

MOVE THE NEEDLE

2024 Project Report



WHPC
WOMEN IN HPC

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INTRODUCTION



The 2024 Move the Needle project, founded by Alces Flight, aimed to foster a positive and inclusive culture in High-Performance Computing (HPC) by promoting equality, diversity, inclusivity, accessibility (EDIA), and sustainability in the field.

To strengthen this effort, we partnered with Women in HPC (WHPC), an organisation dedicated to increasing the participation of women and underrepresented groups in supercomputing. WHPC's network of volunteers played a critical role in the success of this project.

Throughout 2024, we gathered insights on workplace inclusion initiatives and developed an accountability program to evaluate their impact on advancing EDIA. Here's what we've learned.

PROJECT OVERVIEW

The "Move the Needle" project, which took place from January to December, 2024, invited HPC students, enthusiasts, and professionals to commit to one to three actions aimed at advancing inclusion. We tracked individual and organisational efforts through surveys and online check-ins, with the goal of analyzing these findings and publishing the results at the Computing Insight United Kingdom (CIUK) conference in Manchester, UK, on December 5-6, 2024. Our aim was to demonstrate achievements, celebrate successes, and address barriers.

Initially, the project focused on building an Accountability Team (A-Team), who submitted three surveys detailing their goals, progress, and lessons learned. Online meet-ups supplemented these surveys, though participation was optional due to the global distribution of A-Team members.

The A-Team began with ten core members, including three leading team projects, supported by two project managers from Alces Flight. After the second survey, one member left, leaving nine members who successfully completed the project.



PROJECT OVERVIEW

Due to community interest, the project expanded in 2024 to include a Knowledge Portal and a series of in-person meet-ups and sessions. The Knowledge Portal showcases video interviews and blog posts from members of the HPC and tech communities, highlighting their efforts to advance inclusion. In total, ten of these interview projects were completed across a range of subjects.

We also participated in several in-person and online events, supported five UK-based training grant applications for 2025 (two of these have already been successful), and celebrated as a member of the A-Team received an award for his contributions to fostering inclusive communities at his university.

Project At-A-Glance

- **Duration:** 12 months (January - December 2024)
- **Participants:** HPC students, enthusiasts, and professionals
- **Actions:** Commitment to 1-3 actions aimed at advancing inclusion
- **Tracking:*** Surveys, events and online check-ins for individual/organizational efforts
- **Goal:** Analyze findings and publish results at the CIUK conference (December 5-6, 2024, Manchester, UK)
- **Purpose:** Demonstrate achievements, celebrate successes, address barriers

* This project centered on the unique goals and needs of its participants, which may not be fully captured through standard surveys. As such, we encouraged and have accepted alternative reporting methods. By allowing participants to contribute in ways that suit them best this supports our aim of fostering an inclusive and equitable environment, respecting individual preferences, and enriching the project with diverse perspectives and insights.

ACCOUNTABILITY TEAM

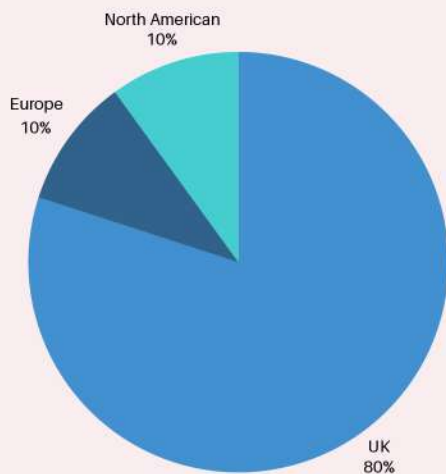


The Accountability Team, or “A-Team,” consisted of nine members plus two project managers. Voluntarily recruited between December, 2023 and February, 2024, these individuals pledged up to three goals that they agreed to track over the project cycle.

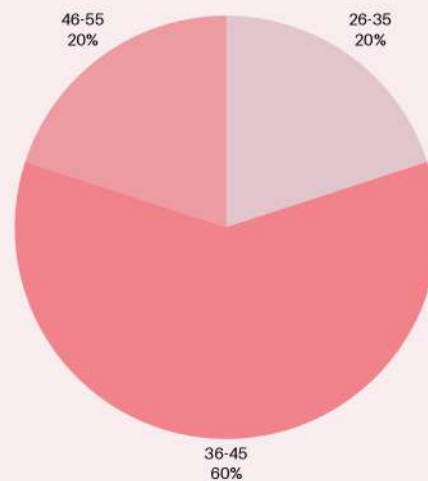
Their surveys, plus the online and in-person meet-ups, form the foundation of this report.

A-Team participants kindly submitted basic demographic information about themselves. This survey concluded with responses from the initial 10 individuals, with an equal gender distribution of 50 % male and 50 % female. The dataset encompasses various aspects of participants backgrounds, highlighted in the following page:

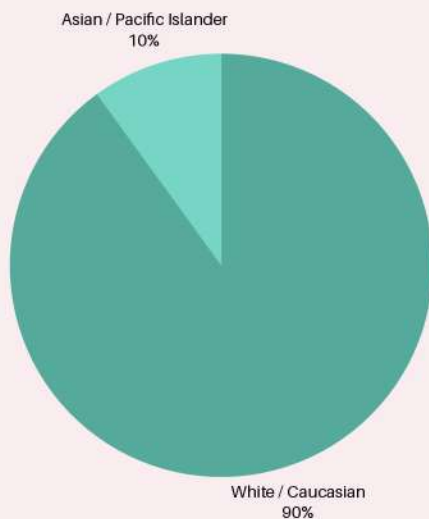
A-TEAM DEMOGRAPHICS



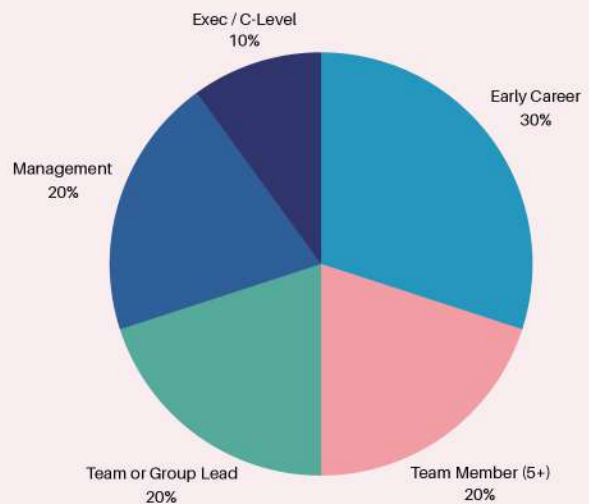
Geographical Location



Age Range of Participants



Race and Ethnicity



Career Level

A-TEAM TOPIC FOCUS

CORE AREAS

In February, 2024, our A-Team committed to goals in specific areas of focus. Utilizing surveys submitted, along with alternative reporting methods, our A-Team primarily focused on three key areas:

1. **Staffing:** Emphasizing hiring practices and improving overall staff retention.
2. **Engagement:** Fostering mentorship, advocacy, allyship, collaborations, partnerships, and coaching.
3. **Long-Term Impact:** Ensuring business and institutional continuity and promoting environmental sustainability.

We are pleased to report that none of our A-Team members needed to make significant changes to their goals or areas of focus during the project period. While some barriers emerged, these proved to be an aid to developing best practices, which can be seen in our “Lessons Learned” section.

STAFFING

Focusing on:

- New role creation
- Updating roles + responsibilities
- Clear HR policies and practices

ENGAGEMENT

Focusing on:

- Collaborations and Partnerships
- Mentorships, Advocacy and Allyship

LONG-TERM

Focusing on:

- Legacy and Institutional Evolution
- Environmental Sustainability





NOTED ACHIEVEMENTS

Over 2024 the A-Team, as well as the project at large, has exceeded initial expectations in several areas. This includes:

STAFFING

- Successfully utilising EDIA checklists to improve job advertisement and hiring practice.
- Re-establishing core role responsibilities to help define better career trajectory.
- Researched, wrote and received approval for HR strategy around defining and improving policy around leaves of absence.

- Mentorship opportunities in the HPC space located, explored, and prioritised.
- Elevation of 'bridge building roles' in HPC/AI (Research Software Engineer, Community Manager) commenced.
- Intersectionality interests noted and definitions created for establishing better guidelines in event/conference planning.
- Improved news and events distribution and information for those interested in accessing or working with HPC.

ENGAGEMENT

LONG-TERM

- Established review process on ecological sustainability and impact on job roles.
- Established review cycle of company culture and building sustainable work environments.
- Successful buy-in across A-Team projects for leadership involvement (low to high level).



AWARDS & FUTURE



We are thrilled to note that over the 2024 cycle the A-Team was able to achieve stretch goals beyond the initial boundaries of the project:



- Successful launch of WHPC - University of Cambridge Chapter (November, 2024).
- Successful application for UKRI Training Grant, HAI-End - Dr. Tobias Weinzierl
- Successful application for training grant: DisCouRSE: Developing a Community of Leaders - University College London (UCL)
- Successful establishment of award for female student excellence in HPC - nAG
- Award Recipient for Creating an Inclusive Community, University of Cambridge - Dr. Tom Meltzer.

The A-Team concluded 2024 with foundational goals to continue their work within this space. Noted areas of exploration include:

- Continued improvement of hiring practices.
- Continued engagement on improving retention practices - focus on job support.
- Support of training grants incorporating insights from Move the Needle.
- Project foundations utilising intersectionality established for:
 - Organisation around day and short conferences.
 - Software and Workflow development and feedback process.



LESSONS LEARNED



BEST PRACTICES

Through the work achieved across the 2024 project cycle, we've identified six essential best practices that are critical for the success of any EDIA or sustainability initiative. These best practices serve as key considerations to guide and inform meaningful, lasting impact in the HPC community. They are:

1

Clarify Your Motivation

Determine whether you're pursuing this initiative because you're genuinely committed or simply obligated. Authentic motivation fosters stronger engagement and better outcomes.

2

Set Clear and Adaptable Goals

Define specific, measurable goals that align with the needs of your team or organization. Be prepared to adapt them as circumstances change to stay on track.

3

Secure Leadership Support

Ensure leaders are actively involved and supportive. Their engagement significantly increases the likelihood of achieving your goals.

LESSONS LEARNED



BEST PRACTICES, CONT.

While not wholly representative of every goal set explored by our Move the Need A-Team, at their core these best practices represent a solid set of key components necessary in securing a successful outcome.

4

Ensure Inclusive Representation

Involve all relevant stakeholders. Excluding the right voices can undermine the initiative and limit its success.

5

Build Accountability Mechanisms

Assign ownership for each goal and establish systems to track progress, report outcomes, and access support when needed.

6

Invest in Resources and Rewards

Allocate sufficient resources, whether through budget, time, or tangible rewards (e.g., monetary incentives, events, or recognition). Investment underscores commitment and motivates success.

Ready to set your own goals?

We built a Pledge and Goal Guide you can download!

<https://alces-flight.com/move-the-needle-knowledge-base/>

S.C.A.L.I.N.G.



CHEAT SHEET FOR CHANGE!

In addition to Best Practices and Project Insights, we've developed a cheat sheet to help others kick-start their own Move the Needle journey. You'll notice that the first two letters of our acronym focus inward—this reflects a key lesson from our team: meaningful change often begins with taking stock of what already exists. This approach helps establish goals and metrics that align with your organization or group, creating a more positive and effective path forward.



Size of organisation (= **Speed** of change!)



Culture of your institution, department, group



Ally Engagement



Leadership Buy In



Investment (Time/Money or Both?)



Needs and Motivation



Goals and Accountability

PROJECT TEAM INSIGHTS



MARTA CAMPS SANTASMASAS

Lecturer, University of Salford

Goals focus: *Mentorship, Community Engagement and Personal Development*

Coming into the Move the Needle project, I had clear goals for what I hoped to gain but grappled with the question, "What can I contribute back?" I set goals centred on the individual experience, and what I discovered was having a supportive team behind me made those personal goals not only achievable but far easier to accomplish. Being in a supportive environment meant that not only could I accomplish my goals - but I could help other A-Team Members achieve theirs. It was a win-win contribution!

GOALS ACHIEVED:

- Mentored my first early career speaker.
- Engaged with two EDI groups at the University of Salford (Athena Swan and Women in CSE) and contributed to organise the Insight Summer School.
- Contributed to two online A-Team Meetings and served as Distinguished Speaker at Sustainable Reality and the CIUK24 Move the Needle Finale.

LESSONS LEARNED:

- Being part of a support/accountability team made it far easier to achieve goals.
- Starting small in mentorship (reviewing posters, helping with presentations) is an easy way to give back - and build confidence to do more.
- Being part of different communities is a great way to develop personal and professional talents.
- Personal development is not only achieved through attending courses, but also through getting involved with new projects and developing relationships.

PROJECT TEAM INSIGHTS



TOBIAS WEINZIERL

Professor, Head of Scientific Computing Research Group and Director of the Institute for Data Science at the University of Durham

Goals focus: *Personal development, Community and Educational development*

My interest in the Move the Needle project stemmed from a desire to make equity, diversity, and inclusion (EDI) as well as accessibility central to my work. As scientist and developer behind major scientific code development projects and PI of research consortia, I know the importance of fostering inclusivity and want it to be built into my work. Otherwise, we will not be able to get the best science out of our team, will not find the right team, and we will not disseminate our work in the best possible way.

The project challenged me to ask critical questions about how we integrate EDI aspects into our day to day software development, collaborate with a supportive team, and lay the groundwork for future initiatives.

GOALS ACHIEVED:

- Balanced event coordination across gender - Durham HPC Days
- Critically explored the role of inclusivity within scientific software development workflows - a write-up of lessons learned (similar to the recipes in eXtreme Programming) is to be published soon
- Built EDI considerations into the design and dissemination of HPC training - see the newly started Digital Research Infrastructure grant HAI-End



PROJECT TEAM INSIGHTS

TOBIAS WEINZIERL, CONT.

LESSONS LEARNED:

- Build Event Momentum by Expanding Perspectives:
 - Invite early-career speakers to events and consider gender balance.
 - Create sessions that appeal to complementary fields.
 - Involve community groups (e.g. WHPC) right from the start in event planning.
- Make Inclusivity a Continuous Effort:
 - Establish accountability measures to stay focused.
 - Don't be afraid to ask questions and seek fresh ideas from your network—it's how innovation happens.



Photos from previous Durham HPC Days



PROJECT TEAM INSIGHTS



TOM MELTZER

Senior Research Software Engineer, Institute of Computing for Climate Science, University of Cambridge

Goals focus: *Hiring and Retention, Community Engagement*

I joined the Move the Needle project to better understand what it truly means to be an ally in advancing EDIA. Initially, I worried about making mistakes, but I've learned that showing up and contributing meaningfully is what matters most. I'm incredibly proud of the team we've built here at Cambridge and the progress we've made in raising the profile of women and underrepresented groups in our community. It was an unexpected honor to have my efforts recognized this year with the university's Creating an Inclusive Workplace award—a testament to the collective work and shared commitment of our team.

GOALS ACHIEVED:

- Launch of Women in HPC Chapter: Cambridge and East Anglia.
- Reviewed and identified improvements in hiring policy.
- Successfully established a Move the Needle Working Group with mix of senior and emerging leadership.

LESSONS LEARNED:

- Tips on being a good ally:
 - Show up: Start quietly - Listen first before acting.
 - Seek permission: Want to contribute? Ask where help is needed.
 - Shine the light: Allies have the power to lift people up - be sure you are bringing the team with you.
- Break big goals down into manageable pieces. Big task at hand? Don't be afraid to take small steps in order to find out how many targets you can hit.

KNOWLEDGE PORTAL

In 2024 we led discussions and activities with eleven experts in High-Performance Computing, Education, Coaching, Volunteering, Community Building, Staff Development and Mentorship. These interviews have provided insights into how organisations and individuals are advancing diversity and inclusion, as well as pushing boundaries in our field. Here is a brief summary of the knowledge we gained:

DAN OLDS AND ADDISON SNELL

Student Engagement in HPC

The Winter Classic Invitational Student Cluster Competition aims to address two key objectives: attracting young talent from diverse communities, particularly Black and Hispanic universities in the United States, and providing students with hands-on experience in High-Performance Computing.

This project is so large it took two interviews! Explore how project engages students with Dan Olds and to find out more about the project history watch our interview with Addison Snell.



VASHTI WHITFIELD

Coaching and Legacy Building

Vashti's insights illuminate the process of reframing challenges, establishing a lasting legacy, and the essential qualities to consider when selecting a coach. Her coaching methodology integrates psychological, neuroscience, and emotional intelligence aspects, emphasising the initiation of change from within.

Her interview covers her coaching style, and how it relates to building better technology, as well as social legacy.





KNOWLEDGE PORTAL

JAY LOFSTEAD

Mentorship and Advocacy

In his interview, Jay gave valuable insights into various types of mentorships, the significance of advocacy, and talked about his work in relaunching the WHPC Mentorship Programme. He highlighted the roles mentors can play in mentorship, sponsorship, coaching and advocacy.



Included in his interview are considerations for selecting the right mentor, details about WHPC Mentorship Programme, and advice on establishing a mentoring initiative.

NAGES SIESLACK

Creating Inclusive Events

Since 2011, the ISC High Performance Conference Series has actively pursued initiatives to foster an open and inclusive environment at their events. Central to their approach is the principle of 'Put People First', which guides their initiatives and has become integral to the conference's identity.

In her interview, Nages walks us through the history of ISC in regards to how they have and continue to build 'social sustainability' for the people of HPC.



<https://alces-flight.com/move-the-needle-knowledge-base/>





KNOWLEDGE PORTAL

LUDOVIC CAPELLI

HPC Education

What defines the 'ideal' HPC graduate? You might be surprised to learn that success hinges more on teamwork than technical skills.

In this interview, Dr. Capelli explores the human side of HPC, emphasising why creativity, communication, and a willingness to try—and fail—are essential for cultivating the next generation of technical talent.



AJ LAUER

Allyship and Coaching

What does it mean to be an ally in HPC? Dr. Lauer shares insights on how those in positions of power can foster a more inclusive supercomputing community.

Drawing on her expertise in EDIA, AJ highlights proven methods to empower teams and drive meaningful change. This discussion includes real-life case studies exploring why women and minorities leave the field—and what the HPC community can do to stem the tide and retain diverse talent.





KNOWLEDGE PORTAL

MARION WEINZIERL AND JEREMY COHEN

Community Volunteering

This interview is by volunteers, for volunteers! Whether you're already contributing to the supercomputing community or looking to get involved, Marion and Jeremy share invaluable insights you won't want to miss.

From identifying where you can make an impact to setting boundaries and organising your own volunteer group, this discussion offers practical advice and inspiration for anyone passionate about giving back.



KAREN LEWIS

Neurodiversity in the Workplace

Neurodiversity acknowledges that people experience and interact with the world in unique ways—there is no single “correct” way to think, learn, or behave.

In this special presentation, Karen Lewis of nAG explores the strengths neurodiverse individuals bring to supercomputing and offers insights on how our community can embrace their abilities to foster greater inclusivity.



<https://alces-flight.com/move-the-needle-knowledge-base/>



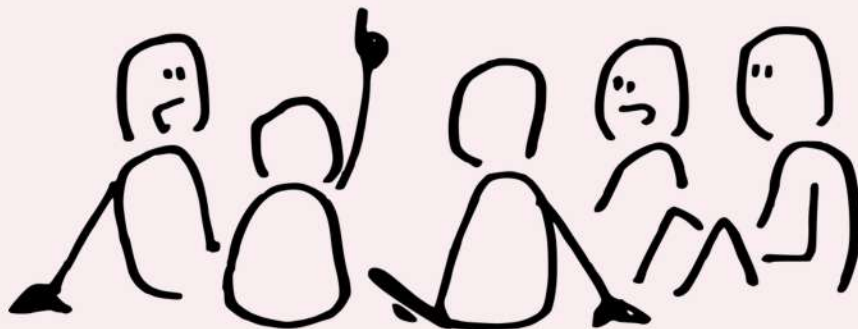
KNOWLEDGE PORTAL

ZARA BIRCH

Community Management

As HPC and AI continue to advance, the role of skilled community managers has become increasingly vital. These professionals act as bridges, fostering relationships, nurturing advocates, and channeling user feedback to drive product improvement and organisational growth.

In this special presentation, Zara Birch of NI-HPC explores the foundations of this role, highlighting its purpose in connecting the technical world and strengthening the broader community.



ONSITE OPPORTUNITIES

We are deeply grateful to the HPC community for offering us the opportunity to create sessions and present what we are learning for the Move the Needle project. Our 2024 sessions included:

UK KTN GREEN COMPUTING WORKSHOP

March 26, 2024 - Manchester Museum of Science and Industry



Innovate UK
Knowledge Transfer Network

The workshop highlighted social sustainability, focusing on skills, staffing, engagement and long term impact. Hosted by UKRI, the event underscored the need for technical and soft skills, inclusive staffing, active engagement, and lasting impact to build a resilient HPC ecosystem. Highlights included bridging the skills gap, developing competency frameworks, the need for clear sustainability guidelines, and fostering a collaborative, risk-taking culture.

HPC DAYS - DURHAM

May 8 & 9, 2024 - University of Durham

Over two sessions on separate days, we engaged in discussions about skills, talent, and hiring; presented a draft of our six factors for consideration; and participated in a Lyceum, or open panel discussion. During these sessions, we explored problem-solving strategies and reframing approaches to address current issues in EDIA and HPC.



Durham
University

ONSITE OPPORTUNITIES

SUSTAINABLE REALITY

September 25, 2024 - Bletchley Park

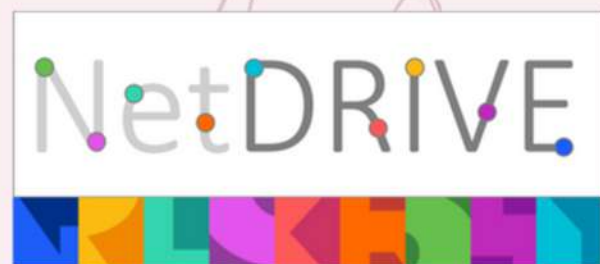


This day conference explored the four pillars of HPC/AI: Hardware, Software, People, and Change. We were pleased to welcome two guest speakers for Move the Needle: Karen Lewis of nAG who presented on neurodiversity, and Zara Birch of NI-HPC who presented on community management. We were also pleased to have A-Team Member, Dr. Marta Camps Santasmasas present on her experiences with the project to date.

UKRI-NETDRIVE

October 21, 2024 - Daresbury Labs, Manchester

The Network for sustainable Digital Research Infrastructure Vision and Expertise (NetDRIVE) has been set up to provide a forum for managers, software engineers, academics and others to come together to build a common vision for a sustainable future and to incite a transition to sustainable working practices in the Digital Research Infrastructure communities. We were invited to present our findings to date on Move the Needle as part of their two-day workshop.





ONSITE OPPORTUNITIES

UNIVERSE-HPC

October 24, 2024 - Online



UNIVERSE-HPC or 'Understanding and Nurturing an Integrated Vision for Education in RSE and HPC' defines a training curriculum framework - spanning from undergraduate to continuing professional development level - for Research Software Engineers (RSEs) specialising in high performance computing (HPC). In an invited online talk we outlined our findings to date with the Move the Needle project, focusing on our A-Team's knowledge gained in job role support and retention.

CIUK 2024

December 5 & 6, 2024 - Manchester Central, Manchester

We were honored to host the finale of our Move the Needle project on December 6th during the Women in HPC Breakfast. During this session, three of our A-Team members—Tom Meltzer, Tobias Weinzierl, and Marta Camps Santasmasas—shared their full experiences with the project.

Following their talks, we facilitated an open forum, allowing attendees to engage directly with the speakers and the group through thoughtful questions and discussions.



CONCLUSION



UNEXPECTED RESULTS

When we started the Move the Needle project, our goal was to gather a group of individuals committed to tracking progress in EDIA. What we gained was not only a stellar “A-Team” but also the support of a generous HPC/AI and UK technical community, eager to share their experiences and provide platforms for our ideas.

The outcomes of this project were less clinical and data-driven than anticipated, instead evolving into an exploration of personal experiences and the development of actionable best practices. For those looking to create their own Move the Needle initiative, we hope the resources and foundational goal-setting materials in this report serve as a helpful guide in advancing equity in this field.



CONCLUSION



ACKNOWLEDGEMENTS

This project was made possible through the generous investment of the Alces Flight team who firmly believed that with dedicated exploration we could help improve (and give actionable proof!) to the narrative around how we can increase equity in our field.

Special thanks to Flight Crew Directors Wil Mayers, Steve Norledge, Mark Titorenko, and Michael Rudgyard for their invaluable support.

We also wish to extend a deep appreciation to Women in HPC, who - when proposed the project - joined with zero hesitation. Their willingness to co-host materials and work with their media supporters to get the word out about what was being done was the spark that led to the creation of the Knowledge Portal alongside of the core project itself.

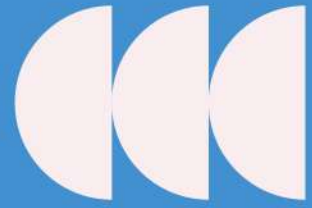
Special thanks to WHPC Board Members George Beckett, Eleanor Broadway, Molly Presley, Lisa Arafune, Elsa Gonsiorowski, Mozghan Kabiri Chimeh, and Mariann Hardey for their contributions.

To the WHPC Media Supporters who kindly published our initial call and halfway report - insideHPC (Stephanie C. Correra and Doug Black) and HPCwire (Tom Tabor, Lara Kisielewska, Doug Eadline) - we are deeply grateful.

To those who invited us to speak at events: Dawn Geatches, Alan Real, Clare Jenner, Marion Weinzierl, Dr. Martin Juckes, Eirini Zormpa, Martin Robinson, Damian Jones, and Georgina Ellis - you gave us opportunities to both reflect on what we've done and learn more about action being taken in our space.

And finally, to the project team and members of the A-Team who are happy to be publicly named: Tobias Weinzierl, Tom Meltzer, Marta Camps Santasmasas, Deepak Aggarwal, Cristin Merritt, Dominik Wojtak, Katie O'Hare and Louise Mitchell - we could not have done this without you.

THANK YOU



WHPC
WOMEN IN HPC

x



CONTACT INFORMATION FOR FURTHER INQUIRIES

✉ cristin.merritt@alces-flight.com

🌐 www.womeninhpc.org

🌐 www.alces-flight.com/move-the-needle