

KEY TAKEAWAYS

- 1** Quantum is as important to the next century as semiconductors were to the last
- 2** Our region is the leader in quantum with more Nobels, more quantum companies, and more quantum jobs than anywhere else
- 3** Now is the moment to secure America's leadership in quantum and Elevate Quantum is the right consortium to realize the potential
- 4** Elevate Quantum's governance and plan secures >11k jobs, a fair quantum economy, and US security in the quantum century

I. Exec. Summary: In 2009, NIST physicists in Colorado unveiled humanity's first [quantum computer](#). For many, this was the starting gun in a global race. Here, the revolution was already underway. Quantum will unlock [\\$3.5 trillion](#) in value and revolutionize nearly every sector of the economy. It will accelerate progress in AI, climate tech, and healthcare and address national security challenges from cyber to stealth. Elevate Quantum (EQ), our industry-led 501(c)(3), represents a consortium of 116 organizations as the lead entity in this application. EQ's core technology area is Quantum Information Technology (QIT), with a focus on commercial-ready applications in sensing, computing, networking, and enabling hardware.

Our core geography includes the Boulder, Denver-Aurora-Lakewood, and Greeley Metropolitan Statistical Areas (MSAs), along with rural Grand County. [This region](#) boasts an unmatched [>3,000](#) commercial quantum jobs, [4 quantum Nobel Laureates](#), and more quantum-focused organizations than anywhere else in the world. Our mix of capability and vision is why Amazon, Google, Lockheed Martin, Microsoft, and others joined EQ. With this grant, EQ will drive inclusive regional economic growth and global quantum leadership; launching 50+ startups, attracting >\$2b in funding, upskilling >30,000 workers, and ensuring 40% representation of underrepresented communities.

Dedicating NIST Colorado in 1954, Pres. Eisenhower [said](#): "Having faith that if we do our part, then we will go down the ages as a people more prosperous, more happy, more secure, and more confident in peace." EQ will make good on that promise, securing U.S. economic and national security in the Quantum Century.

II. Synopsis of EQ's Vision:

EQ's vision is to **secure the Mountain West's position as the global epicenter for QIT development and enhance U.S. economic and strategic security** through A) accelerating lab-to-market transitions for cutting-edge quantum research, B) facilitating a vibrant startup and scale-up ecosystem, and C) scaling an inclusive workforce through diversity-fueled innovation. Phase 2 EDA support will [unlock >\\$80m from CO, NM, and WY and >\\$1b of private capital](#) and industry collaborations to cement the Region as the center of the global quantum economy. Our success will be measured in billions of funding, [>11k](#) new jobs, deployed quantum technologies solving our country's greatest challenges, and a just & equitable ecosystem.

Our Vision and Component Projects focus on what is needed to maintain successful innovation ecosystems around cutting-edge technology, as guided by decades of scholarship. Insights from Margaret O'Mara's *The Code: Silicon Valley and the Remaking of America*, *The Boulder Thesis* by Techstars founder and Colorado entrepreneur Brad Feld, and *Understanding Innovation Ecosystems: A Framework for Joint Analysis and Action* by MIT D-Labs, lead to the following key principles powering that we believe any Tech Hub must embody. Collectively, EQ is the best-placed hub in America to realize these principles for quantum.

Principle	Global Reference Model	How EQ embodies the principle
Focus on Forward-looking Globally Transformative Technologies:	Prioritization of forward-looking technologies early in their lifecycle is how true hubs are built. From Taiwan and the Netherland's relentless focus on semiconductors in the 1980s to China's strategy to beat the US in 5G are prime examples of well-timed investments in transformative tech.	Quantum will be as important to the next century as semiconductors were to the last. Governments are racing to secure leadership, with China spending \$8 for every \$1 U.S. government does and Chinese researchers out publishing Americans 18K to 14K in 2022 (BCG Center for Growth and Innovation Analytics (CGIA)). EQ and US industry players are helping fill the gap. Microsoft, Amazon, Google, and Nvidia are investing heavily in QIT and they have all joined Elevate Quantum. Along with 100+ other partners, they see EQ's role in securing the quantum future.
Create an Entrepreneur and Industry-Led Ecosystem:	As the <i>Boulder Thesis</i> states: Ecosystems must be founded and led by industry and entrepreneurs to thrive. While research institutions, capital providers, and NGOs play critical ecosystem roles, only entrepreneurs	EQ is an industry-led, entrepreneur-founded consortium. The mix of firm density (the highest nationally), market capitalization (\$920m+ in funding this past decade, 2 nd highest (after CA)), and employment metrics (3,000+ employed in quantum industry; 1000 more at labs) makes EQ the premier QIT hub globally (BCG IMPLAN & CGIA). Colorado is also the unquestioned

	are <i>legally</i> driven to create self-sustaining companies that are job engines for entire regions. Flowing from this commercial focus, advanced technology ecosystems must have commercially-ready technology to solve end-customer needs so they can 'pay the bills'. Fundamental research-anchored clusters or those that prioritize niche applications or technologies tech cannot become self-sustaining major ecosystems in isolation.	leader in the most mature and impactful quantum technologies, as defined by the U.S. Department of Defense (see Global Competitiveness section on page 4). Over half of EQ quantum companies are focused on TRL 7+ technologies in the sensing and enabling hardware sub-sectors. While other quantum ecosystems are figuring out how to make quantum useful, Colorado companies like LongPath, Maybell, Q-Magnetics, and Vescent are deploying thousands of quantum systems. Nearly 50% of U.S.-made AMO hardware and 100% American millikelvin cryogenics are produced in Colorado (51). Three of the 20 top U.S. institutions (by publication volume) for QIT are in CO, and over 50% of quantum research in the Denver-Boulder metro area is on quantum sensing and enabling hardware (BCG CGIA).
Create a Cluster of Business, Government, Science, and Workforce:	Hubs must have all the ingredients in one place to thrive. Silicon Valley's mix of National Labs, capital, and higher ed or Boston's mix of leading hospitals, research institutions, scaling startups, capital providers, history of government investment, and higher education cluster set the stage for true tech revolutions.	EQ is the only quantum cluster in the country to combine top capabilities for scientific innovation, scaled and commercial quantum technologies, and inclusive workforce development. Reflecting this confluence of the 'right stuff,' CO has experienced a 40% annual growth in its quantum patents, dramatically outpacing the US, and has witnessed 80% annual growth in quantum investments, outpacing the US average of 30%. (BCG IMPLAN & CGIA). Our quantum industry employs ~10x more workers than other quantum hubs and only trails California in QIT companies, reflecting our maturity and capacity to nurture QIT talent (BCG IMPLAN & CGIA).
Lower Barriers to Entry for All:	Thriving ecosystems must be inclusive of all that want to take part. Streamlined access to the tools for hardware entrepreneurship is why China leads in many manufacturing disciplines. Inclusive education job opportunities help drive European poverty rates down relative to America, despite our higher overall wealth. We can and must do things differently during this technology revolution to both lead the technology race and to not leave our own citizens behind.	While EQ's consortium leads the quantum race today, our region needs accessible infrastructure to lower the barriers for all workers and entrepreneurs to sustain that leadership. EQ has the right consortium makeup and EDA plan to enable all founders and underrepresented groups to lead quantum journeys. Our CREATE facilities will help overcome the high cost required elsewhere to access quantum facilities. The INCLUDE pillar will ensure that diverse communities are equipped to leverage the full breadth of EQ resources. Finally, the ACCELERATE pillar will seek out and enable a new generation of quantum entrepreneurs. With EDA support, EQ projects will help ensure that the Quantum Century is diverse, inclusive, and just while building and sustaining America's competitive advantage.

Table 1: EQ Principles

A. Consortium Members and Partners: EQ's consortium includes leaders in Required Entity Type: industry, academia, economic development, labor, and government. Our Core Geography includes the Boulder, Denver-Aurora-Lakewood, and Greeley MSAs, along with rural Grand County. EQ's geography spans diverse urban communities with [prime-age employment gaps](#) as high as 65.06%, [rural school districts](#) with 1,650 students spread across >2,000mi², over a dozen [Minority Serving Institutions](#), and the hub is backed by the governments of CO, WY, and NM, the latter two being [EPSCoR states](#).

Our consortium is united by a shared vision and effective governance. To ensure that our vision is realized and coordinated across our many members and partners, we have developed a best-practice based strategy and structure that will ensure effective and inclusive participation, metrics, and reporting based on, as described in the UNITE Project Narrative. **The consortium includes:**

- **Industry Groups/Firms (24):** The consortium features an unmatched contingent from industry. Most of our members are CO-based, including the world's largest dedicated quantum computing company ([Quantinuum](#), \$1.3b in funding and 500+ FTEs) and the world's most successful quantum sensing company ([LongPath](#), >\$230 million in funding), producers of critical quantum infrastructure (Maybell, Vescent, and KM Labs) and others driving the advancements essential for U.S. quantum success. **The consortium also includes Amazon, Google, Microsoft, and NVIDIA**, who are partnering with EQ because of our historic ties, unmatched ecosystem, and clear vision.
- **Institutions of Higher Education (32):** Academic excellence is represented by 32 institutions of higher learning, including quantum research powerhouses such as the University of CO Boulder, CO School of Mines, the University of Wyoming, and the University of New Mexico. These institutions contribute through cutting-edge research, innovation, and the cultivation of a skilled workforce

equipped to meet the demands of the burgeoning quantum industry.

- **Economic Development Organizations (25):** Spanning NYC to Silicon Valley, these organizations have come together in EQ because of our global leadership in QIT. From accelerators like Techstars and Access Mode to globally leading quantum investors like Caruso Ventures and Quantonation, these organizations bridge the gap between research advancements and market applications, ensuring the economic viability of quantum innovations.
- **Labor and Workforce Training Organizations (17):** To sustain a skilled and equitable ecosystem with all workforce stakeholders, EQ created the Elevate Quantum Workforce Collaborative (EQWC) in Sept 2023. Based on EQ Consortium leader NCWIT’s pioneering model for their >1600 members, EQWC is composed of organizations of each entity type, including industry firms like Lockheed Martin and startups like Xairos. Labor and workforce-focused groups include: **the AFL-CIO**, the Colorado Museum of Nature and Science, K-12 school districts, regional government workforce organizations, the College Board, and more.
- **State, Local, and Tribal Governments (10):** The commitment of eight state, local, and Tribal governments (CO, NM, WY, Ute Mountain Tribe, Southern Ute Indian Tribe, City of Boulder, City of Denver, North Central New Mexico Economic Development District) ensures that EQ’s initiatives are aligned with broader regional economic development strategies and benefit from supportive legislative and regulatory frameworks.
- **Federal Labs (5):** EQ is further enriched by the participation of five federal laboratories, including the Mountain West’s Los Alamos, NIST, National Renewable Energy Laboratory (NREL), and Sandia and CA’s Lawrence Livermore National Lab. These Labs offer unparalleled research infrastructure and insights, contributing significantly to EQ’s capabilities, and according to McKinsey analysis they reflect >\$9.68b in federal Quantum-relevant investment in Colorado [\(52\)](#).

Together, EQ members have committed nearly \$150m in cash / in-kind resources to realizing EQ’s vision.

B. Description of Component Projects: EQ has 5 component projects, described below: 1-2) CREATE (1. Programming, 2. Construction-NM), 3) ACCELERATE, 4) INCLUDE, and 5) UNITE.

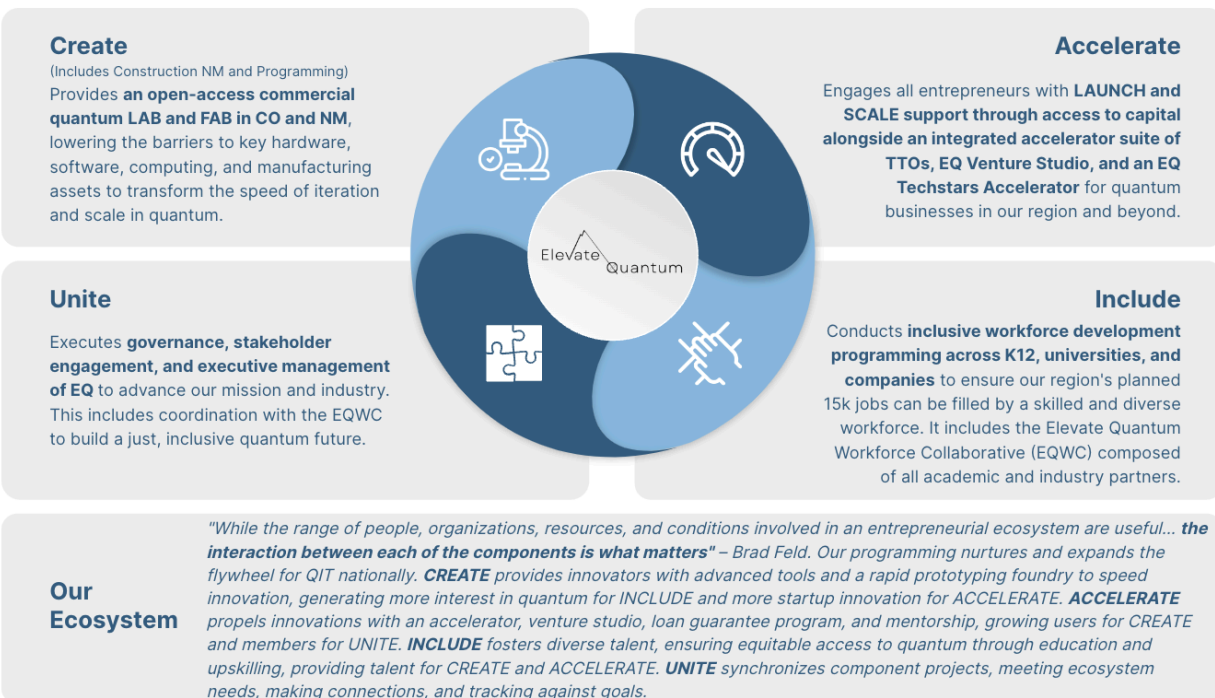


Figure 1: EQ Component Projects

Each Project is synergistic and contributes to a thriving Tech Hub. CREATE Programming is designed to lower the barriers to entry for quantum entrepreneurship and describe access to supporting CO facilities, with the NM Construction Project describing necessary deployment of equipment in NM. ACCELERATE focuses on Launching and Scaling quantum startups. INCLUDE ensures that we have a workforce ready to meet the needs of this scaling industry and the fruits of this economic growth are equitably shared. Finally, UNITE describes EQ's governance and oversight to align these efforts towards the consortium's Vision.

C. Investments and Commitments: Together, **Colorado and New Mexico are pledging over \$80 million** to EQ, but the funding is **100% contingent on Phase 2 EDA funding**. Colorado Gov. Jared Polis and the CO General Assembly put forward bipartisan legislation to invest **\$46m to build cutting-edge fabrication and laboratory facilities** (via CREATE) and a \$30m Loan Loss fund for **Quantum Loan Guarantees that will create a >\$1 billion loan facility** (see Woods Capital Letter of Commitment) to enable quantum companies to scale (via ACCELERATE). New Mexico has also committed **>\$10 million to EQ** and announced the creation of the Quantum New Mexico Institute, a Joint Institute between Sandia and UNM dedicated to accomplishing transformative, long-lasting breakthroughs in QIT. These state-based commitments are on top of over \$145m in private sector commitments and substantial policy and financial commitments from regional research institutions. They position the region as an unmatched leader in QIT.

D. EQ's Global Competitiveness: The global quantum industry is at a critical juncture, with significant investments being made to secure the quantum future. The U.S. and China are at the forefront of this race, but China's aggressive investment in QIT is closing the historical gap. *The question is not whether quantum will change the world, but who will benefit from the wealth it creates.* While the U.S. leads today, early leadership does not guarantee success. The transistor was invented in Murray Hill, NJ. Today, a memorial water tower rather than a thriving Tech Hub, commemorates that breakthrough. Today, Colorado is **the** global leader in QIT. Unless we want Quantum's Silicon Valley to be in Shanghai, China, the U.S. cannot afford to lose the lead we have built and let Colorado and America become the Murray Hill of Quantum.



Figure 2: State Ranks based on QED-C Membership

EQ has developed a collection of component projects strategically designed to leverage regional strengths into global dominance and address existing challenges, including:

CREATE: Expedite lab-to-market translation by establishing globally unique quantum labs and fabrication facilities, reducing the time and cost of commercializing quantum innovation.

ACCELERATE: Cultivate startup formation, scaling, and access to capital by leveraging world-class partners (TechStars, Quantonation) and policy commitments (CO's \$1b quantum loan guarantee).

INCLUDE: Develop the skilled, diverse workforce essential for driving innovation in quantum technologies, including BIPOC, urban, rural, veteran, people with disabilities, first-generation, and non-PhD communities. By expanding talent pools, EQ will support diversity-fueled innovation.

UNITE: Govern EQ through robust governance mechanisms so that EQ's strategic initiatives are aligned and executed efficiently, driving towards the goal of global leadership in QIT.

E. Climate and Environmental Responsibility: QIT-enabled breakthroughs in batteries, carbon sequestration, and energy production have the potential to transform human environmental impacts and turn back the clock on climate change. Moreover, while the power consumption of classical data centers has risen exponentially to meet modern computational demands, quantum computers have the potential to

[consume a fraction of the energy](#) expended by those systems. EQ is also committed to an environmentally responsible Tech Hub, mitigating climate impacts, incorporating green technologies in our construction project, and leveraging quantum to develop climate-resilient technologies.

F. Focus on Equity: Ingraining equity and inclusion at the early stages of a technology revolution is the best way to realize a truly diverse advanced technology ecosystem. With quantum, we can get it right from the beginning. Accordingly, EQ has embedded equity into its approach through various projects and commitments, with a focus on achieving equitable economic growth and fostering inclusive innovation economies. The accessible nature of quantum jobs in EQ’s ecosystem is highlighted by the fact that 80% of its QIT occupations require non-quantum specific skills, and about 50% of its quantum job postings today require a Bachelor’s Degree or less, with that share growing quickly ([BCG IMPLAN](#)). The hub’s geography also spans underrepresented communities, ensuring an inclusive workforce pipeline through outreach, training, and upskilling campaigns and curricula. EQ will have a dedicated Quantum Workforce Inclusion Officer (QWIO) who will work in coordination with the EQWC, consortium members, and partners to ensure that all the hub’s quantum-related activities and programming are built equitably and inclusively.

G. Specific Outcomes: The core program goals detailed in [Section X](#) of this document include launching 50+ startups, attracting \$2b in new investments, training, and upskilling 30,000+ students and workers for QIT, ensuring that 40% of roles are filled by underrepresented groups by year 10, and creating a financially independent and sustainable Tech Hub through running a fab/lab that generates operating reserves. Additionally, according to IMPLAN economic modeling, EQ will bring about ([BCG IMPLAN](#) & [CGIA](#)):

- 11,000+ annual jobs across CO, NM, and WY, with an annual average salary of \$125k/year
- ~\$910 million in labor income positively impacting local families and ~\$1.2 billion in additional economic value, yielding over ~\$2.1 billion in total output

The outcomes/KPIs will be tracked via a unified Customer Relationship Management (CRM) platform, detailed in the UNITE component project.

H. General Timeline: CREATE: Year 1: Facilities built in partnership with CU Boulder, MINES, and CSU. Year 2: Facilities established and running. Revenue generation begins. CO and NM lab facilities open and offer services otherwise unavailable in the U.S. to private and public sectors for quantum innovation. Year 3: Facilities running at full capacity. Strategic review for alignment of facilities with ecosystem demand. Year 10: World-recognized leader in Quantum fabrication and deployment.

ACCELERATE: Year 1: Planning and talent sourcing for the first EQ incubator, Techstars accelerator cohort, and underrepresented entrepreneurship leaders from Access Mode. Finalize loan guarantee program legislation and capital partners. Year 2: Incubator and Accelerator formally launched with teams. Year 3: Incubator and Accelerator at full capacity. Loan guarantee launched. Year 4: Incubator and Accelerator fully deployed for outcomes. Strategic review of incubator and accelerator. Year 5: At least 50 startups have been created; many are on track for success; at least 2 quantum “unicorns”

INCLUDE: Year 1: Begin implementation of K-12, community college, and non-degree programs. Year 2: Full implementation. Year 3: Strategic review of core programming to align with ecosystem needs. Year 5: Historically underrepresented groups fill 30% of quantum jobs Year 10: Historically underrepresented groups fill 40% of quantum jobs; 30k training and 15k jobs with EQ member programming.

UNITE: Year 1: Ratify governing body; Create CRM platform; Management team in place. Year 3: Strategic review of programs/funding decisions, including enhancing CREATE revenue generation. Year 4: Maintain governance and metric reviews. Year 5: Strategic review of programs and funding decisions. Year 10: Hub seen as global standard for advanced tech ecosystem governance.

III. Problem Statement: EQ is addressing critical challenges for QIT advancement and commercialization, with a focus on commercializing high commercial readiness technologies while laying the groundwork to enhance the long-term economic and national security of the United States. To facilitate this, component

leads will oversee their specific projects, but will also partake in quarterly meetings evaluating their problem/solution fit organized by UNITE. These challenges include:

Challenge	Context
Breaks in Iteration Loops	Speed and quality of technical iteration are essential for success in QIT. Currently, U.S. companies and researchers need to fabricate critical components in Europe or Asia . This outsourcing has a doubly negative impact, first because of the delayed innovation cycle relative to foreign counterparts, and second, because U.S. innovations build foreign expertise in device fabrication. EQ's CREATE Project, first of its kind in the nation, will establish open-access commercial facilities for rapid prototyping and low-volume manufacture of the main critical quantum technologies. This will enable research and commercial stakeholders to access key components quickly, maintaining global relevance for advanced technologies while building domestic capabilities. No individual player has the scale, demand, or resources to address this challenge effectively, but with EDA funding EQ will.
Whole Ecosystem Inclusive Workforce	There is a significant shortage of quantum-skilled employees, with 3 job openings for every 1 qualified candidate according to a recent McKinsey report. To tackle this, EQ is adopting a comprehensive ecosystem approach, aiming to prepare the next generation of lifelong, skills-based learners to become quantum-capable, starting from K-12 through to upskilling. Community partners and programming include Denver Museum of Nature & Science (DMNS) curricula support for K-12, OpportunityNow's funding for SparkFun to develop quantum curriculum, and Coorstek enhancing its lifelong, skill-based training to include quantum relevant skills. By engaging community organizations whose efforts span the K-12 to workforce pipeline, EQ is ensuring a comprehensive effort to bridge the skills and equity gaps present in the quantum realm. EQ's INCLUDE, ACCELERATE, and UNITE component projects will coordinate this strategy.
Translational Funding and Knowhow Gap	Quantum technologies often struggle to bridge the gap between the lab and the market. The widely publicized " valley of death " is deeper and wider for technologies based on fundamental research, driving a lack of access to the funding and expertise required for commercialization. EQ's ACCELERATE initiative addresses this by fostering diverse talent through our partners like Access Mode and connecting startups with the necessary expertise, capital, and training to scale. This collaborative effort expedites lab-to-market transitions and overcomes the challenge of translating quantum research into viable commercial products, which individual members may struggle to achieve alone.
Gaps in the Capital Stack	QIT faces critical gaps in accessing commercial capital necessary for scaling. These technologies lack historical data to attract traditional scaleup funding like capital loans. EQ acknowledges this challenge and has successfully advocated for the creation of a facility similar to the DOE's loan guarantee program, which successfully supported the clean energy industry. With the support of the State of CO, EQ will fill this gap through the ACCELERATE Project, which will help the state administer a \$1 billion loan guarantee program targeted at quantum companies. This initiative is essential for scaling quantum technologies and making them competitive on a global scale. For other key technologies like clean tech in the U.S. and China or semiconductors in the Netherlands and Taiwan, thoughtful and well-timed public investment into the right clusters has made the difference between sustained leadership and merely a footnote in history.

Table 2: QIT Challenges that EQ will solve with EDA funding

IV. Technology, Geography, and National Security Nexus: [The strategic importance of QIT](#) cannot be overstated. Quantum computers will revolutionize fields from medicine to materials science to logistics, while [quantum sensors](#) will enhance military operations and quantum networks will ensure [secure communications](#). The [DoD's prioritization](#) of quantum technologies highlights a handful of technologies as "existentially important," and our region is a global leader in all of them. According to Lockheed Martin, "the area's existing academic and industrial ecosystem, [makes] CO, NM, and WY uniquely positioned to transform advances in quantum science into tangible applications in quantum technology with immediate results for national security" [\(51\)](#)

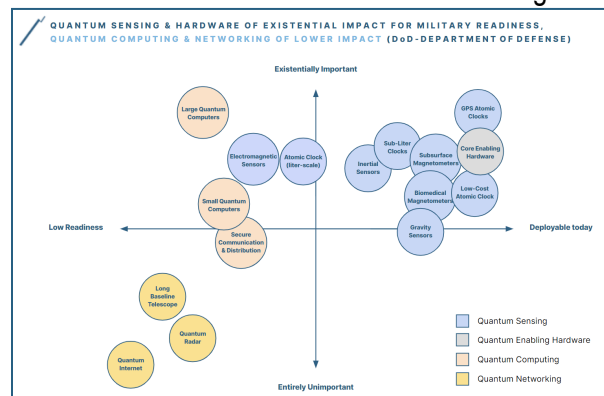


Figure 3: DoD Evaluation of QIT Criticality and Readiness

The Mountain West is the most geostrategically important region for quantum in America, particularly so for “existentially important” national security applications as defined by the DoD. Colorado hosts three of the top 20 U.S. institutions for quantum publications by volume, reflecting a significant concentration of expertise and research activity ([BCG CGIA](#)). It is the largest cluster of critical enabling hardware for a secure U.S. supply chain in the country; for example, it is the supplier of sub-kelvin cryogenics quantum – so while anywhere can build a cryo lab, the hardware inside it will either come from Colorado or from a foreign country. Military assets in the region are also unmatched. CO is one of only two states to host [two combatant commands](#) (Northern Command and Space Command), and it is home to the highest concentration of [Aerospace jobs](#) in the country. Combined with the unsurpassed defense research from Los Alamos/Sandia, the region stands ready to deploy quantum technologies in the strategic interest of the U.S. With the support of the EDA, EQ will develop the missing ingredients the region and the U.S. need to ensure continued national security leadership: coordination of key quantum stakeholders, rapid commercialization infrastructure, and inclusive workforce development assets. From Taiwan and the Netherlands’ relentless focus on semiconductors in the 1980s to China’s strategy to beat the U.S. in 5G, non-quantum ecosystems have employed similar strategies for decades. EQ will do the same for quantum. In doing so, we can ensure that the U.S. has not only the best national security technology today, but for the next 50 years.

V. Private Sector Engagement: EQ is an industry-led consortium. Quantum in the Mountain West has already moved out of the lab. It is largely focused in high-TRL sub-industries, including quantum sensing and the manufacturing of quantum-enabling hardware. These two sub-industries account for the majority of CO’s >3K quantum industry jobs, spanning roles from technicians to PhDs (BCG [IMPLAN](#) & [CGIA](#)). Our industry maturity also drives an unmatched return on research investment, with CO producing 3.7 patents per \$1 million invested in quantum research, nearly 3x more than the next state (California at 1.36 per \$1 million) (BCG [IMPLAN](#) & [CGIA](#)). Every component project is designed to meet the needs of the QIT industry, which EQ is uniquely positioned to understand because of our industry’s maturity and engagement. **ACCELERATE:** Techstars, a global startup accelerator offering funding, mentorship, and networking to early-stage tech entrepreneurs, will provide mentorship, funding support, and networking opportunities to quantum startups, assisting them in scaling their operations and accessing global markets. They are also offering special rates and facilitating connections with investors and industry experts. Quantonation, as a renowned quantum-focused VC, has committed at least \$5 million in investment to power Elevate Quantum’s Venture Studio within ACCELERATE, fostering the growth of quantum startups. **Consortium Wide:** Local quantum computing companies like Atom Computing, Infleqion, and Quantinuum are helping ensure access to cloud-based quantum platforms, granting EQ consortium members direct access to advanced quantum computing resources. National tech giants, including Amazon, Google, Microsoft, NVIDIA, and SandboxAQ have joined EQ during Phase 1 (based on long-standing ties) and are contributing nearly \$10m of in-kind support for Phase 2.

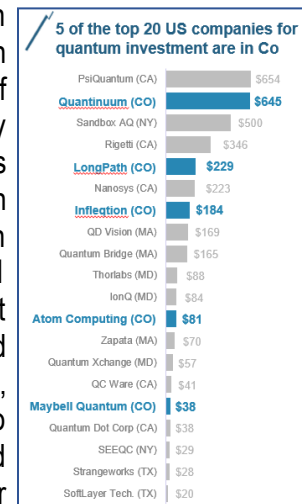


Figure 4: Top-funded US QIT startups

VI. Public Sector Engagement: EQ has significant commitments from state and local governments, international partners, and universities. **State Governments (CO, New Mexico, and Wyoming):** as previously described, Colorado has committed \$44 million to support the establishment of EQ’s fabrication and laboratory facilities and an additional \$30 million of funding for the Loan Loss Reserve. Leveraging the DOE’s experience with similar programs, this will unlock \$1 billion in loans. New Mexico committed \$10 million in funds to workforce development and infrastructure activities associated with INCLUDE and

CREATE projects. Wyoming, through its only R1 institution, the University of Wyoming, will deploy \$250k to supporting curricula training in quantum. **Universities (CU, Mines, CSU):** These R1 institutions have established a formal partnership to facilitate commercialization and translational research in quantum, including a Computer Science initiative (“R1CS”) on quantum software applications aimed at accelerating quantum software development. They are collaborating to create quantum research agendas, technology transfer policies, offer shared access to research facilities, and collectively allocate millions of in-kind contributions. **R1 Coalition Tech Transfer Offices (TTOs):** These offices have partnered and published tech transfer policies to streamline the transfer of quantum technologies.

VII. Tech Hub Sustainability: EQ’s market-driven approach supports enduring investment, collaboration, and growth. Integral to this are multiple funding streams: 1) CREATE Revenue, 2) Educational Programs, 3) Sponsorships, 4) Research contracts, 5) Equity Agreements, and 6) Philanthropic support. The CREATE component project serves as the revenue backstop for EQ, ensuring long-term sustainability alongside the other funding streams. Specifically, by year five, CREATE is projected to generate >\$150m in revenue over the first decade, generating operating reserves that can be re-invested via EQ into expanding operations and supporting other EQ initiatives that ought not to prioritize profitability. Modeling suggests that once stood up, these streams will cover EQ’s operating expenses.

VIII. Labor and Community Engagement: EQ is committed to ensuring the equitable distribution of the economic benefits generated by the quantum technology sector. Central to this approach is the inclusion of the AFL-CIO as an EQ Member and on the board of the Quantum Workforce Collaborative, which will ensure that labor considerations are prioritized from the outset of the quantum revolution. This includes EQ’s commitment to institutional neutrality on organized labor practices. Additionally, EQ will foster a cooperative environment where the contributions of workers are recognized and rewarded, reflecting a commitment to fair wages, local hiring practices, and the overall economic well-being of local residents.

IX. Equity Plan: EQ is dedicated to making its QIT community diverse and inclusive from the start. Under the leadership of some of the country’s most distinguished inclusive workforce leaders like NCWIT, EQ has prioritized evidence-based interventions from wider STEM to address marginalized groups such as women, people of color, veterans, and people with disabilities. EQ’s collaborative approach of curriculum development, recruitment, and accountability will be overseen by the QWIO, a priority hire, who will oversee workforce development programming, and the EQWC, a robust collection of workforce, industry, education, labor, and tribal organizations. Equity initiatives are baked into all our component projects.

- **CREATE:** aims to provide inclusive access to state-of-the-art quantum fabrication and laboratory resources by lowering barriers for quantum technology development for urban and rural populations. CREATE will ensure that founders, startups, and established companies, regardless of their background, can utilize cutting-edge facilities, fostering equitable economic growth.
- **ACCELERATE:** The LAUNCH phase focuses on nurturing diverse quantum startups, providing mentorship and funding. Access Mode, a key sub-awardee in LAUNCH, will expand its program with IBM at HSBCUs to help identify promising quantum founders and bring them into the EQ ecosystem.
- **INCLUDE:** EQ’s workforce programming is centered on access for and enablement of historically underrepresented groups in STEM. Its largest investments will be for non-degree holders from underprivileged backgrounds, including tribal, minority, veteran, and rural communities, with programs like the Quantum Learning Lab, based at Central New Mexico Community College (an MSI), technician training at Front Range Community College and MakerUSA (serving rural and Tribal populations). We will also increase Access for Underserved Groups through Inclusive Practices and Programs. Finally, EQ will focus on K12 education of marginalized groups with programs at the Denver Museum of Nature and Science and many public high schools in the region. Throughout, we will partner with consortium members to expand access to their breakthrough inclusion programs like



[The CO School of Mines' Society of Women Engineers](#), the largest in the country; the [CO Community College System](#), providing post-secondary education for >38% of CO's students of color; [Fort Lewis College](#), a federally designated Native American-Serving Non-Tribal Institution with a 27% Native American student body; and [NM State University](#), with over 60% the student body identifying as BIPOC. EQWC members also include the Ute Mountain Tribe and Southern Ute Indian Tribe.

- **UNITE:** ensures effective governance and oversight so that all voices are heard across the consortium through an effective feedback loop. UNITE aligns people, processes, and technology to activate EQ's vision of becoming a global QIT hub, addressing the needs of the ecosystem in a structured manner.

X. Goals, Milestones, and Expected Outcomes

- **ACCELERATE – LAUNCH:** launch 50+ quantum startups to bolster entrepreneurship within the quantum sector by year 5 of the hub. Interim Milestones, Year 2: Establish core programming. Year 3: Recruit full cohorts of startups. Year 4: Assist in the formation of over 40 startups. Year 5: Evaluate metric completion and assess ongoing support needs. Data and Evaluation: Track the number of startups launched, sectors served, and funding acquired during incubation stages. **SCALE:** Attract \$2 billion in funding for quantum startups and scale-ups over 10 years. Interim Milestones, Year 2: Launch loan guarantee program. Year 3: Achieve \$150 million in raised funds. Year 4: Reach \$400 million in raised funds. Year 5: reach \$800 million and evaluate future support mechanisms. Data and Evaluation: Monitor funding amounts secured, number of companies benefiting, and impact on regional economic development.
- **CREATE:** Will generate key profits for the financial sustainability of EQ. CREATE will break even in year 3, and generate **>\$18m in annual revenue in year 5 and over \$150m in its first decade**. Data and Evaluation: Utilization, revenue, profitability, user feedback, and demand analysis to guide facility enhancements.
- **INCLUDE:** Will deliver a comprehensive quantum/quantum-adjacent skills-based curriculum and training, encompassing a spectrum from K-12 education to upskilling. Metrics include training and upskilling >30,000 students and workers for quantum jobs by the tenth year of the hub and ensuring 40% of quantum jobs are filled by underrepresented groups. Interim Milestones, Year 2-5: Establish comprehensive training programs and partnerships, continuously monitor progress towards diversity goals, and adjust strategies accordingly. Data and Evaluation: Track training program enrollments, job placement rates, and demographic breakdowns of participants and job holders.
- **UNITE:** Year 1: Expand and ratify governing body, including EQ Executive Board, RIO, CIO/CAO, CCO, QWIO, and Industry, Science, and EQWC Advisory Boards; data-tracking CRM created, reporting metrics and cadence established via quarterly reviews; Year 2: Conduct quarterly governing meetings to track progress against KPIs convened; annual consortium and partner wide summits and hackathons hosted; Years 3-5: Hub revenue generation through CREATE component project initiated; Reporting and evaluation of component projects ongoing, revenue generation enhanced; Years 5+ Self-sustainability achieved by year five of post-EDA grant period.

XI. Anti-Displacement and Affordable Housing Strategy: EQ will leverage advantages provided by CO Amendment 123 to accommodate housing growth resulting from EQ. [Amendment 123](#) is a groundbreaking initiative passed in 2022, directing 0.1% of annual state income tax collections in CO toward affordable housing. This allocation is a first in the nation and is expected to generate between \$120 million and \$300 million annually in its early years. It also allows for investments in various affordable housing programs, including Land Banking, Equity, and Concessionary Debt. Local and Tribal governments can access these funds by committing to affordable housing projects, serving persons experiencing homelessness, and local planning capacity development.

XII. Phase 2 Updates: Between Phase 1 Designation and the Phase 2 application submission, the EQ has made significant progress and refinements to its vision and commitments for the Tech Hub, including:

Expansion of EQ Board: The EQ Executive Board added notable figures Dan Caruso, Eve Lieberman, Wendy Lea, Jesus Salizar, and **Matthias Troyer (Microsoft's Head of Quantum)**, showcasing a commitment to diverse leadership and expertise. More details are available in UNITE's application.

Launch of Quantum New Mexico Institute and Colorado Quantum Incubator: Consortium members have launched major quantum initiatives with EQ as a close collaborator. In Jan 2024, the University of New Mexico and Sandia announced the creation of the Quantum New Mexico Institute, modeled after [Colorado's JILA](#), the historic partnership between CU Boulder and NIST leading to 4 Nobel prizes. Colorado launched the Colorado R1 Coalition, a partnership between EQ, CU Boulder, Mines, and Colorado State University to commercialize top quantum technologies in the ecosystem.

EQ's Consortium Engagement: Quantum Future Summit with CO Governor Polis - CO Gov. Polis and EQ convened a [landmark summit](#), engaging over 100 organizations to chart the future of quantum in the region. This event unveiled several private sector partnerships and significant tax incentives that were unlocked by an initial \$1.5 million investment through CO's OEDIT during Phase I. Additionally, Gov. Polis unveiled CO's and NM's [\\$74 million in total commitments](#) that are contingent on EDA grant selection. WY will be committing funding through UWYO. || **Quantum Industry Panel with Senator Hickenlooper** - Senator Hickenlooper, in collaboration with EQ, CU Boulder, and JILA, assembled a panel of 11 quantum founders and CEOs, alongside other industry and academic experts. This gathering was pivotal in discussing the National Quantum Initiative (NQI) and Colorado's role in advancing quantum technologies. ||

Launch of the Quantum Workforce Collaborative - Reflecting a deep commitment to inclusivity and workforce development, EQ initiated the EQWC. This program aims to build a diverse and skilled workforce for the burgeoning quantum economy through partnerships like Qubit by Qubit, Womanium, NCWIT, CO School of Mines, CO Community College System, Fort Lewis, Ute Mountain Tribe, and Southern Ute Indian Tribe. || **Quantum Workforce Development Summit** - [A significant gathering](#) of over 200 stakeholders at CU in Boulder, CO, using funding from OEDIT, focused on addressing the gaps in the Quantum Information Technology (QIT) workforce, signaling a proactive approach towards creating a robust talent pipeline for the industry. || **EQ's Phase 2 Application** - EQ planned and executed a bottom-up application process for all consortium members, including: 5 consortium-wide meetings, >108 focus-group component project meetings, 10 board meetings, and commitment ratification with all the 116 consortium members.

EQ Member Funding and Technological Milestones: Quantinuum raised [\\$300 million at a valuation of \\$5 billion](#), demonstrating strong investor confidence and market validation of Colorado's quantum computing ventures. || **Maybell Quantum and Vescent Photonics** each received major funding rounds, underscoring the strength of CO's enabling hardware sector. || **Atom Computing** announced the deployment of a [1,200 qubit quantum computer](#) in Boulder, setting a new benchmark for quantum computing capabilities, and has received a \$60 million Series B. || **Amazon Braket** launched an innovative quantum computer chip designed in-house, significantly advancing error correction capabilities. || **Inflection**, recently receiving a \$100 million Series B, was awarded a significant contract to develop a neutral atom quantum computing testbed for the [National Quantum Computing Centre \(NQCC\)](#) in England, showcasing international collaboration and technological expertise. || **LongPath** received a [\\$200 million DOE loan guarantee](#) to expand a national network of quantum sensors for methane detection, reflecting the application of quantum technologies in addressing environmental challenges.

These collective efforts underscore the dynamic progress and strategic positioning of EQ and its partners in establishing a leading quantum technology hub. The integration of diverse leadership, collaborative industry summits, significant financial investments, and [groundbreaking technological developments](#) all contribute to a [robust foundation for quantum innovation](#) within the region and beyond.