Innovation and the Wisconsin Idea: Undergraduate Research, Entrepreneurship, and Technology Transfer

Innovation doesn’t just happen in big cities and at large universities. How one university system in the USA has made big things happen on small- and medium-sized campuses.

University of Wisconsin System and WiSys Technology Foundation (WiSys) Madison, Wisconsin, USA

Submitted April 2, 2020
## GENERAL INFORMATION

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**Nature of interaction**  
Please select one or more of the following (simply place an “x” between the brackets):  

- [X] Collaboration in R&D  
- [X] Commercialisation of R&D results in science  
- [X] Entrepreneurship  
- [X] Technology Transfer  
- [X] High Impact Practices  
- [X] Innovation
CASE STUDY PROFILE

1. SUMMARY

The University of Wisconsin System (UW System), and its 13 public universities within the state of Wisconsin, is a national leader in undergraduate research. The system as a whole contributes greatly to the region’s priorities, including retention, graduation rates, workforce, and economic development.

Two of the 13 universities (UW-Madison and UW-Milwaukee) are large and well-known “Research I” institutions—a designation indicating very high research activity—with UW-Madison ranked among the top-10 research institutions in the United States. Eleven additional universities are regional comprehensives that serve 100,000+ students in aggregate, primarily undergraduates; although these universities are not primarily known for research output, it is a growing component of the educational experience for their students.

To enhance the research mission of these regional institutions varying in size, scope, and program focus, WiSys Technology Foundation was established in 2000 as a non-profit supporting organization of the UW System. WiSys provides dedicated technology transfer guidance and mentorship; it is modelled on the well-established research protocols and principles pioneered nearly 100 years ago by the Wisconsin Alumni Research Foundation (WARF) for the benefit of UW-Madison.

As WiSys’ scope of influence has grown over the past two decades, the technology transfer organization has challenged the perception of what is possible within the UW System’s portfolio of regional comprehensive universities. Through the years, WiSys has increasingly helped to foster and promote discovery and innovation at each UW campus and in every university city across Wisconsin. By interconnecting the research mindset among and within these regional University of Wisconsin System entities dispersed across a large geographic area, WiSys has inspired and enabled innovation to flourish more broadly throughout the entire UW System and across the state for the benefit of all Wisconsin residents. WiSys has made this growth possible through:

- **Collaboration.** By working as a shared service of the 11 universities, WiSys is able to provide high-quality expertise to organize programs and services; to market ideas developed by faculty, staff, students, and alumni; and to inspire and teach students how to innovate and build a culture that perpetuates ongoing innovation.

- **Nimbleness.** Thanks to stable funding and support from a knowledgeable Board of Trustees, WiSys does business as an independent service organization, working in concert, but separate from the universities’ overall administrative structure. This allows WiSys to take more chances in piloting new, responsive programs with immediate impact.
**Active listening.** By seeking feedback and ideas from university leaders as well as directly from university researchers and innovators through regular face-to-face meetings, WiSys deeply understands the unique impediments to innovation on each campus and works with stakeholders to define solutions that can easily be embedded in each university’s distinct campus culture.

The resulting positive outcomes of these efforts for faculty, staff, and students are embodied in the WiSys tagline: “Eureka isn’t a moment. It’s a process.”

### 2. BACKGROUND

Although WiSys is only two decades old, the idea for WiSys stems from a philosophy developed at the University of Wisconsin more than a century ago. The Wisconsin Idea—the principle that education should influence people’s lives beyond the boundaries of the classroom—is one of the longest and deepest traditions surrounding the UW System.

The concept was first articulated by University of Wisconsin President Charles Van Hise in 1904, when he said, “I shall never be content until the beneficent influence of the University reaches every family of the state.”

In one of many ways the philosophy of the Wisconsin Idea went on to better the state and the world, the Wisconsin Alumni Research Foundation (WARF) was founded in 1925 by innovative alumni as a way to advance the discoveries made at UW-Madison, now the flagship research institution of the UW System.

Today, the UW System is one of the largest public education systems in the world, encompassing 13 universities across 26 campuses throughout the state of Wisconsin and recently ranked 36th in the 2019 Reuters listing of the World’s Most Innovative Universities.

WiSys launched in 2000 when the UW System recognized the need for a foundation to support the innovation and technology transfer needs of all UW System campuses outside of UW-Madison. With this goal in mind, UW System collaborated with the Wisconsin Alumni Research Foundation (WARF) to launch WiSys as a WARF subsidiary. In 2013, WARF spun out WiSys as an independent foundation.

Today WiSys provides a shared service of research, innovation, and entrepreneurship support for the 11 regional comprehensive and primarily undergraduate UW System universities: UW-Eau Claire, UW-Green Bay, UW-La Crosse, UW-Oshkosh, UW-Parkside, UW-Platteville, UW-River Falls, UW-Stevens Point, UW-Stout, UW-Superior, and UW-Whitewater.

WiSys is facilitating cutting-edge research programs, developing and commercializing discoveries, and fostering a spirit of innovative and entrepreneurial thinking at these regional universities.
3. OBJECTIVES

To serve the University of Wisconsin System’s 11 regionally and programatically diverse universities, WiSys focuses on four primary objectives:

- **Funding research.** WiSys connects faculty and students to grants that support every stage of their research.

- **Commercializing research and ideas.** WiSys provides intellectual property assistance when research or other ideas lead to a commercial opportunity.

- **Inspiring students.** WiSys improves the student educational experience with events and opportunities to grow research and innovation skills.

- **Building culture.** WiSys thinks big to foster a culture of innovation on university campuses.

FUND AND SUPPORT RESEARCH

Grants

To foster research on WiSys-connected UW System campuses, where teaching is often a larger priority for faculty, WiSys offers a full suite of research grant opportunities to grow researchers along with their research projects. These programming efforts support research projects at all levels, from a kernel of an idea to readying an invention for commercialization into the marketplace.

Pre-Award Program

The Pre-Award Program (PreP) aims to provide pre-award grant submission support to campuses on a regional basis through regular virtual and in-person visits. This builds capacity among research administrators and faculty to enrich UW System research and scholarship and, ultimately, the undergraduate student experience. The program’s three goals include:

- Educating and coaching faculty grant seekers.
- Strengthening campus research culture.
- Developing research administrator capacities.

COMMERCIALIZING IDEAS

WiSys’ experienced licensing managers work hand-in-hand with companies and investors—connecting them with inventors, sponsoring research, and making the most out of the UW System’s most exciting new ideas. Once the intellectual property has been filed, the WiSys
licensing process takes over. This can take the form of licensing to established companies or start-ups.

**INSPIRE STUDENTS**

**Quick Pitch (Three Minutes)**
Quick Pitch is a student “pitch” competition that inspires undergraduate researchers to communicate their research along with its impact in layman’s terms to a broad audience.

**Innovation Competitions**
WiSys Innovation events, focused on the academic strengths of individual campuses, encourage students to develop solutions to real-world problems, work on cross-functional teams, and iterate and innovate ideas. These events include Innovation in Aging, Innovation in Sustainability, and Prototype Hackathon.

**Wisconsin Big Idea Tournament**
The Wisconsin Big Idea Tournament is a student entrepreneurship competition that teaches lean start-up business development tools, provides business mentorship, and allows participants to compete at a state level for a chance to win seed funding for their idea as well as a chance to compete internationally at the Business Model Competition Global.

**App Factory**
At UW-Parkside, WiSys provides funding for the App Factory, where students gain real-world job experience in design, development, and maintenance of software. WiSys’ support of the App Factory also provides UW System innovators an avenue to see their novel app ideas grow into working prototypes.

**BUILD CULTURE**

**Student Ambassador Program**
The WiSys Student Ambassador Program aims to enhance the vital connection between WiSys and the research community on UW System campuses. WiSys Ambassadors receive training in intellectual property and the technology transfer process. Additionally, they learn how to access resources offered by WiSys and other campus organizations designed to support technology development and entrepreneurial activity. WiSys Ambassadors receive a stipend for their work and participate in a variety of meetings and events on campus. They also encourage faculty, staff, and students to think about innovation and connect to WiSys for support.

**Regional Associate Program**
The WiSys Regional Associate Program maintains strong relationships with campus innovators. These post-doctorate level experts:

- Support research and technology development.
- Link campus innovators to WiSys grant programs.
- Meet one-on-one with campus innovators—both new and existing.
- Prepare and give presentations to campus groups.
SPARK Symposium
The WiSys SPARK Symposium features the research and entrepreneurial work of UW System faculty, staff, and students. The event focuses on student engagement, entrepreneurial innovation, and research across all disciplines—not just science and technology. The SPARK Symposium includes dynamic speakers, networking opportunities, and student-focused activities such as a poster competition and innovation showcase.

4. RESPONSIBILITY

WiSys is governed by a nine-member Board of Trustees with specific representation from stakeholders and interested leaders. The board includes representation from the heads of the universities WiSys serves, UW System staff, and staff from WiSys’ larger sister organization the Wisconsin Alumni Research Foundation (WARF), which exclusively serves the UW System’s flagship university. The board also includes members outside of the system and the president of WiSys to provide an effective balance and knowledge base.

The board empowers the WiSys president and WiSys staff to implement and calibrate new programs to serve WiSys’ 11 universities. WiSys’ shared service model allows the organization to hire excellent, highly qualified professional staff, often with doctoral credentials, to run and manage programs. This allows WiSys’ universities to access highly qualified staff that they would not be able to afford on their own.

IMPLEMENTATION & FUNDING

5. STRATEGY & ACTIVITIES UNDERTAKEN

At WiSys, staff believe in collaboration, productivity, and engagement. The client-focused personnel have an enthusiasm for innovation and research. They understand the challenges that faculty face in furthering their research projects while carrying full teaching course loads at primarily undergraduate institutions.

These values and considerations allow WiSys to:

- Support faculty, staff, student, and alumni innovation.
- Identify, develop, and transfer new innovations.
- Strengthen stakeholder relationships.
- Build the WiSys brand.
- Ensure long-term financial stability for operations and grant programs.
- Support regional comprehensive collaboration with Wisconsin companies.
WiSys staff, some of which are deployed regionally, maintain close relationships with faculty, staff, and students, and also host local innovation events. This allows WiSys to identify creative and innovative leaders within WiSys universities.

Once these dynamic leaders are identified, WiSys works to provide them with opportunities to showcase and develop their ideas. Sometimes that means providing them with resources to obtain research data, develop prototypes, fund patents, or otherwise protect intellectual property.

WiSys also works to develop faculty and student innovators through professional development and learning opportunities. WiSys will often provide funding or expertise for faculty members seeking research grants. For students, WiSys provides learning opportunities through local competitions that teach innovation, entrepreneurship, and inventorship. These events provide practice experience for students to build experience for their future endeavours both inside and outside the classroom.

Furthermore, WiSys is a convener and connector, creating opportunities for collaboration. WiSys, through its state-wide and inter-university reach, can make suggestions about research or commercial partnerships.

Connections are further established and facilitated at WiSys networking events, such as the annual WiSys SPARK Symposium. Symposium attendees are encouraged to meet with faculty and students from other institutions as well as with entrepreneurs outside of academia.

6. MONITORING AND EVALUATION

WiSys maintains active feedback relationships with state-wide leaders, regional officials, and the specific constituencies that WiSys serves, namely system faculty, staff, students, and alumni.

WiSys leadership regularly reports to the leadership of the UW System. In addition to presenting to the UW System Board of Regents, the system’s oversight panel, the WiSys president makes a specific presentation to the UW System president to discuss impact, both qualitative and quantitative.

Additionally, WiSys meets regularly with regional officials, including university chancellors, department chairs, and campus champions to listen and seek advice on specific programs that may be improved or created. This is further amplified by WiSys’ advisory committee, containing representative stakeholders.

Going a step further, WiSys seeks active feedback from faculty, staff, students, and alumni at the local level to understand their challenges and opportunities in building a culture of innovation. Many of WiSys’ programs and events have been built from the ground up through active listening at the local level.

Many events have been inspired by university areas of interest. For instance, UW-Green Bay’s focus on healthcare and the aging population led WiSys to work with local leaders to create a student innovation event called Innovation in Aging.
Through this event, WiSys gave students an opportunity to have practical learning experience in the subject matter as well as connect with area business and organizations working in the same field. Through events like Innovation in Aging, WiSys can bring together faculty, students, and the community to start or continue dialogues.

7. SUSTAINABILITY MEASURES

WiSys’ many programs and services have proved sustainable, firstly, because WiSys ensures that the programs and services have tangible and timely impact. As a nimble organization, WiSys can act quickly, where sometimes university systems or culture are more deliberate.

WiSys programs and services also thrive because they are “opt-in.” WiSys does not force university to use any programs or services. Therefore, when WiSys universities opt in they opt to commit to them more explicitly.

Once university leaders commit, WiSys cultivates local support. When faculty exhibit interest in a program, WiSys grows the relationship by supporting these faculty champions. Sometimes this means that WiSys will “buy out” the time of a faculty member in order to free them up to work with WiSys on building the culture of innovation on their campus.

When WiSys empowers these campus champions and gives them ownership over the success and failure of WiSys programs and services, they are more likely to continue. Furthermore, this helps WiSys embed the programs and services into campus culture.

WiSys events also benefit from local corporate sponsorships. Successful WiSys events often attract interest from community businesses and organizations who want to be a part of and support WiSys’ efforts on the local university campus and in the community where these businesses and organizations operate.

8. COSTS

The major costs include personnel, legal costs for patenting inventions, and personnel travel. WiSys hires highly qualified professional staff that can serve multiple universities, because the universities that WiSys serves would not be able to hire these highly qualified professional staff members on their own. WiSys bears the burden of retaining and attracting top-notch staff. Additionally, because these staff members often serve multiple universities over a large geographic area, regular travel is required.

WiSys covers the legal expenses needed to go through a lengthy and detailed patenting process to ensure intellectual property protection of ideas. WiSys has a series of grant programs to help in the development lifecycle of early-stage technologies. Low-cost but high-impact activities include holding WiSys events and supporting student ambassadors.

9. FUNDING

WiSys is primarily funded by all the member institutions with an annual fee based on their research expenditures. It also receives regular funding and has a strong long-term financial commitment from the UW System to provide high-quality shared services.
10. OUTCOMES

Five-Year WiSys Impact Summary:

- Allocated more than $3.5 million in grants to faculty, students, staff, and alumni to spark, ignite, and launch research and innovation projects.

- Hired and trained 72 students as WiSys Ambassadors to build culture and rally interest in research and innovation on their campuses.

- Trained 672 faculty through webinars (in the past two years) to assist them in learning how to successfully apply for grant funding.

- Engaged more than 500 students in WiSys innovation events that teach innovation, teamwork, intellectual property, and communication skills.

- Received and processed 311 invention disclosures from faculty, staff, students, and alumni who have worked with WiSys for assistance with intellectual property and commercialization.

- Logged 43 patents issued for inventions in the WiSys technology portfolio.

- Executed 52 licenses, options, amendments, and commercial agreements generating close to $1 million in revenue.
11. IMPACTS

Whether finding the funding to take an idea further, assuming the responsibilities of intellectual property protection, or helping to commercialize products and services, WiSys helps innovators see their ideas succeed.

Students are taught how to think of themselves as innovators and problem solvers by taking their coursework and applying it to solve real-world problems. This adds up to the 11 universities that WiSys serves seeing themselves as more than just “teaching schools.” They see themselves as budding hubs of innovation.

12. INVOLVED STAKEHOLDERS AND BENEFICIARIES

WiSys has many direct and indirect stakeholders who benefit from WiSys services. The primarily beneficiaries are the 11 universities that WiSys serves. However, the entirety of the UW System also benefits because each individual university is stronger with WiSys programs and services.

Additionally, WiSys provides an indirect benefit to the communities and regional industries where the WiSys universities are located. By working to inspire more innovative activity, WiSys is increasing the quality and quantity of innovative talent in Wisconsin. WiSys further connects this budding talent and their innovative ideas with industry partners inside and outside Wisconsin.

13. AWARDS / RECOGNITION

In 2017, the Milken Institute—a non-profit, nonpartisan think tank—named WiSys one of the “best” in technology transfer.

WiSys ranked 128th in the nation in a peer cohort of similarly ranked organizations that includes Texas Tech, the New Jersey Institute of Technology, San Diego State, UW-Milwaukee, and the University of Oklahoma—based on issued patents, licensing agreements, licensing income, and start-ups.

This ranking demonstrates how aggregating and sharing services among 11 primarily undergraduate institutions allows them to compete with large, research-intensive institutions in the innovation space.

LESSONS LEARNED

14. PRIMARY CHALLENGES

WiSys encounters three big challenges in working with its 11 university partners:

1. **Brand awareness.** As an independent non-profit organization, WiSys must constantly work to make campus administrators, faculty, and students aware of
available WiSys programs and services as well as educate them about why and how the organization can help.

2. **Statewide reach.** Since Wisconsin’s 11 regional comprehensive campuses are stretched across a wide geographic area, WiSys must stretch a small staff to ensure that personal and on-the-ground relationships are effective.

3. **Time for innovation.** WiSys works with smaller undergraduate-focused universities. At these universities, faculty have high teaching loads and a culture focused around the classroom. In order to be successful, WiSys must be cognizant of faculty’s time and their ability to participate in research and innovation opportunities.

### 15. SUCCESS FACTORS

WiSys’ three main success factors include:

1. **Engagement with the shared service model.** Buy-in from top university officials, as well as influential faculty members, has been a determiner of successful outcomes. When university leaders understand how they benefit from WiSys’ shared programs and services, and then opt in, the model succeeds.

2. **Stability through independence.** WiSys was guaranteed a significant amount of long-term funding and has an ongoing commitment from its universities. This financial certainty and WiSys’ status as an independent non-profit service organization ensures that WiSys is mostly insulated from the challenges that come from regular administrative change in policy and leadership personnel.

3. **Ability to embed into university culture.** WiSys works to fit into the universities that it serves. WiSys ensures that the organization has “boots on the ground” through regional employees that have regular face-to-face contact with university faculty and staff. This is further amplified through hosting regional events that engage the students of these faculty and staff members.

An additional success factor includes a very supportive and understanding WiSys Board of Trustees that is tuned into the business. The board is stable and enables a consistent plan and strategy to be implemented by WiSys staff.

WiSys is further successful because of the organization’s close relationship with the Wisconsin Alumni Research Foundation (WARF)—which serves the UW System’s flagship, UW-Madison. This connection to a bigger, highly successful technology transfer office provides WiSys with significant credibility. WARF further supplies in-kind services, such as Human Resources, that enable WiSys to operate efficiently.

### 16. TRANSFERABILITY

WiSys’ shared service model is transferable to groups of universities that have a common bond. However, these universities must be open to sharing and opt in to participating in the model’s success. Beyond that, many WiSys programs are transferrable broadly. The themes of many of WiSys’ programs cover broad themes such as professional development,
innovation skills, collaboration, and communicating research. These are common themes and can work in many different systems.

Overall, transferability of both the service model and the programs depends on having a strong local support system. WiSys, for example, has leaned on strong partners such as UW-Eau Claire Chancellor James Schmidt, who has been an ally in piloting and launching new programs at his university, which, if proven successful at one institution, can be applied more broadly at other institutions.

For example, the WiSys Quick Pitch program was piloted at UW-Eau Claire. The institution’s successful adoption of the program, and effective annual continuance, showed that the event can work and how it might work best. UW-Eau Claire’s Quick Pitch event served an example for how other universities can operate it. Since its inception in 2015, the WiSys Quick Pitch program has been adopted across all 11 universities. The systemwide adoption has allowed WiSys to host a state final event to further grow the event and its prestige.

FURTHER INFORMATION

17. PUBLICATIONS / ARTICLES


Hive Central student startup supported by WiSys. (Sept 9, 2019) https://www.youtube.com/watch?v=qhemQDAzGn4


How is a UW-Oshkosh professor improving glucose monitoring? (April 29, 2019)

Innovative people you should know: Caleb Dykema. (Nov. 13, 2019)
https://www.wisys.org/news-media/innovative-people-you-should-know-caleb-dykema

Innovative people you should know: Anneka Johnson. (Aug. 7, 2019)
https://www.wisys.org/news-media/innovative-people-you-should-know-anneka-johnson

Psychology major wins WiSys Quick Pitch @UW-Whitewater by explaining racial bias research. (Nov. 18, 2019) https://www.wisys.org/news-media/psychology-major-wins-wisys-quick-pitch-uw-whitewater-by-explaining-racial-bias-research


UW System Regent Scholar grants. (Fall 2019) https://www.wisconsin.edu/grants-awards/undergraduate-research-3/


18. LINKS

University of Wisconsin System. https://www.wisconsin.edu


Wisconsin Idea. https://www.wisc.edu/wisconsin-idea/

WiSys: Eureka isn’t a moment, it’s a process.® http://wisys.org
19. **KEYWORDS**

Technology Transfer
Undergraduate Research
High-Impact Practices
Intellectual Property
Talent and Workforce Development
Public-Private Partnerships
Industry Partnerships
Triple Helix
Collaboration

20. **PUBLIC CONTACT DETAILS**

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