Beyond Resources

Ecosystem for Research Networking (ERN) Summit 2026 Results:
Integrating AI, Quantum, and the Workforce of the Future

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ECOSYSTEM for RESEARCH NETWORKING

2026 PEARC

ERN Vision and Mission

Vision:
Simplify, support, catalyze, and foster multi-campus collaborations and partnerships between academic institutions of all types and sizes across the U.S. that advance the frontiers of research, pedagogy, and innovation.

Mission:
To achieve the vision through a consortium of academic institutions, research facilities, core service providers, network providers, and industry partners, both public and private **organized around a shared interest in supporting and enabling collaborative data and computation-enabled science by providing standards, blueprints, policies, and training associated with the design and implementation of an infrastructure to access data and research instruments** distributed federated environment designed to simplify, support, and encourage collaborative science, scholarship, and education.

To realize the vision and mission, the ERN will enable partnerships and collaborations **that support the democratization of science, data, research instruments, AI, technical expertise, infrastructure, and services, aimed at lowering the barriers to participation** for scientists engaged in research that cross institutional and disciplinary boundaries.

https://ern.ci

Ecosystem for Research Networking (ERN) Summit 2026 (Virtual)

April 22, 2026

Beyond Resources:
Integrating AI, Quantum, and the Workforce of the Future
Findings and Strategic Recommendations

ECOSYSTEM for RESEARCH NETWORKING

2026 PEARC

Ecosystem for Research Networking - Summit 2026

12:00 - 12:15 **Welcome and Opening Remarks**

Forough Ghahramani, Ed.D., Vice President for Research & innovation, NJEdge, Summit Co-Chair
Maureen Dougherty, Ecosystem for Research Networking, Summit 26 Co-Chair
Barr von Oehsen, Ph.D., Director, Pittsburgh Supercomputing Center

12:15 - 1:15 **Keynote "Heterogeneous Quantum–Classical Computing: Scaling Through Integration"**

Masoud Mohseni, Ph.D., Senior Distinguished Technologist, Director of HPE Quantum, Hewlett Packard Labs

1:15 - 2:15 **Panel 1: Building Sustainable Advanced Technologies: Industry, Academic, and National Lab Collaborations**

Sandra Gesing, Ph.D., UC San Diego; **Benjamin Brown**, Ph.D.,The U.S. Department of Energy;
Monica Van Dieren, Ph.D., NVIDIA; **Parag Deotore**,Ph.D., University of Michigan

2:15 -3:15 **Panel 2: Democratizing Access: National Resources and Regional Initiatives**

Barr von Oehsen, Ph.D., Pittsburgh Supercomputing Center; **Stephen Deems**,Internet2;
Amy Apon, Ph.D., National Science Foundation; **William L. Miller**, Ph.D., University of Utah

3:15 - 4:15 **Panel 3: Research Data Management in the AI Era**

Jim Griffioen, Ph.D., University of Kentucky; **Chris Simmons**, Ph.D., Cambridge Computer;
Miron Livny, Ph.D., University of Wisconsin-Madison; **Ilkay Altinas**, Ph.D., UC San Diego

4:15 - 4:45. **Open Discussion**

4:45 - 5:00 **Closing Remarks**

Summit 2026 Full Agenda

ECOSYSTEM for RESEARCH NETWORKING

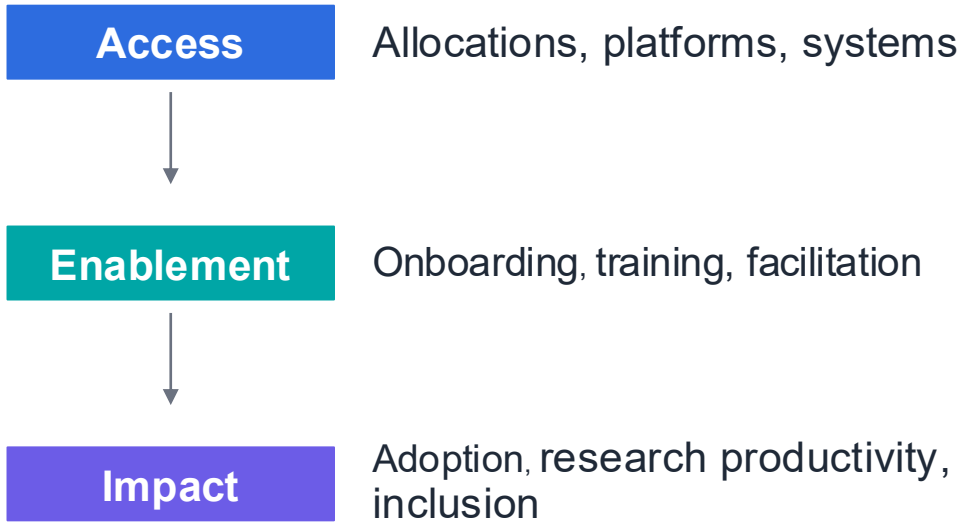
A Transition Point

The national ecosystem has expanded capacity. The next challenge is effective use.

Federal and national investments such as NSF ACCESS, the NAIRR Pilot, and DOE initiatives have expanded access to advanced computing, AI, and data resources. The Summit made clear that the question is no longer simply whether resources exist, but whether researchers and institutions can use them effectively.

"If they can't use the system they are given access to, they will still walk away, because time is more valuable for PI than the access."

From resources to enablement



Summit at a Glance: Broad National Engagement

98 Attendees

42 States

3 Countries

Participation reflected a broad research cyberinfrastructure ecosystem, spanning R1 and non-R1 institutions, RENs/NRENs, national centers, industry, funding agencies, libraries, and other stakeholders.

Why this matters for AI and quantum

- AI and quantum adoption requires participation beyond a small number of highly resourced institutions.
- The Summit brought together technical, policy, workforce, data, and institutional perspectives.
- The discussion highlighted the need for regional and national ecosystems that can support varied levels of readiness.

AI + Quantum Throughline Across the Summit

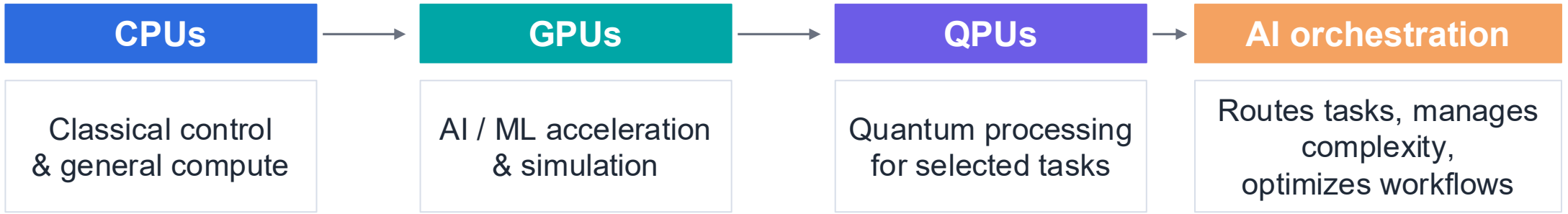
The Summit framed AI and quantum as converging capabilities that require integration, software, data readiness, and workforce support.

AI	Quantum	HPC + Data	Workforce
Machine learning, AI-enabled orchestration, AI for science, resource recommendation, data-intensive workflows	Quantum processors, CUDA-Q, quantum toolkits, quantum-HPC integration, emerging use cases	CPUs, GPUs, advanced networks, federated data, metadata, governance, secure stewardship	RSEs, AI facilitators, data professionals, Campus Champions, experiential learning

AI and quantum will scale through heterogeneous, workflow-centered ecosystems, not isolated systems.

Keynote: Heterogeneous Quantum–Classical Computing

Masoud Mohseni emphasized that quantum computing will achieve practical impact through integration with existing HPC, AI, and advanced networking ecosystems.



- Quantum is not positioned as a standalone replacement for classical systems.
- The critical barriers are integration, usability, software abstractions, and workflow alignment.
- Incremental adoption allows institutions to experiment and build expertise without major standalone quantum investments.

AI as the Enabling Layer for Complex Workflows

AI positioned not only as a research tool, but as an orchestration layer for increasingly complex scientific workflows.

Resource selection

AI can help match research questions to appropriate compute, data, software, and support resources.

Workflow orchestration

AI-driven systems can coordinate movement across CPUs, GPUs, QPUs, storage, and networks.

Productivity and impact

The goal is not capacity alone, but faster, more usable, and more reproducible research workflows.

Human-in-the-loop support

AI tools still require facilitators, domain experts, and governance to ensure trusted use.

AI readiness includes infrastructure, data readiness, workflow redesign, and support roles , not just access to models or GPUs.

Discussion 1: Keynote: Heterogeneous Quantum–Classical Computing

How do researchers feel about AI taking on an "orchestration" role, deciding which resource (CPU, GPU, QPU) their workflow should use? Does this feel empowering (less infrastructure burden) or does it raise concerns about losing control/transparency over how their research is processed?

Does AI orchestration, making decisions about which compute resource to use, serve as a potential equalizer or does it risk creating a two-tier system where well-resourced institutions get priority routing or better support?

Panel 1: AI, HPC, Quantum, and Cross-Sector Innovation

Panel 1 explored how industry, universities, national laboratories, and startups are partnering to accelerate AI and quantum innovation while building experiential workforce pathways.

DOE Project Genesis

A forward-looking example of structuring computing, data ecosystems, and institutional partnerships to accelerate scientific discovery. The discussion emphasized productivity and impact, not capacity alone.

NVIDIA / CUDA-Q

Industry perspectives highlighted convergence across AI, HPC, and quantum. Platforms such as CUDA-Q support hybrid workflows and movement across classical and quantum environments.

Software determines usability

Panelists emphasized that quantum impact will depend on software ecosystems, tools, and workflows that researchers and developers can actually use.

Workforce implications

- Experiential learning is essential for preparing researchers and technical professionals.
- Learners need hands-on work with real AI, HPC, and quantum systems.
- Cross-sector partnerships can provide applied projects, mentorship, and exposure to production environments.

Discussion 2: Panel 1: AI, HPC, Quantum, and Cross-Sector Innovation

Panel 1 argues that "availability does not equal usability," programs like NSF ACCESS and NAIRR Pilot exist, but access alone isn't enough. Based on your experience, what are the barriers to useability and how can they be addressed, especially at under-resourced institutions?

Panel 1 frames workforce development as central to whether quantum becomes usable at scale. Should workforce/training investment be treated as equally important as hardware investment in future funding calls, and if so, how might that change how institutions apply for or structure grant proposals?

Panel 2: National AI Resources and Regional Enablement

Panel 2 examined how national investments can become broad, equitable participation, particularly for institutions with different levels of readiness.

National platforms	→	Regional ecosystems	→	Institutional users
NSF ACCESS, NAIRR Pilot, future AI readiness and data initiatives		Shared facilities, AI–quantum hubs, state/regional coordination		Researchers, educators, students, non-R1 and under-resourced institutions

University of Utah AI Supercomputer case study: advanced GPU infrastructure paired with workforce development, governance, onboarding, training, and distributed champions.

Availability does not equal usability. Equitable AI access requires facilitation, workflow support, local/regional expertise, and trusted points of entry.

Discussion 3: Panel 2: National AI Resources and Regional Enablement

Panel 2 highlights state-level/regional coordination as a key lever for translating national resources into usable access. Are you aware of a regional AI/computing coordination initiative in your state, if so, please share how you and others at your institution are currently engaging.

Panel 3: AI-Era Research Data Management

As AI capabilities expand, data readiness becomes the bottleneck: quality, interoperability, metadata, governance, compliance, and trust.

Fragmentation	Data distributed across systems, disciplines, and organizations	**Interoperability**	Limited standards constrain discovery, sharing, and reuse
Metadata	Inconsistent practices reduce transparency and reproducibility	**Trust & Governance**	Security, privacy, IP, compliance, and accountability obligations

Federated data ecosystems were discussed as a promising approach for distributed access while maintaining institutional control. Implementation requires common standards, access controls, governance agreements, and specialized expertise.

AI implication: without robust, trusted, and well-governed data ecosystems, even advanced AI and computing resources will have limited research impact.

Discussion 4: Panel 3: AI-Era Research Data Management

If AI adoption is more a data problem than a compute problem, what are the impacts to you and your institution with the shift in data readiness and data governance requirements?

Federated data ecosystems are presented as a promising model because they preserve institutional control while enabling distributed access. What are the challenges and benefits of institutional control, and what are the impacts on the researchers?

Workforce as Critical Infrastructure for AI and Quantum

The Summit emphasized that people are as essential as platforms in translating technical capacity into research impact.

Research Software Engineers

Develop, maintain, optimize, and scale research software; enable reproducibility and complex workflows.

AI facilitators

Help researchers understand, select, and apply machine learning tools within real research contexts.

Data professionals

Manage, curate, govern, and prepare complex datasets for AI-ready research.

Campus Champions / regional facilitators

Serve as trusted bridges between researchers, local institutions, and national resources.

Training model needed: hands-on, workflow-embedded, mentorship-supported, and connected to peer networks.

Discussion 5: Workforce as Critical Infrastructure for AI and Quantum

Does your institution see RSEs, facilitators, and data professionals as essential infrastructure, or are they viewed as “nice to have” support? Which would have the most immediate impact if filled first?

What are your thoughts about shared or regional workforce positions (e.g.,data professional, RSE, or facilitator)? What are examples of funding models for such roles?

Emerging Themes

Access → Enablement

Advanced platforms require onboarding, facilitation, and workflow support.

Integration over replacement

Quantum, AI, HPC, data, and networks must work together in heterogeneous environments.

Data as bottleneck

AI impact depends on interoperable, governed, trusted, and reusable data.

Sustainability

Long-term value requires operations, staffing, software, governance, and refresh strategies.

Ecosystems as innovation unit

AI and quantum progress require cross-sector, multi-institution collaboration.

Workforce as infrastructure

RSEs, AI facilitators, data professionals, and champions translate capability into impact.

Regional bridges

Regional models connect national resources to local needs and readiness levels.

Open Discussion: Implementation Realities

Participants brought the conversation back to the practical question: what does it actually take for researchers and institutions to use advanced resources?

Hands-on facilitation	Personalized support, onboarding, and resource navigation are essential.
Local infrastructure still matters	Training, experimentation, recruitment, student engagement, and institutional readiness often begin locally.
Sustainability is unresolved	Local systems remain important, but long-term funding is increasingly difficult.
New ideas are emerging	AI-driven resource recommendations and data provenance mechanisms could improve usability and trust.

> “Universities and faculty still want to have local resources… however, sustainability is getting more and more difficult.”

Post-Summit Feedback: AI and Quantum On-Ramps Matter

Survey comments reinforced the Summit's AI and quantum themes:

- Participants valued the quantum keynote and practical discussion of quantum-HPC integration.
- Comments called for on-ramps from HPC and GPUs to quantum toolkits such as CUDA-Q.
- Participants expressed a need for AI literacy, model training, and real research use cases outside narrow technical disciplines.
- Security, compliance, data management, and human facilitation were identified as critical to effective AI adoption.

Advanced technologies are timely and important, but the community needs clearer pathways for understanding, adopting, and governing them.

Suggestions for Key Stakeholders : Strengthen the AI–Quantum Ecosystem

ERN Community

- Expand enablement and facilitation models
- Strengthen cross-sector partnerships
- Continue convening and knowledge sharing

Funding Agencies

- Consider workforce investments alongside infrastructure
- Support regional and ecosystem-based models
- Explore sustainable funding approaches

Academic Institutions

- Invest in RSEs, AI facilitators, and data professionals
- Align infrastructure with research workflows
- Engage in regional collaborations

Regional Stakeholders / States

Support statewide and regional infrastructure initiatives
Invest in workforce pipelines
Foster industry-academic partnerships

Across all groups, the common priority is to connect technology with people, data, governance, workflows, and sustainable partnerships.

Strategic Implications for ERN

ERN is positioned to translate national AI and quantum investments into inclusive, scalable, and sustainable impact.

Convene → **Integrate** → **Enable** → **Sustain**

Convene	Integrate	Enable	Sustain
Bring together institutions, RENs, national programs, industry, and agencies	Connect AI, quantum, HPC, data, workflows, expertise, and governance	Support adoption through facilitation, training, and regional pathways	Advance models that support operations, software, and workforce capacity

The next phase will be measured by what the ecosystem enables, and who is empowered to shape it.

Discussion 6: Open Discussion

Where do you see the greatest opportunities to make a collective impact in 2026 and beyond?

What role can this community play in helping shape national policy or priorities in AI/Quantum?

What recommendations would you give to funding agencies, national programs/centers, or institutions that would make the biggest difference in building and sustaining workforce capacity for AI and Quantum readiness?

What is a gap or need of your institution regarding the introduction and integration of AI and Quantum that was not mentioned?

Acknowledgements

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- ERN Steering Committee
- ERN Working Groups
  - Broadening the Reach
  - Architecture and Federation
- Summit 2026 Participants

Interested in learning more about the ERN?
Please visit our website, https://ern.ci, or contact info@ern.ci

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