Report on Vive la Différence - Research Software Engineers

July 2022

Lorentz Centre workshop Leiden, the Netherlands,
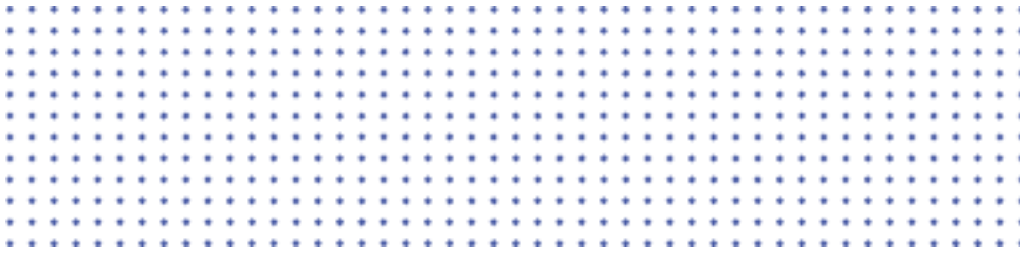19–22 April 2022, and online March to April 2022

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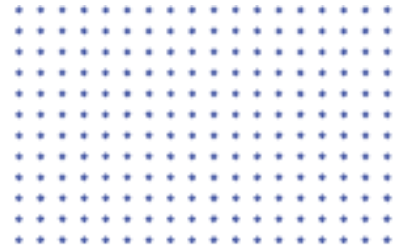
1 INTRODUCTION TO THE VIVE LA DIFFÉRENCE WORKSHOP

Image – Lorentz Center Photo: Sean Goggins, reproduced with permission.

This report summarises the 2022 *Vive la différence - research software engineers workshop*, including its discussions and suggestions. The purpose of the workshop was to consider how research software engineering (RSE) could be reframed to place diversity, equity, and inclusion (DEI) as a central organising principle. The French phrase in the title, vive la différence means long live difference, and reflects the overarching theme of the event.

While there are many DEI initiatives in the RSE, research, and/or open source software communities, these are often focused on a particular country, discipline, community and/or organisation. The workshop was designed to bring together a wide range of stakeholders who have not previously collaborated to analyse best practices and available data, identify research opportunities, and share experiences in solving their own local challenges, to create an informal network of champions in this area, and to understand which approaches and solutions can be reused, and in what contexts.

This workshop was a hybrid event, which brought together 40 participants from around the world. Representatives from international RSE communities and others interested in DEI came together both in-person at the Lorentz Centre in Leiden, the Netherlands, from 19-22 April 2022; and online from March to April 2022.

2 WHY COORDINATE AN RSE DEI WORKSHOP?

The research software community is well situated to evolve to frame DEI at its centre because research software typically depends on community involvement for innovation and sustainability. Improved DEI would contribute to expanding the pool of research software contributors, with benefits including:

- Increasing innovation: research has found that diverse teams can improve scientific outputs (Campbell et al., 2013; Liang et al., 2007).
- Increasing sustainability: Community engagement is a key part of sustainability, and the open source software community faces challenges in improving DEI (Benjamin, 2019; Dunbar-Hester, 2020; Vasilescu et al., 2015).
- Decreased duplication of effort and increased reuse of outputs: A stronger, more inclusive community is more likely to work together than to compete, for example, in the field of computational workflows (Ferreira da Silva et al., 2021).

Redefining research culture to embrace DEI is thus important for the RSE community, which is conservatively estimated to include 330,000+ worldwide (Hettrick, 2020). Available data reveals a more significant lack of diversity than in the mainstream research community, and there is almost no research on equity and inclusion. An analysis in 2018 of international RSE demographics found that 73-92% of Research Software Engineers (RSEs) were male, and most commonly ranged in age from 25-44 (Philippe, 2018). Data specifically on United Kingdom RSEs documented a breakdown of 14% women, 5% ethnicity of Black, Asian and minority ethnic/mixed, and 6% reporting a disability, with these figures being at least 50% smaller than for the UK workforce as a whole (Chue Hong et al., 2021). From another angle, a recent survey about research software in the US research community considered information about how individuals develop, use, and sustain research software. This survey found that: "When asked how well their projects recruit, retain, and include in governance participants from underrepresented groups, only about 1/3 of the respondents thought they did an "Excellent" or "Good" job. Interestingly, when asked how well they promote a culture of inclusion, 68% of the respondents (390/572) indicated they did an "Excellent" or "Good" job" (Carver et al., 2022).

Image -Workshop participants at Lorentz Center Photo: Sean Goggins, reproduced with permission.

3 ORGANISING A DEI-FOCUSED WORKSHOP

The section addresses how the workshop was organised to assist in achieving its aims around integration of DEI principles.

3.1 Integration of DEI principles

DEI was central to both the workshop content and design. From the workshop's inception, the organisers used principles for inclusive design. *Vive la différence - research software engineers* was a hybrid event to ensure that anyone who wanted to participate could, without having to be in a certain place and/or at certain times.

To ensure all attendees could participate in the workshop fully, the organisers encouraged speakers to create accessible presentations by recording their talks and using closed captioning, providing alternative text for any visual content, and following best practices for accessible and inclusive events (Chautard, 2019; Chautard & Hann, 2019; NumFOCUS, 2018; Ruhm, 2019). As some participants noted that they would be using assistive technologies such as screen readers, or would benefit from the provision of captioned videos, the accessibility of all workshop materials was a key consideration. The workshop organisers prompted speakers to consult guidelines and recommendations for creating accessible documents and presentations (Digital Education Strategies & The Chang School, 2020; Ruhm, 2019; Spellman et al., 2021).

Analysis of participant statements on what they hoped to learn from the workshop identified common themes around connecting with others with similar aims, exploring how to make a difference in participants' own contexts, and learning how to define success for DEI initiatives.

3.2 Participant demographics

In total, 40 participants from 12 countries attended the Lorentz workshop. 82% of participants identified as from an under-represented minority, including 56% who identified as from an underrepresented minority other than women (e.g., ethnic minority, LGBTQ+, and/or person with a disability) and 12.5% represented Global South countries: Colombia, India, Kenya, and Namibia.

Of the 40 total participants, 20 participated in the in-person workshop and 20 participated online. Participants included representatives from the international RSE community, academics, institutional leaders, independent researchers, non-profit organisations, government agencies and funders, and the private sector. All participants are listed in Appendix A.

Participants were identified through a combination of a public open call coordinated by the Research Software Alliance, the organisers' networks, word of mouth, and by deliberately searching for members of the research community involved in RSE and/or DEI in a wide range of countries. Approximately half of the participants were asked to provide a formal 5-10 minute talk

for the workshop to seed discussion, which had a strong emphasis on large and small group discussion to maximise sharing of best practices and building of networks. However, as all participants could have provided equally valuable talks about their skills and experiences, the majority of other participants were asked to facilitate sessions to break down any perceived divide between formal speakers and other attendees.

Image - on screen: [top row left to right] Heather Turner, Yo Yehudi, Anne Fouilloux, [middle row] Becca Wilson, Jeremy Cohen, Caroline Jay, [bottom row] Rowland Mosbergen, Marion Weinzierl; in-person [back row left to right]: Pauline Karega, Neil Chue Hong, Sandra Gesing, James Hetherington, Alexander Serebrenik, Sean Goggins; [middle row] Anna-Lena Lamprecht, Michelle Barker, Bianca Trinkenreich, Caleb Kibet; [kneeling in front row] Anita Banerji, Hana Frluckaj, Kelly Blincoe, Lieke de Boer, Kari Jordan, Jessica Upani. Photo: Sean Goggins, reproduced with permission.

3.3 Varied opportunities for engagement

The in-person element of *Vive la différence - research software engineers* was held at the Lorentz Centre in Leiden, the Netherlands. The Lorentz Centre is a workshop centre that hosts international scientific meetings; it aims to bring scientific fields and minds together via open and interactive workshops that support diversity. The workshop organisers (Michelle Barker, Anna-Lena Lamprecht, Sean Goggins and Mozhgan Chimeh) submitted a formal proposal through the Lorentz Centre processes and were successful in being selected to convene *Vive la différence - research software engineers*.

Provision of an online program was a key part of integrating DEI principles in the workshop planning and integration. 50% of participants choose to participate online, and an Australian Research Data Commons (ARDC) report on the event described it as a hybrid event done well (ARDC, 2022). The number of online participants was higher than anticipated, due to various travel-related barriers including participant personal circumstances, concerns related to the ongoing COVID-19 pandemic and an increase in SARS-CoV-2 BA.2 variant cases throughout Europe at the time, and organisational restrictions on international travel.

Both in-person and online participants engaged in a variety of collaborative activities including breakout groups; presentations and lightning talks; panel discussions; pre-recorded videos; and asynchronous discussions via a private Slack channel.

Most workshop speakers pre-recorded their talks to ensure online participants would have access to materials prior to and during the in-person workshop. Pre-recording like this facilitates inclusion (e.g., for participants with disabilities) and accessibility (e.g., to access materials at one's own pace). The few talks that were not recorded in advance were recorded when

presented at the event for later review by participants and the public. Participants accessed speakers' videos via a public YouTube [playlist](#) on ReSA's channel, and [slides](#) were also publicly available.
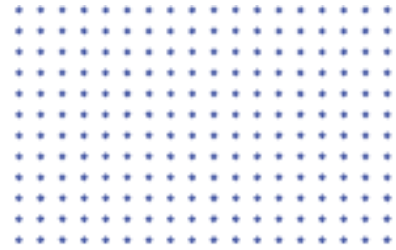
To enable online participants to engage equally in the workshop and to feel included, the workshop presented a range of optional ways to engage online from late March to late April. The online-meeting agenda invited all workshop participants to engage asynchronously with the workshop content and build relationships with other attendees, and was designed to provide similar opportunities to those experienced by in-person attendees. This hybrid approach enabled online participants to engage for as many hours as in-person participants experienced from 19-22 April, if they wished.

Online participation options included a series of online discussions via videoconferencing both pre- and post-workshop, scheduled at various times to accommodate different time zones. Participants engaged in ice-breaker activities and weekly discussions, which were based on the pre-recorded talks (that participants were encouraged to watch beforehand) and suggested topics. Online participants also had an opportunity to communicate asynchronously via a private Slack channel, and were encouraged to contact other attendees they wanted to engage with further directly for an informal chat. Online participants also had the option of joining all in-person sessions via videoconferencing and being active in discussions. In-person attendees were also encouraged to engage online where possible, to increase the level of inclusion for online participants.

3.4 Sponsors

The Research Software Alliance is grateful to the Alfred P. Sloan Foundation, the Chan Zuckerberg Initiative, and the Ford Foundation, for the funding provided for travel (for sixteen participants) and organising costs; and to Leiden University and the Dutch Research Council (NWO) for the support provided via the Lorentz Centre to provide workshop facilities.

4 WORKSHOP CONTENT

This section summarises the daily and weekly activities and talks that took place during the *Vive la différence - research software engineers* workshop. Each day of the in-person agenda was related to a week of the online agenda. For example, day 1 was 19 April, and week 1 was 28 March to 1 April 2022. See Appendix B for the full in-person workshop agenda and Appendix C for the full online workshop agenda.

4.1 Setting the scene

Image – In person participants discussing over lunch. Photo: Sean Goggins, reproduced with permission.

Day 1/week 1 of the workshop involved setting the scene, with an aim to create a welcoming environment and enable participants to begin to make connections. On the first day, the Lorentz Centre and workshop organisers welcomed in-person participants; during the first week, online participants were invited to attend introductory videoconference calls to get to know each other.

To understand the language being used, the workshop began with RSE and DEI explainers. Dr Daniel S. Katz from the National Centre for Supercomputing Applications (NCSA) presented on what research software is and why it is important (video and slides). Dr Mozhgan Chimeh from NVIDIA presented the DEI explainer: "What do we need to understand about DEI to improve it in the research community?" (video and slides).

Participants engaged in an icebreaker activity – practising diversity, equity, and inclusion in our communities – facilitated by Dr Anita Banerji from the University of Manchester, and Dr Malvika Sharan from the Alan Turing Institute. This session aimed to facilitate the building of connections through shared experiences. The icebreaker activity involved breakout groups with scenario-based discussion, which allowed both online and in-person participants to talk about assumptions, bias and discrimination through lived experience; share responses; and deepen understanding. The nature of this activity created space for participants to share different views, giving a richer understanding of participant perspectives.

Dr Florencia D'Andrea from R-Ladies and R-Ladies Buenos Aires chapter, presented an early career research viewpoint on the future vision for DEI in RSE (video and slides). Dr D'Andrea is a Postdoctoral Research and Teaching Fellow working in the Master of Data Science program at the University of British Columbia. Day 1/week 1 concluded with an inspirational keynote delivered by Dr Mary Ann Leung from the Sustainable Horizons Institute. Dr Leung presented on increasing developer productivity and innovation through diversity and the normalisation of inclusion (video without captions and slides). This keynote was convened through the DiveRSE webinar series to enable both workshop participants and the general public to engage. The

session explored what it takes to achieve DEI, and justice, equity, diversity, inclusion (JEDI) and how reframing DEI within RSE could increase innovation and developer productivity. Mary Ann Leung posited that cultivating respect among RSE teams is a necessary condition to achieve DEI and suggested a "coordinated self-assembly" model which focuses on creating teams where all members are fully contributing to the project in ways that take advantage of similarities and differences. Key to achieving this is recognising the many dimensions of difference, enabling lively communication about difference, addressing barriers to change, and adapting known methods for facilitating integration of technical diversity. It is possible that the concept of RSE is applicable across many cultures, but at present RSE communities are limited to certain countries (as listed in the International Council of RSE Associations).

Participants were also asked to share the challenges related to improving DEI in RSE that they hoped the workshop would cover. The outcome was a very broad list of statements, many of which could not be addressed in this workshop, with common issues including:

- Diversity in leadership and decision making committees/groups
- How to pitch RSE globally while avoiding an imperialistic patronising legacy
- Measuring DEI
- Differentiating equity and equality for DEI in RSE
- Centring on marginalised experiences
- How to bring more diverse contributors into research software projects
- Managing (volunteer) burnout
- Facilitating hybrid meetings to maximise inclusivity.

4.2 Learning from social science approaches

The intention of day 2/week 2 was to focus on learning from social science approaches to stimulate consideration of the workshop's two research questions. This part of the workshop began with examples of successful DEI-focused initiatives and collaborations, to focus thinking on research question 1: *What approaches to repositioning DEI as central to the RSE community will prove most promising?* Dr Sharon Broude Geva from Women in High Performance Computing (WHPC) presented "Changing the face of HPC" (video and slides). Jessica Upani from PyCon Namibia gave a talk on PyCon Namibia and the Python Namibia community (video). And Dr Kari L. Jordan from The Carpentries presented on The Carpentries' DEI initiatives (video and slides).

Through breakout groups, participants considered how they could apply these frameworks to improve centrality of DEI in their own environments. Participants shared their experiences of engaging in repositioning DEI as important in their community; considered what social processes and/or supporting technology help enable this; and discussed how the DEI initiatives with which they engage demonstrate benefits of DEI. Following the breakout sessions, participants reconvened in a larger group to report on their discussions. Some of the highlights of the discussion included consideration of issues related to mentoring, and support networks; and how these make an impact in responding to DEI and considering DEI from the start of any endeavour. The sharing of participants' lived experiences showed that while small changes are beneficial, challenges remain in how to measure impact to build on these small wins.

To facilitate engagement with research question 2: *Which combinations of social processes and supporting technology show effectiveness in advancing the community of research software engineers to direct research toward a future centred on DEI?,*

Dr Kelly Blincoe and Dr Alexander Serebrenik presented on social science approaches to developing diverse research software communities and teams. Dr Blincoe, who is a Senior Lecturer of Software Engineering and leads the Human Aspects of Software Engineering Lab at the University of Auckland, New Zealand, gave a talk on "Centring DEI by reimagining software processes and practices" ([video](#) and [slides](#)). Dr, Serebrenik, a Full Professor of Social Software Engineering at Eindhoven University of Technology, the Netherlands, presented "Diversity and communication in software development teams" (*[video](#) and [slides](#)).*

Day 2 concluded with feedback on breakout groups from earlier in the day, and a group discussion to consider how each participant could better utilise social processes and/or technology to support DEI in their own environments.

4.3 Reflecting on learnings

During day 3/week 3, participants reflected on what they had learned and considered next steps – at an individual level and a collective level – to reposition DEI as central to the RSE community.

Saranjeet Kaur Bhogal, a statistician, R consultant, and co-founder of the RSE Asia Association, presented an early career research viewpoint on future vision for DEI in RSE ([video](#) and [slides](#)).

Through group discussions, participants considered examples of successful DEI in the software world and good practices. To further highlight the importance of community in RSE, Mr Neil Chue Hong, founding director and principal investigator of the Software Sustainability Institute delivered a talk titled "What do we know about DEI in the RSE community?" ([video](#) and [slides](#)). Dr Sean Goggins from Community Health Analytics Open Source Software (CHAOSS) presented an empirical analysis of differences between corporatised open source software projects and scientific open source projects ([video](#)).

Thereafter, participants joined breakout groups to reflect on learnings and to support one another to identify next steps. The breakout groups discussed potential opportunities to collaborate for knowledge transfer or to build critical mass while continuing to consider the workshop's research questions. Participants discussed that it is important to consider how to move towards equity rather than just inclusion since it is a stronger concept. Communities who are identified as successful at being inclusive are, for example, the Software Sustainability Institute (SSI), The Carpentries, rOpenSci and the Centre for Scientific Collaboration and Community Engagement (CSCCE). One idea is to analyse the communities and which steps make them successful at DEI. Defining values for the RSE community led to a lively discussion that a definition on an international level might be difficult since how DEI looks in different countries and continents also varies. To conclude day 3/week 3, workshop participants reported back on breakout groups to identify commonalities in next steps and opportunities for building on each other's work.

Some of the highlights of the discussion were: discussion of the importance of first acknowledging that currently inclusive communities exist, and that whilst participants and practitioners have the perception of this being successful (to some extent), there is still work to be done to shape equitable communities. Organisations that have succeeded in improving DEI effectively seem to have a commonality in having clear values that drive DEI. There was also discussion on how hybrid events (done well) are revolutionising inclusivity and participation, and that events where people can feel really included can increase motivation to collaborate.

4.4 Summarising knowledge and determining workshop outcomes

The *Vive la différence* workshop concluded on day 4/week 4 by summarising learnings and agreeing on outcomes. To seed discussion, Dr Caleb Kibet, a bioinformatician and founder of OpenScienceKE ([video](#) and [slides](#)); Dr Carly Strasser, an Open Science Program Manager at Chan Zuckerberg Initiative (CZI) ([video](#) and [slides](#)); Dr Lieke de Boer, a community manager from the Netherlands eScience Centre ([video](#) and [slides](#)); and Rowland Mosbergen, founder of Practical Diversity and Inclusion, gave lightning talks on how to incentivise the changes needed to centralise DEI in RSE ([video](#), [accessible slides](#) and [pdf slides](#)).
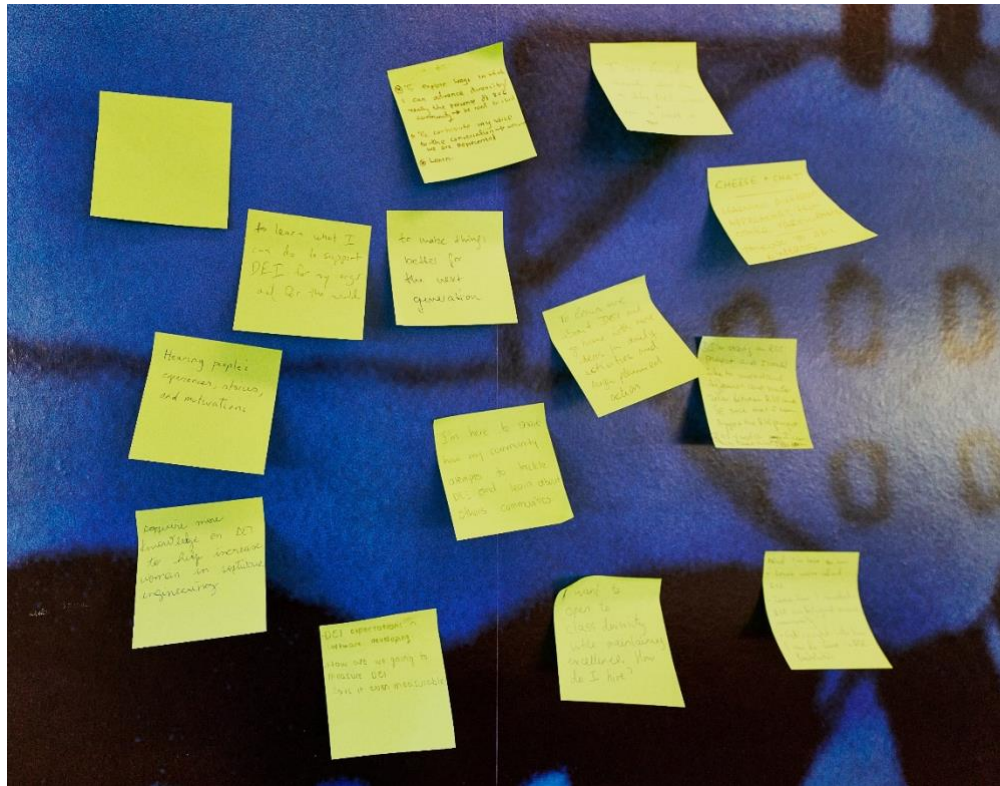

Image – Reflections on learnings. Photo: Sean Goggins, reproduced with permission.

Next, workshop participants reviewed progress on research questions. To seed discussion, speakers addressed useful structures to support DEI in RSE. Dr Ian Cosden, Director, RSE for Computational and Data Science at Princeton University and Chair of the US-RSE Steering Committee, gave a talk on the International Council of RSE Associations ([video](#) and [slides](#)). Yo Yehudi, the Executive Director and co-founder of Open Life Science (OLS), gave a talk on the OLS mentoring and training program ([video](#) and [slides](#)). Dr Becca Wilson, a UKRI Innovation Fellow at the University of Liverpool, presented "Disability in STEM" ([video](#) and [slides](#)). And Dr Michelle Barker, Director, Research Software Alliance (ReSA), presented "The Research Software Alliance: Collaborating on the advancement of the research software ecosystem" ([video](#) and [slides](#)). To wrap up the workshop, attendees participated in a group discussion on next steps for collaborating and sharing workshop outcomes.

5 MOVING FORWARD
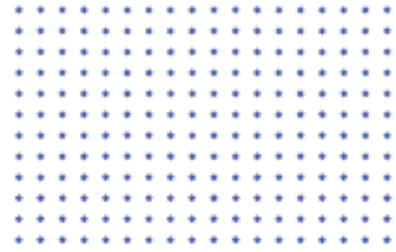
The outcomes of this workshop were as varied as the participants and it was impossible to address all of the issues that participants were keen to discuss. The conclusions reached on the two research questions, and concrete outcomes are shared in this section. However, many participants felt that as the first in-person workshop for many of the participants, the ability to simply share ideas and make connections during both the workshop and the social events around it was achievement enough. There was also very positive feedback on how well the online elements were integrated.

5.1 Addressing the research questions

Discussion on the two research questions that the workshop aimed to address can be summarised as follows:

Question 1: What approaches to repositioning DEI as central to the RSE community will prove most promising? A lot of the early discussions focused on deconstructing the assumptions in this statement, that DEI and RSE are understood in the same way across all cultures, and equally relevant to all. It was noted that diversity means different things in different countries, particularly with regard to understanding of ethnic and/or tribal backgrounds. Underrepresented minority is a term not used in all countries. The concept of RSE is also mostly now used by a small number of countries that are predominantly in the Global North. Whilst there are undoubtedly benefits in considering how software engineering can benefit research in all cultures, it is not yet clear if RSE is a framing that is universally applicable.

Question 2: Which combinations of social processes and supporting technology show effectiveness in advancing the community of RSE workers to direct research toward a future centred on DEI? The workshop included inputs from social science perspectives that helped connect efforts on improving DEI in RSE with some similar efforts in the open source software community, as the RSE and open source software communities overlap. This highlighted research that identifies problematic practices (because software engineering practices have historically been designed by a narrow spectrum of people), and more inclusive practices that are now being developed. There was a lot of interest from participants on how to leverage these types of studies to enable change in their own contexts.

The workshop helped identify some technological tools that can assist in understanding and/or improving DEI for the software community, including

- [CHAOSS](#) DEI metrics. CHAOSS Health and Sustainability Metrics can contribute to shaping RSE as a role that advances collaborative, sustainable open source scientific software.
- [GenderMag](#), a tool that enables software practitioners (e.g., developers, managers, UX professionals) to find gender-inclusivity "bugs" in their software, and then fix bugs.
- [Gender Decoder](#), a tool that provides a quick way to check whether a job advertisement has subtle linguistic gender-coding.

5.2 Workshop outcomes

Concrete outcomes include:

1. The development by national RSE associations of [DiveRSE](#), a series of online discussions that is providing a public forum to complement the Lorentz workshop. This will assist in broadening engagement in this discussion.
2. Engagement between several participants on computational social science (on the social science side of things), collaborative and human aspects of software engineering, and maybe even reaching out to the computer-supported collaborative work (CSCW) community. Partnerships are forming between social science approaches and/or technology tools, and those wishing to pilot them, and look likely to involve the Software Sustainability Institute, University College London, CHAOSS and the [Software Developer Diversity and Inclusion initiative](#) of the Linux foundation. Rowland Mosbergen's diversity training resources are also now in use at the University of Manchester.
3. Identification of an opportunity for participants to contribute to an [upcoming book](#) on DEI in software engineering.
4. Participants planned to introduce the concept of RSE in their own organisations in Kenya and Namibia; and at the national level in Norway[1]. The concept of RSE does not exist in any of these countries, and in Norway it is hoped that this workshop will enable the discussion to begin discussion on establishing status for RSEs, with diversity by design in-built into this new category from its inception. In this light, some participants felt that RSE is already disruptive to traditional research practices (particularly in terms of recognition); consequently RSE can embrace DEI more easily than mainstream research and assist in facilitating change.
5. Identification of the next key research questions in this area to assist in providing information to help move this agenda forward. The Software Sustainability Institute is currently planning to explore this area.

Potential next steps include:

1. Progression of [DiveRSE](#) from the current series of online discussions to a research software equivalent of an exemplar like the [All-In Project](#), which aims to create a more inclusive open source community for developers everywhere. All-In Partners include GitHub, Microsoft, Cisco, Intel, and the Linux Foundation.
2. Reframing DEI at the heart of RSE by assembling and drafting values for the international RSE community. This should be undertaken in a way to enable a sense of agency for all.
3. Increasing consideration of how to raise awareness of research on how different behaviours in software/research teams negatively impact minority groups. The emerging ReSA Research Software Science Interest Group (RSS IG) and [Open Evidence Bank](#) may assist in addressing this. Events such as Collaborations Workshop and RSECon could also be avenues.
4. Demonstration of the breadth and depth of DEI topics, as the discussions resulted in production of a longer list of things that could benefit from this type of workshop, rather than moving towards solutions of the challenges it had aimed to address. It could be valuable to make this workshop an annual event, to be convened in the Global South participants, and located there, in its next iteration.

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[1] While some RSEs in Norway are part of the Nordic RSE organisation, the nation as a whole does not recognise the title or the role as distinct from administrative roles. This workshop can assist in the creation of a separate status for RSEs that incorporates diversity from its inception.

5. Organisation of workshops for DEI change agents that would help them visualise their final outcomes and then identify the concrete next-steps to move towards this. These could be facilitated by an organisation like Company of Mind that have computer science connections.
6. Documentation of the DEI-centric practices which made this event such a success (such as the hybrid requirement) and identify how these add to existing work (Chautard, 2019; Chautard & Hann, 2019; NumFOCUS, 2018; Ruhm, 2019).

5.3 Challenges and opportunities

A range of challenges and opportunities also emerged from the hybrid approach to the Lorentz Centre workshop. Participants reflections from the end of workshop survey, and also in specifically considering the hybrid approach, provided the following key feedback:

- Maximise opportunities for attendees to share their experiences and opinions. The ice-breaker began this process, but more was needed to fully open the space.
- Ensure online participants have ample opportunity to contribute to the larger group discussion.
- Narrowing down the discussion topics by day 3 or 4 could have enabled specific ideas/themes to be discussed further to avoid going back to the big questions and generating ideas that there was not time to fully explore.
- Appoint a dedicated coordinator/facilitator to act as an intermediary between online and in-person participants, especially for breakout rooms. (This was addressed during the workshop, with volunteers taking turns to perform this function.)

Overall the workshop feedback was very positive. 24/40 participants (or 60%) of participants completed the event feedback form, and 58% of participants rated the workshop as excellent, 34% as good, and 8% as satisfactory. More details are shown in the table below:
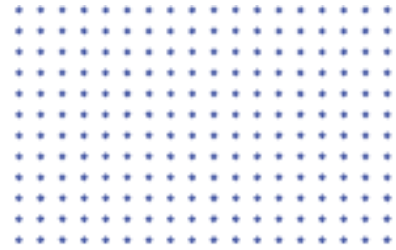
	Strongly disagree	Disagree	More or Less	Agree	Strongly Agree
The workshop enabled me to build networks with other participants	4.2%	4.2%	4.2%	54.2%	33.3%
The workshop helped me identify ways to connect with other relevant initiatives	4.2%	0%	12.5%	58.3%	25%
The workshop enhanced my understanding of how to achieve change in my context	4.2%	16.7%	37.5%	25%	16.7%
The workshop increased my motivation and support to work towards improving DEI	4.2%	0%	12.5%	45.8%	37.5%
The workshop provided a safe and welcoming environment	4.2%	4.2%	8.3%	8.3%	75%
Workshop events and materials were easily accessible	4.2%	8.3%	8.3%	16.7%	62.5%
The agenda was well structured to achieve workshop aims	4.2%	4.2%	8.3%	45.8%	37.5%

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Appendix A: Workshop participants

First name	Surname	Affiliation	F2F	Online
Phoenix	Andrews	Currently independent, UK	1	
Anita	Banerji	University of Manchester and the Software Sustainability Institute, UK	1	
Michelle	Barker	Research Software Alliance, Australia	1	
Saranjeet Kaur	Bhogal	RSE Asia Association, India		1
Kelly	Blincoe	University of Auckland, NZ	1	
Lieke	de Boer	Netherlands eScience Centre, Netherlands	1	
Sharon	Broude Geva	Women in High Performance Computing, USA		1
Neil	Chue Hong	Software Sustainability Institute, UK	1	
Jeremy	Cohen	Imperial College London, UK		1
Jonathan	Cooper	University College London, , UK		1
Ian	Cosden	Princeton University, USA		1
Stephan	Druskat	German Aerospace Centre (DLR), Germany		1
Denae	Ford	Microsoft Research, USA		1
Anne	Fouilloux	University of Oslo, Department of Geosciences, Norway		1
Hana	Frluckaj	UT-Austin & Carnegie Mellon University, USA	1	
Sandra	Gesing	Discovery Partner Institute, University of Illinois Chicago, USA	1	
Sean	Goggins	CHAOSS, USA	1	

Kim	Hartley	Research Software Alliance, Canada		1
James	Hetherington	University College London, UK	1	
Caroline	Jay	University of Manchester, UK		1
Stephannie	Jimenez Gacha	Quansight, Colombia	1	
Kari	Jordan	The Carpentries, USA	1	
Pauline	Karega	Bioinformatics Hub of Kenya Initiative, Kenya	1	
Daniel S.	Katz	University of Illinois at Urbana-Champaign, USA	1	
Caleb	Kibet	OpenScienceKE, International Centre of Insect Physiology and Ecology, Kenya	1	
Anna-Lena	Lamprecht	Utrecht University, the Netherlands	1	
Mary Ann	Leung	Sustainable Horizons Institute, USA		1
Carlos	Martinez	Netherlands eScience Centre, Netherlands	1	
Paula	Martinez	Australian Research Data Commons, Australia		1
Rowland	Mosbergen	Walter & Eliza Hall Institute, Australia		1
Njoki	Njuki Lucy	R-Ladies Nairobi, Kenya		1
Alexander	Serebrenik	Eindhoven University of Technology, the Netherlands	1	
Malvika	Sharan	Alan Turing Institute, UK		1
Bianca	Trinkenreich	Northern Arizona University, USA	1	
Heather	Turner	University of Warwick, UK		1
Jessica	Upani	Python Software Association of Namibia	1	
Marion	Weinzierl	Durham University, N8 CIR, UK		1
Becca	Wilson	University of Liverpool, UK		1
Yo	Yehudi	Open Life Science, UK		1
Qian	Zhang	Digital Research Alliance of Canada		1

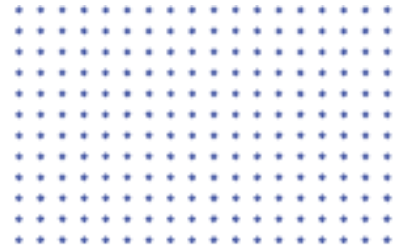|		TOTAL		20	20
Did not attend but provided recorded talks					
Florencia	D'Andrea	University of British Columbia, Canada			
Mozhgan	Chimeh	NVIDIA			
Carly	Strasser	Chan Zuckerberg Initiative, USA			

Countries represented by attendees:

1. Australia
2. Canada
3. Colombia
4. Germany
5. India
6. Kenya
7. Namibia
8. Netherlands
9. New Zealand
10. Norway
11. United Kingdom
12. United States

Additional countries represented by those originally registered but unable to attend:

1. Argentina
2. Belgium
3. Mauritius

Appendix B: In-person workshop agenda

Day 1 - 19 April 2022

All times are in CEST

Aim: Create a welcoming environment and begin to make connections.

until 10:15 Arrival, coffee

10:15-11:00 Session 1: Welcome by the Lorentz Centre and the organisers:

- Lorentz Centre information
- Workshop goals and structure
- Brief introductions (your name, organisation and role)
- Ways of working together - Code of Conduct

Facilitator: Michelle Barker, Research Software Alliance

11:00-12:00 Session 2: Setting the scene: Understanding the language we are using. Talks (10 mins each then Q&A) by:

- Research software engineering (RSE) explainer: what is RSE and why is it important - Daniel S. Katz, National Centre for Supercomputing Applications (NCSA), USA - video and slides
- Diversity, Equity and Inclusion (DEI) explainer: what do we need to understand about DEI to improve it in the research community - Mozhgan Chimeh, NVIDIA - video and slides

Facilitator: Neil Chue Hong, Software Sustainability Institute

12:00-13:00 Lunch break

13:00-14:30 Ice-breaker. This session aims to build connections through shared experiences as well as diversity of perspectives people bring into the conversation. Breakout groups will be assigned a scenario to catalyse discussion. Through scenario-led constructive and open discussion on the concerns, (mis)conceptions and goal-oriented actions that everyone can take on a day-to-day basis, this session will allow the participants to exchange their personal tools and tips with each other. Group sizes of 4-5 people across ~6 groups. Facilitators: Anita Banerji, University of Manchester; Malvika Sharan, The Turing Institute

14:30-15:00 Session 3: Early career research viewpoint on future vision for DEI in RSE (10 mins each then Q&A):

- Florencia D'Andrea, R Ladies, Argentina - video and slides
- Saranjeet Kaur Bhogal, RSE Association of Asia, India

Facilitator: Anna-Lena Lamprecht, Utrecht University

15:00-15:30 Break

15:30-16:30 Session 4: Inspirational keynote (½ hour talk, ½ hour discussion):

- Mary Ann Leung, Sustainable Horizons Institute, USA: Increasing developer productivity and innovation through diversity and the normalisation of inclusion - video (no captions) and slides

Facilitator: Sandra Gesing, University of Illinois Chicago

16:30-17:00 Discussion on plans for the rest of the workshop. Facilitator: Sean Goggins, CHAOSS

17:00- Evening reception with snacks. Bring along something that you can show and tell others about a favourite hobby, side project, or work project.

Day 2 - 20 April 2022

Aim: Learning from social science approaches to stimulate consideration of the workshop's two research questions.

09:00-10:30 Session 1: Examples of successful DEI-focused initiatives collaborations, to focus thinking on research question 1: What approaches to repositioning DEI as central to the RSE community will prove most promising? Talks (10 mins each then discussion):

- Women in High Performance Computing (WHPC): Sharon Broude Geva, USA - video and slides
- PyCon Namibia: Jessica Upani, Namibia - video
  - PyCon Namibia
  - Python Tutorial
  - Patreon
- The Carpentries: Kari L. Jordan, USA - video and slides

Facilitator: Phoenix Andrews

10:30-11:00 Break

11:00-12:00 Session 2: Breakout groups to consider how each participant could apply these frameworks to improve centrality of DEI in their own environments. Instructions on breakout group focus.

12:00-14:00 Lunch break

14:00-15:00 Session 3: Social science approaches to developing diverse research software communities and teams, to facilitate engagement with research question 2: Which combinations of social processes and supporting technology show effectiveness in advancing the community of RSEs to direct research toward a future centred on DEI? Talks (10 mins each then discussion):

- Kelly Blincoe, University of Auckland, New Zealand - video and slides
- Bogdan Vasilescu, Carnegie Mellon University, USA
- Alexander Serebrenik, TU Eindhoven, Netherlands - video and slides

Facilitator: Anna-Lena Lamprecht, Utrecht University

15:00-15:30 Break

15:30-17:00 Session 4: Feedback on breakout groups from session 2, and group discussion to consider how each participant could better utilise social processes and/or technology to support DEI in their own environments.

18:00- Workshop dinner at LAB071 restaurant, Poelweteringpad 5 2333 BM Leiden

Day 3 - 21 April 2022

Aim: What have we learned so far? What are our next steps?

9:00-10:30 Session 1:

- Saranjeet Kaur Bhogal, RSE Association of Asia, India - video and slides

Exemplars of successful DEI in the software world. Group discussion on good practices. Facilitator: Michelle Barker, Research Software Alliance

10:30-11:00 Break

11:00-12:00 Session 2: The importance of community in RSE. Talks (10 mins each then discussion):

- Neil Chue Hong, Software Sustainability Institute, UK - What do we know about DEI in the RSE community? - video and slides
- Sean Goggins, CHAOSS, USA - Empirical analysis of differences between corporatised open source software projects and scientific open source projects - video

Facilitator: Caleb Kibet, OpenScienceKE

12:00-14:00 Lunch break

14:00-15:30 Session 3: Breakout groups to reflect on learnings and to support each participant to identify their next steps. Where are there opportunities to collaborate for knowledge transfer or to build critical mass? Instructions for breakout discussion.

15:30-16:00 Break

16:00-17:00 Session 4: Report back on breakout groups to identify commonalities in next steps and opportunities for building on each other's work. Facilitator: Kari Jordan, The Carpentries

18:00- Informal dinner (optional)

Day 4 - 22 April 2022

Aim: Summarise learnings and agree workshop outcomes.

09:00-10:30 Session 1: How do we incentivise the changes needed to centralise DEI in RSE? 5 minute lightning talks to seed discussion:

- Caleb Kibet, Open Science KE, Kenya - video and slides
- Carly Strasser, Chan Zuckerberg Initiative - video and slides
- Lieke de Boer, Netherlands eScience Centre, Netherlands - video and slides (pdf and ppt)
- Rowland Mosbergen, Practical Diversity and Inclusion Online Resource, Australia - video, accessible slides and pdf slides.

Facilitator: James Hetherington, University College London

10:30-11:00 Break

11:00-12:00 Session 2: Review of progress on research questions. Facilitator: Michelle Barker

12:00-13:00 Lunch break

13:00-14:00 Session 3: What are useful structures to support this? 5 minute lightning talks to seed discussion:

- Council of International RSE Associations: Ian Cosden, US-RSE - video and slides
- Yo Yehudi, Open Life Science - video and slides
- Disability in STEM: Becca Wilson, UK - video and slides
- Research Software Alliance: Michelle Barker, Australia - video and slides

Facilitator: Stephannie Jimenez Gacha, Quansight

14:00-14:30 Break

14:30-15:45 Session 4: Next steps for collaborating and sharing workshop outcomes (including written report). Facilitator: Sean Goggins, CHAOSS

15:45 END

Appendix C: Online workshop agenda

There are a range of (completely optional) ways to engage online from late March onwards. These are designed to provide a similar opportunity to the in-person meeting agenda for engagement with the workshop content and relationship-building with others, with the option to engage for as many hours as in-person participants will experience from 19-22 April.

In-person meeting participants are also welcome to join any of the online events, which are governed by the ReSA [Code of Conduct](#).

Week of 28 March:
- Join the getting to know each other sessions online:
● Tuesday 29 March 08:00 UTC (1 hour)
● Tuesday 29 March 20:00 UTC (1 hour)

Ice-breaker by Malvika Sharan, Alan Turing Institute. This session aims to facilitate building connections through shared experiences as well as diversity of perspectives people bring into the conversation. Breakout groups will be assigned a scenario to catalyse discussion. Through scenario-led constructive and open discussion on the concerns, (mis)conceptions and goal-oriented actions that everyone can take on a day-to-day basis, this session will allow the participants to exchange their personal tools and tips with each other. Group sizes of 4-5 people across ~6 groups.
 - Access the pre-recorded captioned [videos](#) and their [slides](#) for day 1:

Setting the scene: Understanding the language we are using:

● *Research software engineering (RSE) explainer: e.g. what is RSE and why is it important - Daniel S. Katz, National Centre for Supercomputing Applications (NCSA), USA - [video](#) and [slides](#)*
● *Diversity, Equity and Inclusion (DEI) explainer: what do we need to understand about DEI to improve it in the research community - Mozhgan Chimeh, NVIDIA [video](#) and [slides](#)*

Early career research viewpoint on future vision for DEI in RSE:

● *Florencia D'Andrea, R Ladies, Argentina - [video](#) and [slides](#)*
● *Saranjeet Kaur Bhogal, RSE Association of Asia, India ([video](#) and [slides](#))*

Inspirational keynote: Mary Ann Leung, Sustainable Horizons Institute, USA: Increasing developer productivity and innovation through diversity and the normalisation of inclusion - [video](#) (no captions) and [slides](#)

- Join the online discussions for week 1 and discuss the suggested topics (and/or read notes of these). These will enable participants to discuss the pre-recorded videos and topics from the in-person agenda (you can still join if you haven't watched the videos). You can join as many or few sessions as you wish, which are at the same time each week (these will not be recorded):
  ● Thursday 08:00 UTC
  ● Thursday 14:00 UTC
  ● Thursday 20:00 UTC
- Join the Lorentz Centre workshop Slack channel discussion (see below for instructions

Week of 4 April:
- Access the pre-recorded captioned [videos](#) and their [slides](#) for day 2:
  Examples of successful DEI focused initiatives collaborations

- *Women in High Performance Computing (WHPC): Sharon Broude Geva, USA -* [video](#) *(12 mins, 30 sec) and* [slides](#)
- *PyCon Namibia: Jessica Upani, Namibia (*[video](#)*)*
- *The Carpentries: Kari L. Jordan, USA -* [video](#) *(8 mins) and* [slides](#)

Social science approaches to developing diverse research software communities and teams

- *Kelly Blincoe, University of Auckland, New Zealand -* [video](#) *(11 mins, 30 secs) and* [slides](#)
- *Bogdan Vasilescu, Carnegie Mellon University, USA*
- *Alexander Serebrenik, TU Eindhoven, Netherlands collaboration -* [video](#) *(10 mins) and* [slides](#)

- Join the online discussions for week 2 and discuss the suggested topics (and/or read notes of these). These will enable participants to discuss the pre-recorded videos and topics from the in-person agenda (you can still join if you haven't watched the videos). You can join as many or few sessions as you wish, which are at the same time each week (these will not be recorded):
  - Thursday 08:00 UTC
  - Thursday 14:00 UTC
  - Thursday 20:00 UTC
- Join the Lorentz Centre workshop Slack channel discussion (see below for instructions

Week of 11 April:
  - Access the pre-recorded captioned [videos](#) and their [slides](#) for day 3:
    [To be added]
- Join the online discussions for week 3 and discuss the suggested topics (and/or read notes of these). These will enable participants to discuss the pre-recorded videos and topics from the in-person agenda (you can still join if you haven't watched the videos). You can join as many or few sessions as you wish, which are at the same time each week (these will not be recorded):
  - Thursday 08:00 UTC
  - Thursday 14:00 UTC
  - Thursday 20:00 UTC
- Join the Lorentz Centre workshop Slack channel discussion (see below for instructions

Week of 19-22 April (the in-person event in Leiden)
- Join any sessions on person if you wish (in-person sessions will not be recorded) via Zoom
- Read the [notes](#) of in-person discussions

Week of 25 April
- Access the pre-recorded captioned [videos](#) and their [slides](#)
- Join the online discussions for week 3 and discuss the suggested topics (and/or read notes of these). These will enable participants to discuss the pre-recorded videos and topics from the in-person agenda (you can still join if you haven't watched the videos). You can join as many or few sessions as you wish, which are at the same time each week (these will not be recorded):
  - Thursday 08:00 UTC
  - Thursday 14:00 UTC
  - Thursday 20:00 UTC
  - Continue to engage in the Slack channel discussion

Slack

We've set up a private Slack channel for the Lorentz Centre workshop so participants can engage in asynchronous communication. If you're interested in sharing and discussing practices, challenges, and ideas with fellow participants, please consider joining via the following link: join Lorentz workshop Slack channel

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Once you join the [ReSA Slack](), you'll be added to the lorentz-workshop private channel. On 28 March we'll start by inviting you to share a photo of something that you can show and tell others about - a favourite hobby, side project, or work project. This can be a great conversation starter!

If there are any topics you'd like to discuss, please go ahead and start a conversation. Or, you can send us a note, and we'll post on your behalf.