Arizona State University

NNCI Annual Meeting

28 - 30 October 2024

NAU NORTHERN ARIZONA UNIVERSITY

Trevor Thornton – Director

Jameson Wetmore – Deputy Director

Jessica Hauer – Education and Outreach

Inès Montaño – PI at NAU, Quantum Materials

Gabe Montaño – Nano-Biomaterials

RIO SALADO COLLEGE
A MARICOPA COMMUNITY COLLEGE

SCIENCE foundation ARIZONA
INNOVATION AT WORK

National Nanotechnology Coordinated Infrastructure

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Award # ECCS 2025490

Nanotechnology Collaborative Infrastructure Southwest

NCI Southwest

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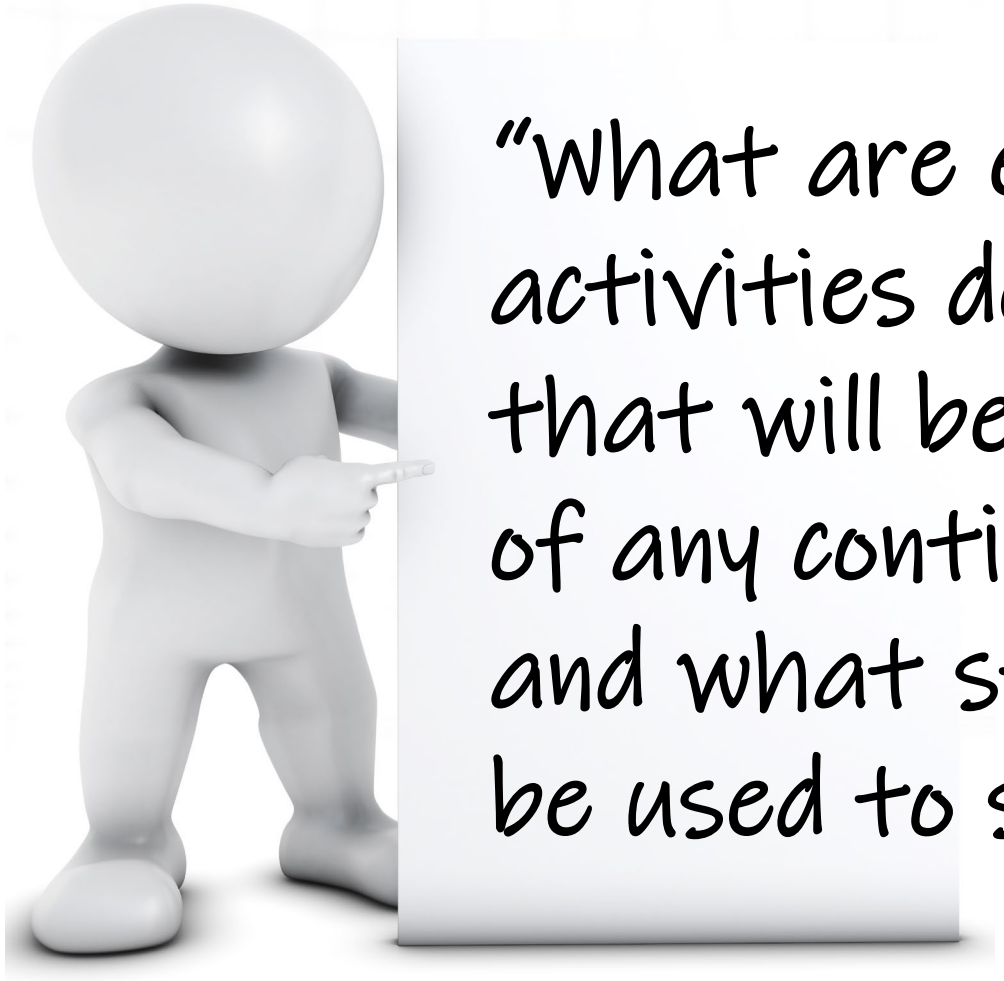
Sustainable Program Activities



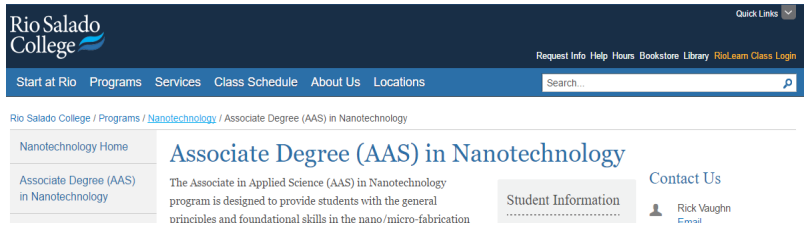
"What are examples of programs and activities developed under NNCI that will be sustainable, independent of any continued NSF renewal funding, and what strategies or sources will be used to support them?"

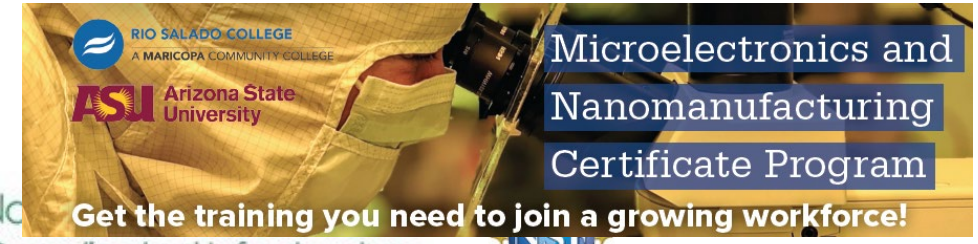
Sustainable Program Activities

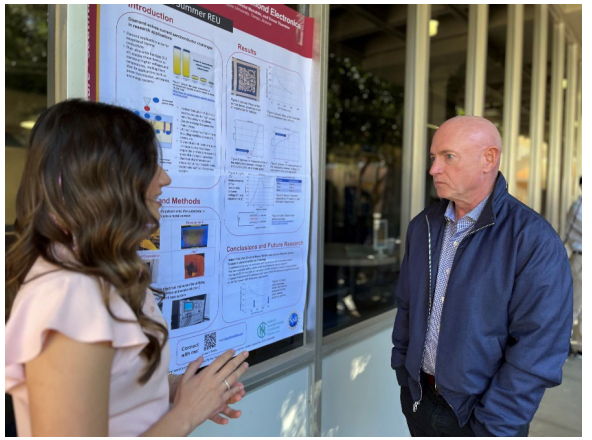
NCI Southwest

Technician Training

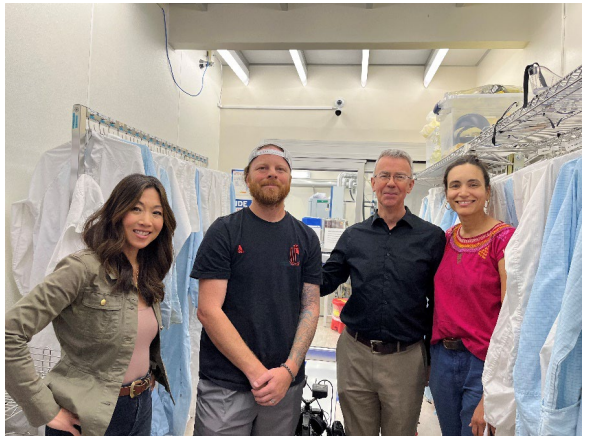
- Various programs started under the NNIN/NNCI umbrella with Rio Salado College, were then supported by e.g. the NSF ATE program and are now getting support from industry including Intel and TSMC.
- The CHIPS and Science Act helped to raise awareness among elected officials, the media, and university administrators!





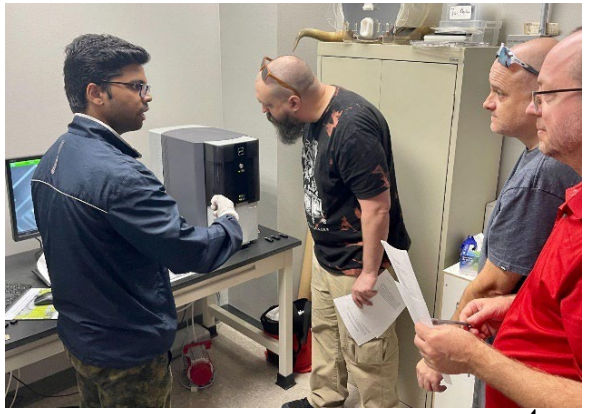


REU student Sierra Monreal presents the results of her research to Senator Mark Kelly



PBS Newshour reports from ASU about semiconductor workforce development

Veterans participate in a 12 week certificate program with hands-on experience



Coordinated Infrastructure

Sustainable Program Activities

NCI Southwest

NAU/ASU Partnership in Quantum Information Science Engineering (QISE) and Quantum Materials (QM): A regional partnership designed to:

- **Create Awareness in QISE and QM**
- **Create a Blueprint for an Inclusive Quantum Future**
- **Lay the foundation for a quantum-trained workforce**
- **Partners: NCI-SW; NAU ¡MIRA ; ASU- Quantum Collaborative; ASU-Center for Broadening Participation**

Workforce development in Metrology and Microelectronics

- **New equipment investments (CHIPS supported) for equipment for research and education training**
- **Degree and Certificate development in metrology and microelectronics under construction**
- **Partnership development with regional industry-specifically start up/small operations**

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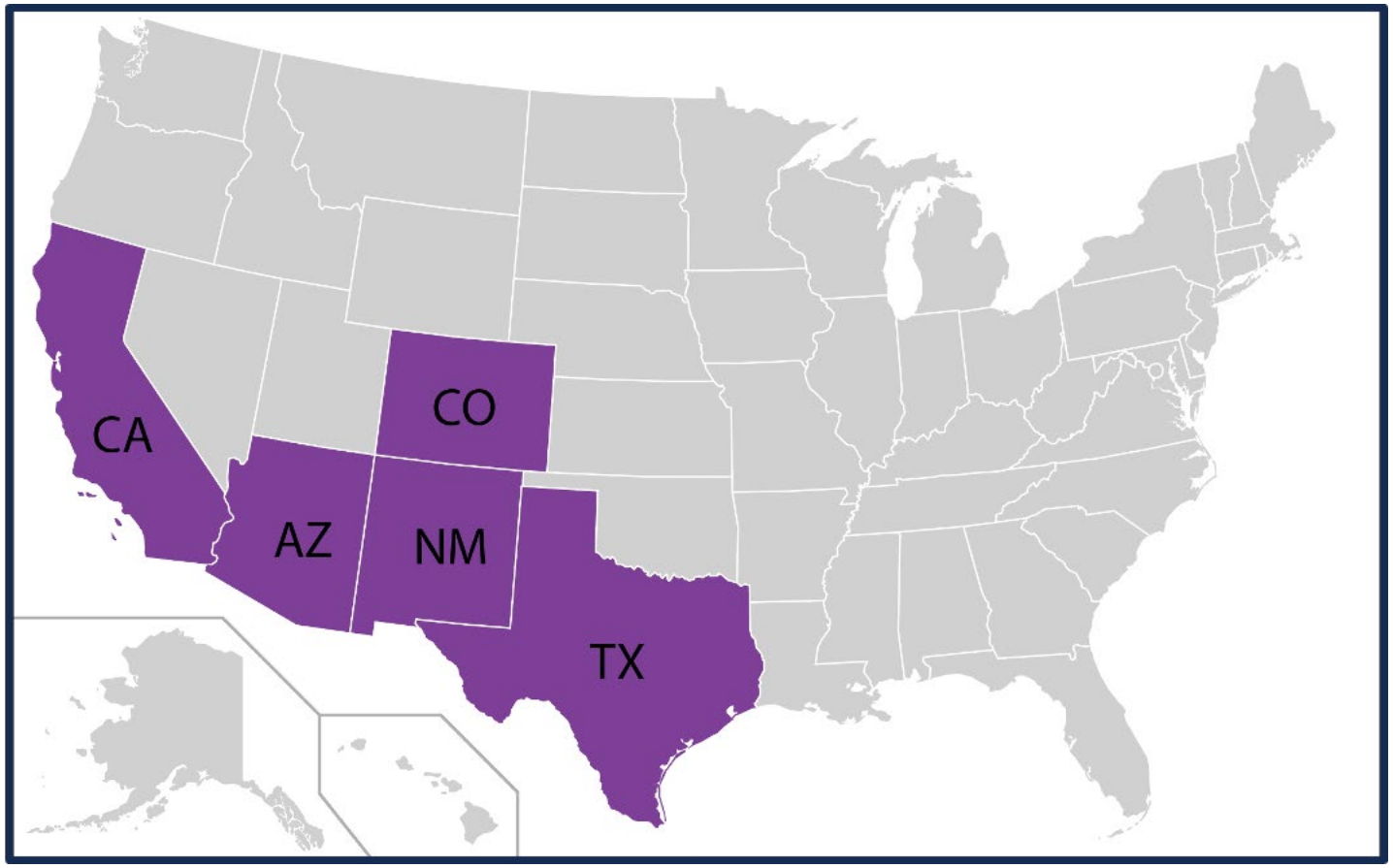
Sustainable Program Activities

NCI Southwest



"From LA to Austin!"

Sparking Curiosity Programs-
A ¡MIRA! initiative

- **An expansion of the Sparking Curiosity in Quantum Sciences (SparCQS) initiative (led by NCI-SW NAU PI I. Montaño) that has reached nearly 40,000 individuals in ~2 years.**
- **Outreach/Engagement from K-16 with hubs across the southwest: PCC, UT Austin, (more to be announced soon in NM and Colorado)**
- **Supported by NSF funded: NCI-SW (NNCI); ¡MIRA!-PREM (PREM); EXPAND-QISE;CQN (ERC);**

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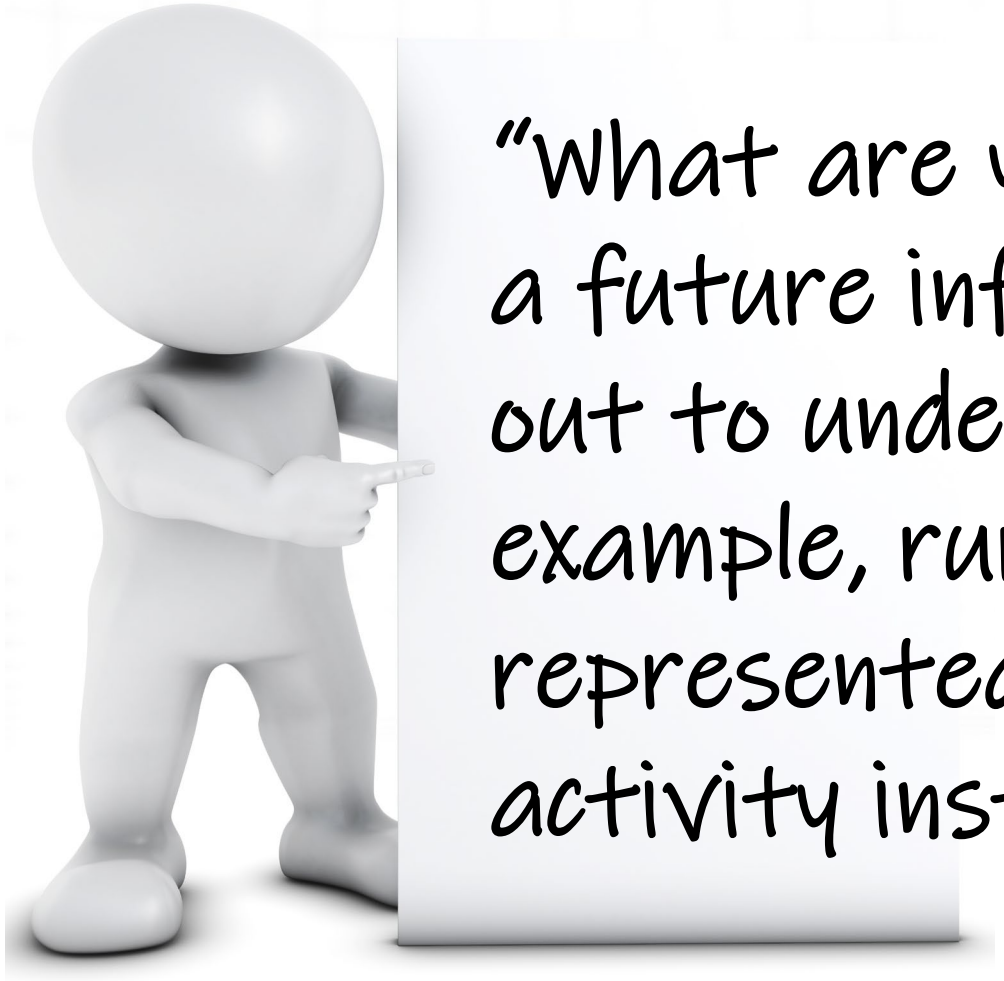
Panel 1 – Underserved Communities



"What are you doing now and how can a future infrastructure better reach out to underserved communities (for example, rural areas, under-represented groups, or low research activity institutions)?"

Panel 1 – User Facilities to Expand the STEM Community and Workforce

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15 years

7 years

User Facilities are an Essential Component of our National STEM Capacity Building

Serve to Enable High-Impact Research and Discovery

The Impact Potential is Nonlinear… But also Largely Falls Short of Potential Community Impact

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The Metrics of Success Set the Stage

Common Metrics:

- Numbers of HIGH IMPACT publications
- Total Numbers of Users
- Novel Capabilities Development
- Peer Comparative Analysis
- …
- …
- Community Impact
  - Technical Workforce Development
  - "Demonstration" of Community Engagement

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It's not just the Right Thing, It's the Smart Thing!

The Result is a Deficit-Mindset Approach to User Engagement

- **Peer institutions are deemed worthy of and equals in Engagement**
- **Non-peer institutions are deemed "costly"**

The Result is a Focus on those Engagements that will render metrics of merit

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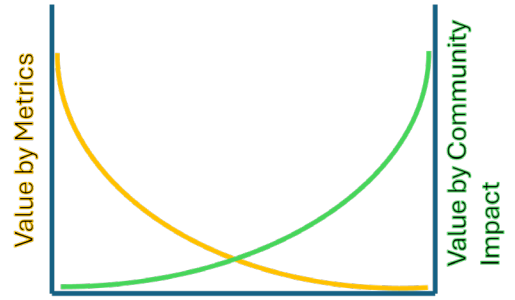
A Missed Opportunity

While the non-R1 Engagement may take more effort for less outcome from a purely metric evaluation, the impact can be exponentially greater!



Collaborations are great, but Community Development is TRANSFORMATIVE!!!

Takeaway 1: non-R1 engagements need to be prioritized with metrics that reflect prioritization

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Mechanism of Engagement Matters

The deficit mindset says: Providing access to resources will make them better

The asset mindset says: Together we are collectively stronger and we have as much to gain as to provide!

Takeaway 2: The Culture of user facilities needs to be value brought, not value provided!

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A Need to Reassess our Priorities

It's always about the metrics and evaluation

- **How do we value a paper from a collaboration that is 1 of 1 not 1 of 100**
- **Currently? …. Depends on the Journal!**
  - **Which one truly had the Higher Impact? Forget the Impact Factors!**

- **A workforce addition that brings creativity born of lack of resources- VALUE BROUGHT!**

Takeaway 3: We need to Recalibrate what High Impact means!!

Panel 1 – User Facilities to Expand the STEM Community and Workforce

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What makes ¡MIRA! unique?

Diversity is in our DNA…. Literally

1. It's not just a logo

¡MIRA!

2. The mission – materials science research & DEIA center

3. The people ->

- **50% of our faculty are URM/Women - *unprecedented* in the US in Materials Science**
- **Our students, faculty, staff reflect our mission**

The ¡MIRA! Culture "Invites" a Diverse User Population

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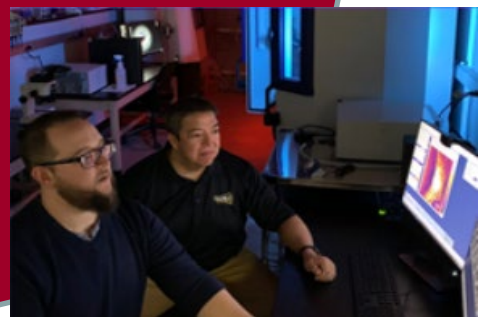
Why Does Diversity and Inclusion Matter in a User Facility?

Appreciation of Value Brought Culture

Our students, faculty, staff reflect our mission

A Reflective Community of Engagement



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Questions?