



A Proposal to Strengthen the
Center for Blockchain and Digital Innovation

A Pioneering Spirit

The pioneering spirit has always been an essential element of the Wyoming way. From early homesteaders to fur traders, to roughnecks to suffragettes, adventure and enterprise has guided Wyoming's people for generations. These industrious men and women have transformed our state, blazing bold trails, and seizing opportunities to build new paths of promise and prosperity.

This same steadfast spirit is alive and well at the University of Wyoming as we reimagine the way forward. This time, our trail will be illuminated by the new and innovative technologies that are transforming the global marketplace. These technologies will create untold advances and UW is ready to develop the flexible systems required to capitalize on these opportunities.

A Partnership with the State

No other state has invested as much legislative bandwidth and enacted more blockchain-enabling laws as Wyoming. Since 2017, Wyoming has passed 20 laws with the intent to attract blockchain technology companies to Wyoming. In addition to enabling legislation to allow this nascent industry to experiment with new business concepts through Wyoming's new financial technology sandbox and clearly defined legal rights within the state's commercial laws, Wyoming created the first new type of bank charter in 40 years to help bridge the traditional financial system with new digital asset technology.

In the last three years, Wyoming has become the only U.S. state to provide a comprehensive regulatory structure for blockchain technology. With many close ties to state and federal regulators, UW is well positioned to support Wyoming's effort to diversify its economy, to create a global financial services hub in Wyoming, to establish an environment for blockchain companies to flourish, and to profoundly enhance UW's revenue sources.

UW is bolstered by a robust partnership with the State of Wyoming. It is in this environment that we have created the UW Center for Blockchain and Digital Innovation (CBDI) this past October. The business models and applications of blockchain promise to dramatically affect the lives of individual citizens, business practices, the day-to-day processes of government, and international trade and relations.

The State recognized that a bold legislative approach was needed to remain competitive, to attract new business investment in the state, fuel opportunities for UW graduates, and diversify its revenue sources. To date, Wyoming is the only jurisdiction that has defined digital assets and has set appropriate guardrails for digital asset innovation, which is creating a new regulated financial services industry around blockchain and digital assets.

Our Vision for Excellence

Our vision is bold but attainable. We seek to make the University of Wyoming a world-class leader in blockchain education, research, economic development, and commercial impact. Blockchain is a new type of database technology, but its applications reach far beyond computer science and engineering into financial services, business, law, agriculture, healthcare, and other uses of the technology. The blockchain market was valued at 1.57 billion U.S. dollars in 2018 and is forecast to grow more than hundred times to 163 billion U.S. dollars by 2027⁽¹⁾. To succeed, blockchain needs both talented engineers to write code and capable users who know how to commercialize it and solve real-world problems with it. The Center will focus on financial technology and business use applications relevant to industries (e.g., agriculture, environmental credits, energy, financial services, rural health, et. al.) critical to the diversification of Wyoming's economy.

Moreover, the CBDI serves as an interdisciplinary umbrella for blockchain efforts across campus. It is the central point for university-wide strategy, planning, information sharing, networking, and collaboration for persons conducting research, teaching, or professional service in blockchain activities. Blockchain technology uniquely fits the Four Pillars that UW is striving to attain – Blockchain is Entrepreneurial, Digitally-focused, Interdisciplinary in its execution, and nothing is more inclusive than new technology services in blockchain activities.

The Center works in collaboration with academic and research units across campus to connect them with major blockchain companies and Wyoming-based organizations. These collaborations will enable UW to become a major thought-leader in blockchain research, and educational opportunities both within the state and with outside entities.

Additionally, the CBDI benefits undergraduate, graduate, and professional students on a cross-disciplinary basis, including faculty and students from the College of Engineering and Applied Sciences, the College of Agriculture and Natural Resources, the College of Law, and the College of Business. Students learn the latest developments in blockchain technology and create innovative, path-breaking knowledge and practical applications, often based on real-world market relevant use cases. The Center also supports industry by offering non-degree seeking learning opportunities (e.g., executive education, seminars, skills development training).

Key Objectives

Through collaborative partnerships, the CBDI strategic plan includes:

- Providing students, business professionals, and government agencies with educational opportunities to acquire the foundational principles and technical blockchain skills that will shape society in the years to come, as well as encouraging the development of creative, technical, and systemic thinkers.
- Overseeing a research hub that produces new ideas based on interdisciplinary research collaborations with UW faculty, external researchers, and industry experts in fields of blockchain, digital assets, Artificial Intelligence, Machine Learning, and the future trajectory of the financial services industry.
- Create Public-Private Partnerships (PPP) with the State(s), industry/corporate partners, and UW to identify and execute on tokenization projects to benefit the State and generate independent sources of revenue for UW.

- Target legacy processes, technologies, and intermediaries ripe for disruption within agriculture, financial services, health sciences, and the legal industries.
- Partner with State leadership to facilitate efforts to diversify the State’s economy, attract new employment opportunities, retain talent in the state, and generate new sources of revenue from blockchain and digital asset companies.

Educational Opportunities

As outlined in the key objectives, the CBDI will provide distinctive educational opportunities. The primary goal in this area is to develop interdisciplinary, and technology-agnostic programs that create opportunities for existing students as well as professionals.

1. Undergraduate Minor (Fall of 2021)–

A 2020 report from LinkedIn⁽²⁾ found that familiarity and understanding with blockchain systems was the number one most sought-after skill requested in job postings. The interdisciplinary undergraduate minor program will serve the purpose of preparing the current undergraduate students from different academic backgrounds to work in any industry that would likely be impacted by blockchain and digital assets technology. This flexible minor will allow students from across UW’s colleges to customize a minor program utilizing a core group of blockchain courses followed by electives in accordance with their college.

2. Online Certificate Program in Blockchain and Digital Assets (In development) —

The audiences for the certificate program are working professionals seeking to supplement their education and work experiences with more skills-based training. Broad application of these skills drives student demand for shorter, non-terminal programs that supplement their education in specific industries, such as healthcare, agriculture, finance, engineering, computer science, energy, and law. Offering an online certificate program structured around the instruction of these foundational blockchain principles skills will help to meet increasing student and employer demand. The certificate could be integrated into existing graduate and professional programs (e.g., MBA) to serve additional markets.

3. Executive Education and Future Educational Offerings (In development) –

Executive education would be a non-credit-bearing program targeted toward professionals and executives in fields that are likely to be impacted (retail supply chains, finance, agriculture, health sciences, etc.) by blockchain technology. Instructional offerings would include seminars (both face-to-face and web-based) and guest speaking engagements. Other offerings could include summer training programs, and conferences with learning opportunities.

4. WyoHackathon (Present) –

Our annual conference and software competition for blockchain developers, entrepreneurs, and companies to experience the blockchain community, develop innovations, and learn about opportunities through blockchain technology. Our 2020 event drew over 4,300 participants from 97 countries:

- DevCon – A developer-centric programming conference and hackathon with programmers from around the world competing for corporate challenge rewards totaling \$150K (in 2020).

- BizCon – Technology, industry and academic experts gathered to explore how decentralized information and value exchange online is transforming business.
- LawCon – Top federal and state regulators and blockchain legal experts discussed current challenges facing blockchain technology, virtual currencies, and the law while earning CLE credits.

Research Opportunities

One of the main objectives is for UW to become a research hub in several key areas. To this end, the Center will coordinate with public and private entities at every level: local, regional, national, and international industrial partners.

The CBDI is building collaboration with industry experts, creating opportunities for sponsored faculty research, and conducting interdisciplinary research with faculty and external researchers in fields of economics, finance, law, computer science, engineering, health sciences, and agricultural business. The CBDI is presently pursuing collaboration with other key university's blockchain centers at Arizona State University, University of Arkansas, Carnegie-Mellon, Columbia University, Cornell University, Duke University, University of Michigan, MIT, Stanford, University of Texas, Notre Dame, and Cardiff University.

Industry and grant funded research efforts are already underway. The Department of Computer Science at UW has recently received \$1M in funding; \$500K from IOHK Global and the other \$500K matching grant by the Wyoming Legislature. These funds were used to establish the UWYO/IOHK Advanced Blockchain Lab. This research lab is working on several open-source projects. Among the current efforts is the ongoing development of Domain Specific Languages for writing Smart Contracts (a language for non-programmers to be able specify and execute smart contracts). The main mission of the lab is the design of computer hardware and software implementing cryptographically secured protocols that can be used to establish provenance of consumer products. Additionally, the CBDI has brought in a further \$900K; \$450K in private donations with an additional \$450K by matching grant funds from the Wyoming Legislature, since its creation in October of 2020.

Furthermore, the Center has identified over \$3.5M in blockchain-targeted grants for research and faculty training that we are pursuing. These funds can facilitate research by offering awards specifically for blockchain technology that are funded by grants and donations from industry partners in the technical aspects of blockchain.

Public Private Partnerships (PPPs)

The CBDI is working on several PPPs that involve collaborations between Wyoming state agencies, private sector companies, and UW to finance, build, and operate tokenization projects that promise to dramatically change environmental and financial service program delivery and promises to significantly impact the university through independent sources of revenue:

1. Greater Sage-Grouse Mitigation Credits – working in cooperation with the College of Agriculture and Natural Resources, College of Engineering and Applied Sciences, Pathfinder Ranch (and other ranches in an 11-state area), and Wyoming Game and Fish Department, the CBDI will develop

and manage a tradable tokenization program that preserves and maintains sage grouse habitat as defined under Wyoming HB 13 that became effective October 1, 2020.

2. Carbon Capture Credits – develop and manage a program that creates a tradeable token for carbon credits and facilitates national and international attempts to mitigate the growth in concentrations of greenhouse gases (GHGs). Each carbon token would be equal to one ton of carbon dioxide or carbon dioxide equivalent gases.
3. Reinsurance Tokens – working with the Bermuda Monetary Authority, develop a tradeable token for reinsurance companies. Additionally, Wyoming’s Division of Banking is signing a cooperation MOU with the Bermuda Monetary Authority in early 2021.
4. Expansion of the Teton County Land Titling Program to other Counties -- first announced in December of 2018, Teton County is the first county in the United States to record land information (including warranty deeds, mortgages, release of liens, and other similar documents) on a blockchain-based platform.

University Actions

The CBDI’s Strategic Plan calls for three actions that would be greatly accelerated through additional commitment and support by UW:

1. Blockchain Awareness – a campus wide effort would be fast-tracked to ensure that every university unit is aware of blockchain technology, how Wyoming has differentiated itself in this industry, and how this technology could positively impact UW and its stakeholders. UW has made significant progress in this area to date, specifically with the creation of the CBDI; but there is more work to be done to make sure students, faculty, staff, and the community are aware of the opportunities available.
2. Understand the Blockchain Capabilities of the University and its Faculty – UW needs a comprehensive inventory of the capabilities of our existing faculty in each of our educational units. If UW is to educate the finest blockchain-trained students, we need to ensure that our faculty can deliver on its educational promise. After an understanding of our current capabilities, outside resources will need to be identified and engaged that can temporarily fill UW’s voids and aid in providing the exposure and training needed for our faculty.
3. Economic Development – Wyoming needs to develop a blockchain economy to capitalize on the enabling blockchain legislation. Through cooperation with state agencies, and economic-focused groups within the state such as the Wyoming Business Council (WBC), Wyoming Industry Network (WIN), Wyoming’s strong community college network, and the local Chambers of Commerce, the CBDI strives to bring companies to Wyoming that will utilize our students, engage our faculty, and provide ongoing support to the university. Let us not let our UW-educated students continue to be one of the state’s chief exports.

Conclusion

Your increased support for this effort will ensure that the new University of Wyoming Center for Blockchain and Digital Innovation will rise to become a global blockchain innovator bringing together engineering, law, business, and agriculture to create a thriving blockchain ecosystem in Wyoming and beyond.

(1) Blockchain technology market size worldwide from 2017 to 2027: Statista 2020

(2) <https://101blockchains.com/blockchain-is-a-top-skill/>