



# Building RSE Communities at National Labs

Focus Group Takeaways on RSE Organizational Models

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# Introductions

- RSE Empowerment in National Labs Working Group
  - Application of US-RSE mission to National Labs context
  - Young group: started in 2022
  - Activities
    - Leading BoFs and panel discussions
    - Developing references and guides
- What is a “National Lab” in this context?
  - Inclusive definition
  - Any government owned institution with research as its primary mission
  - Government operated or contractor operated

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# What is an RSE community?

- Understanding the RSE community landscape
  - What RSE needs and goals exist in what combinations?
- Examples
  - Institutional department
    - [Sandia Software Engineering & Research Dept.](#)
  - Affinity group
    - [UCAR Software Engineering Assembly](#)
  - Hackathon groups
  - Lunchtime Lightning Talk groups
  - Software Engineering Slack channels
  - Project Based groups, ie [CESM](#) and [SE Working Group](#)
  - And More!



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# Methodology

- Survey
  - Designed primarily to inform focus group questions
  - Six categories
    - Administrative, Inclusion, Community, Tasking, Training, Recognition, Experience
- Focus Group
  - Two sessions with facilitated breakout rooms
  - Two themes:
    - **Current State of Affairs** and
    - **Envisioning the Future**
  - Four questions per theme



J. Kontio, L. Lehtola and J. Bragge, "Using the focus group method in software engineering: obtaining practitioner and user experiences," Proceedings. 2004 International Symposium on Empirical Software Engineering, 2004. ISESE '04., Redondo Beach, CA, USA, 2004, pp. 271-280, doi: 10.1109/ISESE.2004.1334914.

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# Survey Summary

- Outcomes
  - Institutional representation includes 7 labs across 2 different sponsors
  - All respondents have some community and meet regularly in some manner
  - Communities are mostly informal and avenues for institutional support are opaque
- Topics for follow up
  - Conversations weighted more towards technical aspects rather than community building
  - Respondents felt that their colleagues had some idea of the scope of their role
  - Standard software practices not required by a majority of respondent's projects
  - Access to career development resources but not specific to RSE needs
  - RSEs were largely uncertain of their peers struggles with accessibility or prejudice

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# Focus Group Questions

- **Current state of affairs**
  - How did your RSE community get started?
  - What is the focus of your activities and why?
  - In what ways are RSEs being recognized?
  - What practices have you successfully incorporated?
- **Envisioning the Future**
  - What practices do you want to see adopted?
  - What do you wish others knew about your role?
  - What sort of training would you like to see?
  - What goals would you like your community to address?



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# Current state of affairs

- **Formal and informal groups exist at National Labs**
  - Technical discussions often seed group formation
  - Can be low impact due to institutional bureaucracy and focus
  - Siloing by department and domain
- **Not enough senior RSE leadership**
  - Lack of mentorship for junior RSEs
  - How to recognize/evaluate SW work in active flux
  - Possibly contributes to higher turnover
- **Typically science project based work, RSE is 2nd**
  - Integration with research colleagues is critical
  - Minimal attention to technical debt/code maintenance

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# Envisioning the Future

- **Empathy with and among RSEs**
  - Appreciating of relative precarity giving current funding models
  - Expanding recognition of common shared “pain points”
  - Breaking down domain biases to assess RSE needs
- **Discoverability and Coordination**
  - Near universal concern of sharing resources and skill sets
  - Documentation, documentation, documentation
  - Common infrastructure
- **Education and communication**
  - Cross domain communication and training of SE practices and benefits
  - Decoding terminology for common definitions
  - More RSE role focused training, mentorship and career development

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# Lessons Learned

- Common issues and practices
  - Technical knowledge sharing is the major draw
  - Desire to advocate for common, well known software development practices
  - Building bridges and coordinating across an institution is a common hurdle
  - Advocating for software development as a primary concern of the institution
- Unique challenges and characteristics
  - Stage dependent issues
    - Newer communities: burnout, advocacy, outreach
    - Established communities: domain bias, stagnation
  - Recognition of contributions has a high number of dependencies
    - Nature of research deliverable, HR performance metrics, leadership culture, etc

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## Future areas of exploration

- Sponsorship versus administration impact on community building constraints
- Tradeoffs in organizing around specific research or software domains
- How can RSE communities help contribute to DEI within and beyond the community

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