

Partnerships to Drive Digital Transformation

June 29, 2022

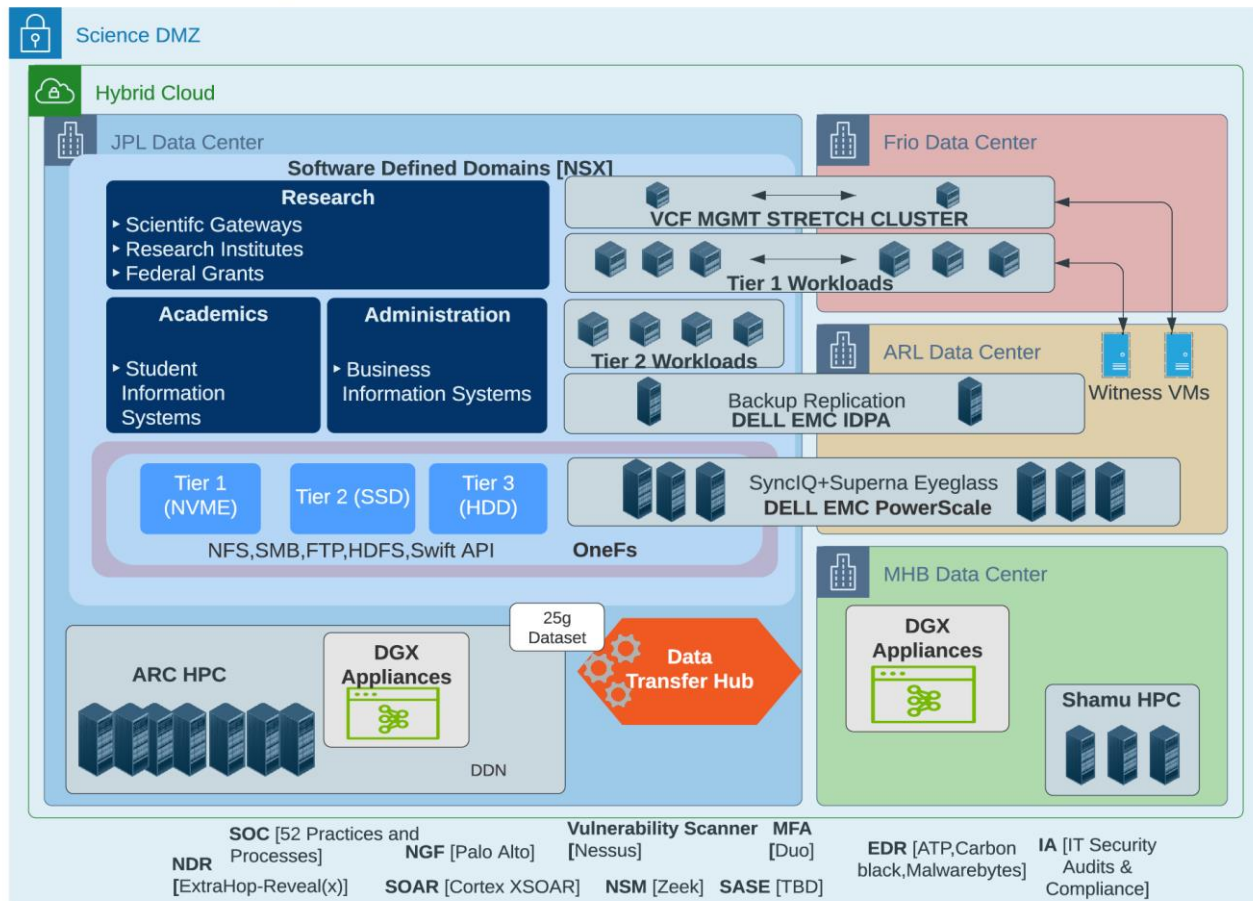
 **DELL**Technologies

Panel Introductions

- **Al Grasso, Moderator**, Past President, MITRE Corporation & GUIRR Industry Co-Chair
- **Kendra Ketchum**, Vice President for Information Management and Technology, University of Texas at San Antonio
- **Deb Stokes**, Director, External Research, Office of the CTO, Dell Technologies
- **Laurie Locascio**, Director of the National Institute of Standards and Technology

Landscape: Academic Research Digital Transformation

- Increasing demand for higher education institutions to provide **exceptional** student experiences
 - Expectation: **engaging digital experience**...requiring new technologies implementation and adoption in preparation for future “jobs to be done”
- Human transformation
 - Using **technology, people and processes** to pursue **new business models/revenue streams**
 - Include students, faculty and staff in **designing digital experiences** and solutions
- Requires **new partnership models** to enable science and innovation, plus building a diverse research enterprise for the future
 - University of Texas San Antonio (**UTSA**) embarking on 5-year digital transformation journey, **partnering** with **Dell Technologies** and US National Academies Science/Engineering/Medicine/GUIRR
 - Building and strengthening **high performance computing** portfolio
 - **Next-gen technologies** to support **research**, academic and business enterprises
 - “Right work at right time” to drive research **creativity and innovation** to address “**wicked problems**”



increased storage **88%**

353 TFLOPS

8 Nvidia DGX

5200 cpu cores

50 gpu nodes

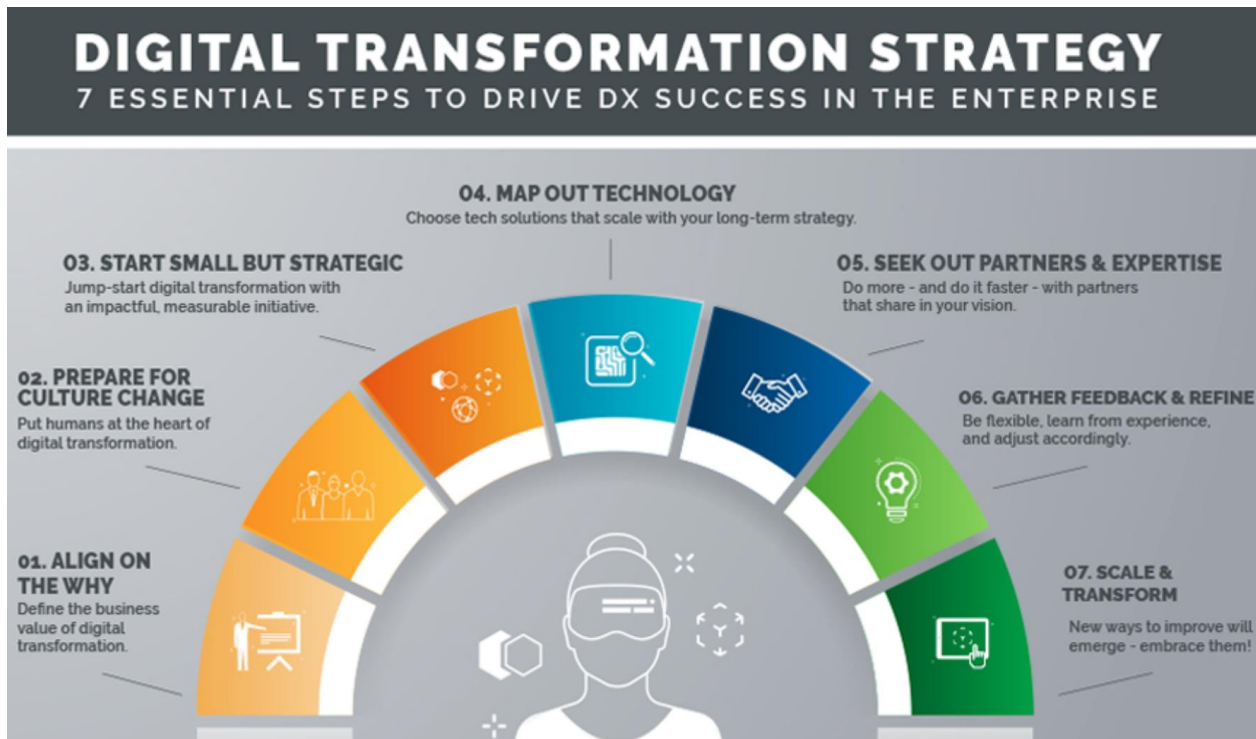
1.9 PB Storage

100GB networks

ACIRP+ARC (HPC) @ UTSA

Since August 2021

- 35%-40% utilization on average
- 1TB long-term storage
- 25TB per project (1yr)
- 250 active users Vizlab
- Education and training
- Matrix AI Consortium Ecosystem
- Secure Networks
- Transform MLOPs/AIOPs



Enhanced Network Security Architecture

All Cyber attacks use network communications

End-to-end coverage

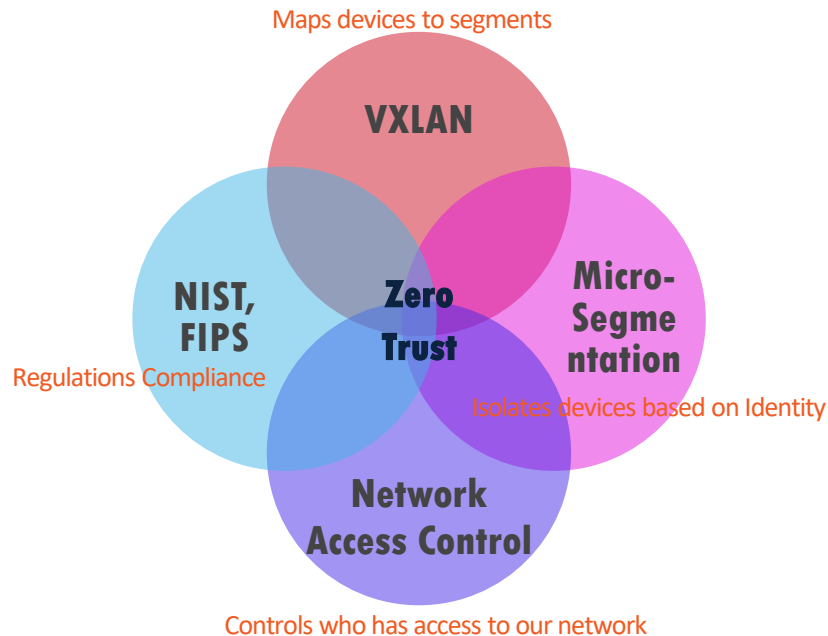
- All network traffic inspected
- Across all network segments in and from our network
- Fully cover MITRE ATT&CK framework

Business-centric segmentation

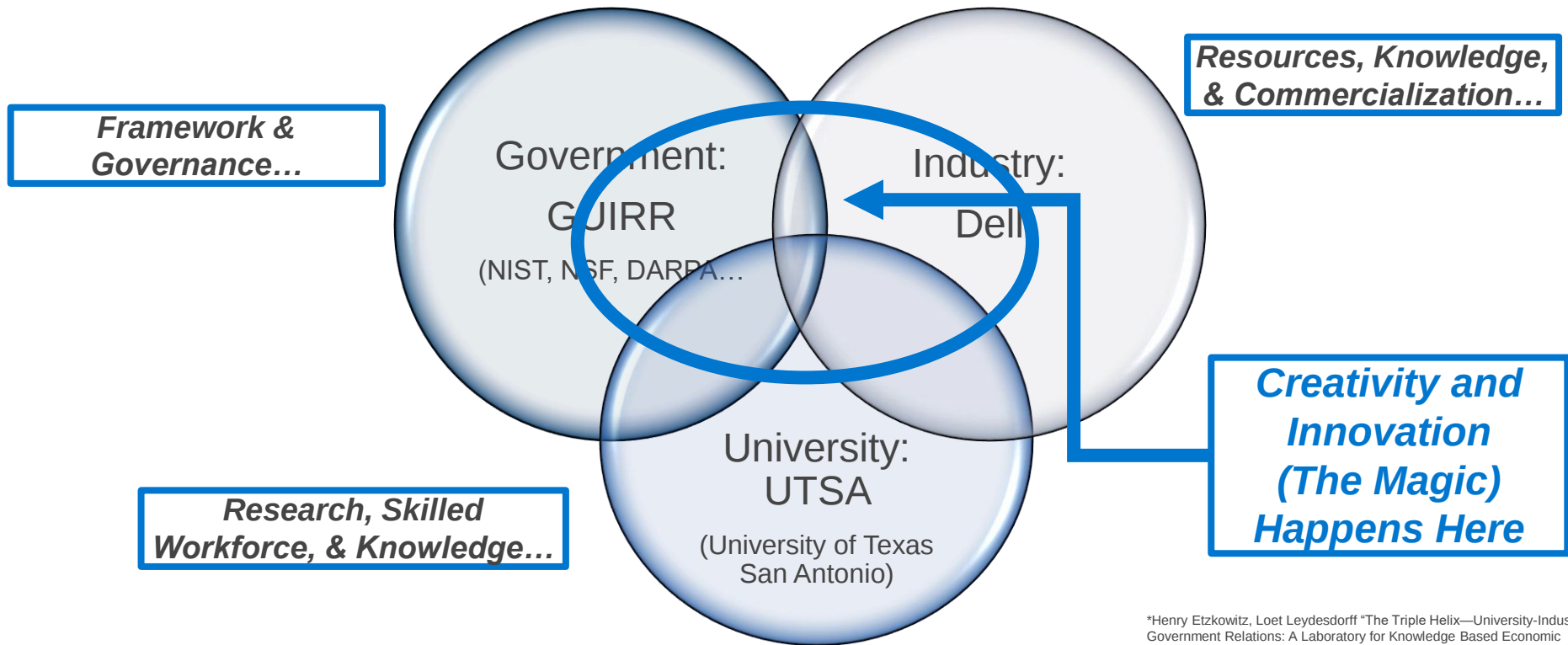
- Reduce attack surface
- Enforce Software defined perimeters
- Zero Trust

Comprehensive Monitoring, Control, and Analytics

- Detection rules, Heuristics, Machine Learning
- Complex System Integrations
- Automation and Orchestration



The Triple Helix* Partnership Model



*Henry Etzkowitz, Loet Leydesdorff "The Triple Helix—University-Industry-Government Relations: A Laboratory for Knowledge Based Economic Development", 1995

UTSA Partnership

How to Create Value in an External Research Ecosystem

NATIONAL
ACADEMIES

Sciences
Engineering
Medicine

Government-University-Industry Research Roundtable



Strengthening
University-Industry
Partnerships

Engagement & Forums ...
UTSA/Dell/NIST Panel
@ June GUIRR

Delivered campus **digital transformation** needed to advance **data science research** for the nation's top **cyber security** program, supporting recognition as top R1 research institution, Campus **Involvement** outside of sales cycle,
H3 Research Engagement:
Quantum, Security, AI/ML, Cloud

UTSA
CREATING
BOLD
FUTURES.

HSI plus R1 designation,
Dell Changing the Face
of Tech partner,
Distinguished Alum:
Jeff Clarke, Dell Co-COO
& Super Campus
Executive Sponsor

*Interactions and
Relationships are the
starting points for the
Innovation ecosystem
that creates value*

DELL

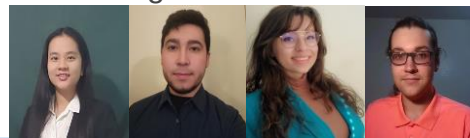
ASU
Arizona State
University

SDSC
SAN DIEGO SUPERCOMPUTER CENTER

UC San Diego



**Spring Semester 2022 Dell
Capstone Student Project:**
Zero Trust Architectures (ZTA)
+Undergrad **Summer Intern**



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NIST Partnerships Enabling The Digital Transformation

Dr. Laurie Locascio

Under Secretary for Standards and Technology,
Director, National Institute for Standards and Technology,
U.S. Department of Commerce
June 29, 2022

Digital Transformation is Critical to the Innovation Economy

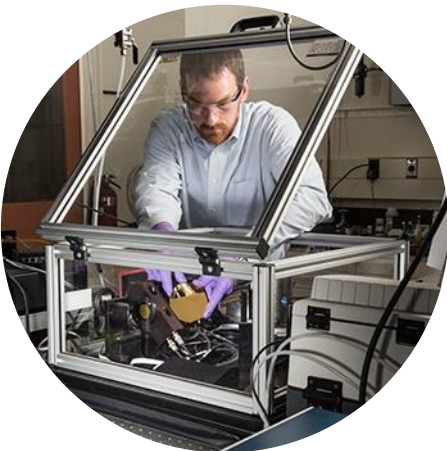
Global Competition

Supply Chain Ecosystems

Cybersecurity



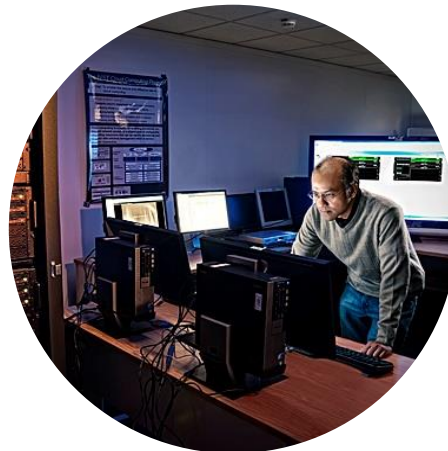
To promote U.S. innovation and industrial competitiveness by advancing **measurement science**, **standards**, and **technology** in ways that enhance economic security and improve our quality of life



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J.Burrus/NIST

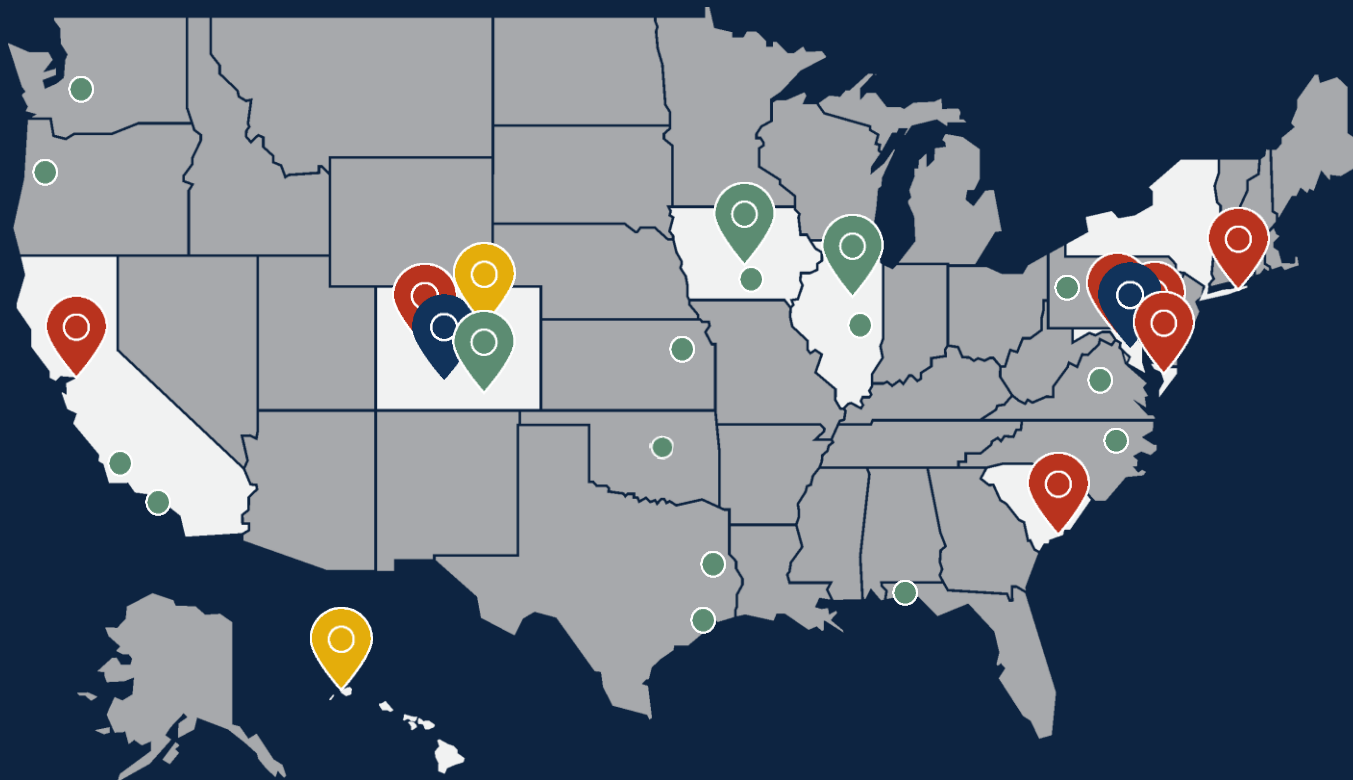


©Nicholas McIntosh Photography



J.Burrus/NIST

NIST Across the U.S.



NIST Campuses

Gaithersburg, MD
Boulder, CO



NIST Centers of Excellence

Forensic Science, IA
Disaster Resilience, CO
Advanced Materials, IL



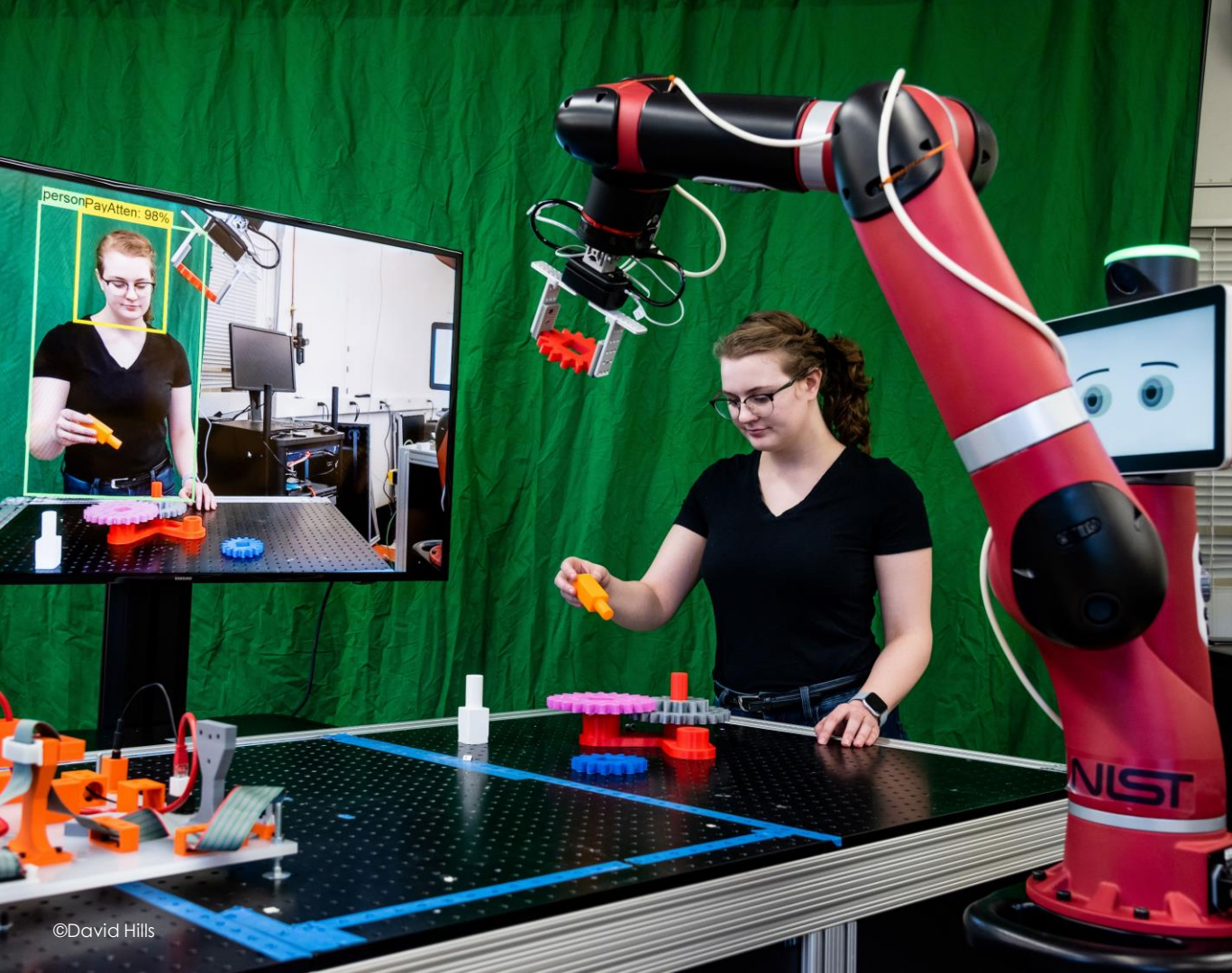
Joint Institutes and Centers

National Cybersecurity Center of Excellence
Institute for Bioscience & Biotechnology Research
Joint Institute for Quantum Computer Science
Joint Quantum Institute
JILA (Joint Institute for Laboratory Astrophysics)
Hollings Marine Laboratory
Brookhaven National Laboratory
Joint Initiative for Metrology in Biology



Atomic Clock Signal Stations

NIST Kauai HI WWVH
NIST Ft. Collins CO WWV



Artificial Intelligence

Bias,
Explainability,
Security
Research

Standards
Leadership

Risk
Management
Framework

Hardware &
Human
Interaction



Cybersecurity and Privacy

National Cybersecurity Center of Excellence (NCCoE)

Journey to Cybersecurity Framework 2.0

Privacy-enhancing Technologies



Cybersecurity and Privacy Workforce Development

National Initiative for
Cybersecurity Education
(NICE)

Advancing the Privacy
Workforce

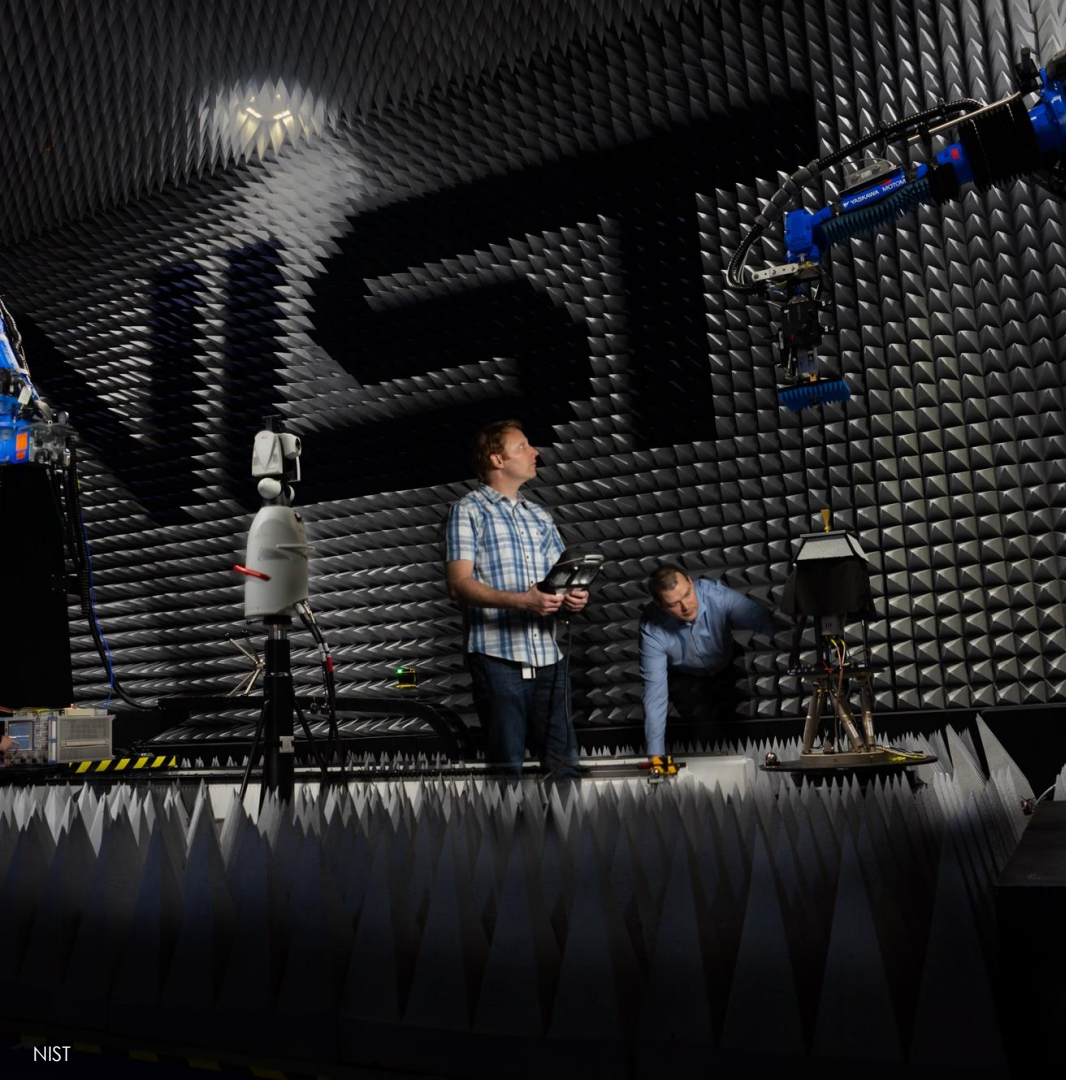
Quantum Computing

Joint Quantum Institute

Joint Institute for Quantum
Computer Science

Quantum Economic
Development Consortium
(QED-C)





Advanced Communication Technologies

NIST is
the U.S. Government's
leader in

- Fundamental and applied research
- Standards
- Coordination
 - government
 - academia
 - industry

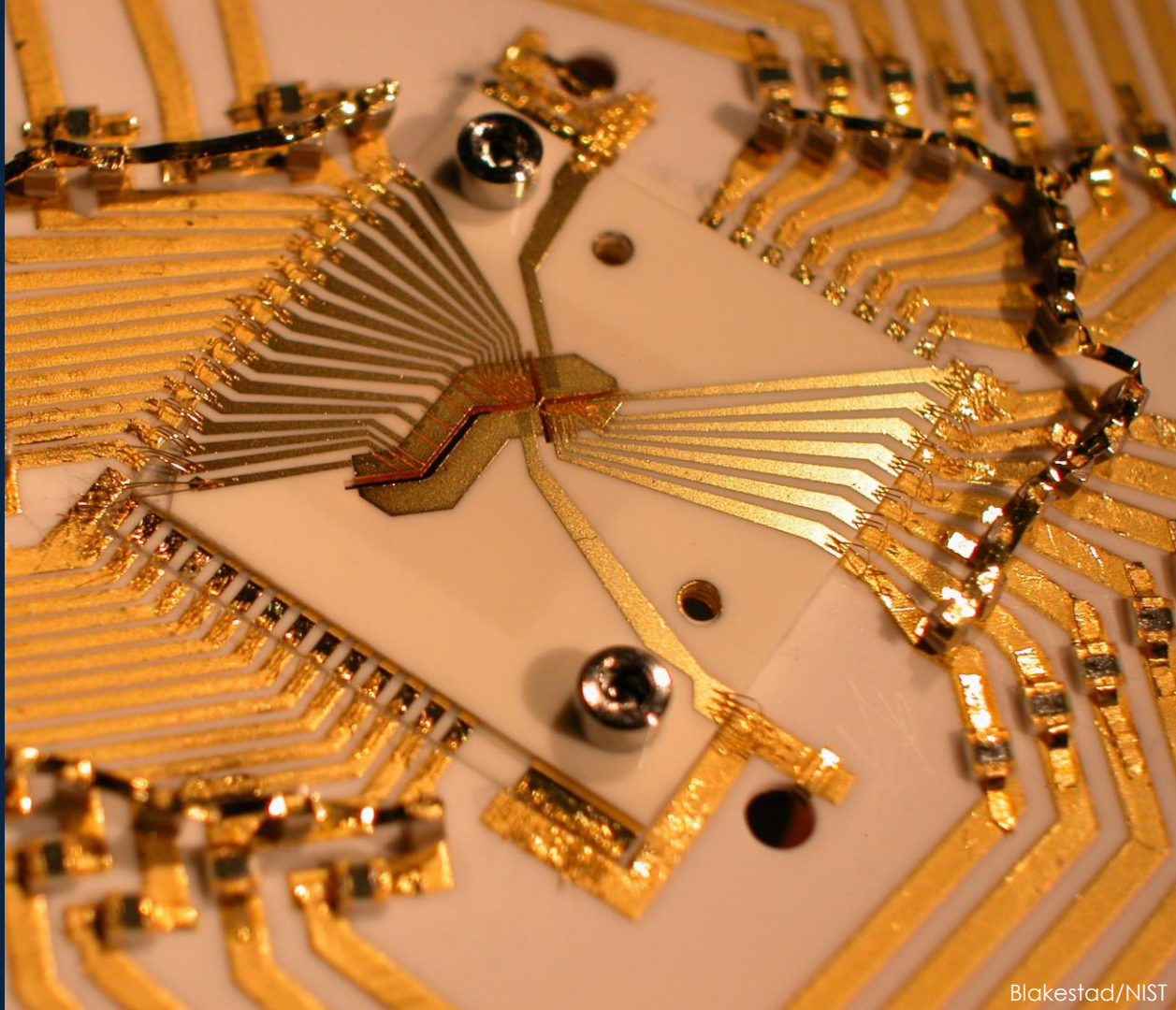
Semiconductors

Fundamental
Research

Foundational
Metrology

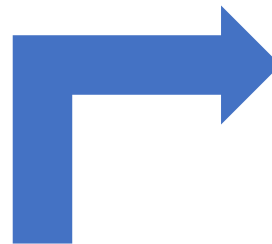
Standards
Leadership

Industrial
Partnerships



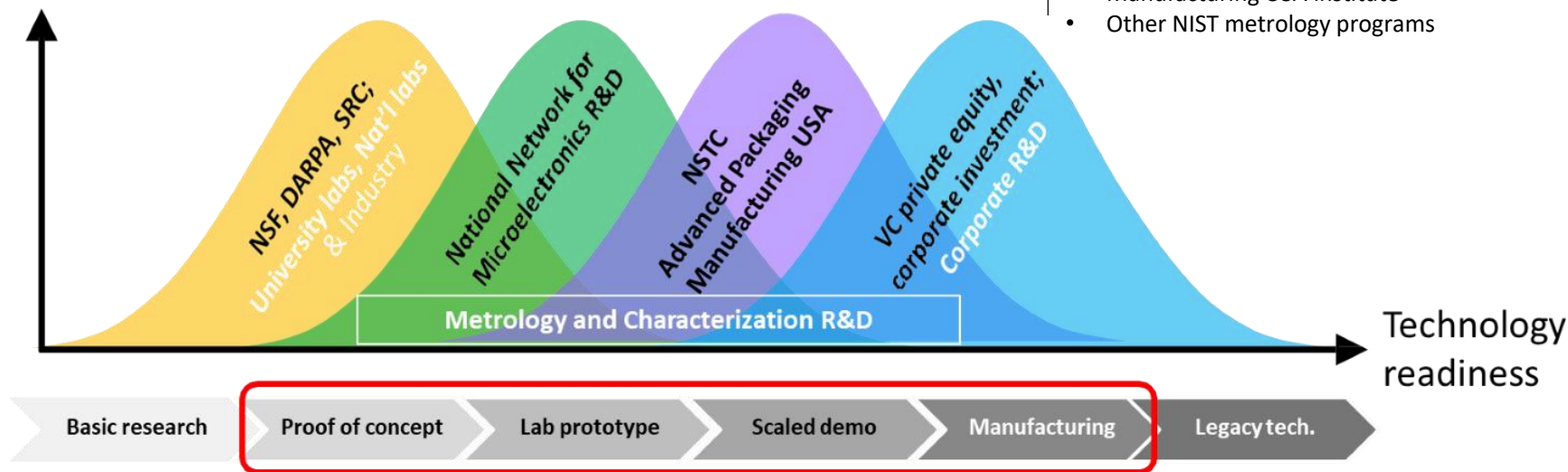
CHIPS Act R&D Programs

Where Commerce R&D programs fit with other elements of CHIPS and inter-agency programs



Commerce 9906 programs

- NSTC
 - Research and prototyping capabilities
 - Investment fund to support startups
 - Workforce training programs
- NAPMP Advanced Packaging Program (research and prototyping capabilities)
- Manufacturing USA institute
- Other NIST metrology programs



Manufacturing USA **Impact** and **Highlights**



16 institutes with
2,320 member
organizations
partnering on grand
challenges

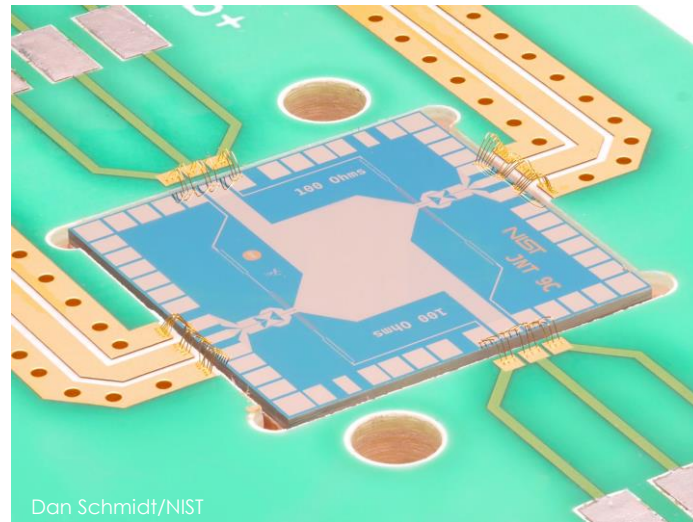
708 major
collaborative
technology and
workforce R&D
projects

63% of members
are from industry
and **72%** are small

\$127M in federal
program funds
attracts **\$354M** in
state, private, and
pandemic funds

Over 90,000
people trained in
advanced
manufacturing

**Workforce
development
initiatives** reached
tens of thousands
this year



NIST funding supports research on identifying manufacturing challenges and technology barriers in semiconductor production.

Thank You

Participants Q&A

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