It's been a remarkable first year for the Discovery Center. Our success is a tribute to the support of our industry, government and academic partners who continue to provide opportunities to serve as a conduit for collaboration among institutions, organizations and companies.

In the past year, the Discovery Center engaged in more than 120 technical assistance projects and 70 collaborative applied research projects, establishing and deploying cross-disciplinary teams of students, faculty and staff from every college on campus. These projects connected UW-Stout with industry and community partners who invested in these teams to expand capacity, to challenge students and to harness the intellectual potential of faculty and staff. This collaboration enabled us to create next-generation technologies, innovative new products and effective processes and systems.

Our challenge is to build on these successes in the coming year. Discovery Center plans include launching a strategic initiative to advance medical device development and commercialization, linking with early-stage investors to support new ventures, developing additional tools to improve our manufacturers’ global competitiveness, and delivering professional education programs to bolster the businesses and organizations that support our region.

This inaugural Discovery Center annual report is an acknowledgment of our shared accomplishments throughout the past year. We look forward to strengthening these collaborative partnerships to address industry challenges, to inspire innovation and to advance knowledge for the benefit of the region and the state.

Randy Hulke, Executive Director
Applied research has a long history at UW-Stout. Since the institution’s founding in 1891, students, faculty and staff members have benefited from a culture guided by principles of putting theory into practice. Today, real-world projects are regular occurrences in the environment of teaching, learning and discovery at UW-Stout. And, since the university was designated Wisconsin’s Polytechnic University in the spring of 2007, UW-Stout has placed an even greater emphasis on research.

The polytechnic culture at UW-Stout has initiated and fueled strong partnerships with industry for more than 100 years. One of the more
The visible demonstrations of these partnerships is the Stout Technology Transfer Institute (STTI). Over the past 30 years, the STTI launched a number of centers to put UW-Stout’s technologies and specialists within reach of thousands of companies and entrepreneurs. When the university reorganized to four distinct colleges in 2008, the success of the STTI model facilitated even broader technology transfer activities. Increasingly, these activities provided students, faculty and staff with opportunities to engage in projects that crossed boundaries between programs and colleges.

In the fall of 2008, Chancellor Charles W. Sorensen pulled together a diverse team of faculty and staff researchers and administrators to construct a plan to optimize these cross-disciplinary project opportunities and to establish direction for future applied research and technology transfer initiatives. This plan resulted in the creation of the Discovery Center in July 2009, aligning the applied research and technical assistance assets of the university to facilitate common access and to bolster these vital resources.

The formation of the Discovery Center was made possible through an endowment to UW-Stout, which also provided seed funding for the earliest Discovery Center projects. A dynamic blend of private and public support sustains the Discovery Center’s ongoing operations.

Through this support, Discovery Center projects draw on the intellectual and physical strengths of focused programs in UW-Stout’s four colleges:

- Arts, Humanities and Social Sciences (CAHSS)
- Education, Health and Human Sciences (CEHHS)
- Management (COM)
- Science, Technology, Engineering and Mathematics (CSTEM)
DISCOVERY CENTER

By integrating UW-Stout’s applied research assets, its faculty, staff and students, and its relationships with community and industry leaders, the Discovery Center creates collaborative partnerships and provides leadership for innovation-based and knowledge-driven solutions for businesses, student learning and economic development.

During 2009-10 the Discovery Center selected and launched more than 65 projects in the areas of new product development, food research, manufacturing research, quality and management systems support, sustainable energy, industry cluster development and economic development. The Discovery Center selects projects that provide participation opportunities for multiple disciplines, leverage close collaboration with industry partners, closely match the priorities of UW-Stout programs and provide solutions to industry challenges with broad impacts.

The Discovery Center serves as a gateway to UW-Stout and UW System applied research, technical assistance, economic development, extension and professional education resources. Reporting directly to the Provost and Vice-Chancellor of Academic Affairs, the Discovery Center is positioned to efficiently launch and facilitate multiple collaborative efforts between and among UW-Stout’s colleges, partnering institutions and industry. The Discovery Center encompasses the university’s contracts, grants, intellectual property, technology transfer and privately funded research enterprise. This unique structure provides creative project funding options and opportunities, resulting in greater collaboration and measurably higher impacts from applied research and creative experiences.

These research and creative experiences are supported by the coordinated activities of the Discovery Center team:

- Research Services
- Stout Technology Transfer Institute
- Professional Education Programs and Services
- Extension and Partnership Services
CENTERS OF EXCELLENCE

The Discovery Center is constructing emerging technology centers of excellence around research and technical expertise in medical device engineering, plastics engineering, life sciences and industrial design. These centers draw on UW-Stout resources, but also on resources within other universities and industry partners, creating a true single point of access for external stakeholders.

The collaborative results of these efforts are illustrated in the early success of the Genomics Technology Access Center (GTAC), housed in the new Jarvis Hall Science Wing addition. Under the leadership of Dr. Michael Pickart, the center combines faculty expertise with new laboratories and equipment, including a Versadoc imager and real-time PCR to allow more precise analysis of complex gene expression and a gene analyzer to greatly expand capacity for high-throughput analysis of gene expression.

The center’s work includes collaboration with Marshfield Clinic to provide center researchers with tumor samples for analysis, and creation of tissue engineered models to identify and understand tumor stem cells in cancers. The center is also working to develop new PCR-based methods for detecting mutational changes in genomes to aid in the identification of potential new drugs and genetic pathways involved in drug responses and disease using zebrafish models.

DESIGNWISE MEDICAL

DesignWise Medical, a nonprofit pediatric medical device company, has partnered with the Discovery Center to develop solutions for unmet pediatric care needs. UW-Stout students, faculty and staff engagements with DesignWise include a pediatric oxygen delivery system, a pediatric venous access device and a diabetic management device.

According to Brad Slaker, president of DesignWise, UW-Stout is a great partner because of its reputation, the diversity of the programs offered, the applied nature of its programs and its nationally recognized industrial design program.

“The rigorous and intense project focus and the commitment of the students and faculty to create the best and most creative solution options have been phenomenal. UW-Stout is a premier educational institution and an excellent partner for DesignWise Medical.”

– Brad Slaker, President
RESEARCH SERVICES

As the central research office at UW-Stout and a primary component of the Discovery Center’s applied research efforts, Research Services facilitates the conceptualization, submission and awarding of all grants, contracts and non-purchasing agreements. UW-Stout’s research activities increased significantly in the past year, building on the steady growth championed by Research Services over the past few years.

FY 2009-10 summary:

- $9,200,000 in grants awarded (127) and contracts signed (219)
- 25 student research grants awarded
- 77 posters presented at UW-Stout Research Day
- The ninth edition of the Journal of Student Research (JSR), comprised of 12 articles, was printed and published online

Other notable UW-Stout research representation and achievements:

- National Conference of Undergraduate Research in Missoula, Montana – 30 students
- UW System Research Symposium – 38 students and staff
- Posters in the (Wisconsin Capitol) Rotunda – five students
- Web-based “Portals of Discovery” incorporated into the Discovery Center
Kitrina Carlson’s broad vision of what could be in the world of science education goes beyond the satisfaction she gets in her classroom. For Carlson, science can’t be contained in a test tube, boxed or confined to four walls. An associate professor of biology, she sees limitless possibilities as long as students are given access to opportunities to learn and take their lessons into the world.

To that end, Carlson and others are working to make science more accessible via two major grants they received in 2009 from the National Science Foundation. One, for $996,000, is funding “Portals of Discovery Program,” a searchable database-driven website where students can connect with other student researchers in their areas of interest. The second, for $567,000, awarded Carlson and co-grantee Krista James, also a UW-Stout biology instructor, provided funding for “Polytechnic Mission, Applied Science.” Both grants are aimed at attracting more disadvantaged young people to science.
The Stout Technology Transfer Institute (STTI) provides diverse industry partners with strategic business and process improvement technical assistance. UW-Stout has developed outreach programs consistent with its polytechnic mission to meet the perceived and expressed needs of industry and has received numerous national awards for technology transfer work. For nearly 30 years, one of UW-Stout’s main mechanisms for economic development has been the Stout Technology Transfer Institute. Now integrated into the Discovery Center, the STTI has grown to include technical assistance capacity across all colleges.

In the past year, STTI activity revolved around the efforts of four established centers:

- **Northwest Wisconsin Manufacturing Outreach Center**
- **Center for Innovation and Development**
- **Technology and Business Incubator**
- **Economic Development Administration – University Center**

**CENTER FOR INNOVATION AND DEVELOPMENT**

The CID provides entrepreneurs with assistance in product design and development, manufacturing feasibility assessment, prototype development and product evaluation. Housed within the Discovery Center, the CID is a collaborative effort of UW-Stout, the Small Business Development Center, UW Extension and the U.S. Economic Development Administration. The CID also leverages the resources of the digital fabrication laboratory (Fab Lab) to engage students with tools to help conceptualize, design and fabricate their innovative product ideas.

**TECHNOLOGY AND BUSINESS INCUBATOR**

The incubator provides a sheltered environment for emerging enterprises. It fosters technical businesses through close relationships with faculty, students, industry and the UW-Stout community to better enable Wisconsin to compete in the global economy and sustain employment within the region. New businesses receive affordable facilities, services and professional support in areas that include marketing, packaging, product development and plant layout. Some start-up costs are deferred until graduation from the program. The UW-Stout incubator eases the way into the private sector to promote further economic development.
Soon after Cool Science founder Ken Smith moved into the Technology and Business Incubator, his company became part of an engineering and technology capstone project to demonstrate the feasibility of his pressure-balanced fuel cell technology in a working LED camp lantern. Following this successful demonstration, Ken partnered with WiSys Technology Foundation and STTI’s CID to develop a prototype to advance the commercialization efforts. Through further collaboration with faculty at UW-Stevens Point and UW-Green Bay, this project is now in the next phase of development.
The Northwest Wisconsin Manufacturing Outreach Center (NWMOC) was established in 1994 as part of the National Institute of Standards and Technology (NIST)/Manufacturing Extension Partnership (MEP), its primary funding source.

Formed as a partnership between UW-Stout and five technical colleges, the NWMOC is headquartered within the Discovery Center. The NWMOC delivers integrated transformation services, serving more than 3,500 small- and medium-sized manufacturers in 33 counties in northern and western Wisconsin.

The NWMOC is results-focused and uses a third-party survey house to monitor the results of completed client projects. In the past year the NWMOC:

- Served 171 manufacturers
- Delivered 122 technical assistance projects
- Sponsored 17 public events attended by 387 people from 151 companies
- Achieved client-reported impacts:
  - $26.2 million in sales, cost savings, investment
  - 395 jobs
  - 8.94 customer satisfaction rating (10 pt scale)
GREEN BAKERY

Owners of a rural Wheeler, Wisconsin cooperative wanted to start a niche bakery to produce and market organic, vegan and gluten-free (wheat-free) breads. While none of the owners had commercial bakery experience, they were aware of a Twin Cities supermarket chain that had been struggling to locate quality, good-tasting, gluten-free breads with no preservatives. The company worked with Dr. Lamin Kassama, a UW-Stout food and nutrition professor, to optimize the baking process and test the recipes for commercial production. Through partial support from a Wisconsin Department of Commerce grant to assist in community-based economic development, university specialists perfected the original recipes for commercial production. NWMOC project management kept the project on track.

“I will definitely come to UW-Stout for assistance again, and hire more students as we expand the Green Bakery business or add new businesses. The value added by UW-Stout and its students has been astounding.”

– Ann Woods, Co-Owner

SCHOFIELD ENTERPRISES

Schofield Enterprises is a family-owned manufacturer of electrical wire harnesses, battery cables and instrument panel assemblies. In business since 1966, the 115 employee company was facing increasing customer pressure to reduce lead times and costs. The manufacturing strategies that were successful in the past could not deliver what was needed in today’s rapidly changing, competitive world. NWMOC worked with Schofield through the Enterprise Business Transformation Planning Process and through projects in Value Stream Mapping, Plant Layout and Cellular Design. Efforts resulted in $200,000 in annual cost savings; $80,000 in avoided investments; 50 percent reduction in parts travel distance and 50 percent reduction in lead time.

“This has given us a nice edge. When I visit customers and mention that we employ Lean Manufacturing techniques, their eyes light up. We have not missed a ship date since implementing Lean; it will be a major part of our future.”

– Shawn Feirn, Vice President
PROFESSIONAL EDUCATION PROGRAMS AND SERVICES

Professional Education Programs and Services delivers educational programs to advance the knowledge of professionals in the field and provides venues to exchange ideas with peers in business, industry, education and other sectors.

Built on an innovative mindset and entrepreneurial concepts, the programs are designed with an understanding of the inherent complexity of the adult learner. Discovery Center Professional Education programs are relevant, high-quality and client-centered.

Conferences and Workshops are developed to address today’s challenges and trends in business, industry and professional development. Using diverse learning methodologies, knowledge is disseminated to thousands of professionals every year in support of individual goals and objectives.

Custom Education programs for professionals are developed in partnership with individual organizations. Upon completion of a needs assessment to identify learning objectives, audience and culture, the program is tailored to align with the organizational strategy. The transfer of knowledge is enhanced for the adult learner by using a blend of teaching methodologies and integrating adult learning principles.

Certificate Programs and Noncredit Courses, including continuing education units (CEUs) for certificate renewal and relicensure, are offered through programs and courses locally and online, providing access around the world.

Program and Event Planning Services are provided to help businesses, agencies, organizations, colleges and departments deliver relevant information through conferences, workshops, seminars and video conferences, ranging in size from five people to several thousand.
An innovative concept of UW-Stout’s Chancellor Sorensen, the summit brought together polytechnic universities to share best practices specific to active, applied learning; to promote innovation in curriculum and applied research; and to provide an excellent platform for networking and building relationships with polytechnic colleagues. In partnership with Professional Education Programs and Services and an advisory group of other polytechnic universities nationwide, the program was developed and launched in July 2009.

Following a very successful initial offering, the second annual summit was held in July 2010 with both national and global participants. The summits have led to initial collaboration discussions, including plans for student/faculty exchanges. Due to UW-Stout’s success in launching this event and the cooperative spirit to sustain the network, a different polytechnic institution will host the summit each year, beginning in 2011 with Southern Polytechnic University in Marietta, Georgia.
EXTENSION AND PARTNERSHIP SERVICES

Discovery Center’s Extension and Partnership Services (DCEPS) unit develops and manages partnerships with a wide variety of local, regional and statewide institutions to streamline access for area businesses and potential industrial entities to the physical resources and expertise of UW-Stout. Additionally, the unit promotes the sale of Stout Technology and Business Park property.

In the past year, important partnerships have developed or were strengthened in an effort to serve the region including:

➤ Economic and workforce development offices
➤ Development entities for small business and entrepreneurial activity
➤ Municipal planning and growth commissions
➤ Chambers of commerce
➤ Commercial brokers and financial institutions

Internal partnerships were also developed this year with the various units in the Discovery Center to promote collaborative business support and optimize efforts to help meet regional growth agendas. Partial funding for Extension and Partnership Services comes from UW Extension.

Additional activities this year included providing access to collaborative ventures with other regional institutions of higher education, public and private community entities and PK-12 systems through the West Central Wisconsin Regional Education Consortium; and facilitating industry access to the resources of six higher education institutions in the region through a web-based searchable database known as ReBAR (Regional Business Assistance Resource Directory.)

DUNN COUNTY ECONOMIC DEVELOPMENT CORPORATION

Extension and Partnership Services works in close partnership with the Dunn County Economic Development Corporation to encourage entrepreneurship, expand and retain businesses, and attract industry throughout Dunn County. Through this partnership, the unit provided assistance to 54 entrepreneurs in FY 2009-10. In the first six months of 2010 alone, the partnership yielded $114,000 in low-interest loans to county-based business start-ups, leveraging $1.19 million dollars and initially creating 11 jobs.
DISCOVERY CENTER MARKETING SERVICES

The DCMS provides comprehensive marketing solutions for the units within the Discovery Center, as well as other campus entities such as UW-Stout Online and Credit Outreach. The team provides expertise in the areas of strategic planning, project management and list/data development, as well as content and design for websites, print and electronic marketing pieces. Growth in the demand for services from DCMS has grown 75 percent in the last two years.

Notable recognitions received in the past year include:

→ 2010 Bronze Award for Research Week campaign, awarded by University Continuing Education Association in their annual national marketing awards competition

→ 2010 Outstanding Partner Award granted by UW-Stout’s School of Education

“The DC Marketing Services unit does an exceptional job of providing quality marketing materials and services... Their work is creative, professional, timely and yields results... The team is very client focused and a pleasure to work with!”

– Dr. Carol T. Mooney, Program Director M.S. and Ed.S. Career and Technical Education
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University of Wisconsin-Stout is the first Malcolm Baldrige Award recipient in higher education.