



Visible Research Software Interest Group (VRSIG) eResearch BoF 2023

Summary report

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1. Summary

The consensus for the Visible Research Software Interest Group (VRSIG)¹ Birds-of-a-Feather (BoF) session at eResearch Australasia 2023 was that *addressing visibility of research software is still a valuable activity and the group should remain active*.

The GoogleGroup will remain as a mechanism to organize the community and send notifications. Efforts will be increased towards the GitHub discussions forum until such time as another option becomes available.

Additional changes to the group may be beneficial in accelerating efforts to impact visibility. This could include regular events that feature contributions from community experts, groups, or projects that already make their software visible. These events also provide an opportunity to expand the membership of the VRSIG. Effort should also be expended to embed key stakeholders in a small set of prioritized short term activities that are handled by working groups, and which can be revised at regular intervals. Where possible these working groups should align to, or be replaced by, existing efforts: e.g. through Research Data Alliance (RDA)², ELIXIR Europe³, Research Software Alliance (ReSA)⁴, and others. Where possible, working groups should pursue activity outcomes that contribute to the professional or academic development of VRSIG members.

A total of 25 people (excluding presenters) attended the BoF session.

2. Abstract

Abstract for this BoF session at eResearch Australasia 2023 is provided below⁵.

Visible research software are software outputs (source code, executables, workflows) that are made available by their authors, acknowledged in (re)use by other researchers, tracked and supported institutionally and linked to publications and data as part of the provenance of research findings or data handling. A key aspect of visibility is effective sharing. Streamlined approaches to research software sharing increases reuse of existing software, reduces replication of effort and directly supports an ecosystem where software developers gain visibility and recognition for their effort, expertise and fundamental contribution to research. In this BoF we will focus on what should be emerging best practice around software sharing in research: what can support staff do to better support this activity, what systems and processes can be used now, and what gaps need to be filled to do this adequately.

This BoF is an activity supported by the Visible Research Software Interest Group (VRSIG), which was launched in 2022 to address FAIR (findable, accessible, interoperable and reusable) research software and to also make progress by promoting a convergent community effort that describes the changes in culture, policy and practice that will lead to increased software visibility. In addition to the discussion on sharing software, this BOF will include a community update and an opportunity to continue planning VRSIG activities. We invite the

¹ Visible Research Software Interest Group (VRSIG) <https://sites.google.com/ardc.edu.au/visible-research-software>

² Research Data Alliance (RDA) <https://rd-alliance.org/>

³ ELIXIR European life sciences infrastructure <https://elixir-europe.org/>

⁴ Research Software Alliance (ReSA) <https://www.researchsoft.org/>

⁵ eResearch 2023 BoF Visible Research Software Interest Group
<https://conference.erresearch.edu.au/visible-research-software-interest-group/>

community to join the group and the conversation: to make research software visible by connecting and collaborating in sharing knowledge, exchanging best practices, and minimising duplication of effort.

2. Birds-of-a-Feather session details

2.1 Interest group update

The BoF began with an update on the VRSIG. The goals of the VRSIG are to **(1)** Stimulate community participation to share existing guidance, embrace new ideas (policy, incentives, partnerships, etc.), expand networking and advance together, and **(2)** Increase awareness of national and international guidance to improve the visibility of research software locally by encouraging reflection and adoption.

To enable this, the VRSIG seeks to engage research infrastructure managers, repository managers, research leaders, data librarians, research software engineers (RSEs)⁶, policy makers, and other advocates with capacity to champion and influence the adoption of policies, services and technologies to boost the visibility of research software in scholarly communications.

The VRSIG has grown to a total of 104 members, and engages via a minimum of two meetings every calendar year, a GoogleGroup⁷ and a GitHub discussions forum⁸.

2.2 Visibility first & reports highlighted to the group

In the second section, a presentation was given covering the importance of research software visibility. Two key images from these presentations are included below.



For research software to be visible, it firstly needs to be recognised (discovery, reuse, citation, acknowledgement), through either established or new mechanisms. This recognition needs to translate to measurable impact (times reused or cited), as it is that impact that allows a software developer to attract funding and / or cultivate career opportunities. The concept that visibility is central to this process was presented and emphasized to BoF attendees.

⁶ "Research Software Engineers are people who combine professional software expertise with an understanding of research." International research software engineering community <https://researchsoftware.org/>

⁷ Visible Research Software Interest Group GoogleGroup <https://groups.google.com/a/ardc.edu.au/g/community.vrs>

⁸ Visible Research Software Discussions <https://github.com/au-research/Visible-Research-Software/discussions>

Visibility first Steps to make your best practice visible

Eight steps required to make research software visible were highlighted to the BoF attendees. These steps include those recommended by available guidelines⁹.

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| <ol style="list-style-type: none"> 1. Version control using a popular repository platform (e.g. GitHub) 2. Open source your work from day 1 3. License for reuse by others 4. Document your work such that it can be understood and reused (includes publication!) 5. Follow gold standard examples from your domain (e.g. genomics) | <ol style="list-style-type: none"> 6. Make your software modular and portable by using containers and standards from your community 7. Having and using an ORCID - connecting to visibility services 8. Register your software (e.g. Zenodo, WorkflowHub) - connecting to scholarly knowledge graph, surfacing metadata for search engines |
|--|--|

Two reports of relevance to the community were also highlighted to the BoF attendees:

- *Understanding how researchers find research software for research practice*¹⁰, and
- *Research Software Visibility Infrastructure Priorities*¹¹

2.2 Interactive group discussions

In the final section of the BoF, attendees were asked to break into groups and discuss a response to four different questions related to the VRSIG, visible research software practice, and next steps for the interest group. The responses are summarised below.

How are you, or your organisation, addressing software visibility?

Multiple general ideas were put forward by the breakout groups, including providing community wide guidance via a website, providing curated lists of software projects and software indexes. This also extended to guidance on how to archive software and retain its research-specific context, and supporting descriptive metadata standards across Australian institutions. Scientific papers focused on research software, organizing expert talks, and community collaboration were also suggested.

There were also multiple repository focused suggestions, including hosting software metadata in a repository, creating repositories (domain specific or shared conda¹²) and identifying software as a distinct item type in repositories. One group also suggested collecting software in environments and making these available.

Specific examples from organizations and institutions across sectors were also provided. For example, the Australian Earth-System Simulator National Research Infrastructure (ACCESS-NRI)¹³

⁹ Liffers, M., & Honeyman, T. (2021). ARDC Guide to making software citable. Zenodo. <https://doi.org/10.5281/zenodo.5003989> & Patel, B., Soundarajan, S., Ménager, H. et al. Making Biomedical Research Software FAIR: Actionable Step-by-step Guidelines with a User-support Tool. Sci Data 10, 557 (2023). <https://doi.org/10.1038/s41597-023-02463-x>

¹⁰ Stevens, F. (2022). Understanding how researchers find research software for research practice. Zenodo. <https://doi.org/10.5281/zenodo.7340034>

¹¹ Dr. Karthik Ram, & Dr. James Howison. (2023). Research Software Visibility Infrastructure Priorities Report. Zenodo. <https://doi.org/10.5281/zenodo.10060255>

¹² Anaconda <https://www.anaconda.com/about-us>

¹³ Australian Earth-System Simulator National Research Infrastructure (ACCESS-NRI) <https://www.access-nri.org.au/>

makes use of GitHub¹⁴, Zenodo¹⁵, and will potentially also make use of DataCite¹⁶. CSIRO IMT¹⁷ publish software, and noted that similar to data, software is not treated well. CSIRO is also increasingly fielding questions about software citation. Finally, NeSI¹⁸ maintains a GitHub¹⁹ as well as both raising awareness of the value of research software, and encouraging good practices for visibility, through its RSE support service / consultancy²⁰.

What kind of forums would be most useful for this group?

The main mechanism for communicating with the interest group (GoogleGroup) was considered “old school”, even though a group email model was also considered preferable to options like Slack. Any option implemented was noted as needing to be responsive and active. Additional options suggested included curated newsletters, GitHub, Zenodo, and forums (e.g. the Stackoverflow²¹ model). Interestingly, community specific GitHub discussion boards were mentioned. The VRSIG GitHub discussions section has not seen significant uptake, and the suggestions here indicate that either the use or visibility of this forum should be reviewed. A curated list of software on GitHub was raised here again.

Community focused options were also considered by the breakout groups, including themed (i.e. domain-specific) events and presentations, noting that there would be a need for contributions from community experts, and that there are RDA software groups with which we may be able to build stronger connections.

Who can / should we engage with in the broader community (including internationally)?

When asked about engagement opportunities, it was suggested that the VRSIG encourage members to reach out to others in their communities and engage attendees at domain specific meetings. We should also connect with discipline specific efforts, especially mature ones (e.g. Synchrotron software group), and groups in the EU.

Multiple additional responses clarified the community groups that the VRSIG should engage. This reflected many of our existing engagement goals, and included researchers, scientific domain leaders, data librarians, universities, journals, funders, and industry. Major projects were suggested as examples. Engagement with policy makers and politicians was also suggested, with the aim being to foster recognition of the importance of research software. Finally, work with Linux / RedHat²² was provided as a use case for industry engagement by ACCESS-NRI.

Should this be a working group, instead of an interest group?

There was no clear consensus on whether the VRSIG should convert to a working group or remain an interest group. It was noted that long term community management is difficult, and that a shift to a

¹⁴ ACCESS-NRI GitHub organisation <https://github.com/access-nri>

¹⁵ ACCESS-NRI Zenodo community <https://zenodo.org/communities/access-nri/>

¹⁶ DataCite <https://datacite.org/>

¹⁷ <https://csiropedia.csiro.au/csiro-computing-history-chapter-10-csiro-imt-scientific-computing/>

¹⁸ New Zealand eScience Infrastructure (NeSI) <https://www.nesi.org.nz/>

¹⁹ NeSI GitHub organisation <https://github.com/nesi>

²⁰ NeSI's Consultancy Service <https://www.nesi.org.nz/services/consultancy>

²¹ <https://stackoverflow.com/>

²² Red Hat Enterprise Linux <https://www.redhat.com/en/technologies/linux-platforms/enterprise-linux>

working group model may have multiple benefits including a finite operational time (it does not need to be maintained), prioritized activity, and concrete outcomes. A working group may also have more influence.

Working group members indicated that the model of VRS engagement going forward is subject to the absence of policy and culture for sharing code. This includes barriers to sharing and discovery, which include Academic pressures to spend time on research, not code, as well as resistance to sharing code.

5. After the conference

Join the conversation
GoogleGroup: <https://groups.google.com/a/ardc.edu.au/g/community.vrs>
GitHub discussions: <https://github.com/au-research/Visible-Research-Software/discussions>

Invitation to new co-leads
Would you like to be a co-lead for this group? You can see what's involved in our Terms of Reference²³.

The plan for 2024
The VRSIG will continue
New co-leads will be invited to join
Two VRSIG meetings will be planned, one of which coincides with eResearch Australasia 2024
A minimum of 2 short term working group activities will be identified

²³ VRSIG Terms of Reference <https://docs.google.com/document/d/1wOOIIEywsSyK1OhLUEojBWJSwhpJLyS8jEsJsWsZP0M/edit>