



DISCOVERY CENTER INSPIRING INNOVATIVE RESULTS

A YEAR IN REVIEW
JULY 2014 - JUNE 2015



DISCOVERY CENTER
Inspiring Innovation. Learn more at www.uwstout.edu/discoverycenter

MORE THAN
40
COLLABORATIVE
PROJECTS



MORE THAN
140
STUDENTS INVOLVED

\$15.8
MILLION IN NEW
CLIENTS' NEW/
RETAINED SALES,
COST SAVINGS,
& INVESTMENTS

9.25
CUSTOMER
SATISFACTION
RATING ON A
10-POINT SCALE

The Discovery Center plays a fundamental role in advancing UW-Stout's polytechnic mission, providing technical expertise and industry outreach to manufacturers, partnering with researchers and faculty to pursue outside-the-box solutions, and enhancing our students' educational experiences through pivotal, real-world interactions. As evidenced by the stories that follow, Discovery Center's impacts extended around the globe in 2014-15.

These accomplishments come as no surprise to those of us who've been involved with this innovative and valuable organization from its early days.

While serving as director of the Stout Technology Transfer Institute (the predecessor of the Discovery Center) and director of the Northwest Wisconsin Manufacturing Outreach Center (now known as UW-Stout's Manufacturing Outreach Center), I found it abundantly clear in the organization's infancy that the assistance and guidance we offered were inherently valuable, key components to growth and advancement of small and medium sized companies.

Today, I am honored to lead an institution with the demonstrated capacity to:

- Identify cutting-edge technologies and advise clients regarding best practices; see "To Search the World Over: Technology Scouting for Branches, LLC," page 5.
- Bring the intellect and inspiration of research scholars to bear against industry challenges; see "Learning to Lead: Research Scholars Initiative," page 7.
- Help innovators overcome obstacles to success; see "Marketing Intelligence Opens Doors for New Technology: Cascade Biosystems, Inc.," page 12.
- Facilitate advanced education and training; see "Training to Remove Workforce Barriers: Federal Grant Helps UW-Stout Prepare Rehabilitation Counselors," page 11.

As you can see from these, and so many more, achievements, the Discovery Center continues to distinguish itself as a vibrant group of skilled problem solvers, gifted learners, and action oriented individuals.

For your part in that collaboration, please accept my sincere thanks and acknowledgment, and join me in anticipation of more good things to come.

Bob Meyer
Chancellor, UW-Stout

Established in 2009, the Discovery Center has earned a reputation for providing applied research experiences that empower UW-Stout's students to actively navigate their futures; strengthen UW-Stout's faculty and staff expertise; facilitate access to UW-Stout's resources for Wisconsin's businesses and organizations; and transform Wisconsin into a globally competitive economic leader.

Continuing on this strategic path with Chancellor Meyer at the helm, UW-Stout's Discovery Center achieved several milestones over the past year, including:

- Providing paid cooperative education experiences for students to execute technology-focused research;
- Establishing and facilitating CEO and emerging leader councils throughout Wisconsin;
- Extending Discovery Center resources throughout Wisconsin through a strategic alignment with the National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership program;
- Expanding leadership in results-focused applied research and university-based economic development.



**VALUE - ADDED
INDUSTRY ENGAGEMENT**

*Solve Real World Challenges
and Support Growth*



**OPTIMIZED
LEARNER OUTCOMES**

*UW-Stout Students & External
Continuing Education*



ECONOMIC DEVELOPMENT

*Support Regional Economies
and Create Wealth through
Technology Transfer*



INNOVATIVE RESEARCH

Advance and Apply Knowledge

2014-2015: A YEAR OF GLOBAL INNOVATION

RESEARCH SERVICES
GRANTS AND CONTRACTS:

\$2.7 MILLION
IN EXTERNAL GRANTS AWARDED

\$3.7 MILLION
IN CONTRACTS PROCESSED

\$43 THOUSAND
IN STUDENT RESEARCH GRANTS FUNDED

This year the Discovery Center's influence extended farther than ever before, reaching around the world with innovation, advancements, and impacts that demonstrate our contribution to the global community.



UNLEASHING GREAT MINDS ON GREAT PROBLEMS: UW-STOUT CHAPTER OF ENGINEERS WITHOUT BORDERS USA

“Participation in this project gives our students the unique opportunity to learn valuable skills such as global awareness and cross-cultural communication while helping those less fortunate than themselves. This project provides many opportunities for our students to develop their skills in a unique and challenging environment.”

Devin Berg
Advisor, UW-Stout
Chapter of Engineers
Without Borders

Director, Mechanical
Engineering Program,
University of
Wisconsin-Stout

The UW-Stout student chapter of Engineers Without Borders USA (EWB) was recognized by the university as a registered student organization in fall 2014. With that recognition, the time, energy, and expertise of UW-Stout was engaged to help EWB build a better world through projects that “empower communities to meet their basic human needs and equip leaders to solve the world’s most pressing challenges.”

With 21 charter members, UW-Stout’s EWB chapter was approved to begin work on its first engineering project: empowering the Nicaraguan village of Las Macias to improve access to clean drinking water. The minimum five-year volunteer project will impact the lives of approximately 500 Las Macias residents who currently rely on well water that’s hauled in buckets across rough terrain every day.

Five members of UW-Stout’s EWB chapter, accompanied by a translator and professional engineer, made an initial assessment trip to Las Macias in August 2015.

“The group is very excited to work in partnership with the community of Las Macias to help them raise their standard of living,” said Trevor Sobotzak, engineering technology major and UW-Stout EWB chapter president. “We are committed to making a difference in the lives of others while gaining an educational experience that can’t be found in the classroom.”

The next project steps are to get cost estimates, discuss options with the village and design a system. Chapter Advisor Devin Berg hopes this work will begin in summer 2016. The UW-Stout EWB chapter and Berg are working with a nongovernment community development agency to be the project’s main contact in Nicaragua, as well as the Wisconsin-Nicaragua Partners of the Americas.

View the full story at www.facebook.com/EWB.UW.Stout/



POISED FOR INTERNATIONAL SUCCESS: UW-STOUT EXPORTECH™ GRADS

In early April 2015, executives from four northwestern Wisconsin manufacturing companies began participating in ExporTech™, an export acceleration program designed to help manufacturers who would like to enter or expand into global markets.

Jointly offered by Stout Manufacturing Outreach Center (MOC), Professional Education Programs and Services and their partners, ExporTech™ takes a proactive, strategic approach to international sales, offering a structured, yet customizable, process that guides companies through every aspect of export growth.

Representatives from Probiom Probiotics of Wausau, Wheaton Grain of Chippewa Falls, DairySmarter of Galesville, and SteelGlaze of Merrill attended three, day-long ExporTech™ workshops to learn export strategy and best practices, mechanics of exporting, and export growth plan development. In addition to group workshops, an expert coach individually guided each of these companies to develop a customized international growth plan that identifies specific revenue goals and target markets.

Graduates of the spring 2015 ExporTech™ program received their diplomas June 9th at Phillips-Medisize Corporation's Origen Center in Menomonie, and anticipate offering Wisconsin-made products to new markets throughout the world.

ExporTech™ is a national program offered in northwest Wisconsin by the UW-Stout MOC in partnership with:

National Institute of Standards and Technology

U.S. Commercial Service

Manufacturing Extension Partnership

U.S. Small Business Administration

Wisconsin Economic Development Corporation

ACCORDING TO SPRING 2015 EXPORTECH™ GRADS, WISCONSIN-MADE PRODUCTS MAY SOON BE HEADED TO:

- Dubai
- South Korea
- China
- Indonesia
- Mexico
- Columbia
- New Zealand
- Germany
- United Kingdom
- France



TO SEARCH THE WORLD OVER: TECHNOLOGY SCOUTING FOR BRANCHES, LLC

“They (MOC) stayed on task, familiarized themselves with our product, and thought outside the box. The MOC understood what we’re trying to accomplish.”

Jim Judkins
Manufacturing | Process
Engineer Branches, LLC

Branches, LLC, a canoe and kayak paddle manufacturing company located in Osceola, Wisconsin, sought to update and improve one of its production lines in 2014 and turned to the Manufacturing Outreach Center (MOC) for help. The project’s primary goal was to identify an alternative decorating process for one of Branches’ fastest growing products. MOC’s work also aimed to reduce process time, process steps, and inventory requirements by moving the decorating operation to the end of the production line.

To do so, the MOC Technology Scouting team comprised by MOC Development Engineer Roger Gehring and Technology Scouting students Dillon Dudley and Pierce Hanson, began researching existing technologies capable of meeting the company’s needs.

The team conducted an extensive, multi-phased study to identify potential solutions and spoke directly with providers throughout the United States and across the globe. “There’s great value in learning from experienced people in any given industry,” notes Gehring. “We often find that a technology that is well understood in one industry can have game-changing impacts when applied to another.”

MOC findings were presented to Branches, LLC, in March 2015. For each option, including the final recommended process, the team outlined the pros and cons of quality, production item, production flow, required skill level, and estimated costs, as they relate to Branches’ priorities.



2014-2015: A YEAR OF TRANSFORMATION

Fall
2014



672

Accesses to Fab
Lab equipment



1,528

Total hours of
machine time

The Discovery Center embraced change in 2014-2015, moving forward with a new era of leadership at UW-Stout and significant strides toward our goals to provide vibrant applied research, focused technical assistance, and ambitious research initiatives.

During the 2014 fall semester, Discovery Center Fab Lab equipment was accessed 672 times for 1,528 total hours of machine time.



LEARNING TO LEAD: RESEARCH SCHOLARS INITIATIVE

A primary focus of the Discovery Center is developing and transforming leaders in a dynamic and collaborative environment. In the summer of 2014, the Discovery Center partnered with the UW-Stout Provost's office to launch the Research Scholars program providing resources for emerging faculty and staff to advance their research and creative interests.

Through this initiative, The Discovery Center links emerging leaders like Noah Norton, UW-Stout Associate Professor in Industrial Design, with industry partners to solve real-world challenges. In the fall of 2014, Norton led a team of three UW-Stout industrial design students to address a challenge faced by Rice Lake Weighing Systems (RLW), a world-renowned leader in manufacturing and distribution of precision weights and process control equipment. The company requested help from the Discovery Center to develop a distinctive line of cases to preserve and protect high quality, precision weights.

"...weights like these impact the manufacturing of products all around us. Their influence is everywhere."

Noah Norton
Associate Professor,
Industrial Design

Research Scholar
University of
Wisconsin-Stout

"They're almost like jewels," observed Norton of the small, high-tech, polished cylinders that are so sensitive, they require gloved handling to avoid oil deposits that could compromise accuracy. "Although most people are largely unaware of their existence, weights like these impact the manufacturing of products all around us. Their influence is everywhere."

After touring the RLW facility and meeting with representatives to discuss priorities and goals, Norton and the industrial design team began generating initial ideas for weight cases, subsequently refining concepts approved by RLW for further development. The team made its final presentation to RLW in November 2014, providing the company with 3D printed prototypes and two designs: one large case to store an entire set of weights, and a series of individual cases to store single weights. Each individual case features a particularly innovative clamp that allows the weight to be captured and released by a simple molded spring in the case cover, eliminating the need for direct contact.

Responding to RLW's objectives, both casing solutions feature a clean, high-tech design with components made from stainless steel, clear injection molded plastics, and silicone gaskets to protect and secure the weights while allowing visibility.



“It is a privilege and an honor to serve as UW-Stout’s chancellor. Since it was founded by James Huff Stout in 1891, the university has enjoyed a rich history. It is renowned for its applied programs and strong ties with employers that enable graduates to go out in the world with such success.”

Bob Meyer
Chancellor
University of
Wisconsin-Stout

A FAMILIAR FACE: BOB MEYER RETURNS TO UW-STOUT AS CHANCELLOR IN 2014

Bob Meyer became the seventh chancellor at UW-Stout on August 16, 2014, succeeding Charles W. Sorensen, who served 26 years. Chancellor Meyer didn’t need long to find his way around campus: He worked for UW-Stout in various capacities – professor, college dean and special assistant to the chancellor – for 25 years. He left in 2006 to become president of the Wisconsin Indianhead Technical College in Shell Lake, Wisconsin, before being named by the UW System Board of Regents in May 2014 as UW-Stout chancellor.

“Chancellor Meyer is an established leader with an extensive knowledge of Wisconsin and a long-time affinity with UW- Stout. He understands its mission, challenges and potential, and how higher education must evolve to meet the needs of those it serves,” said UW System President Ray Cross. “He has a distinguished record of successful service and senior-level leadership, and I am confident he is well prepared to lead UW-Stout to a bright future.”

Chancellor Meyer holds a Ph.D. in industrial engineering from the University of Minnesota. He earned an M.S. in management technology and a B.S. in industrial education, both at UW-Stout.

STOUT
PROUD

2014-2015: A YEAR OF OPENING DOORS



86
Programs

The Discovery Center opened doors of opportunity for our 2014-2015 partners, sharing critical expertise and innovation through new offerings tuned to emerging technology, business needs, and cultural trends.



4,665
Participants Served

The Discovery Center's Professional Education Programs and Services unit offered and supported 86 programs and served 4,665 participants. Registrants participated in seminars, conferences, certificate programs, and online offerings to enhance their professional development and obtain continuing education units (CEUs) as relevant to licensure requirements.



DYNAMIC DISCUSSIONS: INNOVATIONS IN HEALTHCARE SERIES

A new series from UW-Stout Professional Education Programs and Services, Innovations in Healthcare was very well received during its initial run in April 2015. The 3-day series welcomed benefits managers from business and industry to help them gain insight on recent health care mandates and the changing landscape of health care in the United States.

Innovations in Healthcare was first envisioned several months earlier when a Manufacturing Outreach Center (MOC) Peer Council identified the topic. The idea was addressed again at the 2014 Manufacturing Advantage Conference, where conversation spurred Professional Education to develop this opportunity for employers.

Today, Innovations in Healthcare is engaging business and manufacturing representatives in dynamic discussions of health care management success strategies. Expert speakers from throughout the United States address topics including unique financing options, pharmacy programs, onsite clinics, telemedicine, direct contracting, and other options to pursue value in health care and innovative methods to provide employee health care coverage.

Representing Rx Benefits, Inc., a Birmingham, Ala., firm specializing in pharmacy benefit procurement and administration, Jack Tews spoke at the spring 2015 series and returned to speak again at the fall 2015 series.

“It’s very important that companies prioritize management of the pharmaceutical portion of their benefits package in 2016,” observed Tews, adding that he anticipates a significant increase, nearly double that of current cost, for this benefit in the near future. “Employers need to seek informed, educated guidance in order to get a handle on this expense now.”

In direct response to program feedback, an advanced version of Innovations in Healthcare is currently in the planning phase, and when complete, will offer in-depth exploration of health care topics requested by past participants.

“Innovations in Healthcare shines a light on these issues, and more importantly, offers solutions and resources for employers who are trying to navigate their way through some very complicated topics.”

Jack Tews
Business Development,
Rx Benefits, Inc.
Speaker, Innovations in
Healthcare Series



TRAINING TO REMOVE WORKFORCE BARRIERS: FEDERAL GRANT HELPS UW-STOUT PREPARE REHABILITATION COUNSELORS

The U.S. Department of Education awarded UW-Stout a grant of nearly \$1 million in 2014 to help address the need for more vocational rehabilitation counselors.

“This long-term training grant will fund advanced education and training for students interested in being rehabilitation counselors,” said Daniel Kelsey, a professor in the Department of Rehabilitation and Counseling at UW-Stout and the project director. “These students will then become professionals and assist people with disabilities who desire to obtain employment.”

The Rehabilitation Long-term Training Grant, funded by Rehabilitation Services Administration, provides scholarships for students who are admitted to the on-campus or online M.S. degree in vocational rehabilitation program at UW-Stout.

UW-Stout Research Services facilitated application for the grant which totals \$950,000. The funds will be applied directly to student scholarships over five years. “Vocational rehabilitation counselors work with individuals with disabilities who are seeking assistance in returning to work or who are entering the workforce for the first time,” Kelsey said. “The counselors specialize in implementing workplace accommodations and removing physical and/or social barriers that prevent individuals with disabilities from obtaining or maintaining employment.”

The demand for rehabilitation counselors is expected to grow 20 percent nationally over the next 10 years, Kelsey said, and the grant will help to reduce the shortage of rehabilitation counselors in the United States. Graduates from UW-Stout’s program are in high demand and report an employment placement rate of 95 percent.

“Helping students become rehabilitation counselors is a win-win for society. Individuals with disabilities obtain work and employers find qualified employees, regardless of disability status.”

Daniel Kelsey
Professor, Department
of Rehabilitation
and Counseling
University of
Wisconsin-Stout



MARKETING INTELLIGENCE OPENS DOORS FOR NEW TECHNOLOGY: CASCADE BIOSYSTEMS, INC.

“Yes, there was a great tangible outcome. Our company was positioned to present our technology to several molecular diagnostic companies and investors within the biotech industry.”

Kenneth Smith
President/CEO
Cascade Biosystems, Inc.

IMPACTS

- Increased staffing by 150 percent
- Added a new office in San Diego, California, where virus detection assays are currently being developed
- Secured at least five in-person meetings with major industry representatives

Cascade Biosystems, Inc., a biotechnology venture based in Colfax, Wisconsin, recently developed an easy-to-use, fast, portable, and affordable method to detect DNA.

Called “Restrictase Cascade Exponential Amplification” (RCEA), Cascade Biosystem’s new patented technology differs from current DNA detection by amplifying the signal rather than the target. The resulting technique is faster, easier, and field-deployable.

Despite these advantages and potential applications in cancer detection, food safety testing, bacterial infection/pathogen detection, agricultural/veterinary diagnostics, and many others, RCEA technology remained largely overlooked by dominant corporations within the worldwide molecular diagnostic industry.

In 2014, Cascade Biosystems consulted UW-Stout’s Manufacturing Outreach Center to develop effective communications and marketing to open doors for this entirely new platform technology.

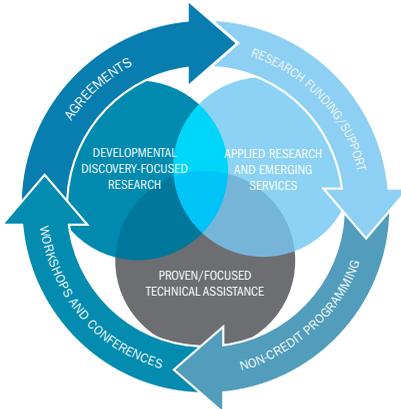
MOC collaborated with Research Triangle Institute (RTI) International, a leading nonprofit research and development organization with specialized knowledge in this highly technical field. Together, MOC and RTI developed a communications tool with specific portions directed toward scientists, and other portions directed toward high level executives.

The communications piece and market intelligence offered by MOC and RTI were instrumental in making key contacts within the molecular diagnostics industry - those with the potential to license and/or co-develop RCEA technology.

RCEA technology has since garnered the attention of high-level executives in molecular diagnostics, prompting them to see its potential and visualize their organization’s role in bringing this game-changing technology to market. As of fall 2015, Cascade Biosystems is working on a virus detection test for a U.S. based blood testing company, and is engaged in ongoing negotiations for patent licensing and commercialization opportunities with multiple worldwide companies and investors.



LOOKING FORWARD



Throughout the past year, the Discovery Center has focused on technology as a vehicle to transform our organization, the university and Wisconsin's economy and position each to meet the challenges of tomorrow. This report communicates the broad range of these activities, from advancing discoveries through scientific investigation and applied research to translating and transferring knowledge through topical programming and results-focused technical assistance.

Our funding sources and industry partners alike have looked to the Discovery Center and UW-Stout to adapt, adopt and accelerate those technologies that will have the highest impact on their road to success.

Through our Manufacturing Outreach Center, companies in multiple industries are employing technology to optimize production processes, implement digital fabrication, and advance product development. Building on these efforts, our Professional Education group leverages technology to deliver leading edge professional development, training and certificate programs that both broaden and strengthen the capacity of our individual, company and community learners. At the core of our activities this year was our support of research that explores new technologies and applies them to where they can have the greatest impact.

Finally, we understand that learning is an additive and lifelong process and the Discovery Center continues to launch initiatives that groom faculty, staff and student leaders and engage them in solving the dynamic challenges of industry and society. We also believe that problem formulation, goal-setting and execution are often most successful in a team environment. The Discovery Center pushes individual team members to perform outside their comfort zones and to realize even greater success and meaningful change.

We truly value the support of our academic, industry, community, state and federal partners and look forward to continuing to serve you all. As we look forward to the challenges of tomorrow, the Discovery Center remains committed to advancing student learning through real-world problem solving and transforming faculty leaders through engagement in complex industry challenges.

Randy Hulke
Executive Director
Discovery Center

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In addition to dozens of companies and individuals funding Discovery Center efforts, we would also like to recognize state and federal partners including:

NIST MEP
EDA
UW-Extension
SBA
UW-System
WEDC
WI Department of Agriculture
NSF