ASSOCIATION OF PUBLIC & LAND-GRANT UNIVERSITIES

UNIVERSITY OF MARYLAND

CECE | INNOVATION AND ECONOMIC PROSPERITY AWARDS PROGRAM

IEP CATEGORY - INNOVATION

2025 CASE STUDY

University of Maryland, College Park

Capital of Quantum Initiative: Investing $1 Billion in the Regional Quantum Ecosystem for Economic Engagement

The Washington, D.C., Maryland, and Virginia region—commonly called the DMV—is fast becoming a global hub for quantum innovation. With a powerful research base, including the University of Maryland (UMD), and proximity to over 70 federal agencies, the region is ideally positioned to drive advances in quantum computing, sensing, communication, and materials. These technologies hold vast potential for economic disruption and national security enhancement, and UMD is emerging as a cornerstone of this evolving ecosystem.

UMD: A NATIONAL QUANTUM LEADER

UMD has more than 35 years of experience in quantum research and is globally recognized for its leadership in the field. The university houses over 200 quantum researchers and consistently publishes more than 200 papers annually. Its researchers are advancing quantum computing, metrology, and networking, and more than 100 PhDs in quantum science have graduated from UMD in the past decade. The campus supports 10 quantum-focused research centers, including the National Quantum Laboratory (QLab)—a public-private collaboration with IonQ—which provides shared access to quantum computing infrastructure and fosters real-world applications.

MID-ATLANTIC QUANTUM ALLIANCE: REGIONAL COLLABORATION AT SCALE

In 2020, UMD helped launch the Mid-Atlantic Quantum Alliance (MQA), a coalition of 49 members including 18 small-to-medium-sized enterprises, 15 academic institutions, and several industry, nonprofit, and government partners. MQA supports quantum innovation and talent development through 16 working groups focused on research collaboration, infrastructure, commercialization, education, and building a diverse workforce. The alliance is also fostering a local supply chain to speed innovation, advance national security needs, and promote cross-sector engagement in fields such as neuroscience and healthcare.

Initiatives include curriculum sharing, hands-on learning experiences, and shared access to labs and equipment. The MQA's efforts not only build regional capacity but also raise the DMV's visibility as a global quantum center.

PUBLIC-PRIVATE INVESTMENT: MARYLAND'S BILLION-DOLLAR QUANTUM COMMITMENT

In January 2025, Governor Wes Moore announced the "Capital of Quantum" initiative to further position the state of Maryland as a global quantum leader.. This landmark economic development agenda aims to unlock $1 billion in investment through federal grants, private sector partnerships, philanthropic funding, and public dollars. The state's early investments in quantum already show strong returns. The 2021 launch of the Quantum Startup Foundry(QSF) and the Discovery Fund has spurred commercialization and brought over 30 quantum startups to UMD's Discovery District, with QSF hosting two investment summits to date.

Maryland Governor, Wes Moore announces the Capital of Quantum initiative at IonQ in January 2025.

The latest state budget approved in April 2025 includes over $52 million for quantum initiatives. These funds will help recruit faculty, hire quantum testing and evaluation experts, scale QSF's efforts, expand quantum training, increase QLab access, and grow Maryland's quantum ecosystem

Additionally, Maryland is investing in two new facilities in the Discovery District: one for IonQ's headquarters, enabling job growth, and another for the Applied Research Laboratory for Intelligence and Security (ARLIS),supporting national security innovation.

CAPITAL QUANTUM BENCHMARKING HUB: VALIDATING WHAT WORKS

A core element of the Capital of Quantum initiative is the new Capital Quantum Benchmarking Hub. Announced by Governor Moore alongside UMD leadership and DARPA officials, the hub will serve as the only site on the East Coast dedicated to testing and evaluating quantum computing systems for commercial and national security applications.

This benchmarking effort is part of DARPA's Quantum Benchmarking Initiative (QBI), which aims to determine which quantum technologies can truly deliver real-world utility. According to QBI program manager Joe Altepeter, the hub will help answer key questions: Can quantum systems perform useful computations that exceed classical methods? What specific problems can they solve? And what is the actual value for users?

UMD and ARLIS will now play a lead role in this validation process, attracting test and evaluation experts to Maryland and providing an independent research and evaluation platform. The state and DARPA have pledged up to $100 million in matching funds to support the hub. More than a dozen quantum companies have already been selected to participate in QBI, with many expected to interact with the benchmarking team based at the new hub.

MEASURING QUANTUM PROGRESS

Progress in this nascent field will be tracked across several fronts:

- Technical impact: peer-reviewed publications, patents, and advances in technology readiness.
- Commercialization: the number of new quantum companies formed, technologies licensed, funding raised, and products introduced.
- Workforce development: jobs created, degrees granted, certifications earned.
- Ecosystem building: expansion of facilities, infrastructure, and a supportive regulatory environment.

UMD and its partners are committed to documenting these outcomes, offering transparency and accountability while also helping to guide future investment and collaboration.

THE QUANTAM MOMENT

With a confluence of federal agencies, academic institutions, venture support, and infrastructure investment, the DMV—and UMD in particular—is poised to lead the second quantum revolution. The Capital of Quantum initiative is more than a branding exercise—it's a strategic bet on Maryland's future as a leader in one of the most consequential technologies of the 21st century.

From R&D and startup acceleration to education and policy, the Capital Quantum Benchmarking Hub and broader regional investments are laying the foundation for the United States' global leadership in quantum technology—and Maryland is positioning itself at the very center of that future.

LINKS TO FURTHER INFORMATION

Supporting Information:

- Quantum Startup Foundry
- Mid-Atlantic Quantum Alliance
  - Members
- Quantum at Maryland
- Applied Research Laboratory for Intelligence and Security
- Quantum World Congress

Articles:

- Moore Announces $1B 'Capital of Quantum' Initiative Centered at UMD
- IonQ Becomes First Publicly Traded, Pure-Play Quantum Computing Company; Closes Business Combination with dMY Technology Group
- At UMD-Sponsored Summit, Pines Offers Vision for Growing the 'Capital of Quantum'
- Discovery Fund to Seed Local Innovation Ecosystem
- New Center to Support National Security With Quantum Tech
- 7 Reasons You Should Care About World Quantum Day
- UMD leaders promote technology, innovation at World Quantum Day celebration

Videos:

- UMD: The Capital of Quantum | Enterprise Research Stories

ABOUT APLU

The Association of Public and Land-grant Universities (APLU) is North America's oldest higher education association. APLU is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities in the U.S., Canada, and Mexico. The association's membership consists of public research universities, land-grant institutions, state university systems, and affiliated organizations.

APLU's mission is to expand access and improve student success to deliver the innovative workforce of tomorrow; advance and promote research and discovery to improve society, foster economic growth, and address global challenges; and build healthy, prosperous, equitable, and vibrant communities locally and globally.

Based in Washington, DC, the association's work is furthered by an active and effective advocacy arm that works with Congress and the administration as well as the media to advance federal policies that strengthen public universities and benefit the students they serve.

ABOUT THE IEP PROGRAM

APLU and its Commission on Economic and Community Engagement (CECE) established the Innovation and Economic Prosperity (IEP) Program to help higher education institutions codify, elevate, and advance their campus enterprise supporting economic and community development.

The **IEP Program** recognizes institutions that have demonstrated a meaningful, ongoing and substantial commitment to economic and community development, growth, and economic opportunity.

The **IEP Awards Program** recognize exemplary and innovative projects in university-based economic and community engagement:

- Talent and workforce development
- Innovation, entrepreneurship, and tech-based economic development
- Place development through public service, outreach, and community engagement

Learn more at: www.APLU.org/IEP