

OVERARCHING NARRATIVE: The Bloch Tech Hub

SECTION 1: Executive Summary

By investing in quantum information science and technology (QIST, KTFA#3), the US can lead an industry providing \$970B in value by 2035 [1, BCG client report], transforming sectors and strengthening national security; failure to act now risks ceding US QIST leadership to China. Long-term quantum advancement hinges on addressing a critical barrier: the lack of integration between QIST development and end-use industry sectors. Spanning the Chicago-Naperville-Elgin (IL-WI-IN) MSA, **The Bloch will build tight technology development-industry sector feedback loops to drive adoption of end-to-end QIST solutions at scale [Fig. 1].** Through deep engagement between our globally recognized tech ecosystem and industrial base, The Bloch will:

1. Build a commercialization pipeline of high-readiness QIST use cases in sectors, starting with finance (e.g., fraud protection), and including energy (e.g., grid resilience), biotech (e.g., drug discovery), manufacturing (e.g., process optimization) and others prominent MSA players.
2. Launch and scale shared-use QIST infrastructure and programming, including the MSA’s first QIST co-development facility, the nation’s first commercial-grade quantum network, and nucleation for the nation’s first data center-based quantum computing resource.
3. Create the largest community college-centered QIST program in the nation, partnering with industry employers to build an equitable, accessible workforce.

With deep regional commitments and EDA as our catalyst, **The Bloch will translate QIST innovation into equitable regional economic growth and strengthened national security.** With 4-6% of the global QIST market by 2035, Chicago will generate **\$40-60B in economic value** and **10K-30K QIST** (70K-160K total jobs) — making the US the world’s leader in commercial QIST.

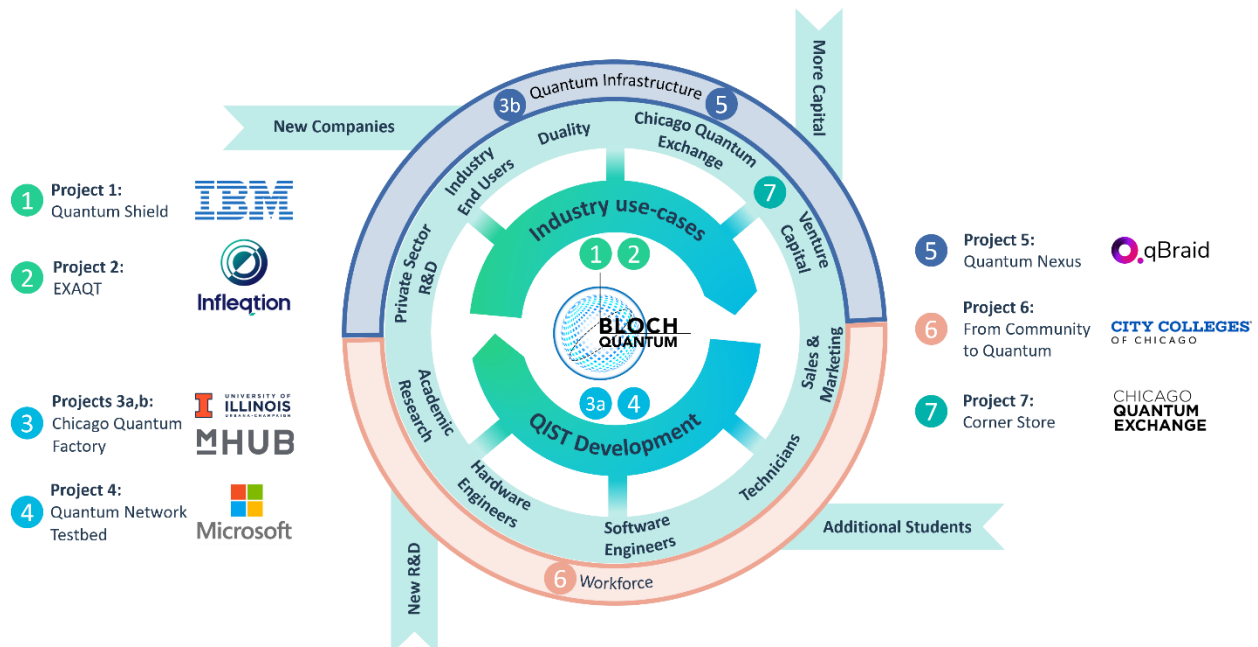


Figure 1. Ecosystem flywheel centered around QIST development-industry sector feedback loops, sustained by interconnected workforce pathways, infrastructure, innovation assets, and a constant stream of new inputs that grow the MSA.

SECTION 2: Synopsis

Overview of Quantum Technologies: QIST offers fundamentally new ways of processing, measuring, and transmitting information, with the potential to solve globally intractable problems with far-reaching equity implications, beyond the reach of current paradigms, including: reduced fraud; accelerated drug discovery; optimized transportation and logistics; secure communication and IT infrastructure; a strategic advantage in intelligence, defense, and cybersecurity operations; and opening new frontiers in navigation, medical imaging, and environmental monitoring [2,3].

Theory of Change: Lack of connectivity between tech development and end-use industry sectors is the greatest impediment to QIST advancement and commercialization [4]. Moving QIST forward requires coordination across public and private sectors to drive connectivity between hardware and software developers, end users, and resources to scale tech advancement. As several QIST platforms (superconducting, trapped-ion, etc.) are in competition, industry use cases must develop in tandem with these platforms. An informed, portfolio approach to tech and use case development will drive rapid learning for long-term QIST leadership across sectors. **The Bloch will integrate these quantum technology developers with priority industry sector users to accelerate adoption and speed further QIST development. This will transform industry competitiveness, strengthen national security, and provide pathways for good QIST jobs.**

Why investments are critical now: Quantum technologies are at a tipping point: breakthrough inventions are ready but need the support of end-use industry to guide scaling and commercial deployment. There have already been proven applications across quantum computing (e.g., credit risk assessment), sensing (e.g., MRI), atomic clocks (e.g., GPS), and communications (e.g., QKD) [5, 6, 7, 8]. This technology commercialization pathway will create up to \$970B in net income for users by 2035, including across multiple KTFAs. Investment now will guarantee US leadership for decades: 90% of the economic value of quantum computing estimated to go to its first 10% of adopters; those companies, regions, and nations are likely to become the global leaders [1].

Why the Chicago MSA: The Bloch is the nation's best bet to build a self-sustaining, equitable, and globally competitive region in QIST. Chicago's strong culture of collaboration, deep-tech ecosystem, and ability to operate at-scale, are preconditions for a quantum hub. We boast:

- A strong, **multi-sector business community of global corporations**—including 35 Fortune 500 companies—that are ready to co-create and be early adopters of quantum solutions. Our diverse regional economy, of which no sector comprises more than 14% [9], will feed into an ecosystem ripe for early adoption into additional sectors [10,11,12].
- Top **federally-funded QIST research**—the MSA leads QIST research nationwide, including four of the ten National Quantum Initiative Act Centers; Q-NEXT at Argonne National Lab and SQMS at Fermi National Accelerator Lab, each receiving \$125M in Department of Energy (DOE) funding; and QuBBE at University of Chicago (UC) and the Hybrid Quantum Architectures and Networks at University of Illinois Urbana Champaign (UIUC), each receiving \$25M in National Science Foundation (NSF) funding [13].
- **State government support**—Illinois awarded \$200M to the Chicago Quantum Exchange (CQE), UC, and UIUC from the Rebuild Illinois Capital Plan to support a joint research building in the MSA. See Section 6 for new commitments, including \$15M for The Bloch Phase 2, among \$500M for capital investments in quantum [14].
- Globally recognized R1 universities and national laboratories **that generate world-leading IP** and one of the country's **largest quantum-ready talent pipelines** with almost 60K degrees

and certificates annually in quantum-relevant skills (physical sciences, mathematics/statistics, engineering, and computer science): 4K PhD, 17K MS, 25K BA, 13K AS and certificates [15].

- **Innovation Accelerators**—including Duality, the first QIST accelerator in the US launched by UC, CQE, UIUC, P33, and Argonne, which supported 15 global startups—not restricted to home grown ones—that launched 7 new offices since 2021; Chain Reaction Innovations at Argonne, which supported three QIST startups, mHUB, and 1871.
- **Inclusive capital** attraction—including P33’s TechRise and SpeedRound and World Business Chicago (WBC), with the MSA as #1 for women founders, #2 for founders of color, and #1 for Latinx-founded companies [16].
- A robust QIST ecosystem—with **17 QIST companies**, 13 with a permanent MSA presence that is #1 in federal contracts nationally [17], and the **Chicago Quantum Exchange (CQE)** — one of the largest QIST consortia in the US, leading cross-sector collaboration and co-launching assets, including as lead agency of the Bloch EDA Tech Hub [18].
- Exceptionally **diverse demographics**—45% White, 30% Black, and 29% Latinx, including above national average shares of Latinx and female STEM talent (19% and 41%, respectively).
- **4.4M workers**, including 220K in STEM and 300K in business and finance [19].
- **Good job and union** opportunities, with a higher union density than other US cities [20], and across wide sectors for QIST including engineering, construction, trades, and research; and EDA-funded **P33 QIST plan** guiding QIST workforce scaling with good-paying jobs.

EDA funding will catalyze and enable global leadership: The Bloch will position the MSA as the foremost global QIST hub where industries identify, pilot, and solve pre-competitive solutions at scale. It will empower the rapid entrance and harnessing of new markets, de-risking innovation and driving forward a globally resilient technology [21]. With funding, The Bloch will overcome constraints to global competitiveness (See *Section 3*) by building: an MSA with diverse sectors leveraging QIST for their businesses, a distributed set of shared-use commercial-grade QIST facilities for tech development, and a scaled workforce to fit employers' needs. The Bloch’s tightly intertwined projects will build QIST tech development capacity and end-use industry sector integration of QIST solutions. Tech development-industry sector feedback loops will:

Build a commercialization pipeline of high-readiness QIST use cases in multiple sectors

1. **Quantum Shield**, led by IBM, will tackle financial fraud detection by creating feedback loops between partners such as Federal Reserve Bank of Chicago, Discover, BCG, and P33 to accelerate the commercialization of QIST solutions. Fraud detection already has high-readiness solutions and can be integrated into hybrid classical/quantum methods.
2. **EXAQT**, led by Infleqtion (a QIST-enabled products and software company), will create feedback loops between tech development and prominent MSA industry sectors – including energy (with EPRI, Southern Company, Exelon, and their respective ComEd and Nicor Gas subsidiaries, and VCs, including Chicago-based ECV and S2G), and other sectors.

Launch and scale shared-use QIST infrastructure and programs

3. **Chicago Quantum Factory**, led by UIUC and mHUB (innovation center) will provide an upstream quantum R&D facility and ecosystem to commercialize solutions that: facilitates hardware development, engages new talent, and anchors companies.
4. **Quantum Network Testbed**, led by Microsoft, will create the first commercial-grade quantum testbed in the US, comprising of QIST communications technologies paired with a commercial-grade fiber network and commercial proofs-of-concept.

5. **Quantum Nexus**, led by qBraid (a cloud-based platform for quantum computing), will develop the nucleation point for the first US data center-based quantum computing resource, which will provide MSA access to 12+ quantum simulators and emulators, and computers.

Create the single largest community college-focused QIST program in the nation

6. **From Community to Quantum**, led by City Colleges of Chicago (CCC) and Harper College, will grow a diverse QIST workforce by establishing four Quantum Workforce Education and Training Centers with industry-led curricula, training, and employment pathways.

Facilitate tight feedback loops the ecosystem to promote tech development

7. **Corner Store**, led by the CQE, will provide a structure for governance and leadership, as well as cross-project connection and operating support to The Bloch and MSA communities.

Diverse Members and Affiliates of The Bloch: Our Members and Affiliates span core components of the deep tech ecosystem [Fig. 2]. Following other successful models [22], Bloch Members signed an MOU codifying shared principles and outlining governance processes (sans government entities; see *Letters of Commitment*). See Section 12 for definition of Member organizations.

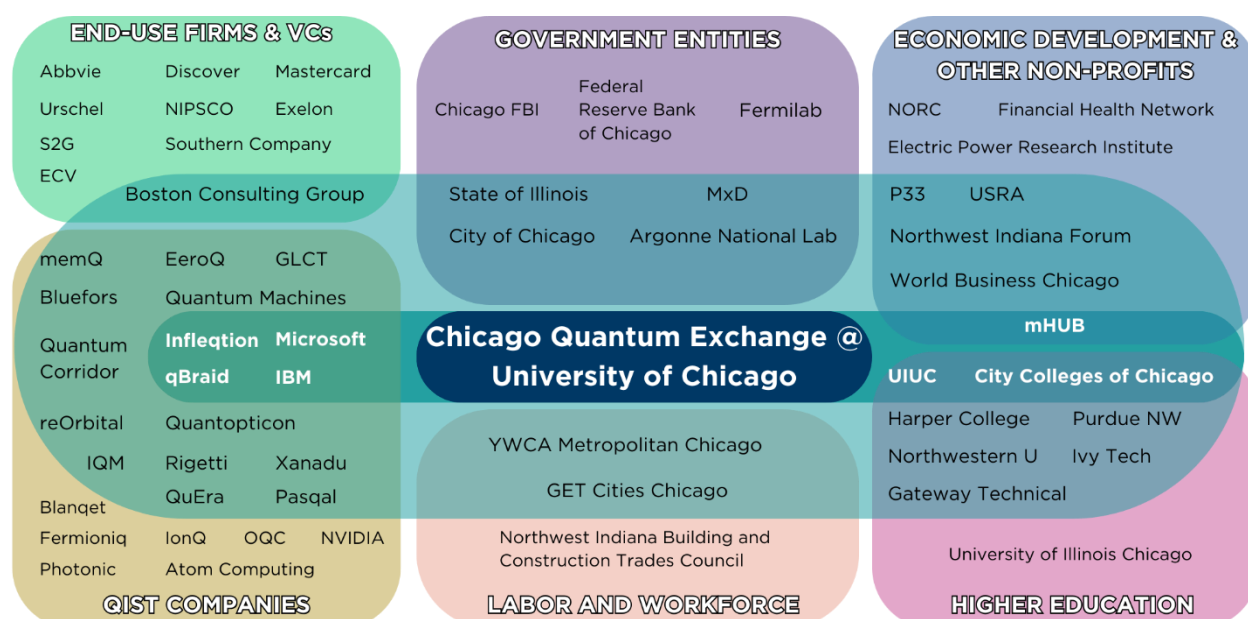


Figure 2. Project leads (inner), non-lead Members (middle), and Affiliates (outer) of The Bloch.

Investments and commitments: Members and Affiliates have committed over **\$625M in cost share and investments to the Bloch**, which includes \$505M from local government, \$105M from companies and firms, \$11M from institutions of higher education, and \$4M from economic development organizations. Detailed commitments are provided in the *Commitments Index* and individual *Letters of Commitment*. Highlights are shown in **Table 1**.

Table 1. Key commitments from Members and Affiliates to achieve Tech Hub outcomes.

Tech Hub Outcome	Commitment	Organizations
Ensure benefits of innovation and commercialization accrue locally	Events and consulting for quantum tech use case development and demonstration	P33, MxD, Abbvie, BCG, EPRI, NIPSCO, Purdue NW, reOrbital, Urschel, Discover, IBM, Infleqtion, NORC, Mastercard
	Providing equipment and related service to shared-use infrastructure projects	Bluefors, Quantum Machines, Quantum Corridor, mHUB, UIUC, Rigetti, Microsoft, reOrbital

	Providing access and services related to quantum computing technologies	Atom Computing, QuEra, Pasqal, IQM, OQC, Fermioniq, Xanadu, IonQ
Promote research-based entrepreneurship	Financially supporting shared-use infrastructure for quantum companies	State of Illinois, City of Chicago
	Attracting investment into infrastructure, innovation, and entrepreneurship	qBraid, mHUB, City of College, ECV, State of Illinois, Argonne
	Increasing QIST infrastructure access	UChicago, Argonne, Northwestern, Fermilab
Attract and retain talent	Engaging labor unions to plan for future workforce needs	City of Chicago, NWI Forum, NWI Building & Construction Trades Council
	Hiring regional employees and interns	qBraid, Atom Computing, QuEra, memQ, USRA, EeroQ, Quantopticon, reOrbital, GLCT, Blanqet
	Providing infrastructure or advisory capacity to support quantum education and training centers	Gateway Tech, Harper College, Ivy Tech, NWI Forum, CCC, Purdue NW, Inflection, IBM, Microsoft, GLCT, qBraid
	Training to support quantum and business workforce development	NVIDIA, Northwestern, Microsoft, UChicago, P33
Accelerate innovation through DEIA	Training and work-based experiences in and for underserved communities	Gateway Tech, Harper College, NWI Forum, Ivy Tech, CCC, P33
	Engaging and hiring in underserved communities	MxD, qBraid, mHUB, USRA, EeroQ, Quantopticon
	Providing wraparound services and support for job retention and career growth	YWCA, GET Cities
Create and elevate economic development leadership for local cross-collaboration	Incentivizing and providing concierge level service to quantum companies in Chicago	City of Chicago, State of Illinois
	Identifying QIST as a key industry cluster	State of Illinois
	City, community, and alderman liaison	WBC, City of Chicago
	Policy changes at the State of IN to advance quantum commercialization	NWI Forum, Purdue NW, Quantum Corridor
	Convening stakeholders to form advisory councils for workforce pathways	Ivy Tech, Gateway Tech, CCC
	Including job opportunities in regional portals	City of Chicago

Embedded equity: The Bloch will take a four-pronged approach to embedding equity throughout its projects and broader work: (1) prioritized use-case development (e.g., financial fraud, energy) chosen in part because they unduly impact underserved communities; (2) shared-use infrastructure in underserved communities, lowering barriers and increasing access to QIST [Fig. 3]; (3) workforce programs run by MSIs with supports for underrepresented populations (See Section 9). To cement this approach, the RIO will develop an Equity Plan, with consultation from the Advisory Board’s Equity Chair and approval from The Bloch Steering Committee.

Climate: The Corner Store’s Equity framework will enable each project to assess and reduce or improve potential environmental impacts, including, though not limited, to construction, new and existing equipment,

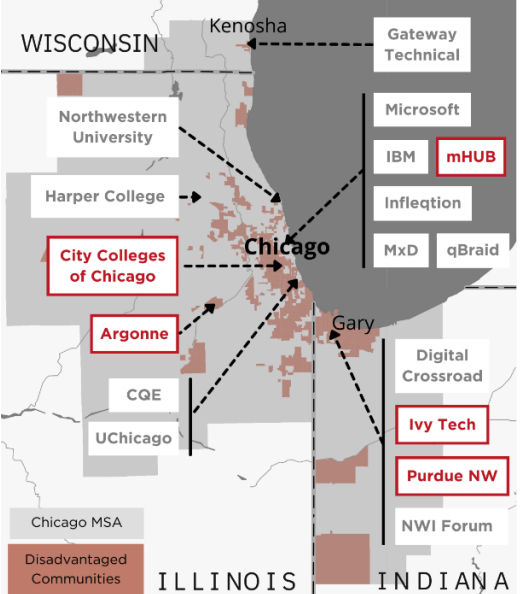


Figure 3. Bloch activities across the Chicago MSA. CEJST communities in red.

pollution remediation, and others, particularly as they pertain to underserved communities. Additionally, the Chicago MSA has a strong advantage: our nuclear-powered grid uses less power than cities operating under other forms of energy [23].

Outcomes and timeline: The Bloch will evaluate success based on quantitative and qualitative outcomes, including total factor productivity increase from sectors integrating QIST, tech commercialization at facilities, increase in jobs and companies, and workforce program impact on trainees and employers. Over five years, the Bloch forecasts \$2-3B in economic value generation, 1-2K QIST jobs and 4-8K indirect jobs, including: by 2035, the MSA can expect \$40-60B in value, 10-30K in QIST and 70-160K total jobs (See *Section 10*).

Some high-level milestones include:

- Year 1-3: Demonstrate QIST use cases for finance and energy; Factory construction completed, equipment acquired, and companies use facilities; Quantum Network Testbed and GPU compute cluster built and accessible; From Community to Quantum Centers launched with industry and internship pathways; Governance and operation structures established.
- Year 3-5: Expand use cases to additional sectors (e.g., biotech, manufacturing); The Factory, Network Testbed, and QNexus revenue generating facilities become self-sustaining through commercial operations; Students from workforce programs enter workforce.
- Post-award: The Bloch is self-sustaining through revenue, partnerships, and government and philanthropic funding; community workforce partnerships scaled around the region.

SECTION 3: Potential Obstacles to Technology Advancement and Commercialization

Lack of business awareness: Despite over 100 quantum computing applications identified across industries [7], bilateral gaps in awareness – QIST’s evolving capabilities and the opportunity to leverage them for business – persist among users and developers [4]; **EXAQT** will build feedback loops between to reduce these barriers. *Lack of use case-driven development for end users:* Limited exchange of expertise and data between QIST developers and end users slows tech maturation. Engaging industry leaders through **Quantum Shield** and **EXAQT** to apply QIST to high-value applications, especially financial fraud and energy, will speed the tech development rapid path for end-to-end commercial solutions. *Technology access:* QIST development and deployment infrastructure is often inaccessible due to cost and institutional barriers, which decelerates the tech maturation needed to support industry adoption. This issue is addressed directly by shared-use QIST infrastructure and related programming, including **Chicago Quantum Factory** providing cost-limiting for-rent facilities for companies, without the IP or collaboration of universities and national labs; **Quantum Network Testbed** integrating commercial fiber with early commercial quantum devices for customers; and **Quantum Nexus** reducing costly barriers to quantum computing and building an attractive nexus for future quantum hardware deployment. *Limited workforce gap:* the supply of talent does not meet the demand for QIST jobs, which increased 4x from 2018 to 2022, hindering the scaling of the quantum sector [24]. Bridging this gap requires scaling pilot and new training programs and pathways [25], as planned in **From Community to Quantum**. *Need for a consortium:* A “region-first” orientation is crucial for ecosystem-wide integration, communication, and action. **The Corner Store** will provide structures that leverage our region’s strong public-private partnerships to build a long-lead pipeline of prospective QIST users for all projects and tight feedback loops that continually monitor economic trends, such as evolving industry workforce requirements. It will ensure that the Bloch continuously learns and improves as it overcomes these obstacles.

SECTION 4: Nexus between QIST, Chicago, and National and Economic Security

Given the tremendous economic power of QIST, US economic and national security is at stake. We stand at an inflection point, with the potential to cement decades of US investment (See *Section 2* for QIST in Chicago) for up to \$970B in annual value creation by 2035 or risk ceding leadership to other global players. Global QIST leadership is critical to US national security by offering: tech sovereignty, sector leadership, enhanced security, and threat mitigation.

Connections between **QIST advancement, national security and economic competitiveness, and the Hub's competitive advantage** include key policies for national security and economic growth from the National Strategic Overview for Quantum Information Science [26]:

- Balancing the benefits of economic growth with new risks created by the technologies, particularly with an influx of new sectors, organizations, and people that the Bloch will attract, which are key to QIST development and end-use industry sector incorporation, and an expanded workforce (See all Projects and *Overarching Risk Mitigation*).
- Enhanced industrial engagement and infrastructure improvements and ensuring these enhance national security and provide economic growth. The Bloch's efforts will foster QIST within the US, prevent innovators from seeking support elsewhere, and securely attract international companies to the US as they expand (See *The Factory, Corner Store*).
- The Bloch universities, DOE national labs, and companies are at the forefront of the changing science and technology landscape in QIS and will help the MSA and the nation maintain an understanding of evolving security implications of QIST; five Members of the National Quantum Initiative Advisory Committee come from Bloch Members [27].
- The Bloch universities, DOE national labs, and companies ensure consistent application of existing classification and export control mechanisms through existing connections, which The Bloch will expand on to include community colleges, innovation centers, and commercial and labor groups (See *Risk Mitigation plans, Corner Store*).

The Bloch will ensure that security is maintained in Phase 2. The Assistant Director, Risk Mitigation will work with all Projects, cybersecurity firm, the Risk Mitigation working group, and annual FBI QIST Security Symposia (See *Corner Store* and *Overarching Risk Mitigation*).

SECTION 5: Private Sector Participation

The Bloch has a history of deep private sector quantum computing and communications partnerships across multiple industries; these partners are actively committed across component projects [Fig. 2]. IBM and Microsoft—private sector leaders in QIST technology—and Inflection and qBraid—will lead 50% of Bloch Component Projects. Financial firms like Discover and Mastercard and energy groups like Southern Company will anchor their industries as early QIST adopters (See *Quantum Shield* and *EXAQT*). In addition, Projects will attract both providers and users of quantum technologies to the MSA (e.g., international companies Quantum Machines and Bluefors, have made significant commitments to have a local presence in The Factory). Quantum computing companies, including Rigetti, QuEra, and Microsoft, have committed to providing access to their machines via the cloud and GPU clusters in the region (See *Quantum Nexus*). The private sector has also committed to hiring at least 80-180 employees from our region's students and jobseekers, as highlighted in the *Commitments Index*.

SECTION 6: Government Commitments and Investments

The Chicago MSA benefits from strong government support and QIST investment (See *Section 2* for past investments). New commitments to The Bloch's vision for quantum innovation include:

- State of Illinois: Allocating \$5M in cost share; \$500M to solidify Illinois’ leadership in QIST, including \$10M to directly support *Factory* shared-use infrastructure; identifying QIST as a key industry cluster; suite of incentives to help quantum businesses locate and grow.
- City of Chicago: Providing concierge level services for quantum companies; incorporating quantum job opportunities into regional portals; connecting the quantum ecosystem with labor unions, community organizations, and secondary school pathways.
- State of Indiana: State of Indiana funds for investments to workforce and commercialization.
- Federal Entities: Federal Reserve Bank of Chicago will convene leading financial sector companies and government entities, including the Chicago FBI who has been deeply engaged (see *Quantum Shield*). Chicago FBI also commits to supporting Bloch security efforts (See *Overarching Risk Mitigation*) and working with the Assistant Director, Risk Mitigation.

SECTION 7: Sustainability Plan

The Bloch will launch sustainability planning on day 1, including a Sustainability Plan developed and updated annually by the RIO, with Steering Committee approval, that includes:

- Considerations for individual Component Projects and The Bloch overall.
- Both long-term forecasts as well as rapid response opportunities, led by the RIO with their positioning given consistent engagement with external partners and The Bloch Members.
- Funds from: rental and other facilities fees; state and federal, CHIPS and Science, NQI Reauthorization, and other, legislation; private, corporate philanthropy; corporate partner and other dues—in conjunction with the CQE Corporate Partner program, and universities.
- Continuous Innovate Illinois support on federal funding opportunities, marketing, workforce development opportunities across the region (See *State of Illinois Letter of Commitment*).
- Includes adaptability and creativity, including data-informed rearticulation of The Bloch vision, structures, and governance to respond to funding decreases and potential increases.

The Capital Chair of the Advisory Council will provide guidance, feedback, and leverage their network to make connections to the broader funding community, particularly new funding sources.

SECTION 8: Labor Union Engagement

Good jobs and labor unions are a key part of the Chicago MSA. The Bloch is committed to engaging labor unions in construction. Northwest Indiana Forum (NWIF) will lead good jobs and union engagement (See *Corner Store*) that engages stakeholders, produces a report sharing the QIST labor and union landscape in the MSA, and provides actionable guidance to employers on Recruitment and Hiring, Benefits, DEIA, Empowerment and Representation, Job Security and Working Conditions, Organizational Culture, Pay, and Skills and Career advancement [28]. NWIF will lead Indiana-based stakeholder engagement, for example with the Northwest Indiana Building and Construction Trades Council; and collaborate with the City of Chicago’s Deputy Mayor for Illinois Labor Relations engagement. The City of Chicago will also: 1) identify workforce gaps and create a Chicago-focused plan to meet future needs; 2) build out the roadmap to create a clear pathway to allow for populations with lower workforce participation in the tech sector access to high road jobs; 3) participate as lead Illinois partner in NWIF-led quantum labor convening.

SECTION 9: Equity across Regional Communities

The Bloch embeds equity throughout its projects, with an overarching goal to ensure jobs created by The Bloch are accessible across the MSA. To maintain equity as a priority across all component projects, the RIO will develop and implement an Equity Plan, approved by the Steering Committee, that outlines how activities will reach, serve, and benefit MSA underserved

communities. The Plan will address inclusion in QIST research and commercialization, climate, and environmental impact assessments of all Projects, including consideration of the region’s history and gentrification for infrastructure projects, and grid resilience and energy costs (See *EXAQT*). Additionally, partners and Projects commit to equity in their work across five key dimensions. Selected examples, further detailed in *Letters of Commitment*, are:

- **Location of infrastructure investments:** Placing facilities and programming directly in underserved communities will help stimulate local economies including transportation, utilities, affordable housing, internet access, and culture (See *Chicago Quantum Factory*).
- **Job creation and skills training:** By providing employment opportunities in underserved areas and investing in accessible community college, technician training, and employer-driven workforce development The Bloch will aim to foster a local workforce to meet QIST’s demands and also increase incomes, build and retain wealth, reduce poverty, and enhance overall quality of life for decades to come [Fig. 3].
- **Access to capital and entrepreneurial support:** Providing access to capital, mentoring, and networks will allow entrepreneurs to promote innovation at the early stages of the Chicago MSA’s QIST landscape, contributing to a more diverse and equitable ecosystem (See *Factory* location, *Quantum Nexus* access goals, and *Corner Store* Quantum Connections).
- **Involving diverse voices across The Bloch, including in use case priorities:** Ensuring industry prioritizes innovation on use cases that have real-world impact for underrepresented groups. For example, Quantum Shield aims to reduce fraud in the financial sector, which unduly impacts lower income and historically disadvantaged groups. IBM commits to increasing the number of minority-serving and regional banking institutions engaged in workshops and forums that will help bring financial security to these areas.

The Equity Chair of the Advisory Council will provide guidance and feedback to the Equity Plan, and regularly review metrics on The Bloch’s goals to build an inclusive QIST MSA.

SECTION 10: Expected Outcomes and SMART Goals

Table 2. SMART goals to be evaluated by The Bloch to reflect the impact of component projects.

Goal	SMART Details
Build a commercialization pipeline of high-readiness QIST use cases in multiple sectors, with anchor Industry and QIST participants for each	<ul style="list-style-type: none"> • In the first 2 years, build an alliance of key financial and govt stakeholders and identify and explore 2 financial fraud detection QIST use cases, disseminating learnings within the sector through workshops and more broadly through a best practices document for building and deploying industry-drive QIST use cases (See <i>Quantum Shield</i>) • Over 5-year Implementation period, identify 4 high-readiness use case sectors through conversations with ecosystem partners and execute a 4-step program for each sector to ensure end-user guided technology development, further building out best practices for industry-QIST commercialization (See <i>EXAQT</i>)
Launch and scale shared use QIST infrastructure and programming	<ul style="list-style-type: none"> • In 12 weeks, remodel existing space within hard tech accelerator mHUB to deploy \$30M dedicated co-development QIST instrumentation, ordered within 4wks of award, and create related support business and commercialization programming (See <i>Chicago Quantum Factory</i>) • Within 3 years, build a testbed and paid proof of concept model for Quantum Key Distribution-based security protocols, offering QKD-secured connectivity as a paid service in year three (<i>Quantum Network Testbed</i>) • Within 30 months, build and scale a quantum commercialization facility with a remotely accessible GPU cluster and streamlined access to compute resources (See <i>Quantum Nexus</i>)
Create the largest community college-centered QIST program in the nation, partnering with	<ul style="list-style-type: none"> • Over 5 years, establish 4 Quantum Workforce Education and Training Network (QuNetwork) Centers, featuring stackable credentials and expanded work-based learning opportunities, building and expanding a

industry employers to build an equitable, accessible workforce	Business and Industry Leadership Team, to ensure close alignment with industry needs and trends (See <i>Community to Quantum</i>)
Develop an overarching structure that will both field governance for The Bloch and work to further build across projects.	<ul style="list-style-type: none"> • Within year 1, lay the governance foundation by hiring key staff/appointing key committee leads and creating shared governance documents, and ensure refreshed participation by assessing and appointment new Steering Committee members every two years (See <i>Corner Store</i>)

Economic Value and Jobs: The global economic value created by QIST is forecast to grow from \$10B value today to \$50B by 2030 and \$970B by 2035 [(1, BCG 2024 client report)]. With early investment, Chicago is poised to become a top global tech hub and capture 4-6% of that value; \$2-3B by 2030 and \$40-60B by 2035. At an average wage of \$110K/year and 20-30% of value creation going to wages, that value translates to 4-8K jobs by 2030 and 70-160K by 2035; of those jobs, 20% are forecast to go to quantum technology providers, implying 1-2K quantum tech jobs by 2030 and 10-30K by 2035. 20% of quantum tech jobs are estimated to be in technician roles [29], many of which require domain skills but can be done without a four-year degree [30].

SECTION 11: Growth Plan

As Chicago becomes a leading center for QIST, attracting companies, jobs, and investments, we foresee increased demand for housing and infrastructure near educational and industrial centers. The Bloch’s Equity Plan will attend to these evolving needs and proactively work with state, municipal, and other partners to: safeguard residents from displacement; enhance job access for low-income and assisted housing communities, for example by connecting training centers with improved bus routes, and enhancing transportation to key quantum and employment areas; and labor group engagement (See *Corner Store*).

SECTION 12: Activities between Phase 1 Designation and Phase 2 Submission

New Commitments: The Bloch’s many new commitments from Members and Affiliates are highlighted in narratives and *Commitments Index*, including State of Illinois commitments of \$15M directly for The Bloch, among \$500M for the related quantum ecosystem. Since designation, The Bloch vision has been integrated within the Illinois vision for CHIPS-related investments, which is being shared through meetings with State employees and legislators. Early efforts are underway with State of Indiana legislator. A State of Illinois Department of Commerce and Economic Activity inventory of quantum startup needs guided the development of *The Factory*.

Refinements to Approach: While the overall vision of the Bloch remains unchanged, detailed strategies have evolved. This includes the expansion to all QIST, from an initial focus on quantum computing and communications, upon guidance from internal and external experts, to ensure inclusion of sensing industry use cases and technologies, such as biotech. The Bloch also expanded on the finance focus (See *Quantum Shield*) to include future sectors of energy, biotech, and manufacturing sectors (See *EXAQT*) as likely early MSA adopters of QIST. We identified equipment, location, providers, and users for infrastructure. We focused our workforce strategy on employer-led community college pathways.

Changes to Consortium Membership: To enable clarity for future growth, we defined consortium membership to include organizations making substantial contributions to The Bloch. The size of The Bloch has increased since Designation, driven by strong ecosystem coalition-building [Fig. 2]. We define Members as organizations making at least three: financial contributions of \$100K; regional economic development commitments; commitments to engage underserved communities; component project leadership; and multi-project participation. Our diverse Affiliates also share the vision of The Bloch and participate in at least one component project.