US-RSE:
Today's successes and tomorrow's challenges

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deRSE CONFERENCE WÜRZBURG 2024

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UNITED STATES RESEARCH SOFTWARE ENGINEER ASSOCIATION

US-RSE & history

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 diversity within RSE community

US-RSE in 2018

- US part of International RSE survey asked for volunteers to start community
- International RSE leaders meeting in UK had 5 US participants
- Various of these folks started Slack channel, created GitHub site, created website v0, made logo, got us-rse.org domain
- End of year membership: 9

Int'l RSE Leaders Meeting 2018

US-RSE in 2019

- Started mailing list
- Started social media
- Created website v1 on us-rse.org domain
- Started Job Board on website and Slack and social media
- Created initial steering committee and structure
- Printed US-RSE stickers
- Held workshops at PEARC'19 and SC19
- Started newsletters, aimed at every two months
- Started monthly community calls
- Received first Sloan grant to host community building workshop
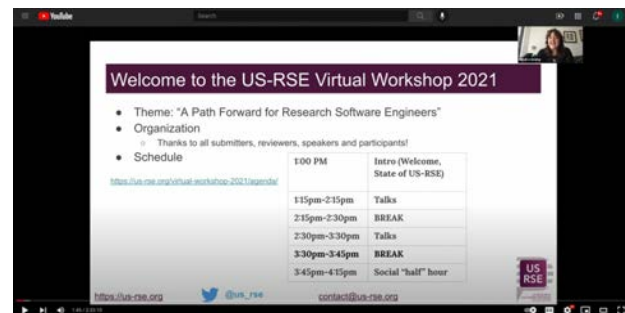- End of year membership: 259

PEARC'19

US-RSE in 2020

- Started working groups: website, DEI, education & training
- Started annual steering committee elections
- Started annual general meetings
- Held first virtual workshop (because community workshop was postponed)
- Held workshops at PEARC'20 and SC20
- End of year membership: 592

US-RSE in 2021

- Joined Open Collective as financial sponsor
- Created website v2
- Started DEI speaker series
- New logo (with professional designer) and redesigned website
- Held virtual workshop
- Held workshops at PEARC'21 and SC21
- End of year membership: 893

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US-RSE in 2022

- Princeton community-building workshop
- Started funders talk series
- Held workshops at eScience and SC22
- US-RSE exhibitor booth at SC22
- End of year membership: 1498

US-RSE in 2023

- Changed financial sponsor to Community Initiatives
  - To be able to receive grants & hire staff
- Held workshops at eScience and SC23
- Received Sloan award
  - Hired executive director (50%, Sandra Gesing)
  - Hiring community manager (100%, Sophia Anyatonwu)
- Held first conference
- Produced joint documents
  - Hiring, Managing, and Retaining Data Scientists and Research Software Engineers in Academia: A Career Guidebook from ADSA and US-RSE
  - Research Software Engineers: Creating a Career Path—and a Career (US-RSE and IEEE CS)
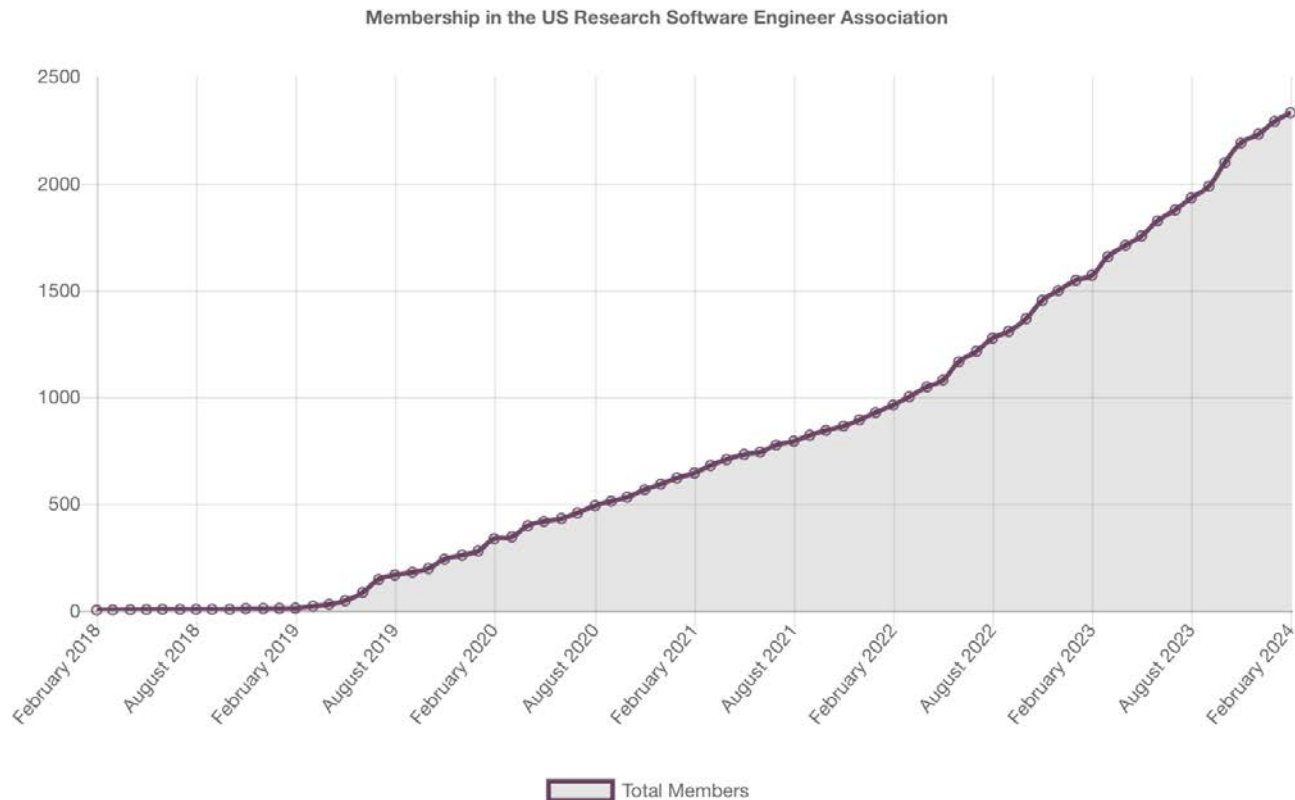- End of year membership: 2231

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Successes

Membership growth

Membership in the US Research Software Engineer Association

Membership

Community forming in working & other groups

Working groups

- Awards
- Code of Conduct and Moderation
- Code Review
- Diversity, Equity, and Inclusion (DEI)
- Education & Training
- Grants
- Group Management
- Mentorship Program
- Outreach
- RSE Empowerment in National Labs
- Website
- Regional and affinity groups

Affinity groups

- RSE Group Leaders' Network
- Neuroscience group

Regional groups

- Chicago
- Front Range (CO)
- New England
- New Orleans

Image by Gerd Altmann from Pixabay

These often start via Slack discussions or a community call

Subcommunities as a means to address common challenges

- The US-RSE community has many aspects
  - Subcommunity groups now under-formed; likely to be an area of future growth
  - Want to encourage & support these groups; may be just scratching the surface of interests now

- Disciplines
  - Not really well-explored yet
  - Neuroscience affinity group as a possible groundbreaker, along with existing #physics-astronomy on Slack
  - Slack event channels might lead to more (e.g., #agu2022)
- Job type
  - Active national labs working group
  - #rse-in-industry and #students on Slack

- Personal characteristics
  - #LBGTQ on Slack
- Geography
  - The US is big!
  - 4 formal regional groups so far, plus 6 more geographic Slack channels
- Technical
  - Slack channels for #cloudcomputing, #clustercomputing, #containers, #data-engineering, …

Image by Gerd Altmann from Pixabay

US-RSE community-organized events

- Community calls (#communitycalls)
  - 2022: Working Group Round Table, International RSE Day, Challenges of Adopting Agile Methodologies in RSE Projects
  - 2023: Workflow Tools, Computational Notebooks as Scholarly Objects, US-RSE'23, New Sloan Grant, Tips for Mentoring around Coding, Promoting Good Software Development Practices, A Retrospective on Pride Month: Celebrating Diversity in Our Community!, Career Mentoring Plans, AI (ChatGPT & LLMs), Executive Director vision and feedback
  - February 2024: Keeping Up With Changing Technology
  - March 2024: RSE types of positions, pros and cons, how US-RSE can help
  - Alternating months on different days/times
- DEI Speaker Series
- DEI Media Club
- Education & Training Seminar Series
- Funder Speaker Series

US-RSE Funders Talks
Varun Chandola
National Science Foundation
(NSF)

US-RSE Funders Speaker Series – Varun Chandola (National Science Foundation)

US-RSE standalone events

- US-RSE 2022 community building workshop
  - Sponsored by Sloan grant
  - Breakout group sessions
  - Multiple new WGs and initiatives launched
  - Lots of blog posts published
- US-RSE virtual workshop, Sept 2022
  - Theme: Make it happen! Towards a diverse and sustainable future!
  - 2 half-days: 1 keynote, 9 talks, 3 breakout sessions
- US-RSE & ADSA Career Support Workshop, Oct 2022
  - Guidebook for RSE & DS career paths in academia
  - Published as https://doi.org/10.5281/zenodo.8264153
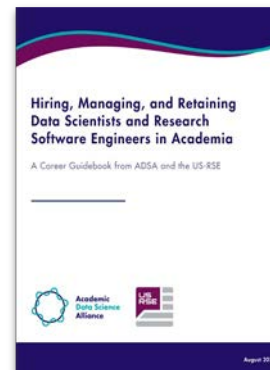
ADSA/US-RSE Workshop

US-RSE conference events

- PEARC22 - Building Enduring Cyberinfrastructures - The Role of Professional RSEs panel & social event
- eScience22 - RSEs in eScience workshop
- SC22 - RSEs in HPC workshop, US-RSE booth
- PEARC 23 - social event following SE4RS workshop
- eScience23 - RSEs in eScience workshop
- SC23 - RSEs in HPC workshop & RSE panel, US-RSE booth

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Sloan Award

- 2022-2023 proposal to Alfred P Sloan Foundation based on US-RSE's accomplishments
  - Recognizing that future growth was limited by all volunteer effort, with virtually no money
- Funded at $799,776 (over 2 years), starting May 2023
  - Via Community Initiatives (US-RSE fiscal sponsor)
  - Supporting
    - Dedicated staff (executive director, community manager)
    - Community initiative & travel funding proposals ($100-$10,000; quarterly applications/decisions; judged on potential for positive impact on the community, alignment to US-RSE mission, availability (or lack thereof) of funding, submitting members' qualifications (incl. previous US-RSE activity)
    - Awards (US-RSE excellence in service, US-RSE impact)
    - Organizational tools & community health

Conferences

- First annual conference, 2023, Chicago
  - https://us-rse.org/usrse23
  - Sold out at 250 attendees
  - Sloan award provided "bootstrapping" funds
  - Lots of committees, each with 2+ volunteer co-chairs, chosen considering experience and diversity, and many volunteers in each committee
  - Many sponsoring organizations
  - Included travel (aimed at students and early career participants) & dependent care grants
  - Invited keynotes by Neil Chue Hong and Mary Ann Leung, and funders panel
  - 90 contributed and peer-reviewed submissions (birds of a feather, notebooks, full and short papers, posters, talks, pre-conference virtual tutorials, workshops); proceedings on Zenodo
  - Student program
  - Sponsor lightning talks
- Second conference, October 15-17, 2024, Albuquerque, NM
  - https://us-rse.org/usrse24
  - Will be similar to first conference, slightly larger, more hybrid

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Increased awareness of RSE role and title in US

- In hiring organizations
  - Job board as a common place to advertise jobs
    - 480+ submissions since Jan 2022
      - As of 1 Mar 2024, RSE: 20; Related: 3; Interns: 8
    - Google form to submit
    - Quickly added by #job-post-team
    - Bot to post in #jobs, twitter, mastodon
  - Increased usage of RSE title in new jobs
- Two special issues of CiSE focused on RSEs in the US

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tumor cells

necrotic center

The Future of Research Software Engineers in the United States—Part I

◆IEEE
IEEE COMPUTER SOCIETY
www.computer.org/cise

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The Future of Research Software Engineers in the United States—Part II

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US RSE

Increased awareness of RSE role and title in US

Training-based **[...]**
Cyberinfrastr[...]

PROGRAM SOL[...]
NSF 23-520

REPLACES DOCUMENT(S):
NSF 22-574 [...]

CI Professionals include information technology professionals, scientists, and engineers who work closely with the computational and data-enabled scientific and engineering researchers at colleges and universities, supercomputing and other centers, and other research institutions. Examples of *CI Professionals* include CI system administrators, CI research support staff, research software engineers, and CI facilitators, and may also include computational research scientists and engineers and non-tenure-track faculty.

2. **CI Professional Mentoring and/or Professional Development Plan** (**1 page**, *if applicable*): Any proposal that requests funding to support a CI professional must upload a document titled "CI Professional Mentoring and/or Professional Development Plan" in the supplementary documentation section of Research.gov. CI Professionals are the professional staff who develop, deploy, manage, and support effective use of CI (e.g., research software engineers, programmers, IT professionals, data scientists, system administrators, CI facilitators, etc.) The document must describe the mentoring and professional development activities that will be provided for such individuals. In no more than one page, the planned activities must be described that are targeted specifically for CI professionals supported by the project, regardless of whether they reside at the submitting organization, any subrecipient organization, or at any organization participating in a simultaneously submitted collaborative proposal. Proposers are advised that

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sustainability plan. Proposals are encouraged to consider how the CI Professionals will interact with national CI entities (such as the RCD-Nexus CI Center of Excellence Pilot, the Campus Research Computing Consortium (CaRCC ☑) and the US Research Software Engineer Association (US-RSE) ☑), collaborators, participating institutions, and scientific virtual organizations where relevant. While single institution CIP proposals are encouraged, proposals are also encouraged from multi-institution teams to serve the advanced CI needs of institutions within a designated region of the U.S. or within one or more scientific or engineering disciplines.

January 18, 2024

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US RSE

Challenges

Will funding hurt volunteerism?

- Pre-funding, any action needed to have volunteers to do it
  - Led to community ownership of US-RSE and all activities
- Now, with some paid staff, how do we avoid saying that these staff should do everything
  - Potential though of possible volunteer: I'm not going to do this; someone being paid will
- Need to clearly define staff roles vs volunteer roles
  - And justify
- Other issues will likely arise
- Steering committee must keep an eye on this
- On the positive side, the community manager is attempting to drive more activities that involve more people, and this appears to be successful

US RSE

How to continue to grow & sustain community, and avoid volunteer burnout?

- At the Steering Committee level, all but two of the original (2019) nine SC members have been replaced
  - In 2022, nine candidates for four positions
  - In 2023, eight candidates for five positions
  - This seems healthy
- An increasing number of working groups are forming
  - Needs an increasing number of people to lead and sustain
  - Some groups might end if not enough people are interested – this is natural and fine
  - Other groups might have people interested but not in being leaders – this is more of a problem
- About 400 active members on Slack each week, community calls often have ~50 people, education & training seminars have 75-100 people
- Underlying issue: without annual membership process, it's unclear how many members are really active on an annual basis
  - In 2022 and 2023, less than 200 members voted for SC
  - Is this a concern?
- Unclear what a healthy community needs in terms of fraction of members who perform various roles (vote, participate in activities, lead WGs, …)
- Also unclear what part of the diverse potential community we're missing

US RSE

How to sustain funded activities after initial award?

- Sloan funding is ~$400k/year, supporting
  - Dedicated staff (50% executive director, 100% community manager)
  - Community initiative & travel grant proposals
  - Awards
  - Organizational tools & community health
- How do we support these after the 2-year award ends?
- UK SocRSE has membership, about $25/year
- If US-RSE did this, with similar fraction of community (1/8) becoming paying members, income would be $8k/year
- Other options: organizational memberships, sponsorships, revenue from events, training fees, ?
- Additional philanthropic or government support?
- This is one of the main challenges for the current staff and SC

How to transition to a new steering committee chair eventually?

- Until now, Ian as steering committee chair has been essential to continuity
- He also was key in getting the loose community in 2018 to start the formal US-RSE org, so he's been here from the start
- But it's unhealthy for an organization to be dependent on one person
- Only 2 of 9 initial steering committee members from 2019 remain, 1 left in 2020, 1 in 2021, 3 in 2022, 2 in 2023
- Good turnover and new people coming; gradual change preserves memory
- Also have #SC-alumni channel on slack to let current SC communicate with previous SC as a group when needed
- Will US-RSE professional staff and other SC members help smooth the eventual transition?

How to develop professional/technical benefits for members?

- First, figure out what members want
  - Via a membership wide survey perhaps
  - Also see what people just come out and ask for and what people are willing to help organize
  - Potentially look at what other societies do, learn from them
    - Other societies = other disciplines (e.g. IEEE CS, ACM, AGU, AAS, ...) & other RSE orgs (SocRSE, deRSE, ...)
- Then provide it
  - Collaborate with other societies when appropriate
  - Working groups that enable members to come together to provide benefits and learn from each other
    - Both direct benefits (e.g., training) and indirect benefits (e.g., satisfaction in mentoring)
  - Annual conference as a place to get credit for work that doesn't fit well in other venues, connect with others, etc.
  - Guidebooks (both in collaboration with other societies)
    - [Hiring, Managing, and Retaining Data Scientists and Research Software Engineers in Academia: A Career Guidebook from ADSA and US-RSE](#)
    - [Research Software Engineers: Creating a Career Path—and a Career (US-RSE and IEEE CS)](#)

How to make progress on common problems?

- Common is hard to define
  - Remember that US is federal and extremely decentralized in many ways, and is physically large (4-5 time zones, cross-country flights up to 6-10 hours)
  - National culture mostly ties us together, along with high-level policy
- Need to work at multiple levels
  - Local (institution, system, state, discipline, type of organization, funder)
  - National
  - Global

  and build methods to share lessons and collaborate across levels
- Use virtual meetings as much as possible, but also take advantage of places where people do gather in person

US
RSE

Conclusions

6+ successful years, and more to come

- 2018
  - Small group of people thinking, planning, and starting to build
- 2019-today
  - 200x growth in community
  - Almost everything has been replanned and refreshed
  - Great impact on the external RSE community and some institutions/funders
- Going forward
  - Professional staff, in addition to volunteers
    - To add stability and continuous efforts
    - More community growth
    - Will lead to sustainability challenge
  - Annual conferences
  - Increased impact on institutions and other parts of the larger research ecosystem
- US-RSE is focused on US impact, but welcomes members from other countries - many topics are really global
- We see ourselves as open and want to collaborate with other groups, associations, and societies, especially on outreach and advocacy related issues

US RSE

The community is what makes us successful!

- Working groups chairs and members
  - Doing amazing things!
- Community calls
  - Participants and organizers
- Slack members
  - Make the community inviting, inclusive, and worthwhile
- Everyone
  - The RSE movement is in full swing!

"I love how inclusive and diverse the community is!"

"The best part of the US-RSE is the community of active and friendly individuals who are always willing to help their fellow members."

"I love the supportive community. Everyone is friendly, and when I ask questions (technical and career-related), I always get helpful responses."

"Everyone is so supportive! It seems like every question in the Slack workspace gets at least one useful answer, and folks are constantly sharing ideas and resources."