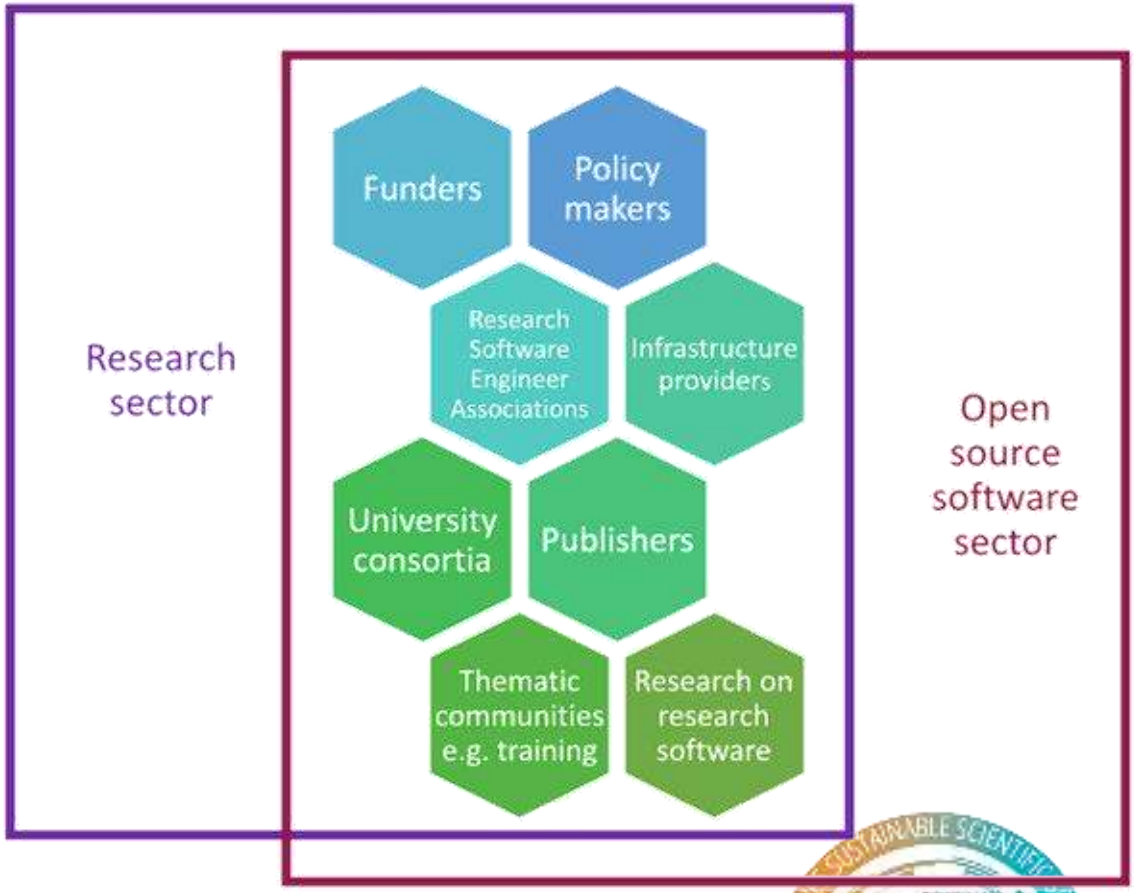
Research Software Alliance

Vision:

Research software and those who develop and maintain it are recognized and valued as fundamental and vital to research worldwide

Mission:

To advance the research software ecosystem by collaborating with decision makers and key influencers



<ReSA>
Research Software Alliance

https://www.researchsoft.org

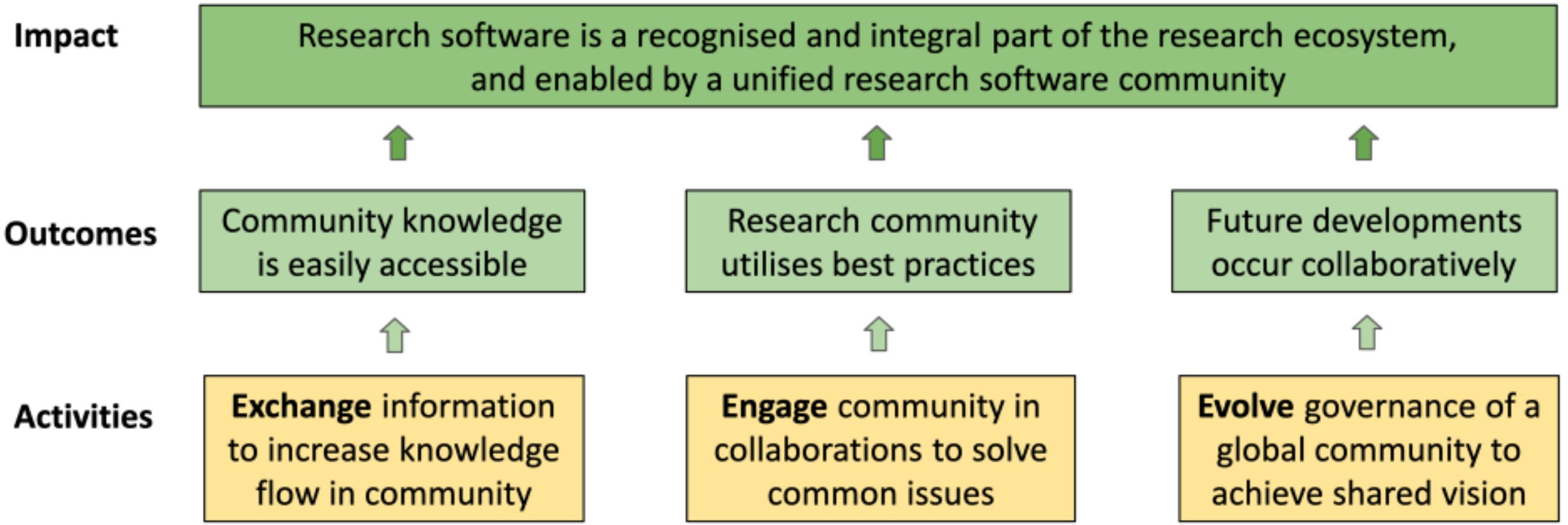
NLS³C

ReSA aims to coordinate discussions across
a wide range of research software organizations
and programs,
enabling the community to create outcomes
that achieve both local goals
and those of the international community

<ReSA>
Research Software Alliance

https://www.researchsoft.org

ReSA engagement strategy



<ReSA>
Research Software Alliance

https://www.researchsoft.org

NLS³C

ReSA organisational members

Example activities

ReSA forums

- ReSA convenes forums for research software funders; infrastructure providers; policymakers; publishers; skills and training; and metascience
- Research Software Community Leadership Forum
- Secretariat for the International Council of RSE Associations; and the Amsterdam Declaration on Research Software Sustainability (ADORE.software).

<ReSA>
Research Software Alliance

IRSC 26 INTERNATIONAL RESEARCH SOFTWARE CONFERENCE

7-8 September 2026
Sheffield, UK & online
Co-located with RSECon26

www.researchsoft.org/irsc/

Our purpose:

To advance global shifts toward strategic coordination, long-term sustainability, and high-level collaboration across the research software community.

Participants:

Leaders and change-makers: RSEs, funders, policy makers, publishers, infrastructure organisations, skills & training initiatives, national/regional RSE associations, etc.

Learn more:

Register to attend

Join the IRSC mailing list for updates

Connect on ReSA's Slack: #irsc

OECD 2025-26 program to support research software

- Access to research software: Opportunities and challenges – Sept 2025 workshop
  - Explored policy options to support access to research software as a key enabler towards advancing open science
- Policies for research software in the age of artificial intelligence – March 2026 workshop
  - Identified emerging evidence and policy considerations on research software within the broader open science agenda.
  - Case studies from 7 countries
  - Aims to make recommendations to OECD member states

Amsterdam Declaration on Funding Research Software Sustainability

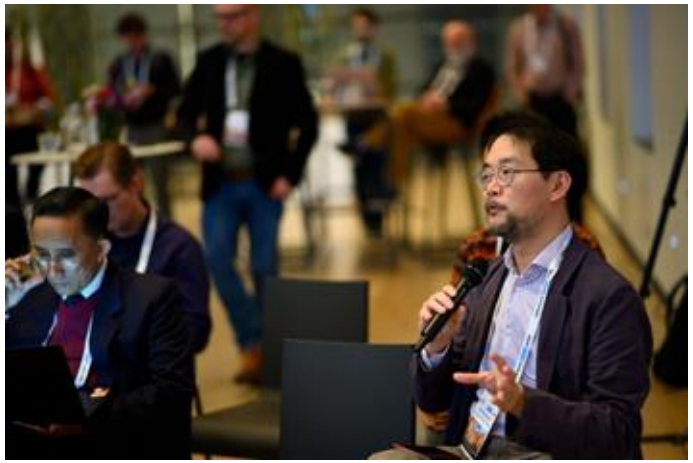


Photo by Annelies Verhelst

- ADORE.software
- Aims to raise awareness of the role of funding practice in the sustainability of research software, and to improve that practice
- Is a first step towards formalising, on a global level, the basic principles and recommendations related to funding the sustainability of research software, including the people needed to achieve this goal.

Policies in research organisations for research software (PRO4RS)

Photo by Annelies Verhelst

- 2024-26 working group, co-convened with Research Data Alliance (RDA) 2024-26
- Improved recognition of research software policy at the institutional level
- Outcomes: database of research software policies, informed institutional guidance, and published "Identifying Gaps in Research Software Policy"

Research software & GenAI

- RSEng in the Age of GenAI: Building a Community Vision, a Schmidt Sciences and ReSA workshop in March 2026 to:
  - Explore future practices
  - Consider key risks and challenges
  - Identify a catalogue of interventions
  - Collate an informal list of resources
- Built upon Position Statement on Generative AI in the RSE Workplace (2025) by ADSA and US-RSE (supported by Schmidt Sciences) includes:
  - RSE work is people work
  - GenAI is a tool, not a substitute for human judgment
  - Sustainability and transparency matter more than ever

How you can engage with ReSA

- Join a relevant forum e.g., skills and training or metascience
- Join task forces focused on specific activities
- Become an Organisational Member to financially support our work
- Help to raise awareness of the importance of research software through use of ReSA resources

- Receive updates through our regular newsletter
- Join the ReSA Slack to share what is happening in your community

NLS³C CoP Webinar

US-RSE

A brief history & Overview

Keith Beattie

KSBeattie@lbl.gov

Steering Committee Member

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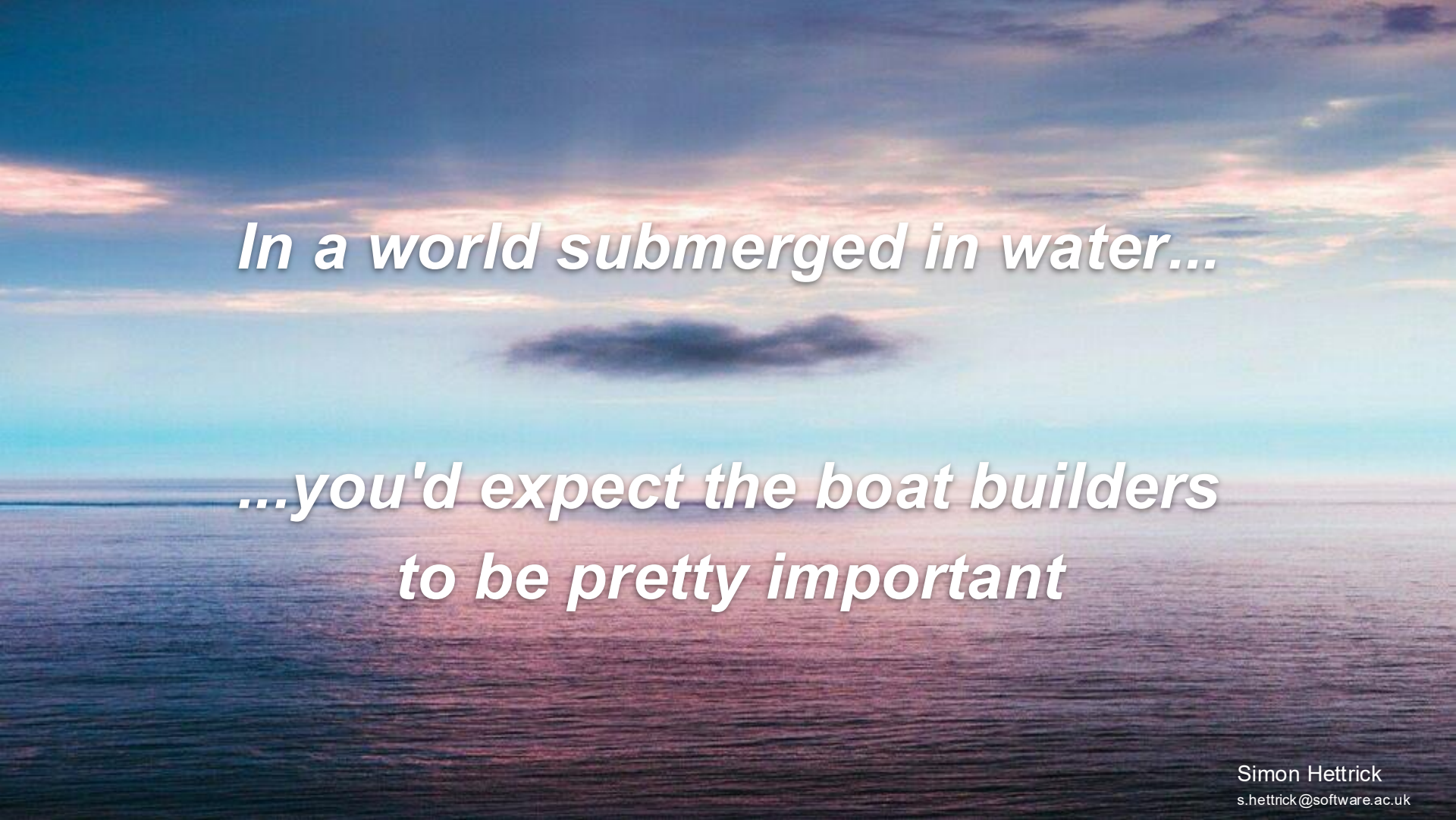


Simon Hettrick
s.hettrick@software.ac.uk

US-RSE: What is a Research Software Engineer?

- Exactly what it sounds like:
  - Software engineers focused on research problems
- At institutions world-wide
  - Universities
  - National Lab
  - Industry
- Help optimize, test and validate codes, design complex codebases, etc.

The United States Research Software Engineer Association (US-RSE)

A community-driven grassroots organization

Members are:

- Those who write and contribute to research software
- Interested in research software engineer careers
- RSE “allies”

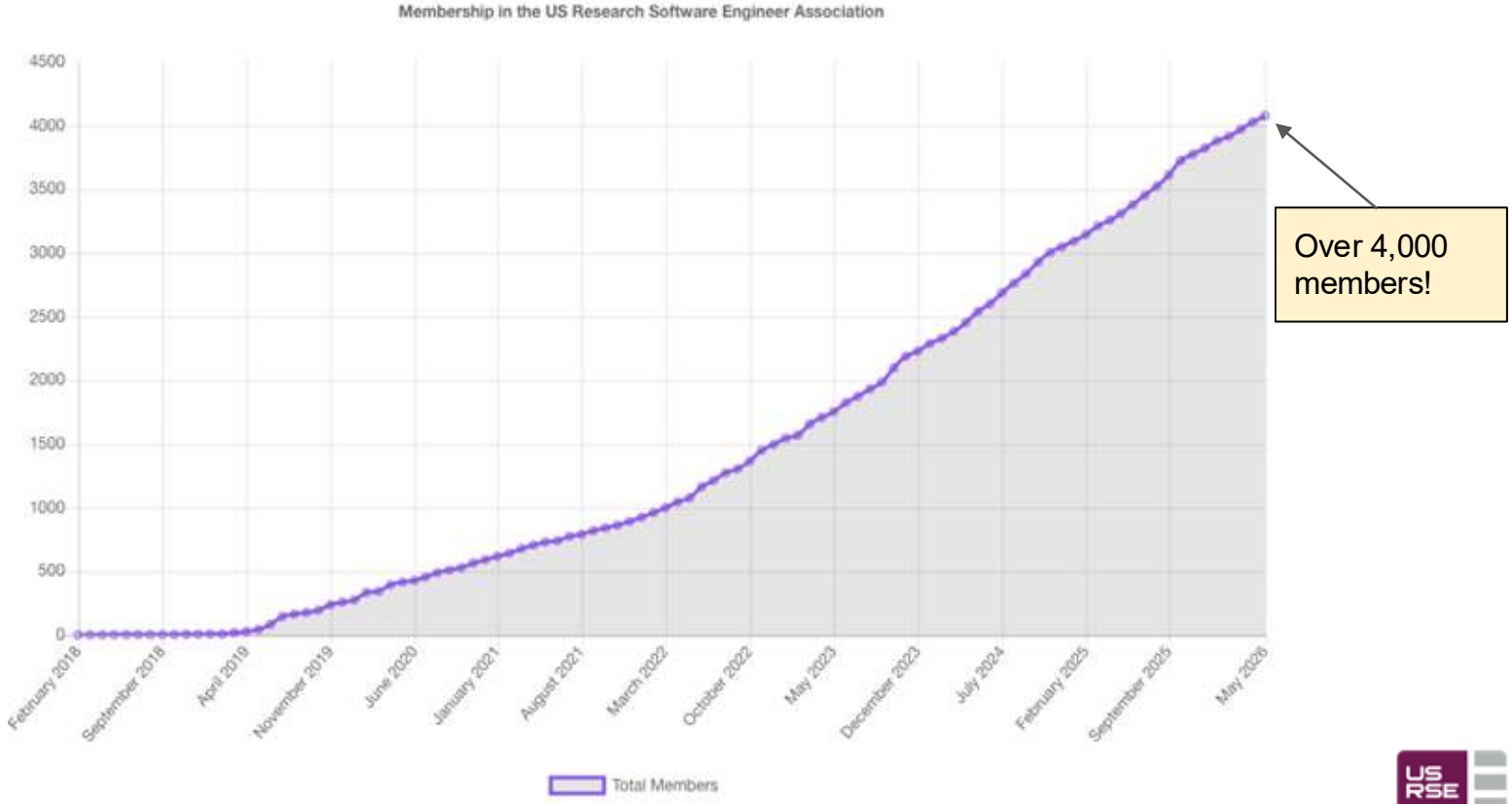
US-RSE's Origin Story

- Movement and Term: Born in the UK
  - 2012 SSI's Collaborations Workshop - "Research Software Engineer"
  - Late 2013 UKRSE Association forms with ~50 members
- US: Winter 2017-2018
  - Int'l Survey of RSEs: ~175 US responses
    - 12 responded with interest to build a national community
  - UK Sponsored *1st International RSE Leaders Meeting*
    - 5 US delegates
- Jan-Feb 2018: US-RSE Slack workspace and first website go live
- 2019
  - Established high level mission/goals
  - First Steering Committee

US-RSE Mission

1. **Community**
   - Create a professional community to share knowledge, connections, and resources
2. **Advocacy**
   - Promote RSEs impact on research, highlighting the critical and valuable role RSEs serve
3. **Resources**
   - Provide access to information and material to support individuals and RSE groups
4. **Diversity, Equity, and Inclusion**
   - Actively promote, encourage, and improve opportunities within RSE community

Membership Growth



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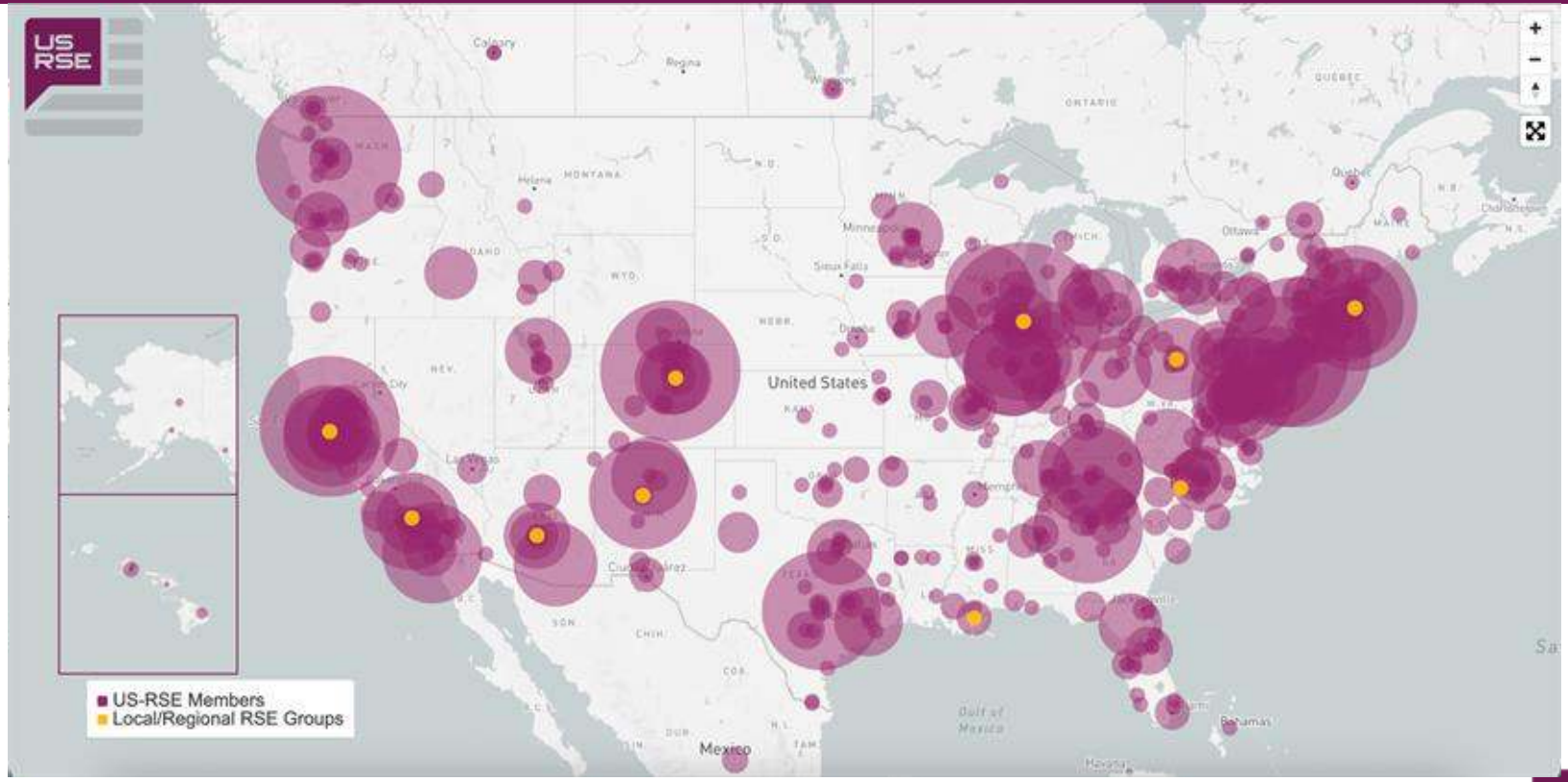
US-RSE: Members



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https://us-rse.org/usrse-map/

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The 2026 US-RSE Steering Committee

Keith Beattie
Lawrence Berkeley National Laboratory

Co-Secretary & Int'l Council Rep

Jeffrey Carver
University of Alabama

Vice Chair

FOUNDING MEMBER

Cordero Core
University of Washington

Outgoing Election Co-Chair

Ian Cosden
Princeton University

Chair & Int'l Council Rep

FOUNDING MEMBER

Julia Damerow
Arizona State University

Treasurer

Alex Koufos
Stanford University

Co-Secretary

Miranda Mundt
Sandia National Laboratories

Outgoing Election Co-Chair

Abbey Roelofs
University of Michigan

Deputy Treasurer

Pengyin Shan
University of Illinois at Urbana-Champaign

Community Builder Rep

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USRSE'25: Overview

- 300+ participants, 3 days
- 2 Keynotes
- 4 parallel tracks
  - 31 Talks
  - 13 Papers
  - 8 Workshops
  - 7 Birds of a Feather (BoF) sessions
  - 3 Notebooks
  - 50 Posters in evening session
- Student program
- Rapid Access Microtalks
- Conference dinner at the Moshulu

USRSE'26

Advancing Science in the Age of AI

Explore how Research Software Engineers (RSEs) and collaborators increase research impact during these rapidly changing times

San Jose, CA

JOIN US OCTOBER 19 - 21 FOR:

- Inspirational Keynotes
- Interactive Workshops
- Networking Opportunities, including a Job Fair
- Talks focused on development of research software, best practices and software sustainability, RSE and AI co-development, and more!

Questions, Comments? Suggestions?

- What do you hope to see US-RSE accomplish?

- Slack: Steering Committee (@sc)
- Email: contact@us-rse.org

Thank you!