



Research and Economic Development Committee, Open Session

University of Wyoming
Salon C, Marian H. Rochelle Gateway Center
2026-09-23 15:00 - 17:00 MDT

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VII. 5:00 p.m. Adjourn

Research and Economic Development Committee

COMMITTEE MEETING MATERIALS

AGENDA ITEM TITLE: Research Excellence Presentations

- ☒ OPEN SESSION
☐ CLOSED SESSION

PREVIOUSLY DISCUSSED BY COMMITTEE:

- ☐ Yes
☒ No

FOR FULL BOARD CONSIDERATION:

- ☐ Yes *[Note: If yes, materials will also be included in the full UW Board of Trustee report.]*
☒ No
☐ Attachments/materials are provided in advance of the meeting.

EXECUTIVE SUMMARY:

Power Theory

Luke Macy

Hometown: Cheyenne WY, BS. Computer Systems Engineering (ASU), MBA, PhD candidate, Civil Engineering

Power Theory is a Wyoming hardware-enabled software company. Our PowerTwin platform serves manufacturers and commercial customers through on-site sensors that detect equipment failures and energy waste before they become costly, and a distribution cooperative engages us to forecast its monthly billing peak. We are now extending the platform to entire communities by simulating every building in a county from public data. In Teton County, simulated residential energy use across 15,487 buildings matched utility records at accuracy that typically requires metered data. Locally funded energy nonprofits and rural electric cooperatives are our initial markets.

EcosAtlas

Christian Bitzas

Hometown: Powell WY., BS Computer Engineering, MS Electrical Engineering

Founded in January 2026, EcosAtlas is a Laramie-based business and industrial intelligence platform building a continuously updated map of U.S. companies, manufacturers, capabilities, and supply chains. It has resolved more than 25 million business profiles from over 500 million records, helping organizations find suppliers, understand regional industries, and make improved decisions. Founder Christian Bitzas drew on his University of Wyoming education, IMPACT307 support, and engineering, manufacturing, and entrepreneurial experience leading UplinkRobotics past \$2 million in total revenue before EcosAtlas. EcosAtlas is now being piloted by Manufacturing Extension Partnerships for supplier discovery, outreach, mapping, and industry analysis.

IronForge Automations

Thayne Thatcher

Hometown: Laramie WY., BS Marketing and Entrepreneurship

IronForge Automations builds custom software and automation for Wyoming's small and mid-sized businesses. A four-person architecture firm competes against national firms with engineering departments behind them. A family print shop competes against a web vendor three states away. IronForge closes that gap. Founded by Laramie native and University of Wyoming graduate Thayne Thatcher, the company has delivered sixteen contracts to seven Wyoming businesses across manufacturing, architecture, construction, printing and hospitality, from Laramie to Gillette. Four of those clients have hired it more than once. IronForge came directly out of the Venture MBA, Impact 307 and the John Evans Fund.

PRIOR RELATED COMMITTEE DISCUSSIONS/ACTIONS: Information only

WHY THIS ITEM IS BEFORE THE COMMITTEE: Information only

ACTION REQUIRED AT THIS COMMITTEE MEETING: None

PROPOSED MOTION: N/A



Power Theory

September 23, 2026

Board of Trustees | Research and Economic Development Division

Luke's Story Fall 2022



Luke's Story Spring 2023

LARAMIE
BOOMERANG

NewsSportsObituariesAnnouncementsCalendarOpinionPhoto GalleriesHomesClassifiedsJobsContestsCirculars

Student creates app to track UW campus energy use, emissions

Carrie Haderlie Laramie Boomerang Feb 2, 2023 Updated Mar 8, 2024 0



University of Wyoming students take a bus to campus in August 2022. Sustainable transportation is one of the recommendations made by the Environmental Advisory Committee.
Laramie Boomerang/File

Opt-Out Signal Honored

A University of Wvoming student has created an online platform that presents real-time, daily campus energy



Win FREE Groceries for a Year!



Women of Influence Nominations

PASSED: UNANIMOUSLY



	SENATE RESOLUTION #2868
TITLE:	ASUW's Support for the Campus Heartbeat Initiative & Improving Energy Efficiency of Buildings On Campus
DATE INTRODUCED:	April 11, 2023
AUTHORS:	Director of Sustainability Macy and Chief of Legislative Affairs Smith
SPONSORS:	Senators Bouma, Castronovo, Engelby, Ewalt, McLean, Meiklejohn, and Stadler; ASUW President Brown, Director of Governmental & Community Affairs Heddins, Director of Student Outreach Murfitt; First-Year Senators Chaudhari, Keasling, Knopp, Lake, Mahoney, Medina, and Worcester; Sustainability Coalition

1. WHEREAS, the purpose of the Associated Students of the University of Wyoming
2. (ASUW) is to serve our fellow students in the best manner possible; and,
3. WHEREAS, the ASUW Director of Sustainability, Luke Macy, created the Campus
4. Heartbeat web application for educational purposes and to enable a method for the public
5. to access energy consumption and emissions data (i.e., electricity, domestic water,
6. chilled water, hot water, and greenhouse gas emissions) of the University of Wyoming's
7. (UW) campus buildings; and,

Power Theory's Story 2024 -2025

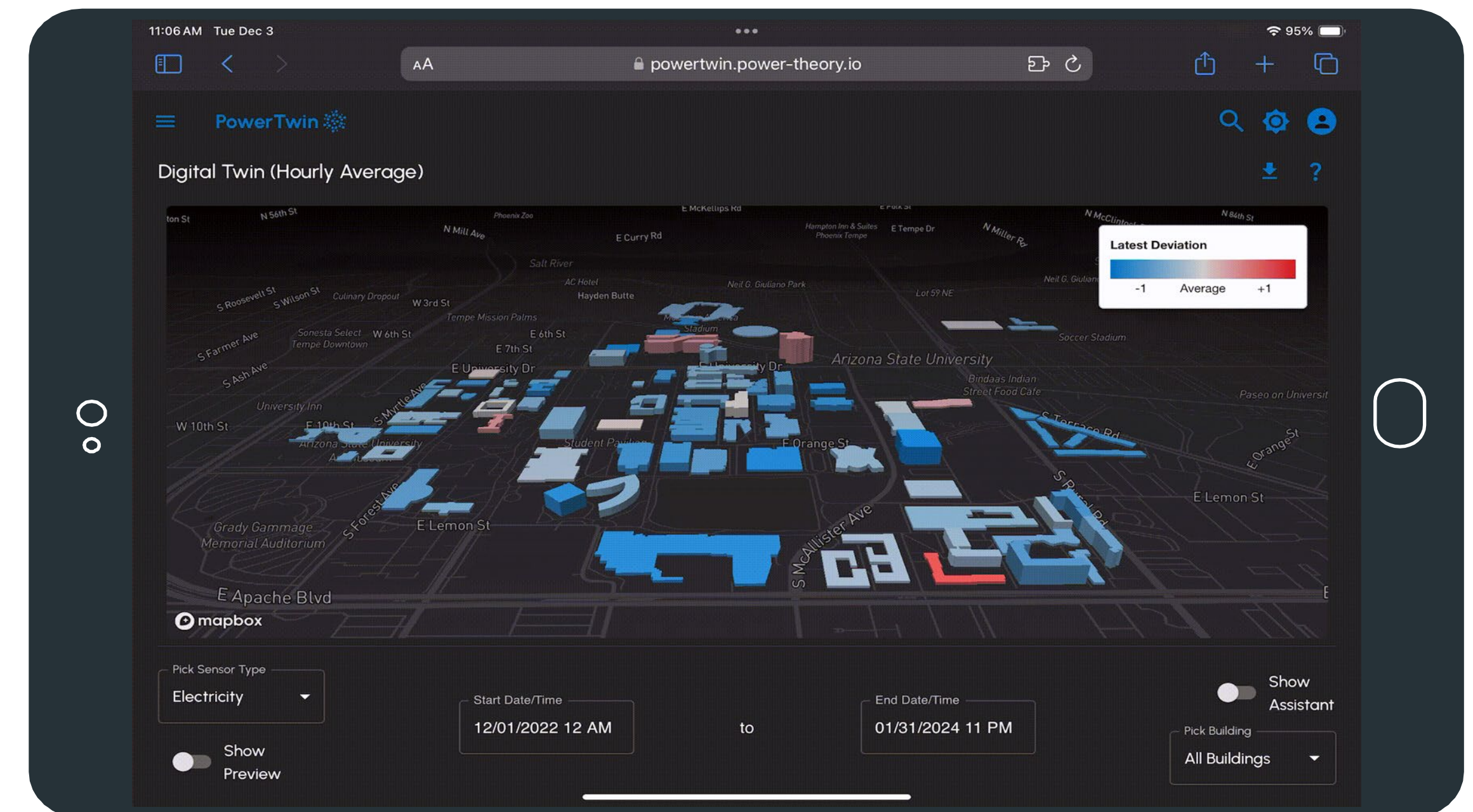


The Problems

- 
- An iceberg graphic with a small portion above the water line and a much larger portion submerged. The submerged portion is divided into several triangular facets, suggesting hidden or overlooked problems.
- Buildings waste ~30% of their energy (EPA ENERGY STAR, 2020)
 - 60% of maintenance time is reactive (ServiceChannel, 2024)
 - Data centers will drive half of US demand growth, pushing rates up (IEA, 2025)
 - Downtime costs \$10k-\$50k per hour, up to \$100k (L&H Industrial, 2025)

A Personalized Evolving Model of a Physical System

- “Smartwatches for buildings”
- Hardware -enabled software to predict & diagnose anomalies causing downtime and waste
- Digital Twins as a Service (DTaaS)



powertwin.io

Sherlock Holmes & Dr. Watson In Your Pocket

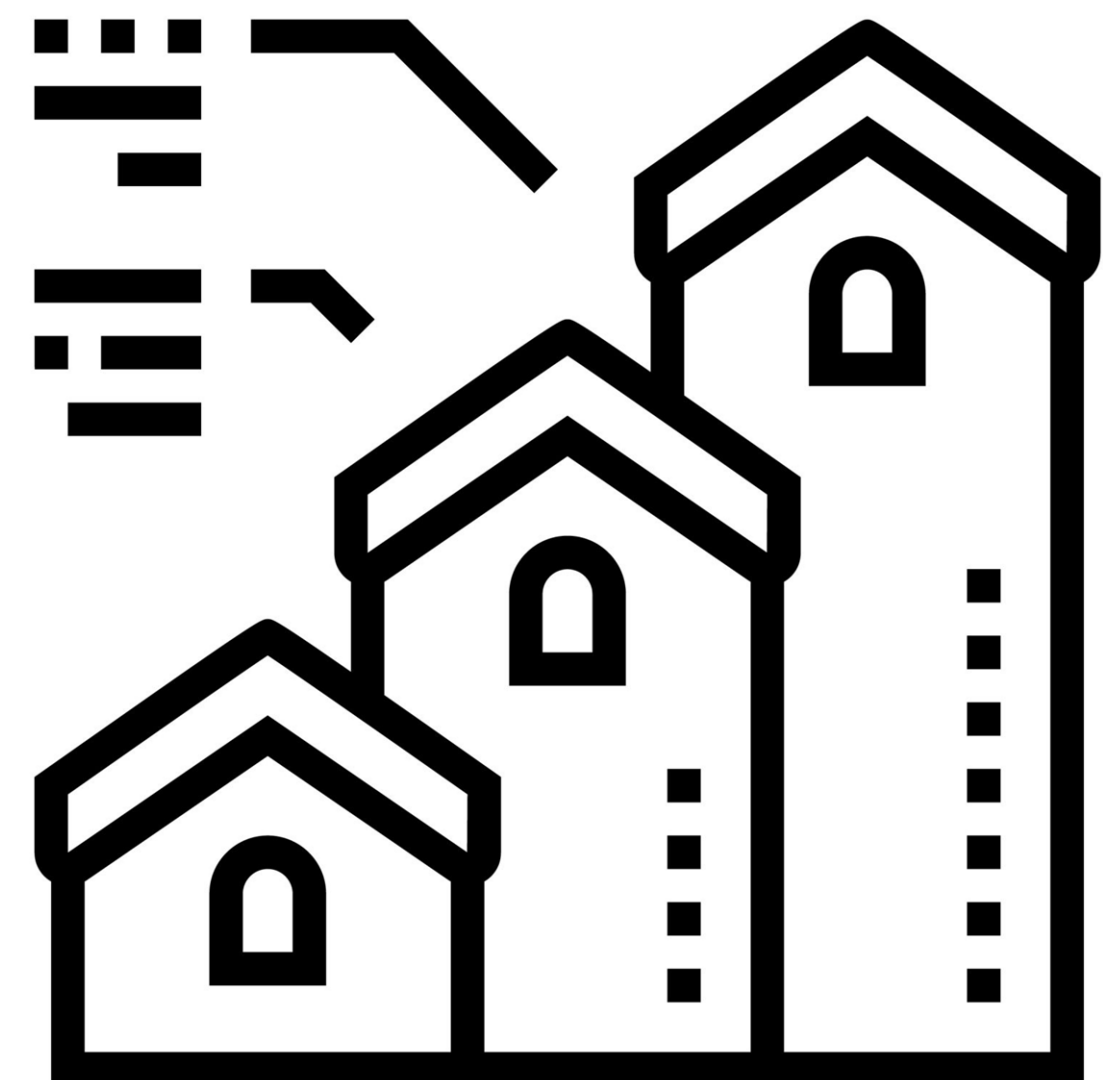
Track the space/region (Physical Layer):

1. Who, when, where?
2. What is the **root cause**?
3. What can be uncovered with hardware and without hardware?

Help develop a solution (Digital Layer):

1. Detection and forecasting (Simulation)
2. Speed up understanding the (LLMs)
3. Assistance in **tuning models**
(Agents/MCP)

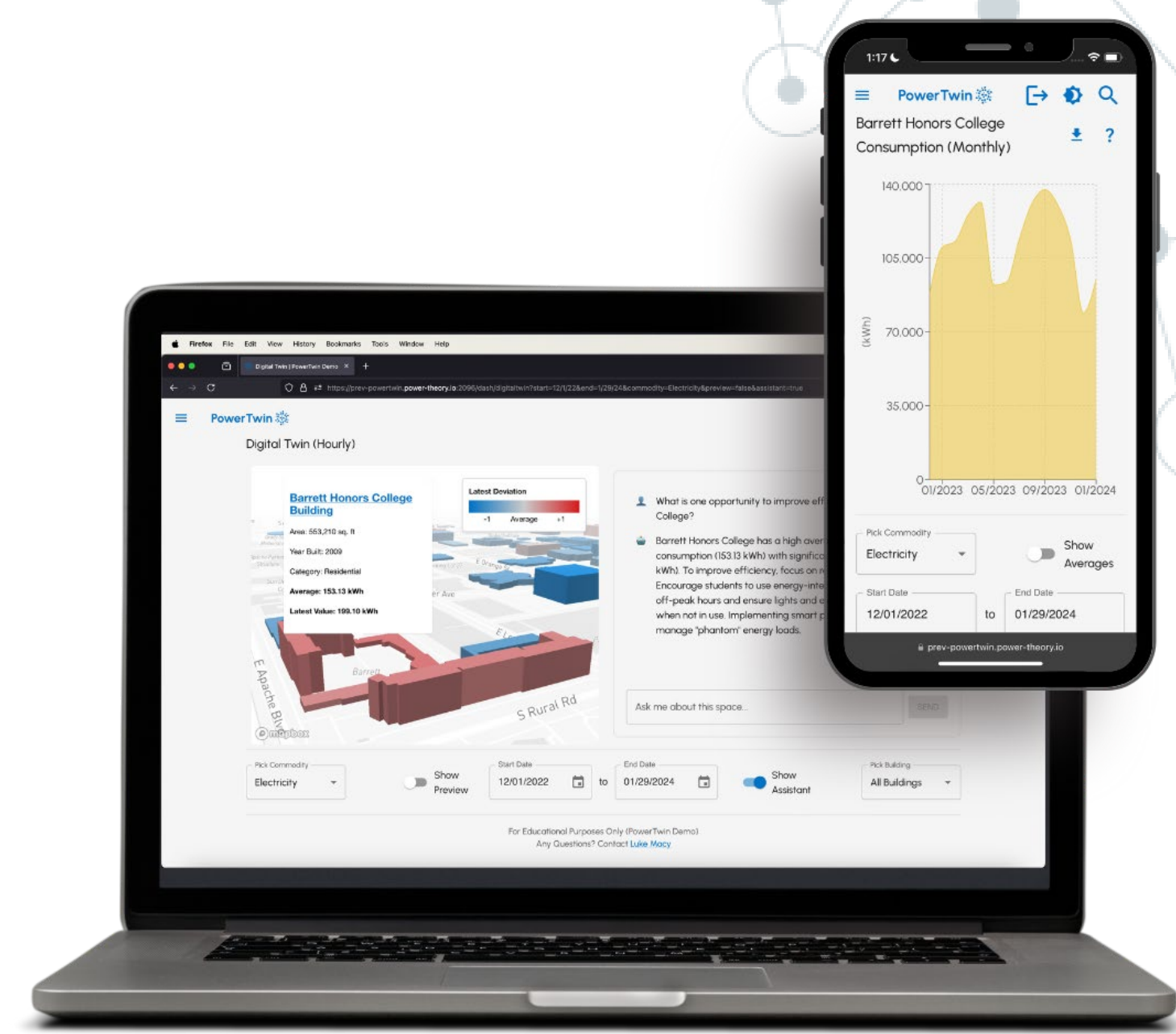
Urban Building Energy Modeling (UBEM)



Communities:
of Buildings

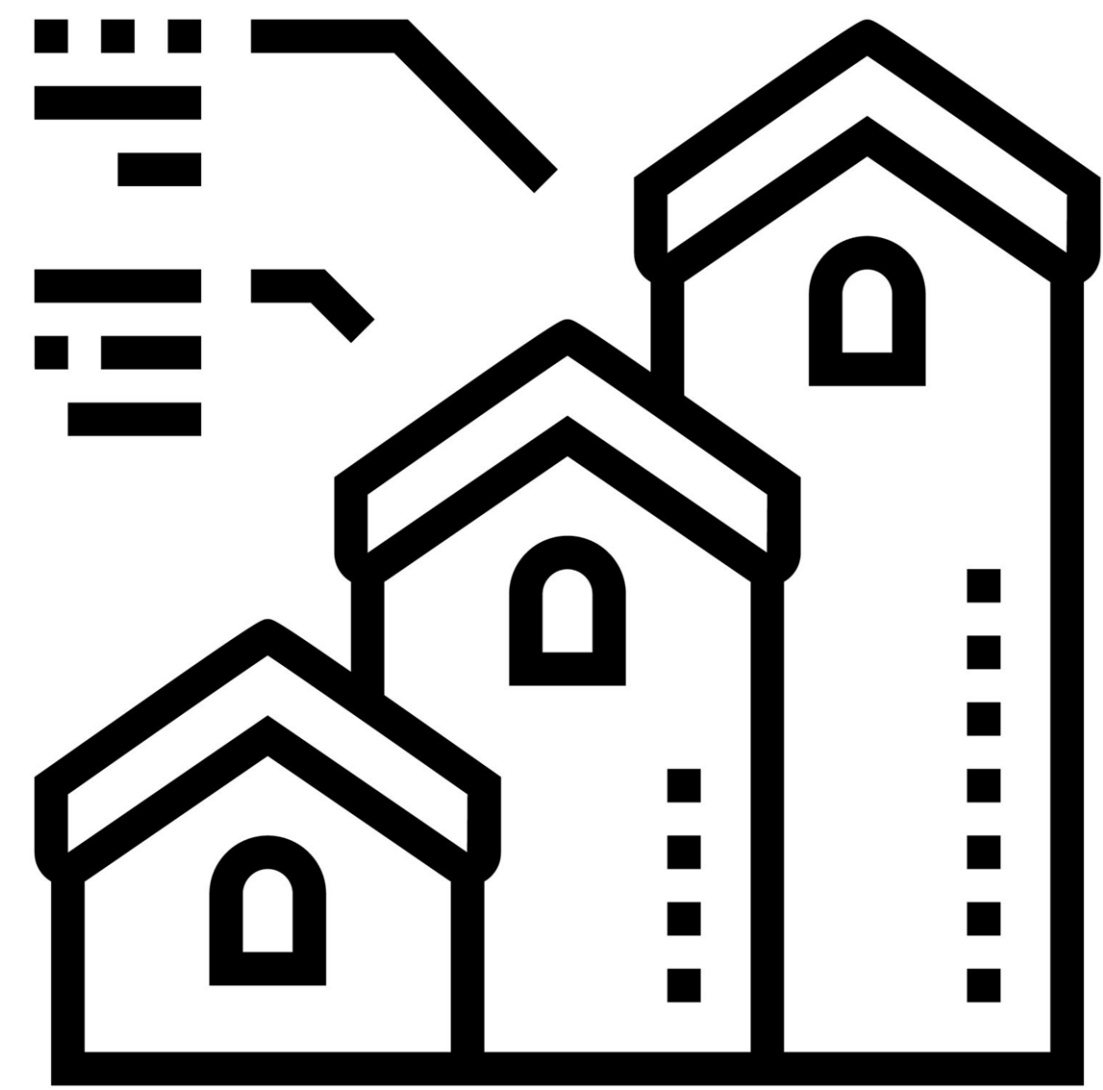


Building
Simulations

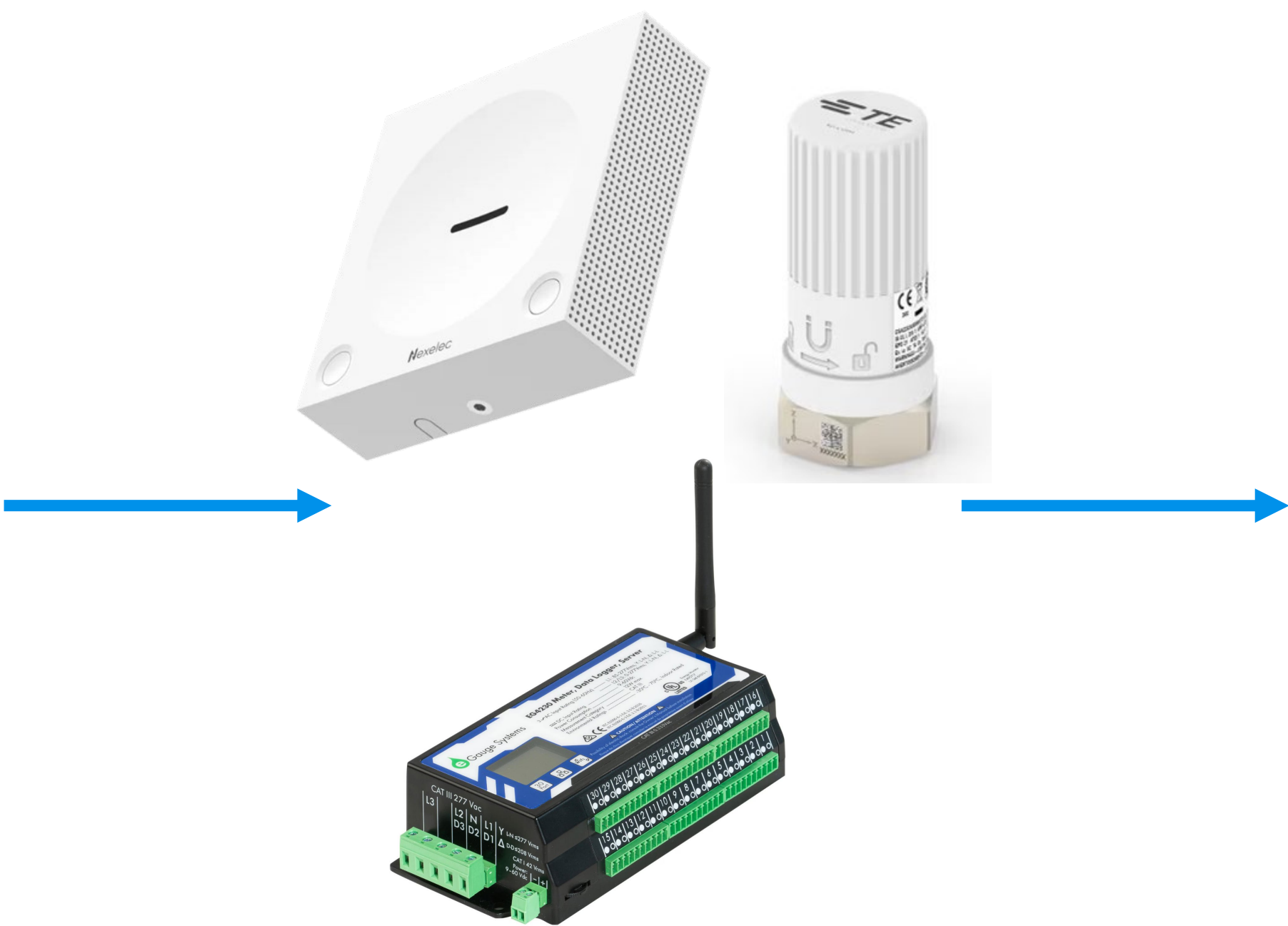


PowerTwin

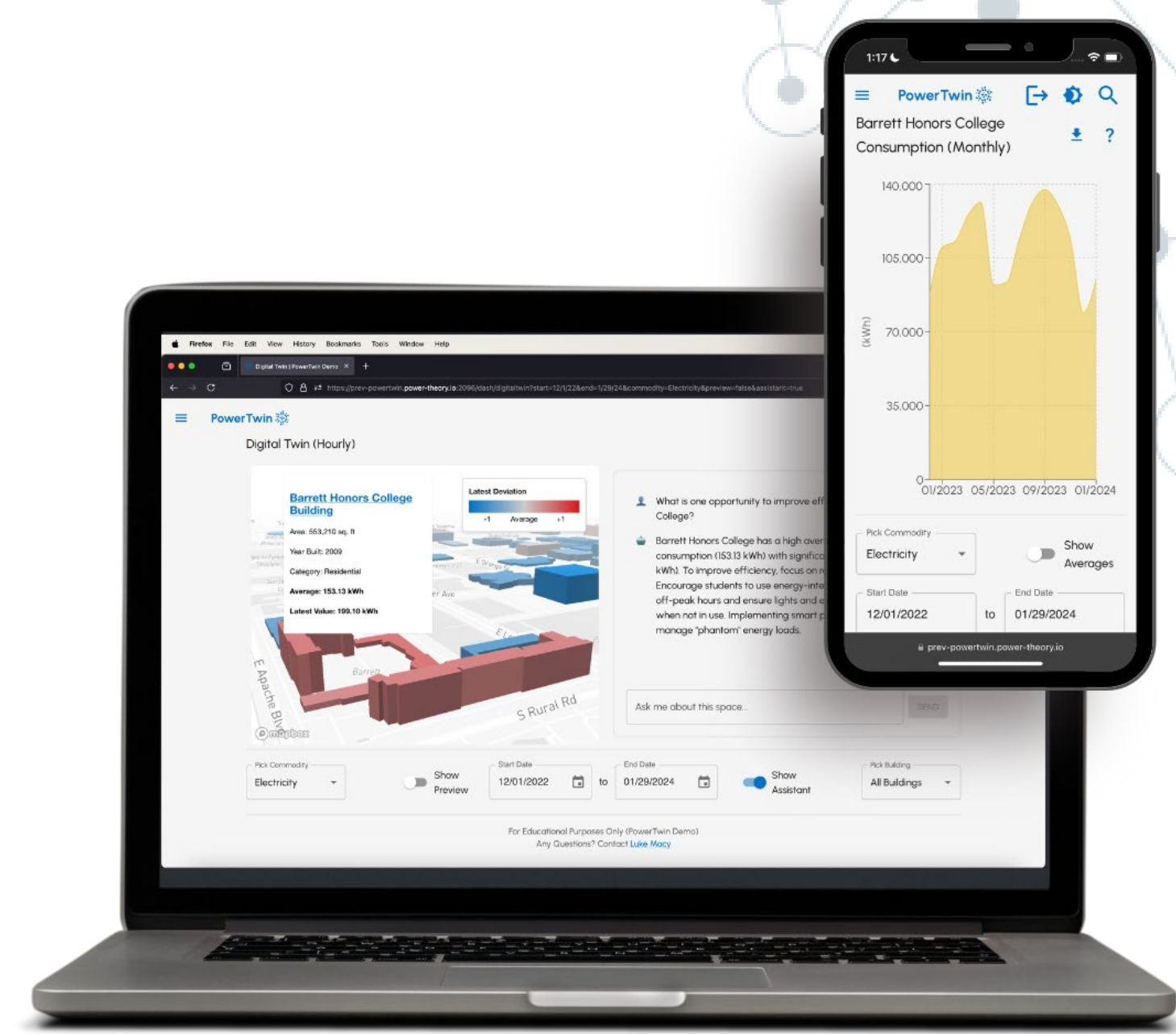
Building Energy Modeling (BEM)



Facility:
of Sensors



Multi -functional
Sensors



PowerTwin

Partners & Collaborators



Innosphere
TECH. SCIENCE. ACCELERATED.

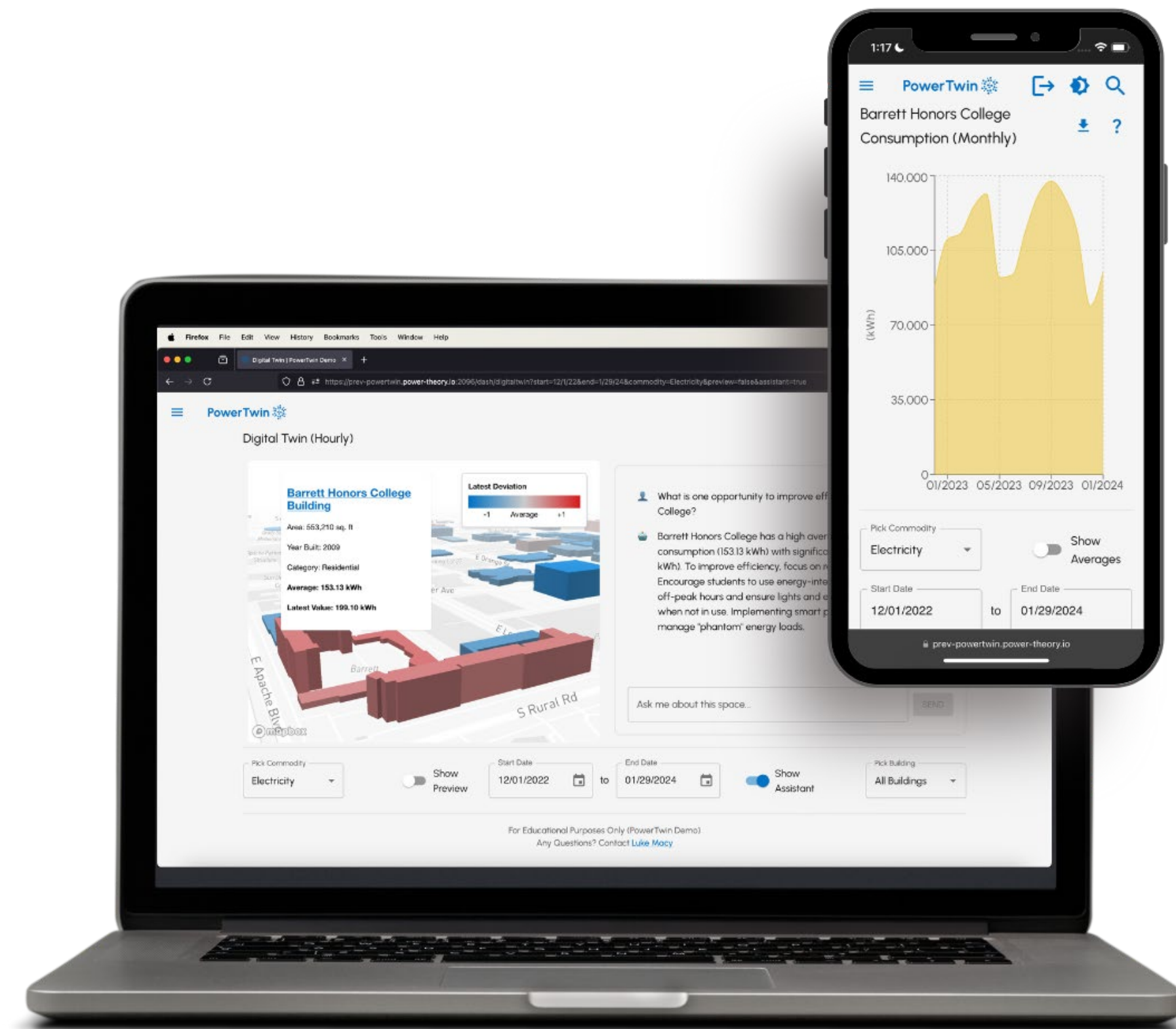


ENERGY
CONSERVATION
WORKS



Thanks!

Luke Macy (CEO)
lukem@powertheory.io



powertheory.io



The **Living Map** of American Industry

Continuously updated intelligence on U.S. businesses, capabilities, and supply chains

Christian Bitzas - Founder



American Industrial Capability Is Difficult to

See. Critical business and capability information is scattered across incomplete, disconnected, and quickly outdated sources.



AtlasAI : Ask the Question Exactly as You Would Say It.

AtlasAI converts a plain-language project need into a verified and ranked supplier search.

The Input Prompt

Plain Language

"I have a data center moving to Wyoming. I need a list of every company here that can work with them, how they can help, and what stage of the data center moving they can help with."

AtlasAI Automated Workflow

- 1 Decomposition**
Breaking down prompt into search criteria
- 2 Scouting & Search**
Scanning database for capabilities or needs
- 3 Company by Company Analysis**
Individually analyzes each company
- 4 Labeling and Sorting**
Labels, sorts, rationalizes based on user requests

One natural -language request becomes a complete, evidence
scouting workflow.

- backed supplier



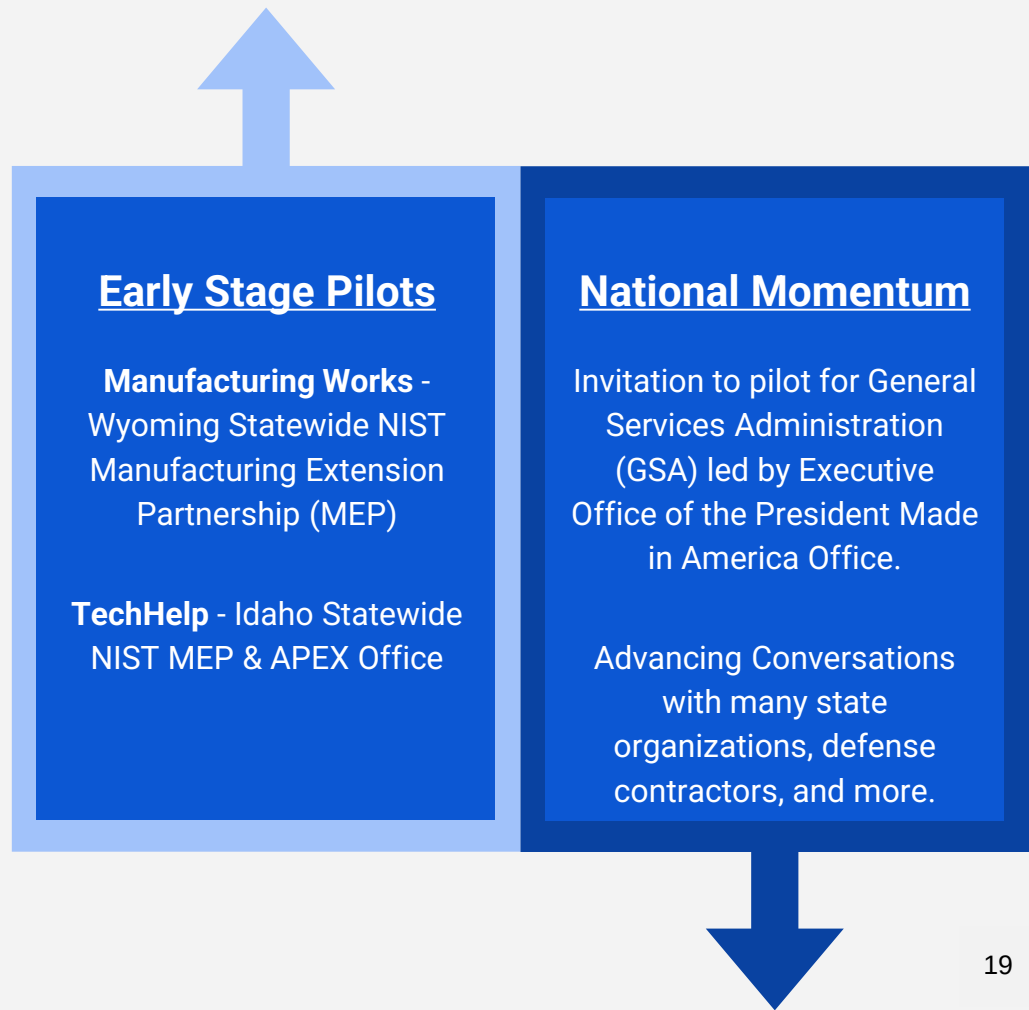
Supplier Scouting Is the First Application, Not the Limit

The same living industrial map can support decisions across academia, industry, and government.



Early Use Is Validating the Need

Regional pilots are producing practical value while broader national interest grows



The Path to EcosAtlas: UW's Foundational Role

UW helped turn a technical education into a company, that company into experience, and that experience into EcosAtlas



UW Engineering
**Technical
foundation**

Technical education
and early opportunities



Ellbogen Competition
**Initial startup
support**

\$30,000 in seed
funding and
connections for first
company -
UplinkRobotics.



IMPACT307
**Entrepreneurial
foundation**

Affordable office
space, mentorship, and
connections



Manufacturing Works
**Extensive
Support**

Manufacturing training,
supplier connections,
reshoring support,
product feedback, and
an early EcosAtlas pilot





Thank You.

Let's build the future of industrial intelligence together.

Contact Information

Email: christian@ecosatlas.com

Web: www.ecosatlas.com

Address: 1938 E Harney St. STE 152,
Laramie WY 82072

IRONFORGE AUTOMATIONS LLC

University of Wyoming Board of Trustees | Research and Economic Development Committee | September 23, 2026

PRESENTER DETAILS

Name	Thayne Thatcher
Company	IronForge Automations LLC, Laramie, Wyoming
Role	Founder and sole operator
Hometown	Laramie, Wyoming. Born and raised.
Course of study	University of Wyoming. Bachelor of Science, Marketing and Entrepreneurship, College of Business. Venture MBA, College of Business.
Contact	t.thatcher@ironforgeautomations.com ironforgeautomations.com

EXECUTIVE SUMMARY (100 WORDS)

IronForge Automations builds custom software and automation for Wyoming's small and mid-sized businesses. A four-person architecture firm competes against national firms with engineering departments behind them. A family print shop competes against a web vendor three states away. IronForge closes that gap. Founded by Laramie native and University of Wyoming graduate Thayne Thatcher, the company has delivered sixteen contracts to seven Wyoming businesses across manufacturing, architecture, construction, printing and hospitality, from Laramie to Gillette. Four of those clients have hired it more than once. IronForge came directly out of the Venture MBA, Impact 307 and the John Evans Fund.

THE ROLE THE UNIVERSITY OF WYOMING PLAYED

College of Business. A Marketing and Entrepreneurship degree, then the Venture MBA. IronForge began as coursework and left the program as a filed Wyoming LLC.

Impact 307 and the Square One Innovation Center. Office space in Laramie, the first customer introductions, and the network that produced the first paying contract.

John Evans Fund. A \$32,500 award restricted to business development, funding the outreach and marketing a one-person company could not otherwise afford.

Mentorship. Robert Macy on venture method, Marcio Paes Barreto Junior one on one with the founder and the business, Nick Giraldo at Impact 307, and College of Business faculty who still take the call.

Workforce Development Training Fund. An approved, funded internship slot. The hire comes out of the College of Business this fall.

WHO IS USING IT NOW

Seven Wyoming companies have paid IronForge across sixteen separate contracts. Four of them came back and bought again. An eighth engagement, Elk Ridge Builders and Design, is in progress.

Manufacturing Works (Laramie), L&H Industrial (Gillette), CLAA Architecture (Laramie), The Cowboy Saloon (Laramie), Digital Blues Print Shop (Laramie), Gold Spur Outfitters, now GSO Metals (Wyoming), and Elevation Pet Resort (Laramie), with Elk Ridge Builders and Design (Laramie) currently underway. The largest relationship, Manufacturing Works, totals \$11,990 across two contracts.

WHAT THE BOARD IS BEING ASKED TO HEAR

A kid from Laramie went through two UW degree programs, took UW office space, took UW mentorship and a UW-connected grant, and turned it into a Wyoming company that pays Wyoming vendors and is about to hire a Wyoming student. That is the pipeline working end to end.

IRONFORGE AUTOMATIONS

Software and automation for the businesses that hold Wyoming together

Thayne Thatcher Founder | Born and raised in Laramie | University of Wyoming, Marketing and Entrepreneurship, then the Venture MBA

The problem

A national competitor moving into Wyoming brings a software team with it.

A four-person architecture firm in Laramie does not have one. Neither does a family print shop, a builder, or a machine shop in Gillette. They run the same market on spreadsheets, paper folders, and the owner's memory.

The gap is not talent. It is access. IronForge is how a Wyoming business gets the same tools without hiring the same team.

01

Consulting

Sit with the owner, map how the work actually moves, and name what should never be automated.

02

Integrations

Make the systems they already pay for talk to each other. Quoting, scheduling, invoicing, records.

03

Software

Build the tool that does not exist yet, then hand over the keys or maintain it.

What the University of Wyoming did

This company did not come to UW. It came out of it.

-  **College of Business**

A Marketing and Entrepreneurship degree, then the Venture MBA. IronForge started as coursework and left the program as a filed Wyoming LLC.
-  **Impact 307 and the Square One Innovation Center**

Office space in Laramie, the first customer introductions, and the network that produced the first paying contract.
-  **John Evans Fund**

A \$32,500 award restricted to business development. It funds the outreach and marketing that a one-person company otherwise cannot afford.
-  **Mentorship**

Robert Macy on venture method, Marcio Paes Barreto Junior one on one with the founder and the business, Nick Giraldo at Impact 307, and College of Business faculty who still take the call.
-  **A UW student this fall**

A Workforce Development Training Fund internship slot is approved. The hire comes out of the College of Business, paid, on real client work.

Who is using it now

7

Wyoming companies
that have paid

16

separate contracts
since founding

4

of them came back
and bought again

Manufacturing Works **Laramie**

Content and outreach systems serving manufacturers statewide. Largest relationship at \$11,990 across two contracts.

CLAA Architecture **Laramie**

Six engagements and counting. Weekly sessions on drawing takeoffs, code compliance, and firm operations.

Digital Blues Print Shop **Laramie**

Replaced an out-of-state web vendor with a custom quoting site the shop owns outright.

Elevation Pet Resort **Laramie**

Staff task and scheduling system, taught to the owner and handed over rather than rented back.

L&H Industrial **Gillette**

Two builds for a Wyoming heavy-equipment manufacturer, including document retrieval for the shop floor.

The Cowboy Saloon **Laramie**

Three separate engagements for a downtown Laramie venue. Second-longest relationship by contract count.

Gold Spur Outfitters, now GSO Metals **Wyoming**

Marketing and content automation for an outfitter that has since moved into metal fabrication.

Elk Ridge Builders and Design **Laramie, in progress**

Building-code retrieval for a residential builder, so field questions get answered from the code, not memory.

Where this goes

● Hire the UW intern this fall

The Workforce Development Training Fund slot is approved and funded. The hire comes out of the College of Business.

● Move from projects to standing relationships

Maintenance agreements alongside builds, so the tools keep working after handoff.

● Push north and east from Laramie

Gillette and Sheridan are manufacturing towns with the same gap and no local provider.

Research and Economic Development Committee
COMMITTEE MEETING MATERIALS

AGENDA ITEM TITLE: FY27 Appropriations updates – Chitnis, Tang, Walker, Biasi, Clementz

- ☒ OPEN SESSION
☐ CLOSED SESSION

PREVIOUSLY DISCUSSED BY COMMITTEE:

- ☐ Yes
☒ No

FOR FULL BOARD CONSIDERATION:

- ☐ Yes *[Note: If yes, materials will also be included in the full UW Board of Trustee report.]*
☒ No
☐ Attachments/materials are provided in advance of the meeting.

EXECUTIVE SUMMARY:

Mineral Synthesis – Jinke Tang, Ian Walker

Our goal is to establish a state-of-the-art lab at UW for AI-driven, autonomous experimentation in materials research and development. This will provide significant value to Wyoming by helping to enable production and recovery capabilities that complement our state's existing abundance of raw materials and its extraction and processing industries. Our vision for mDREAM is an AI-enabled autonomous experimental lab that is versatile, modular and widely accessible by faculty and students across the UW campus and the state of Wyoming.

Assay Lab – Joe Biasi, Mark Clementz

- In the 2026 budget session, the Wyoming state legislature approved funds to establish a critical minerals assay lab at UW.
- An assay lab is used to determine the amount of gold, copper, rare-earth elements, etc. in a rock sample. This lab will be specially designed for critical mineral analyses on Wyoming rocks.
- The assay lab's main goals are to enhance the reputation of the state as a mining-friendly jurisdiction, provide an essential service to the mining industry of the state, and to train students for future careers in the mining industry.
- Lab development is progressing as expected, likely opening in July 2027. UW will have the first (and only) assay lab at any university in the country.

PRIOR RELATED COMMITTEE DISCUSSIONS/ACTIONS: Not in REDC, discussion held previously in Biennium Budget committee August 2025

WHY THIS ITEM IS BEFORE THE COMMITTEE: Update/progress report

ACTION REQUIRED AT THIS COMMITTEE MEETING: None

PROPOSED MOTION: NA



Update Report on Materials Discovery and Research Empowered by AI and Minerals (mDREAM) Lab funded in the FY2027-28 appropriation

Vision:

Our goal is to establish a state-of-the-art lab at UW for AI-driven, autonomous experimentation in materials research and development. This will provide significant value to Wyoming by helping to enable production and recovery capabilities that complement our state's existing abundance of raw materials and its extraction and processing industries. The planned lab, *Materials Discovery and Research Enabled by AI and Minerals (mDREAM)*, will be a facility where AI rapidly and effectively 1) analyzes and evaluates high-dimension, complex data sets from instruments, experiments and models; 2) governs digital twins that bridge computational models with real-time experimental data; and 3) operates integrated robotics to rapidly test and validate new materials. While mDREAM's initial efforts will focus on AI-enabled critical mineral separation and processing, it will expand to multiple research areas such as quantum materials/devices and energy materials research. Our vision for mDREAM is an AI-enabled autonomous experimental lab that is versatile, modular and widely accessible by faculty and students across the UW campus and the state of Wyoming.

Completed and Planned Activities:

We have visited several leading institutions in the field to gain knowledge and establish partnerships. We visited the Helmholtz Institute in Berlin (HZB), where a key outcome was visiting the "self-driving lab" of Dr. Artem Musiienko, observing and discussing its creation and operation with HZB leadership and staff scientists. The information and knowledge gained have strongly benefitted our team and will accordingly inform the design and execution of mDREAM. We also visited Argonne National Lab (ANL) and met with research leaders Drs. Ilke Arslan and Eli Shrkrob, with whom we conceptualized the idea of building laboratory *physical twins*: a closed-loop, AI-guided discovery workflow that operates across interoperable self-driving laboratory platforms both at ANL and UW. These physical twins will enhance user access, extend scope and versatility, and therefore allow verification, cross-validation and enhanced data collection. Other advantages of physical research twins will include parallel hypothesis testing and closed-loop learning, complementarity for modular adaptation, resilience and risk mitigation with the potential for AI co-learning. This is an actionable concept we plan to extend in conversation and investigation with partner institutions including Ames National Lab (IA) and North Carolina State University. For this purpose, we have also visited Georgia Tech, which is a national leader in AI-enabled manufacturing research.

The Team:

Ian Walker – Head of Electrical Engineering and Computer Science Dept and a robotics expert;
Ali Davies – Research Scientist at UW School of Computing and a campus AI leader;
Maohong Fan – UW Professor in Petroleum & Energy Engineering and an expert in critical materials separation and processing;
Brandoch Cook – Director of CASI and an expert in instrumentation; and
Jinke Tang – Director of the UW Science Institute (SI) and an expert in rare earth materials science.
Additional UW investigators and experts will be added for pilot projects. The SI will provide financial aid to support students working on the project.

Lab Design:

Specifically, mDREAM will initially focus on development of functionalized sorbents with high sorption capacity and selectivity for rare earth elements (REEs) and their recovery from waste streams.

Figure 1 shows one proposed laboratory layout, consisting of a central robotic transport system connecting four Zones that include a wet sample preparation lab and various characterization labs. The state-of-the-art lab will be housed in the SIB Building, Room 3010, which is a large open lab space and showroom. We anticipate minimum renovation that is needed to accommodate this. The Lab will be operated as a part of the Center for Advanced Scientific Instrumentation (CASI).

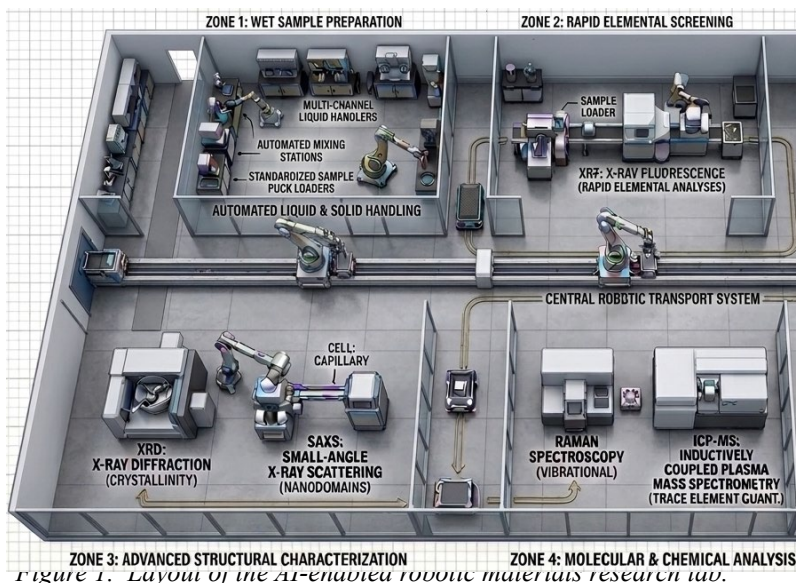


Figure 1. Layout of the AI-enabled robotic materials research lab.

Next Step:

We have scheduled a second visit to ANL. This trip will facilitate the final design of the lab and allow us to move forward with the commission of equipment. We will connect with other national leaders as we finalize plans for the mDREAM lab. We will also implement a closed-loop, AI-guided materials discovery framework illustrated in Figure 2. The AI-enabled discovery pipeline will connect knowledge from relevant literature to experimental synthesis by deploying autonomous agents managed at a high level by LangGraph, an open-source framework designed to build, deploy and manage complex AI workflows. It has demonstrated 2-10 times expedited discovery relative to grid-search or random-sampling synthesis and testing in materials science campaigns. The integration of this framework with the mDREAM lab is therefore a critical component to accelerate innovation and scientific exploration.

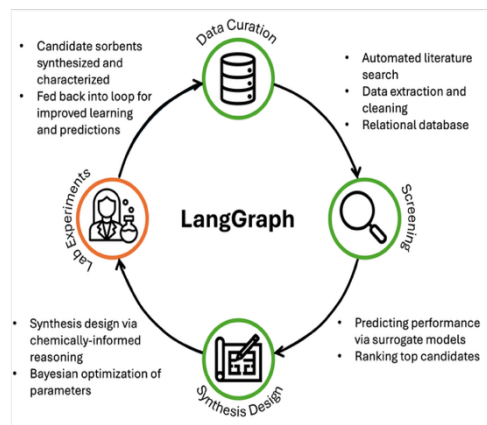


Figure 2: Visual workflow of closed-loop, AI-guided materials discovery framework.

Timeline:

Fall 2026	orders for the equipment this fall
Spring 2027	completion of mDREAM set up.
Summer 2027	calibration and testing projects

The Future:

mDREAM will be a Hub for Innovation and Collaboration for faculty, staff, students, and industry partners. mDREAM will:

- expand outreach to community colleges;
- provide workforce pathways;
- strengthen partnerships between academia, industry and state agencies; and
- establish, attract and grow new businesses and models to innovate and capitalize on materials and energy technologies.

Progress Update to the University of Wyoming's Board of Trustees on the Critical Minerals Assay Lab

Department of Geology & Geophysics

September 2026

Key Takeaways

- In the 2026 budget session, the Wyoming state legislature approved funds to establish a critical minerals assay lab at UW.
- An assay lab is used to determine the amount of gold, copper, rare-earth elements, etc. in a rock sample. This lab will be specially designed for critical mineral analyses on Wyoming rocks.
- The assay lab's main goals are to enhance the reputation of the state as a mining-friendly jurisdiction, provide an essential service to the mining industry of the state, and to train students for future careers in the mining industry.
- Lab development is progressing as expected, likely opening in July 2027. UW will have the first (and only) assay lab at any university in the country.

Background

Wyoming's economy is heavily dependent on mining and other natural resource extraction, and the long-term health of the state's finances are dependent upon finding new mineral deposits and opening new mines.

The assay lab plays an important role in the early stages of a mine's life: after a mineral/ore deposit has been found, a mining company must prove that there is enough ore available to return a profit, in order to attract investors. Assay labs are used to determine the amount of an element in a rock (e.g. copper), and rock assays are legally required to be conducted in all modern mining operations.

The nearest modern assay labs capable of analyzing the elements that are most commonly found in Wyoming deposits (uranium, rare earth elements, copper) are all located out-of-state in Colorado, Nevada, or Canada. This has put Wyoming at a disadvantage when competing for the attention and investment of the mining industry.

In response to this need, the state legislature appropriated \$2.5 million to create the Critical Minerals Assay Lab at the University of Wyoming. Over the next two years, personnel from the department of geology and geophysics will build a world-class assay facility capable of both serving the needs of the state, preparing our students for careers in the mining industry, and enhancing research on campus.

Instrumentation*

Bruker S8 Tiger XRF Spectrometer — this instrument is used to analyze the most abundant elements in an ore sample and can analyze any element between sodium (Na) and uranium (U) on the periodic table. For example, if a company wanted to know how much cobalt was in their deposit, we would analyze those samples on this instrument.

Agilent 7850 ICP-Mass Spectrometer — this instrument is used to analyze rarer elements in smaller quantities. For example, if a company wanted to know how much platinum is in their samples, we would run that analysis on this machine.

DFC 810 Fire Assay Furnaces — these furnaces are exclusively used to determine the amount of gold in a rock sample. Wyoming is rich in gold deposits and there is significant interest from our industry partners in adding this analysis to the assay lab's capabilities. To the best of our knowledge, UW will possess the only fire assay lab at a university in the country.

TESCAN TIMA Scanning Electron Microscope — this instrument is used to image ore samples at extremely fine detail. It can analyze the size, shape, and composition of every mineral within an ore and is an essential tool to determine how an ore can best be mined and processed into a final product. This instrument will help Wyoming bridge the gap between resource extraction and manufacturing.

Progress So Far and Timeline

Since March 2026, Dr. Biasi and Dr. Lewis in the Department of Geology and Geophysics have visited other assay labs, conducted dozens of calls with instrument manufacturers, and completed hundreds of hours of research on assay lab processes, instruments, financial analyses, etc.

We are currently in the process of purchasing instrumentation, most of which will be delivered in the next two to six months. The new assay lab space in the basement of the Physical Sciences building will be available starting December 1st 2026, and lab construction will begin soon after.

Our goal is to complete lab construction during the Spring and early Summer of 2027, with a phased ramp-up of operations and an opening ceremony **in mid to late summer of 2027**. We will then spend the next few months running samples for UW researchers and making sure that we can get every detail right, before fully opening the lab to industry clients in Fall of 2027.

Student Involvement

Throughout the construction and future operation of the lab, we plan to involve students both in an educational capacity and in a work/study capacity. By working in the lab, the students will gain valuable experience and marketable skills that give them an edge over candidates from other schools when they enter the job market. We hope to employ students from a wide variety of departments and colleges, including geology, chemistry, mechanical engineering, business, law, etc. This is the only assay lab attached to a university in the country and will be a unique part of the UW student experience.

Challenges

Though the legislature has been generous with funding for our instrumentation, we foresee some challenges with attracting the right personnel. We currently need funding for a Research Scientist position (Lab Director), who would oversee the day-to-day operations of the lab, interface with industry clients, manage hourly staff, etc. Their primary responsibilities would focus on the success and management of the lab, not research or teaching. Hiring a well-qualified Research Scientist is key to the long-term success of the Critical Minerals Assay Lab.

**We are actively purchasing instruments, the makes/models listed above are examples.*

Progress Update: Critical Minerals Assay Lab

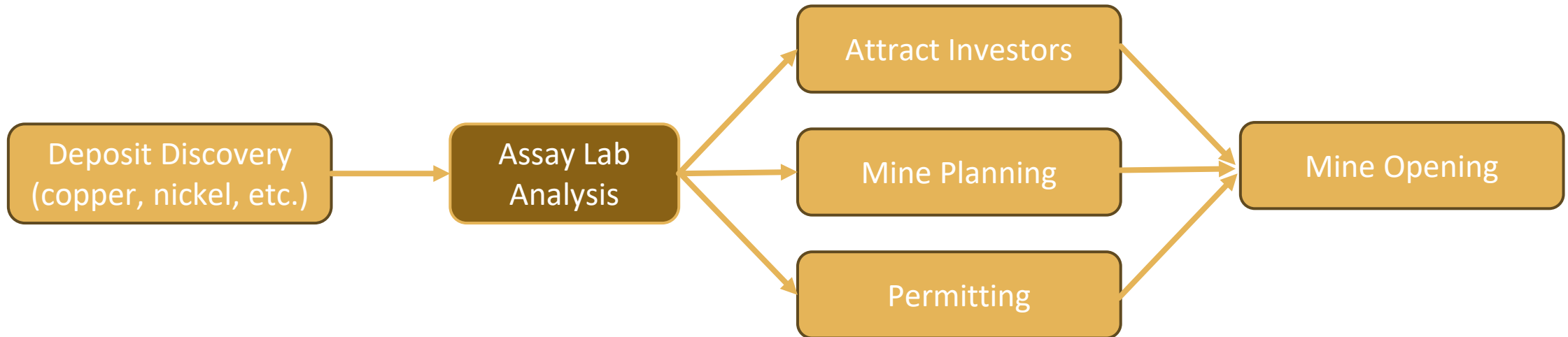
September 2026

Joe Biasi (Geology)

Mark Clementz (Geology)

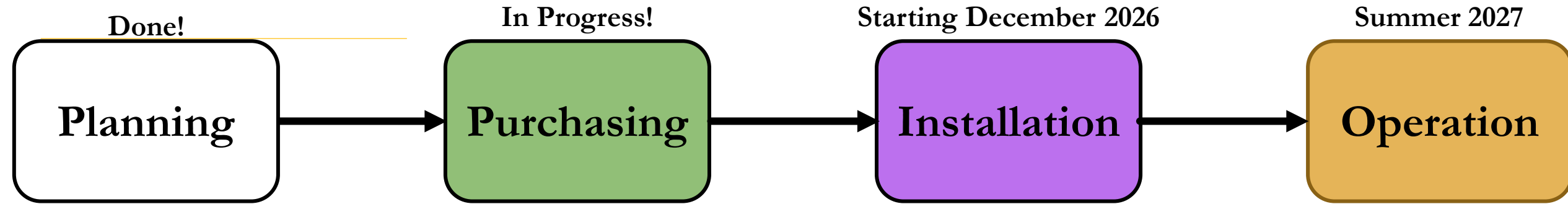
Background

- Wyoming's economy depends on mining
 - Severance Taxes



- Received \$2.5M to establish a Critical Minerals Assay Lab at UW
- Serve our State, our students, and UW researchers

Progress and Future



- Progressing as expected
- Received funds
- Allocated space (starting December 1)
- Actively purchasing instruments
- Goal is to be ready for industry clients by Fall 2027



Thank You!

- WY State Legislature
- UW Board of Trustees
- UW Research and Economic Development Division



Geology and
Geophysics



Research and Economic Development Committee
COMMITTEE MEETING MATERIALS

AGENDA ITEM TITLE: Limited Submission Process and Seed Grant Updates – Chitnis, McBride, Nysson

- ☒ OPEN SESSION
☐ CLOSED SESSION

PREVIOUSLY DISCUSSED BY COMMITTEE:

- ☐ Yes
☒ No

FOR FULL BOARD CONSIDERATION:

- ☐ Yes *[Note: If yes, materials will also be included in the full UW Board of Trustee report.]*
☒ No
☐ Attachments/materials are provided in advance of the meeting.

EXECUTIVE SUMMARY:

Limited Submission process

A limited submission opportunity is a funding opportunity that restricts the number of proposals an institution may submit. When more applicants are interested than the sponsor allows, the institution conducts an internal selection process to determine which proposal(s) will move forward for submission.

Seed Grant Updates

Trustee's Research Excellence provided seed grants for 26 projects totaling \$589,641 in initial investment. Across the documented outcomes, the awards produced at least 14 scholarly outputs, with many more publications in preparation; supported 44 students, trainees, researchers, or participants where a count was provided; and generated 40 external funding proposals. Of those, 7 were reported as successful and 16 are still in review. Most importantly, the portfolio has generated over \$6 million in documented external funding awards, including a \$2,000,000 NSF EPSCoR Track II award allocation to Wyoming (Weinig), a \$375,000 NIH R21 (Kriegel), a \$75,000 private gift and \$2,500 Conservation Grant (Ewer), and a \$2,824 Geological Society of America Graduate Research Grant (Harris). The seed grants also supported at least 25 named collaborative research relationships with institutions, industry, labs, international organizations, or local community.

PRIOR RELATED COMMITTEE DISCUSSIONS/ACTIONS: **None**

WHY THIS ITEM IS BEFORE THE COMMITTEE: **Informational**

ACTION REQUIRED AT THIS COMMITTEE MEETING: **None**

PROPOSED MOTION: **NA**

Limited Submission Process at UW

Dr. Shawna McBride

Senior Director

EPSCoR & Research Impacts, Development, and Engagement Office

What are Limited Submissions?

A **limited submission opportunity** is a funding opportunity that **restricts the number of proposals an institution may submit**. When more applicants are interested than the sponsor allows, the institution conducts an **internal selection process** to determine which proposal(s) will move forward for submission.

Who manages Limited Submissions at UW?

- Research and Economic Development Division
 - EPSCoR & Research Impacts, Development, and Engagement or E-RIDE Office
- Current opportunities can be found on InfoReady and on the E-RIDE website
- E-mail: resdev@uwyo.edu

How are Limited Submissions identified?

- Funding database alerts and searches
- Federal agency newsletters/listservs
- Internet searches: Grants.gov, NSF, NIH, DOE, USDA, DOD, NASA
- Calendar for historically recurring opportunities
- Opportunities shared by faculty
- *Verification review

What types of Limited Submission opportunities are there?

TYPE	DESCRIPTION
Standard - New Opportunities	At least <i>6-8 weeks</i> between identification and the proposal deadline – allows adequate time for an internal competition while providing teams time to prepare a competitive proposal
Recurring	Regularly occurring opportunities that can be planned for – posted several months before the deadline
Quick Turn-Around	Less than <i>6-8 weeks</i> between identification and proposal deadline – does not allow time for internal review and for teams to prepare competitive proposals
UW Community Identified	Varies – may fall under Standard, Quick Turn-Around, or Specialized Opportunities

How are Limited Submissions shared with campus?

- Send out announcements on the Research Office, UW Faculty, and UW Staff listservs
- Opportunities are posted on the InfoReady homepage
- Shared via monthly E-RIDE newsletter
- Grant Development Managers share opportunities within their Colleges and Schools
- Shared on E-RIDE website

How are Limited Submission proposals selected?

WHAT IS THE PROCESS?

- Standard
- Recurring
- Quick Turn-Around
- UW Community Identified



Standard Limited Submissions

- Limited submission identified
- An internal competition is initiated
 - ~1-2 weeks: A request for pre-proposals or letters of interest is sent out to campus with applications collected through InfoReady
 - ~2 weeks: Pre-proposals are reviewed using an external and internal review process – top ranking proposals are selected to submit a full proposal and teams are notified
 - ~4 weeks: Teams work on developing proposals

Recurring Limited Submissions

- Recurring (EPSCoR)
 - Opportunities are posted up to 6-8 months before the deadline
 - An internal competition is completed several months before the deadline and a more detailed pre-proposal is requested
- Limited submission process starts early so groups have time to put together teams, identify external collaborators, and prepare strong proposals

Quick Turn-Around Limited Submissions

- Quick Turn-Around
 - Because there is not time for an internal competition, approvals are granted on a *first-come, first-served* basis
 - An announcement is sent out to campus with the LS opportunity
 - First person(s) to respond via e-mail is allowed to move forward with the opportunity

UW Community Identified Limited Submissions

- UW Community Identified
 - Standard: internal competition is initiated
- Quick Turn-Around and Specialized Opportunity:
 - Researcher instantly approved (National Center for Emerging and Zoonotic Infectious Diseases – Parasitic Diseases)
- Quick Turn-Around and General Opportunity:
 - An announcement is sent out to campus with the limited submission opportunity
 - First person to respond via e-mail is allowed to move forward with the opportunity

Quick Turn-Around Conflicts

- We can't catch everything
- E-mail checked
 - Who notified the E-RIDE or COMPASS office first about the LS opportunity?
- ROAMWyo entries are reviewed
 - Who has started a proposal in ROAMWyo?
 - When did they start the proposal – timestamp?
 - How complete is the proposal?
 - Has the group communicated with the E-RIDE or COMPASS offices and when?

Limited Submissions: Key Takeaways

- **Limited submissions require institutional coordination** because sponsors restrict the number of proposals an institution may submit
- **Early identification is helpful** to give interested teams sufficient time to participate in the internal process, although this is **not always possible**
- **We strive to provide a clear and transparent internal process** to help ensure fair consideration of potential applicants
- **The goal is to advance the strongest, most competitive proposal(s)** while providing applicants with time and support to prepare high-quality submissions

Bottom-line: The Limited Submission process is a balance of fairness, transparency, and competitiveness while positioning institutional nominees and UW for success

A photograph of two scientists, a woman and a man, in a laboratory setting. Both are wearing white lab coats and safety glasses. The woman, on the left, has long dark hair and is smiling while looking down at something in her gloved hands. The man, on the right, is wearing blue safety glasses and is looking towards the woman. The background is slightly blurred, showing a wooden door and a chalkboard. A large yellow banner is at the top of the image.

Questions?

Return on Investment Assessment of Seed Grants

Supported by UW Board of Trustee's

Research Excellence Fund

AMK and CEA Research Seed Grants

Cardiff Collaboration Seed Grants

AI Applications Research Seed Grants

Research Excellence Fund Overview

The UW Research Excellence Fund provides strategic investments to catalyze research growth, foster interdisciplinary collaboration, and position UW faculty for future external funding in areas of importance to UW and the state determined by the input from UW faculty and the Board of Trustees (BoT) as well as emerging topics of national importance. The quasi-endowment created by the BoT supports these awards, and depending on the yield from the endowment, approximately \$200,000 annually is expected to be available for new awards.

This ROI assessment highlights outcomes from three targeted seed grant initiatives supporting research at the AMK Ranch and Controlled Environment Agriculture (CEA), Cardiff University Collaborations, and Artificial Intelligence (AI) Applications seed grants. Collectively, the investments are designed to advance emerging areas of research strength, build new partnerships and research teams, generate preliminary results, and create pathways toward externally funded research programs. During the first three years of the Research Excellence Fund, available funding was strategically directed toward seed grants aligned with UW and emerging national priorities.

- **Year 1:** Funding supported 2 targeted seed grant initiatives: (1) research conducted at the UW–NPS Research Station at the AMK Ranch and research focused on CEA (3 grants), and (2) collaborative research projects between UW faculty and faculty at Cardiff University in Wales, UK (10 grants).
- **Years 2–3:** Funding from Years 2 and 3 was combined to support seed grants focused on applications of AI across a diverse range of disciplines. These awards were designed to stimulate innovative research, encourage interdisciplinary approaches, and build UW capacity in an area of rapidly growing national importance (13 grants).

OUTCOMES ACROSS ALL RESEARCH EXCELLENCE FUND GRANTS

\$589,641 Total seed grant investment	\$6,012,630 External funding awarded	40 External opportunities pursued
26 Seed grants	7 External opportunities awarded	17 External opportunities not awarded
14 Publications	\$2,092,294 Internal and State funding awarded	16 External opportunities in review
44 Students / participants	4 Internal/State opportunities awarded	4 Internal/State opportunities pursued

Key Findings

The seed-grant portfolio represents **26 awards and an initial investment of \$589,641**. Collectively, these awards have generated substantial research, workforce development, and funding outcomes. Documented results include **14 publications** with many more in preparation or review; support for **44 students and participants**; and **40 external funding proposals pursued**. Of the external proposals, **7 were reported as successful** and 16 are still in review.

Most notably, the portfolio has generated over \$6 million in external funding awards, as well as an additional return of \$2,092,294 from state funding and internal UW follow-on grants – close to 13 times the initial seed-grant investment. The seed grants also catalyzed at least 25 new research collaborations with academic institutions, industry, national labs, international partners, state agencies, and local community partners.

Conclusions from this analysis are:

- Seed grants remain a highly impactful strategy to spur competitive research funding, when targeted towards specific research areas with high potential to get external funding.
- Seed grants for the collaborative projects with Cardiff University were not successful to obtain funding for projects with Cardiff Collaboration.
- It takes up to 2 years from the funding of the one-year seed grants to realize the measurable potential of the seed grants.

AMK RANCH AND CEA GRANTS

Return on Investment Outcomes

\$120,000 Total seed grant investment	\$5,634,806 External funding awarded	6 External opportunities pursued
3 Seed grants	5 External opportunities awarded	1 External opportunities not awarded
3 Publications	\$60,000 Internal UW funding awarded	0 External opportunities in review
1 Students / participants	1 Internal UW opportunities awarded	1 Internal UW opportunities pursued

Key Findings

The AMK Ranch and CEA seed grant portfolio represents a strategic initial investment of \$120,000 across 3 awards, generating substantial research, workforce development, and funding outcomes. Collectively, 3 publications resulted from the research and 1 student was funded. Most significantly, the seed grant investment led to \$5,694,806 in additional funding – close to 47 times the original seed grant investment. Major outcomes include a \$2 million NSF EPSCoR Track II award to Wyoming (Weinig), an FFAR award in final negotiations (\$2,899,927, Wang), an NSF REU (\$405,851, Wang), a USDA grant (\$77,778, Wang), an NREL grant (\$251,250, Wang), and an internal UW seed grant (\$60,000, Tarwater).

Performance Highlights

Outcome	Supporting Data
External funding awarded	\$5,634,806 in external awards: \$2M NSF EPSCoR Track II to Wyoming (Weinig), \$2,899,927 (FFAR, Wang), \$405,851 (NSF REU, Wang), \$77,778 (USDA, Wang), \$251,250 (NREL, Wang),
Internal funding awarded	\$60,000 in internal UW seed grant funds (Tarwater)
Publications	3 publications
Students / trainees	1 MS student engaged

Investment Summary

The AMK Ranch and Controlled Environment Agriculture (CEA) seed grant portfolio represents a strategic initial investment of \$120,000 across three awards. These investments generated measurable research, workforce development, and funding outcomes, including three publications and direct support for one student and significant follow-on funding in the amount of \$5,694,806 – more than 47 times the original investment.

Overall, the portfolio demonstrates the value of targeted seed funding as a mechanism for catalyzing research, strengthening student engagement, and positioning UW researchers to secure substantially larger follow-on investments. With a documented funding leverage ratio of approximately 47:1, the AMK Ranch and CEA investments produced a significant return while building capacity for continued research and external funding.

CARDIFF UNIVERSITY COLLABORATIVE GRANTS

Return on Investment Outcomes

\$102,913 Total seed grant investment	\$2,824 External funding awarded	7 External opportunities pursued
10 Seed grants	1 External opportunities awarded	1 External opportunity not awarded
3 Publications	18 Students / participants counted	5 External opportunities in review

Key Findings

The **collaboration-focused seed grant** portfolio represents a strategic investment of **\$102,913 across 10 awards**, supporting research productivity, student engagement, new collaborations, and the development of follow-on funding opportunities. Collectively, the portfolio generated **3 scholarly outputs**, provided research, training, or participation opportunities for **18 students and participants**, and resulted in the submission of **7 external funding proposals**. Additional funding to support the Biodiversity Institute and the Botany program for future collaborations with other universities was secured by one faculty member in the amount of \$77,500 but did not contribute to collaborations with Cardiff University specifically.

Performance Highlights

Outcome	Supporting Data
External funding awarded	Geological Society of America Graduate Research Grant (Harris, \$2,824)
Publications	3 publications
Students / trainees	18 students/participants
External proposal pipeline	7 external funding opportunities identified
Partnerships / collaborations	7 projects with substantive Cardiff–UW collaboration, research exchange, or partnership activity (Chien, Willford, Walker, Cain, Harris, Bruns, Ewer)

Investment Summary

Beyond the quantitative outcomes, the seed grants strengthened international research collaboration, student development, curriculum and clinical training, publication development, and cross-institutional research capacity. Collectively, the awards helped deepen the Cardiff–UW partnership while creating foundations for sustained collaboration and future externally funded research.

Representative outcomes include integrating “Stop the Bleed” training into the Cardiff curriculum (Willford); supporting an international research exchange and specialized library research (Walker); establishing an active collaboration and research dataset focused on assessment design and generative AI (Cain); advancing cross-institutional research and education related to rural maternity care and midwifery (Bruns); and laying the groundwork for globally relevant conservation strategies and continued collaborative research (Ewers). Although the seed grants did provide benefits related to the development of international partnerships, the return on investment was not significant, and the program overall was not successful in terms of ROI.

AI APPLICATIONS GRANTS

Return on Investment Outcomes

\$366,728 Total seed grant investment	\$375,000 External funding awarded	27 External opportunities pursued
13 Seed grants	1 External opportunities awarded	15 External opportunities not awarded
8 Publications	\$2,032,294 State funding awarded	11 External Opportunities in review
25 Students / participants	3 State opportunities awarded	3 State opportunities pursued

Key Findings

The **AI Applications seed grant** portfolio represents a strategic initial investment of **\$366,728 across 13 awards**, generating substantial research, workforce development, and funding outcomes. Collectively, awardees reported at least **8 publications** with several more in review or preparation; supported **25 students, trainees, researchers, and other participants**; established **several collaborative research relationships** spanning academic institutions, industry, national labs, international organizations, state agencies, and local communities; and generated **27 external funding proposals and 3 state funding initiatives**.

Most significantly, the portfolio has leveraged UW's initial investment into **\$2,407,294 in additional funding** – close to **seven times the original seed grant investment**. Major outcomes include a \$375,000 NIH R21 award (Kriegel). In addition to external funding, Jinke Tang received approximately \$2 million in support from the Wyoming State Legislature, and Ben Koger received two grants from the Wyoming Governor's Big Game License Coalition Grant (\$7,294 student support, \$25,000 software development). The overall portfolio demonstrates the value of targeted seed grant investments in generating preliminary results, building research partnerships, developing the research workforce, and strengthening UW's competitiveness for external funding. As a note, the AI grants were awarded in 2024, and as a result the portfolio's actual research, training, collaboration, and funding impacts will likely be significantly greater than the totals reported here as deliverables take time to develop – normally at least two years to see results.

Performance Highlights

Outcome	Supporting Data
External funding awarded	\$375,000 in external awards (NIH R21, Kriegel)
State funding awarded	\$2,000,000 (Tang), \$7,294 (Koger, student support), \$25,000 (Koger, software development)
Publications	8 publications
Students / trainees	25 participants/students/researchers engaged
Proposal pipeline	27 external funding opportunities pursued; 1 funded, 15 unsuccessful, 11 in review – 3 state funding opportunities pursued; 3 funded
Partnerships / collaborations	Multiple institutional, state agency, national laboratory, and interdisciplinary partnerships/collaborations developed

Investment Summary

Beyond measurable funding and scholarly outcomes, the seed grant portfolio has generated broader and longer-term benefits for UW's research enterprise. Investments have helped build research infrastructure and laboratory capabilities, launch new courses and curricular content, establish research collaborations, preserve and digitize historically significant collections, develop AI-enabled research tools, and position interdisciplinary teams to compete for larger-scale external funding opportunities. These outcomes demonstrate the role of seed funding not only in advancing individual projects, but also in developing new areas of research capacity and creating foundations for sustained research growth.

The mDREAM materials-discovery initiative (Tang) provides a particularly strong example of this institutional impact. Planning and development supported through the seed grant investment helped advance this initiative and contributed to securing nearly \$2 million in Wyoming State Legislature support for continued development. This represents a significant state/institutional investment in addition to investments from competitively awarded external research funding totaling \$375,000 with several additional AI proposals in review. This represents a significant return on the seed investment and illustrates how relatively modest early-stage funding can catalyze larger institutional research initiatives and attract substantial follow-on investment. This is especially important for UW because it captures **two different types of return**: the \$375,000 in external awards *plus* over \$2M in additional state investment catalyzed by the Research Excellence Fund.

OVERALL TAKEHOME

INVESTMENTS	COMBINED	AMK RANCH & CEA	CARDIFF	AI
Seed Grant Totals	\$589,641	\$120,000	\$102,913	\$366,728
Additional Funding Secured	\$8,104,924	\$5,694,806	\$2,824	\$2,407,294
ROI	13:1	47:1	0:1	7:1

The Research Excellence Fund seed grants demonstrate a **strong return on strategic research investment**. Across the three funding areas, an initial investment of **\$589,641** has helped secure more than **\$8 million in additional funding**, representing an overall funding leverage of approximately **13:1**. Results vary across the portfolios, reflecting differences in research focus, project maturity, and the time required to translate seed funding into larger awards. The **AMK Ranch and Controlled Environment Agriculture (CEA)** portfolio has generated the strongest financial leverage to date, with a **47:1 return**, while the more recent **AI portfolio has already achieved a 7:1 return with additional financial return expected**. The **Cardiff Collaboration portfolio has generated limited direct return on investment** to date.

Taken together, these results demonstrate that relatively modest, strategically targeted investments can catalyze new research, strengthen collaborations, build institutional capacity, and position UW researchers to compete successfully for substantially larger follow-on funding. Importantly, many projects continue to generate proposals, publications, partnerships, and other outcomes, suggesting that the full return on these investments will continue to grow over time. Of the three areas supported: 1) AMK Ranch and CEA, 2) Cardiff Collaborations, and 3) AI Applications, it's clear that the AMK Ranch/CEA and AI Applications projects resulted in a large return on investment, while the Cardiff Collaboration projects did not. This suggests that research awards like the AMK Ranch, CEA, and AI Applications awards should continue to be supported, while the BoT and REDD may wish to reconsider future investments in international collaboration development initiatives modeled on the Cardiff Collaboration projects due to the limited direct return on investment of these types of awards.

Many thanks to the Board of Trustees for providing these funds to the University to increase continued growth in the research enterprise.