



Radius Steel Fabrication-SOO Tractor Targets New Industries

Radius Steel-SOO Tractor in Sioux City, Iowa, has built a solid reputation as a leading steel fabrication company during its 70-year history. The Mahaney family founded SOO Tractor Sweeprake Company in 1941 to meet the needs of the agricultural machinery industry and provide meaningful employment for skilled workers. The privately held firm recently rebranded to Radius Steel Fabrication, a name that better describes who the company is and what they do, according to Allen Mahaney, president. The goal is to expand the company into new industries including defense, automotive, energy, heavy construction, and waste management.

"This creates a company with a diversified portfolio, as well as safeguards us from the dependency and vagaries of any one product category, product line, distribution pattern, or seasonality," says Ida Covi, CEO of Radius Steel.

The move to diversify is the most recent example of how the company's leadership team is dedicated to successfully expanding the business while maintaining high standards of durability and reliability.

During the first 30 years, Radius Steel-SOO Tractor manufactured and sold agricultural equipment such as wooden sweeprakes, front-end loaders, and backhoes under its own name. In the early '70s, however, the company began the transition to original equipment manufacturer (OEM), producing products such as front-end loaders, backhoes, and attachments to major construction and agricultural equipment

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On the Cover: Radius Steel's welding certification adds another layer of quality control, guaranteeing superior welding procedures, weld quality, and workmanship.

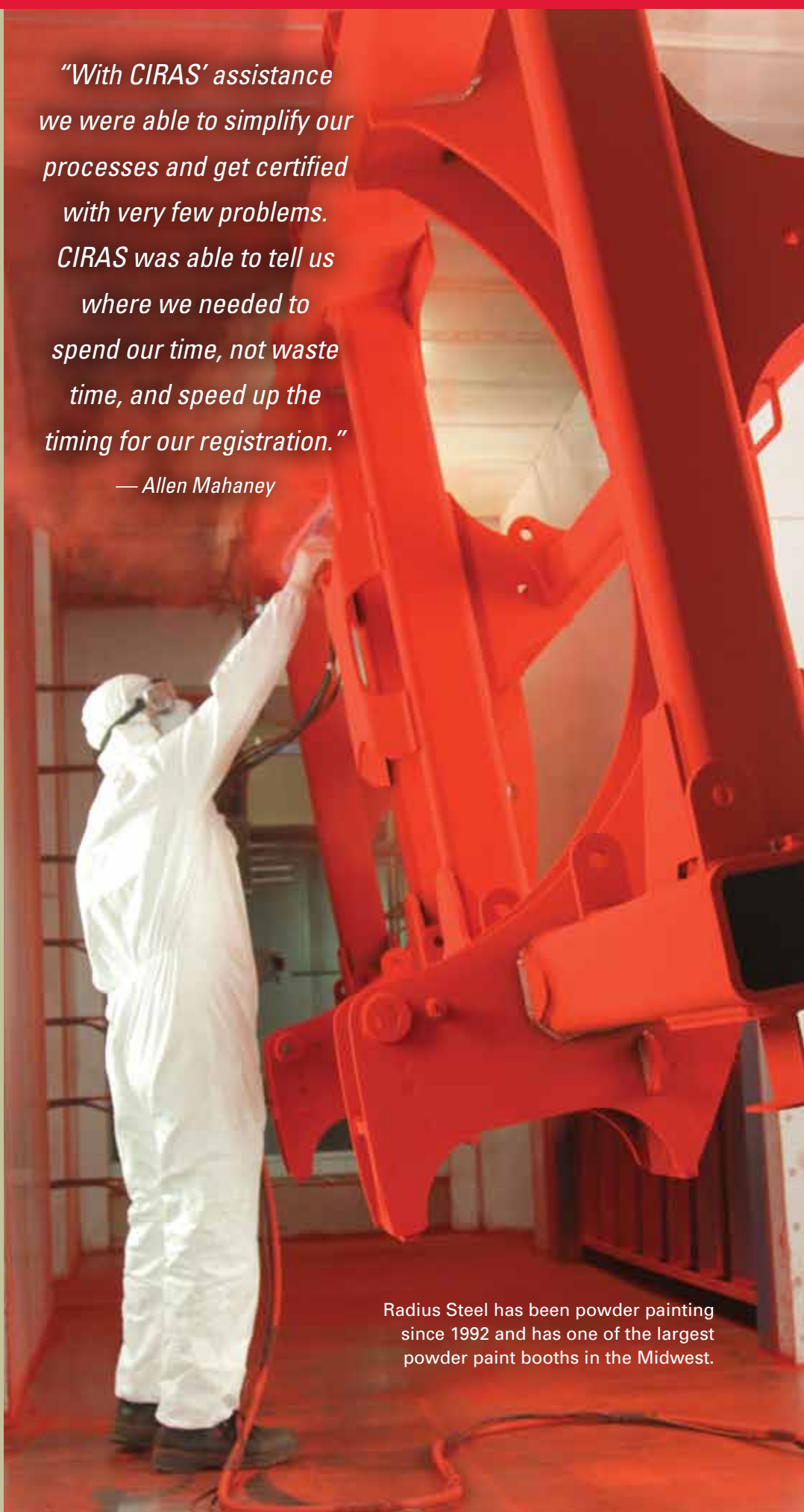
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"With CIRAS' assistance we were able to simplify our processes and get certified with very few problems. CIRAS was able to tell us where we needed to spend our time, not waste time, and speed up the timing for our registration."

— Allen Mahaney

Radius Steel has been powder painting since 1992 and has one of the largest powder paint booths in the Midwest.

for other companies—e.g., Massey Ferguson—to sell under their respective brand names.

Radius Steel-SOO Tractor further extended its customer base in 1992 when it became a major supplier for AGCO, a global leader in agricultural equipment. AGCO products include a full line of tractors, combines, and hay tools sold through four core brands—Challenger®, Fendt®, Massey Ferguson®, and Valtra®. Today, Radius Steel-SOO Tractor is well known in the industry as an OEM.

The company's long-standing focus on precision, quality, and continuous improvement has remained steadfast throughout its history. The effort to earn ISO (International Organization for Standardization) 9001 Quality Management System certification is one indicator of this focus. The ISO 9000 family of standards is designed to provide a certifiable set of business requirements for a world-recognized standard of quality performance. It includes development of a documented system to manage quality assurance throughout the business and establishment of an internal auditing capability to effectively maintain the quality system.

In 2009 Radius Steel-SOO Tractor sought CIRAS' assistance in developing and implementing the ISO quality management system. Bob Coacher, CIRAS account manager, worked with the management team and production operators to define and develop the system. "They recognized the importance of ISO certification to gain new customers in the global marketplace," Coacher says. "It's a way for customers to know that a company has consistent quality."

The process for earning ISO certification began in January of 2010. First, a gap analysis of the company's existing quality management system was conducted. From this it was determined that a number of procedures needed to be rewritten, defined, and added. With

written instructions in place, managers, supervisors, and employees were trained to use and manage their new system. An internal audit team was then selected and trained to insure continued use and compliance with the system.

Finally, CIRAS provided a preregistration audit with feedback to the company on any missing components. With the system in place, a certified ISO 9000:2008 registrar audited the company's system and, in August 2010, the official registration certificate was issued.

"With CIRAS' assistance we were able to simplify our processes and get certified with very few problems," Mahaney says. "CIRAS was able to tell us where we needed to spend our time, not waste time, and speed up the timing for our registration."

Maintaining the high quality ISO standards depends on the dedication of employees, states Covi. "Our quality can only be accomplished with the many long-term employees who help us maintain those standards." In the two years since earning its ISO certificate, the company has reported substantial increased sales and cost savings as well as the addition of more than 20 new jobs, for a total of 130 employees.

Continuous improvement initiatives are essential to the company's success, according to Covi. "We are constantly striving to improve and innovate to be an industry leader," she says. "No matter how small the improvements, they incrementally add value to our goals, lower costs, and lead to an even greater manufacturing precision. Over the years, we have had a great partnership with CIRAS. They have helped us increase our efficiency and reduce waste."

The company has two production facilities totaling more than 300,000 square feet where it fabricates, welds,

paints, and assembles products. With the addition of new products, the company needed another manufacturing line and turned to CIRAS for assistance.

Coacher reviewed the new layout to help the company be more efficient and reduce waste. He is continuing to work with them as the product mix evolves to ensure that the work flows smoothly.

"Radius Steel-SOO Tractor's leadership team has shown they have a strong vision for ensuring that the company is positioned to continually grow and improve production efficiencies," adds Coacher. "We will continue working with the operations team to meet this vision by helping to implement an action plan designed to improve organizational productivity (the ratio of companywide output to input) based on the proven

principles of Lean Constraint Management."

To make certain that its products meet the most stringent quality inspections, Radius Steel-SOO Tractor applied for the Canadian Welding Bureau CSA Welding

Standard 47.1 certification this past summer. The Canadian Welding Bureau is an independent nonprofit certification and registration organization for companies involved in the welding of steel.

The CSA Standards have rigorous requirements with respect to personnel, procedures, and workmanship, which are continually verified through on-site audits every six months.

Radius Steel-SOO Tractor received its CSA Welding Standard 47.1 certification in November. "This means our company, welders, and welding supervisors have earned a world-recognized credential that is held in high esteem among manufacturers internationally," says Covi. "The certification adds another layer of quality control, guaranteeing superior welding procedures, weld quality, and workmanship."

"With CIRAS' assistance we were able to simplify our processes and get certified with very few problems."
—Allen Mahaney



CIRAS Offers System for Innovation

When Kyle Kraudy called CIRAS account manager Bob Coacher in the spring of 2011, his request was simple—he was looking for a speaker for an innovation day for Conductix-Wampfler, which has its U.S. headquarters in Omaha. “The idea was to bring someone in who could guide us through some brainstorming to come up with new ideas for product development,” says Kraudy, director of engineering.

“We have to continually generate new ideas,” he adds. “We try to anticipate what customers will need and have a solution for them even before they realize they have a problem.”

Coacher put Kraudy in touch with Paul Gormley, CIRAS project manager, who specializes in innovation systems development. “Our goal is to help companies learn to continuously innovate,” Gormley explains, “not just come up with an idea now and then. What we do is provide companies with a comprehensive system for discovering, defining, and developing profitable ideas for growth that will work within their present business practices.”

That’s precisely what happened at Conductix-Wampfler, which manufactures a diverse range of products designed to transmit power or

data from a stationary point to a moving machine. This includes everything from parts in an assembly plant that are being transferred to an overhead crane to devices that supply power and data to lights and equipment for theater applications.

“Our goal is to help companies learn to continuously innovate, not just come up with an idea now and then.”

—Paul Gormley

working with Paul. Now, using information from the sessions with Paul, we’ve developed what we call NPIES (New Product Idea and Evaluation System).”

Gormley began working with the Conductix-Wampfler team of 16 in July 2011. It was a diverse group with representatives from manufacturing, engineering, marketing, and sales, as well as the CEO.

The company had spent about a year developing an internal system for capturing new product ideas, according to Kraudy. “We were trying to refine it when we started

The first two-week assignment focused on stimulus mining. Team members were sent out to explore areas they were unfamiliar with—for example, a mechanical engineer might look at electronics and a marketing person at technology. “The idea is for them to learn about something they might not be familiar with,” Gormley explains. “It forces people to learn new things, providing them with a new perspective to familiar issues. That helps inspire unique ideas that are not just rehashes of the past.”

An all-day creative session came next. Each person worked individually and with other team members to create five to eight innovative process, product, service, or business model ideas that were new to their industry and potentially profitable. “Individuals are responsible for developing their own ideas but leverage small teams to hone them,” Gormley points out.

The next step was a systematic process for deciding which ideas should be



Far Left to Right: The Conductix-Wampfler six-person spring reel assembly team builds to order more than 12,000 units a year. The roll forming line produces 80+ miles of C- track annually. The Festoon Department produces 400+ preassembled systems per year. In 2012, the transit rail team manufactured more than 20 miles of power rail.

examined in depth. Conductix chose one of several systems available for idea selection. “The only thing we require of the selection process is that it is completely transparent,” Gormley explains. “Without transparency, you risk losing the trust and involvement of the team.”

When two ideas were selected, Gormley coached the project managers in leading a small team to examine death threats—that is, everything that could possibly kill the idea. “Over several weeks they addressed the most ‘deadly’ ones first, finding if there was any validity to them,” Gormley explains. “At the same time they ran the numbers to roughly calculate the potential market, the cost, and the return on investment.”

In this system, each week the project manager reports back to the entire team on the findings. Once the team is satisfied that the project leader has answered all of the death threats satisfactorily, it makes a recommendation on whether to carry the idea forward as is, modify it, or kill it.

The goal is to develop and utilize a continuous system of innovation within a company. “The end game isn’t the

ideas you develop this time,” Gormley says. “The ideas don’t always work. Sometimes they get killed, and we celebrate that because we have figured out it won’t work and can move on to the next idea.”

As a result of the sessions, Kraudy reports the company is moving forward with two projects. And while there aren’t data yet on what the company will gain from these specific projects, the impact on their approach to developing new ideas has been very positive.

With the new system, the company has a complete record of all ideas that have been generated. This record serves as a reference for building new ideas as well as a way to capture and evaluate ideas throughout the year, according to Kraudy.

“In the process now, someone generates an idea, and they have a series of questions they must answer,” Kraudy explains. “It then goes to a manager who reviews it. Then we’ll have some group meetings with five to fifteen people to discuss and refine the

idea. At this point it can be compared with other ideas in the system. Instead of going by the gut feel that one person may have, this is a concrete system that allows better scrutiny of ideas by a lot of people.”

The international headquarters for Conductix-Wampfler was so impressed with NPIES that the Omaha team is in the process of revamping the system so it can be extended to all of its corporations globally.

Meanwhile Gormley is very excited with what is happening at Conductix-Wampfler. “I am an entrepreneur at heart,” he says. “I get the greatest satisfaction working with companies to

help them become entrepreneurial and innovative, with many people contributing. This is about growing a company’s top line, strengthening their future, and providing great places for

“This is about growing a company’s top line, strengthening their future, and providing great places for people to work.”

—Paul Gormley

people to work. I really feel lucky to get to work with companies like Conductix-Wampfler that are ready to innovate their way into the future.”

➤ For more information, contact Paul Gormley at 319-721-5357 or gormley@iastate.edu.

Capstone Project at Double HH Manufacturing Helps Launch New Automation System

Senior capstone design projects are the culmination of engineering education for undergraduate students. Iowa companies, through a partnership between CIRAS and the College of Engineering, provide students the opportunity to apply their engineering knowledge to real-world applications as a final step in preparation for joining the workforce.



Students apply their classroom, laboratory, and textbook knowledge and participate in the type of hands-on activities they are apt to face after graduation as engineers. The students receive guidance from academic and industry-based advisers.

By working with the students, companies gain a new perspective on difficult engineering problems, with many achieving innovative solutions that enhance productivity and lower costs. Companies have a heightened understanding of the value engineers bring to an organization and are able to showcase their company to students nearing graduation.

Bob Coacher, an account manager at CIRAS,

works with many Iowa-based manufacturers and businesses and looks for projects that might be a good fit for students participating in the capstone program. "I have worked with Double HH Manufacturing over the years," says Coacher. "I knew we could find a good opportunity for our Iowa State mechanical engineering students to help streamline processes and increase revenues for them."

Located in Rock Valley, Iowa, Double HH Manufacturing Co., Inc., has approximately 50 employees. Founded in 1970, Double HH specializes in manufacturing components machined to customer specifications. They are one of the nation's leading manufacturers and distributors of agricultural equipment

hitch pins and three-point linkage components, sold under the Double HH brand name.

Double HH also provides contract machining and assembly services to manufacturers of heavy-duty truck components, agricultural equipment, recreational vehicle accessories, and military equipment as well as to inventory and supply chain management operations.

Double HH is a division of Hope Haven, a center that offers care, skills training, and jobs for mentally and physically challenged individuals. The Double HH Manufacturing operations generate needed funding for Hope Haven. The company is an integrated operation, providing employment to persons with and without disabilities, including jobs to some of the higher-skilled residents of Hope Haven.

Mechanical Engineering Students Begin Working with Double HH

Guided by adviser Jim Heise, a lecturer in the Iowa State mechanical engineering department and coordinator of the capstone program, the student teams spent a fall semester at Double HH planning and designing an automation system for the plastisol process used in the hitch pin line.

The students were challenged to increase throughput and to identify ways to reduce operations costs. John Wallenburg, the plant manager at Double HH, oversaw the project and worked directly with the students on the plastisol automation strategy.

"The students' objectives were to evaluate the current process and design the most suitable system to automate the plastisol process," explains Wallenburg. "The students also needed to understand that the new process must be compatible for operation by persons with disabilities who work with us from Hope Haven."

After initial brainstorming sessions, the students looked for different options to automate the process. They also considered componentry of the new system, component mass, and its impact on heat versus time. Additionally, the students needed to address any issues related to rejects due to dip errors.



At Left: Photos show the Double HH Manufacturing plastisol oven and dipping process equipment used prior to the installation of the new automated plastisol system. **Above:** The new automated plastisol system, based on a preliminary design by Iowa State's Mechanical Engineering Capstone Design Program students, was installed at Double HH Manufacturing in the spring of 2012.

Wallenburg stressed the fact that the new system must have a payback period inside of ten years. Savings were to be realized through reduction in labor, scrap cost, energy costs, and plastisol use as well as increased revenue through increased output.

In December of 2009, the students' capstone project provided a preliminary plan for a viable automation system at Double HH. Since that time, Double HH took those designs and worked with a small Iowa-based automation manufacturer to build the system. That system was installed this spring, so the true outcomes are now being realized.

"What started as our student-mentored capstone project in 2009 has been successfully realized with the installation of a new automated system early in 2012," says Wallenburg.

Installation of New Automation System Reaps Many Rewards

Installation of the new automation system has already resulted in many positive impacts at Double HH. Two jobs have been retained and labor savings of \$12K has been reported thus far. "The new system removes the judgment process in the line and allows us to utilize a wider range of operators for this part of the process," explains Wallenburg.

The research and development ingenuity of students provided Double HH with an additional research and development savings of \$20K. With the installation of the new automation system, Double HH reports an investment of \$250K, which will be recouped within ten years as mandated.

The placement of the new system also streamlined floor planning in the welding, painting, and plastisol areas of the plant. They now have a monorail-type transfer of material directed into the shipping area that eliminated the need for storage. This revision in product transfer also erased the need for non-value added labor related to storage of material.

"The new automated system has tripled our plastisol production," says Wallenburg. "This will now allow Double HH to significantly increase capacity, paving the way for more sales that will provide additional funding for Hope Haven."

During the past two years, Iowa State students worked on 45 projects with 30 different companies across the state. Companies responding to surveys reported impacts totaling more than \$10 million as a result of these student-vested projects.

➤ For more information, contact Bob Coacher at 515-419-2162 or coacher@iastate.edu.



Nir Keren is an associate professor of occupational safety in the Department of Agricultural and Biosystems Engineering and is on the graduate faculty

in the Virtual Reality Applications Center. He joined the Iowa State faculty in 2005 after completing his PhD in interdisciplinary engineering at Texas A&M. As an alum of Ben Gurion University in Israel, Keren holds an MS in management and safety engineering and a BS in mechanical engineering.

In the role of maintenance manager for a company in Israel, Keren practiced what he now preaches. He developed a safety booklet for a major renovation of his facility. It spelled out policies, procedures, and precautions needed to be taken relative to safety.

“Our first day in the renovated facility, the company’s vice president arrived and did not have a hard hat,” Keren recalls. “I had to step forward, at the risk of being fired, and stop him from entering the floor until we could bring him a hard hat. It wasn’t easy, but I had to do it so the workers would know the rules applied to everyone and had to be followed at all times.”

In his work with Iowa companies assessing the safety climate and using that analysis to improve the safety culture, Keren emphasizes that change is evolutionary, not revolutionary. “It takes time and a lot of work to see a significant change, but the main message should be ‘safety pays off.’”

Another of Keren’s projects focuses on the development of a campus shop safety enhancement learning and training system. The project goal is to give students the knowledge and specialized skills they need to work safely in shops and labs. While the system is being developed for the engineering college, Keren expects it to be expanded for use across the university and later to industry.

Strong Safety Culture Benefits Manufacturers

Manufacturers are becoming increasingly attuned to the importance of having a strong safety culture, according to Jim Poe, CIRAS project manager. Safety culture refers to the value and priority companies place on safety. Maintaining a strong safety culture not only helps companies prevent accidents and avoid the costs of work-related injuries, but it can also lead to reduced insurance premiums and out-of-pocket deductibles as well as improved morale.

CIRAS assists companies in the area of safety in a variety of ways. These range from sending a team to conduct a safety assessment of the entire operation to addressing specific concerns such as testing air quality or noise levels to helping a company understand Occupational Safety and Health Administration (OSHA) standards and requirements.

“We partner with many people and organizations—for example Iowa State University’s Department of Environmental Health and Safety (EHS) and the Iowa-Illinois Safety Council, as well as professors on campus who have expertise in a specific area,” Poe says.

Nir Keren, an associate professor of agricultural and biosystems engineering, studies behavioral safety and has developed a tool to assess a company’s safety climate. It includes simulated scenarios where workers make decisions and select factors—such as peer pressure, productivity, and safety—that influence the decisions they make.

The workers also complete a confidential survey of how much they agree with such statements as “My management is committed to safety” and “Accidents are investigated thoroughly.”

From this information, Keren can make recommendations to enhance the safety climate. “Knowing the safety climate,” he emphasizes, “is a precursor to making changes in the safety culture.”

Jerry Hultgren, environmental health and safety coordinator at MAHLE Engine Components in Atlantic, knows that a strong safety culture requires a team effort.

“It’s a matter of getting everyone—production workers, supervisors, and the management team—involved and holding them accountable for safety,” Hultgren says. “Our goal is to make sure everyone leaves work safe, and that means providing the tools, education, and knowledge to perform jobs safely and to insure that the workplace environment is safe. Sometimes people want to make excuses, saying ‘it will take longer that way.’ But there is no excuse; if it takes more time, that’s what it takes.”

Although the facility's safety team conducts monthly safety audits, Hultgren recently sought CIRAS' assistance to conduct a safety walk-through to see if there were issues and concerns that his team was missing. MAHLE, which manufactures components for combustion engines, has 100 production plants and 8 research and development centers worldwide.

The plant in Atlantic is 113,000 square feet and has close to 1,000 different pieces of equipment and 255 employees. "With this much machinery, we have many different aspects to look at," Hultgren says. "CIRAS offered the opportunity to bring in a different set of eyes to help us find areas where safety could be improved."

The CIRAS team, partnering with the Iowa-Illinois Safety Council, conducted the half-day assessment. During the walk-through, they looked at such things as machine guarding, lock-out mechanisms on machinery, protective gear for employees, proper chemical labeling, and housekeeping. A report containing descriptions and photos was then compiled and sent to Hultgren.

"The photos gave us a visual look at areas of concern, and OSHA regulations were referenced in the report, so if we had questions we could easily go and look more in depth at the actual OSHA regulation for that particular item," Hultgren says. "The entire experience has been really helpful."

Noise levels in factories present another safety issue. Among other noise exposure restrictions, OSHA requires annual hearing testing and training for workers exposed to 90 decibels and above during an eight-hour shift.

Gordon Sargent, regulatory and compliance manager at Becker Underwood in Ames, became concerned about the noise levels in his facility when the company, which specializes in biological seed coatings for agriculture as well as landscape colorants and coatings, installed larger tanks to increase capacity.

"We use very powerful high-speed disperser motors to produce the colorants," Sargent explains. "Our handheld noise-level tester bumped over 85 decibels on occasion. That is getting close to OSHA's threshold, so I needed to find out what the exposure was over the eight-hour time period."

As a reference, Sargent stated, the average factory noise is 80–90 decibels, lawnmower more than 90, rock concert 105, and jet engine 140.

Sargent contacted Poe, who arranged for EHS to gather data at the plant. The EHS team outfitted the operators with special



Employee at MAHLE Engine Components adjusts equipment.

noise-level recording devices, which they wore all day. The data from the devices were then taken back to campus and analyzed. A report complete with graphs was sent to the company.

"It turns out we were quite a bit under the OSHA threshold, so we don't have to conduct the annual hearing-level testing and training OSHA requires," Sargent notes.

Nevertheless, he emphasizes that earplugs are readily accessible, and employees are encouraged to wear hearing protection. "The thing with hearing," he adds, "is that once you lose it, it doesn't come back. We don't want to take a chance at damaging people's hearing."

The company also listens to what the workers say. "We had one operation that was a short duration but particularly loud," Sargent says. "We were able to eliminate the noise by modifying the equipment. That was a good resolution as it eliminated the hazard altogether."

"CIRAS offered the opportunity to bring in a different set of eyes to help us find areas where safety could be improved."

— Jerry Hultgren

➤ For more information, contact Jim Poe at 515-294-1507 or jrpoe@iastate.edu.

A Transformation Plan Steers the Success of Your Business

Everywhere you look today it seems organizations, both large and small, are talking about business transformation.

Many organizations feel that they have to implement lasting, positive, and integrated change in order to act on emerging opportunities and to maintain a competitive advantage. To keep up with today's fast-paced business environment, you need to start thinking about how to prepare and handle potential business transformations. From managing a major turnaround, fostering a culture of innovation, upgrading internal processes, or developing a robust supply chain, business transformations take many forms. They provide the opportunity to improve and advance your business operations, allowing your organization to evolve and expand your footprint within the marketplace.

But without a clear, well-defined plan in place—one that allows you to see and understand all of your business capabilities and determine the best possible transformation strategy—your organization may not be in a position to effectively implement and manage change.

"Developing a transformation plan should be a continuous process, essential to any organization implementing a business strategy and vision," explains Steve Devlin, Manufacturing Extension Partnership program director at CIRAS. "It is a living document that is revisited as situations within the organization change." This is an ongoing requirement because strategy and vision will always need adapting and refining as changing economic influences impact business agility.

"At CIRAS, we view transformation plans as a journey, not as a project. By developing a clear understanding of your business needs—the motivating force behind the transformation—we work across process, people, and technology to make positive change a reality for the long term. We focus on the benefits of transforming a business," says Devlin.

With a transformation plan in place, you can achieve the following:

- Set the foundations for attaining major strategic objectives
- Improve customer satisfaction, increase revenue, and reduce costs
- Prepare your business for future demands and change
- Create fundamental changes in culture by altering the way people work
- Remove inefficient processes and structures that inhibit innovation and growth

While change will remain a constant challenge in the years ahead, the mechanics of business transformation are likely to evolve, with a shift from individual projects that have a beginning and end toward an environment of constant change.

Call us today to find out how we can help you transform your business and impact your long-term success.

➤ **For additional information, contact Steve Devlin at 515-490-0439 or sdevlin@iastate.edu.**

Engineering Career Fair Sets New Attendance Record

The Iowa State University College of Engineering Career Fair held in September drew a record number of students. The 5,000 attendees (up 19 percent over 2011) were able to talk to recruiters at 285 employer booths in a packed Hilton Coliseum and Scheman Building. The companies represented included 142 firms with headquarters and/or plants in Iowa.

"We sold out booth space for the first time in several years," says Roger Bentley, Engineering Career Services student and alumni professional development manager. "It is a good sign that companies are starting to hire again and are very engaged with the Iowa State University student population. We've also had many more requests by employers to participate in career and professional presentations on campus. We are very excited about the growing connection between education and industry."

While the record engineering enrollment this fall contributed to the career fair's attendance numbers, Bentley also credits the career fair student executive team, which did a superb job promoting the fair. One of this year's goals was to provide an environment that helped students research and prepare for interactions with prospective employers.

For employers, the career fair is a day that pays dividends to their companies. "They rave about their experiences," Bentley says. "Not only do we have a tremendous number of talented students for them to talk to, we really encourage these students to professionally interact with employers. It is a fantastic opportunity for students and employers to learn about each other."

To register for the spring engineering career fair scheduled for February 12, 2013, visit Iowa State's online Career Management System at <https://ecms.eng.iastate.edu/employers>. Employers can use the system anytime to post positions, set up interview calendars, and schedule workshop and information sessions.

➤ **For more information, contact Brian Larson, Engineering Career Services director, at 515-294-2337 or blarson@iastate.edu.**

“Today I found out that one of our suppliers made some order entry errors, which resulted in 3 purchase orders not being placed. These missed orders will result in not receiving a month’s supply of a product necessary for production...

Fortunately, we will not experience any missed manufacturing or customer orders due to this supply chain interruption.

The Business Continuity and Disaster Recovery Plan exercises that we went through this past year, with the assistance of CIRAS, have helped us identify these types of risk—how we will mitigate our supply chain risks for each supplier, and how we will implement a plan for each supplier. This is one example of how important it is to have a Business Continuity and Disaster Recovery Plan and keep it up to date.

This is an actual example of the value of having a plan to protect our customers (internal and external).”

*—Robert Hoffmann, Buyer
Thombert, Inc.
Newton, Iowa*

CIRAS Forms Partnership with the Iowa Area Development Group

A new partnership between CIRAS and the Iowa Area Development Group (IADG) creates a formalized relationship and an expanded level of support for manufacturers and businesses based in rural areas across the state.

The Iowa Area Development Group, under the direction of Rand Fisher, provides business and community development leadership and consulting services on behalf of more than 200 member-owned rural electric cooperatives, municipal utilities, and independent telecommunication companies across the state. Services include building and site selection, financial incentives, regulatory guidance, technical assistance, and energy and telecommunication solutions.

Connections to Key Resources

The Iowa Area Development Group has built a strong track record of success over the last 27 years, serving businesses interested in locating or expanding within the member-owned and municipal electric and independent telephone service areas of Iowa. Broad knowledge of the financial resources available at the federal, state, and local levels has helped spur investment across the state, fuel job growth, and support rural community revitalization.

“Our utility members serve hundreds of manufacturing operations in Iowa,” states Fisher. “The IADG is excited to introduce the additional expertise and business support that CIRAS offers to a broad range of companies.”

Partnering with CIRAS

For nearly five decades, CIRAS has brought research-based knowledge to bear on the critical needs of Iowa’s manufacturers and businesses. The partnership with IADG allows CIRAS to focus efforts on core needs for rural-based manufacturers and also assist Iowa industry in the transformation into the new economy industries that will be critical to the economic vitality of the state.

“Our partnership with IADG provides increased engagement with key executive-level managers of manufacturers and industries located in rural areas across the state,” explains Steve Devlin, Manufacturing Extension Partnership program director at CIRAS. “Combining our resources allows us to leverage more financial opportunities and provide relevant technical services and support to Iowa manufacturers.”

Successful record of service

Since its inception in 1985, IADG has assisted with more than 1,700 successful business expansions and start-up projects. This growth represents capital investment of more than \$6 billion and 40,000 new and retained jobs for Iowa. The Iowa Area Development Group has also been instrumental in partnering with Iowa communities to establish more than 2.1 million square feet of speculative industrial space and more than 7,000 acres of prime industrial ground to serve all types of projects.

The Iowa Area Development Group, CIRAS, and partners come together with a common goal to strengthen rural Iowa. They work together to advance the economic health and vitality of the state. Iowa is home to the strongest and most innovative electric cooperatives, municipal electric systems, and independent telephone companies in the country, each delivering state-of-the-art technologies and services to more than 500,000 Iowans.



➤ **For more information about IADG, contact Rand Fisher at 515-223-4817 or rfisher@iadg.com or visit www.IADG.com.**

Iowa's Evolving Manufacturing Sector by Liesl Eathington

In 1970, one in five workers in the United States was employed in the manufacturing sector. Even before the Great Recession of 2007–2009, that ratio had fallen to one in ten. Uncertainty about the future of the manufacturing sector has prompted many state and local leaders to reevaluate their strategies for attracting and retaining manufacturing jobs. Recent initiatives to promote innovation in Iowa indicate a growing awareness that the state's manufacturing sector must evolve rapidly to meet new demands of the global economy.

Changing Role in the Economy

Manufacturing jobs accounted for 7 percent of U.S. employment in 2010, down from 21.6 percent in 1970. In Iowa, too, the percentage of jobs in manufacturing has declined, as shown in Figure 1. Manufacturing has fallen from just more than 17 percent of Iowa's jobs in 1970 to less than 11 percent in 2010.

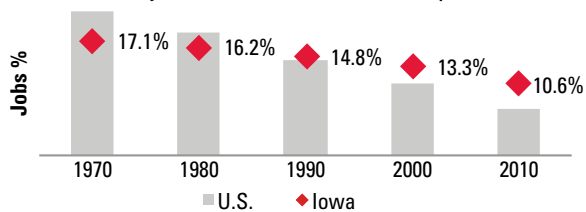


Figure 1. Percentage share of jobs in the manufacturing sector. *Source: U.S. Bureau of Economic Analysis*

The manufacturing sector's relative contribution to gross domestic product (GDP) has also declined over time. Manufacturing, which explained 24.4 percent of the nation's GDP in 1970, now contributes just 11.8 percent. Iowa remains more dependent on the manufacturing sector than the national average, with 18.2 percent of state GDP contributed by manufacturing in 2010 (see Figure 2).

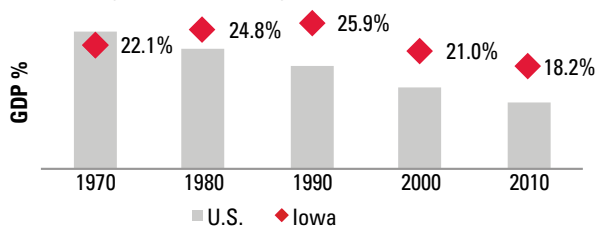


Figure 2. Percentage share of GDP contributed by the manufacturing sector. *Source: U.S. Bureau of Economic Analysis*

Need for Innovation

Leading voices on regional economic development—including Richard Lester, Mark Drabentstott, and Richard Longworth to name only a few—concur that continuous innovation is key to remaining globally competitive. Iowa and many other states have responded by creating public-private innovation partnerships such as the Iowa Innovation Council and educational initiatives such as the Iowa Governor's STEM Network to improve science, technology, engineering, and mathematics skills.

A key challenge for Iowa is determining how to measure progress in fostering innovation. Tracking innovation outcomes beyond the firm level is difficult because of the absence of reliable economic data to describe them. Two of the more popular innovation-related measures include patenting activity and research and development (R&D) spending.

Figure 3 shows Iowa's performance in patenting activity relative to the U.S. average over time. Iowa has followed the national trend in patent activity growth since the 1980s, but it continues to lag the U.S. average in number of utility patents granted per million residents.

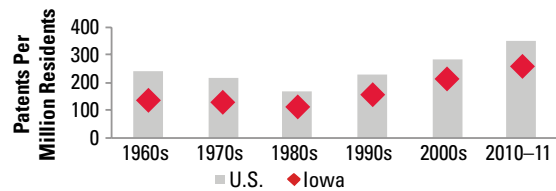


Figure 3. Number of utility patents granted per million residents. *Source: U.S. Patent and Trademark Office*

Statistics on federal R&D funding, which underwrites 31 percent of total R&D spending in the United States, paint a similar picture of Iowa's progress over time. Figure 4 shows federal R&D obligations per employed worker in Iowa and the United States during the last two decades. Iowa continues to lag the U.S. average in this measure, though the state appears to have closed the gap slightly in recent years. In 2008, the last year for which data are available, the federal R&D support in Iowa was about half of the U.S. average on a per-worker basis.

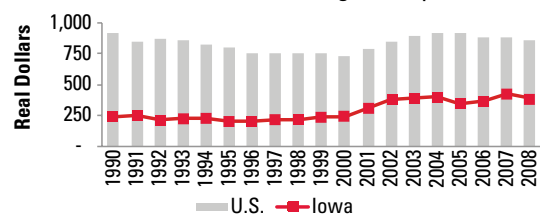


Figure 4. Federal R&D obligations per employed worker. *Source: National Science Foundation*

The manufacturing sector has weathered many changes through the decades. Even as it demands fewer and fewer workers, manufacturing remains a vital component of the U.S. and Iowa economies. Recognizing that continued change is inevitable, Iowa and many other states are making concentrated efforts to promote innovation within the manufacturing sector and the broader economy. Such strategies are not without risks. Innovation success may result in the loss of Iowa manufacturing jobs, or even entire firms, as new technologies and processes replace old. The stakes are high for Iowa. With a higher than average dependence on manufacturing, Iowa's future will be shaped by how well the sector evolves to meet new challenges.

Internet Marketing Strategy Boot Camp

Whether you hope to attract more website clients, want more bang for your Internet buck, or believe you need a fresh start with a new, easily managed, best practice-based website, the Internet Marketing Strategy Boot Camp is your not-to-miss event in February.

In response to clients' suggestions, CIRAS is providing the Internet Marketing Strategy series in an intensive setting to include education, practice, and application. Paul Gormley, CIRAS project manager, and Neal Rabogliatti, senior e-Strategist for Catalyst Connection in Pittsburgh, Pennsylvania, have conducted nine sessions throughout Iowa over the past two years, and they have been listening to the issues of their attendees. "We learned from clients that they want time to practice what they're learning, and then they want one-on-one time with the experts to immediately apply it to their specific situation," states Gormley.

To meet that need, CIRAS has developed a three-day boot camp format for participants, ranging from presidents and owners of small businesses to marketing managers and website developers. The first two days will consist of learning and immediate practice with the tools and techniques of Internet marketing, and the third day will focus on application and attention to specific topics raised by the group. "It's more of a listen-do model than a listen-listen model," Gormley adds. The optional evening session will focus on the application of client-specific needs. Some clients may need more strategic attention while others may need coaching on tactics that they can immediately apply to their websites.

"It will be a different kind of experience," Gormley states, "but clients will get the combination of knowledge and personal attention that our prior participants suggested to make this service even more worthwhile."

For information, visit www.ucs.iastate.edu/mnet/strategy/home.html or contact Paul Gormley at 319-721-5357 or gormley@iastate.edu.



CIRAS to Celebrate 50th Anniversary

Watch upcoming issues of *CIRAS News* and the CIRAS web site at

www.ciras.iastate.edu for additional information and special events.

- **Spring Engineering Career Fair**
February 12, 2013
12 noon–6:00 p.m.
Ames, Iowa
- **Internet Marketing Strategy Boot Camp**
February 26–27, 2013—Workshop with optional evening coaching session
February 28, 2013—Optional Application Workshop
Johnston, Iowa
- **Discover Profitability through Innovation**
March 5, 2013—Spencer, Iowa
March 6, 2013—Cedar Falls, Iowa
9:00 a.m.–3:00 p.m.
- **ABI Taking Care of Business Conference**
June 11–13, 2013
Okoboji, Iowa

See the Events section of the CIRAS website, www.ciras.iastate.edu, for details.



CIRAS Presented Award of Excellence

Through the Sustainable Economies Program, regional trade centers in Iowa are receiving information, tools, and mentoring to develop plans for strategic growth; and the rest of the country is taking notice. In October, CIRAS received the 2012 Award of Excellence for Research and Analysis from the University Economic Development Association for leading this ISU Extension and Outreach effort.

To learn more about this award, go to <http://bit.ly/UNNJgD>.



Dave Buchheit

New CIRAS Advisory Council Member

Dave Buchheit is the vice president of operations at Engineering Services and Products Company (ESAPCO). Since 1990, Buchheit has been managing the manufacturing and distribution functions of the Connecticut direct-marketing company doing business under the names of FarmTek, TekSupply, Growers Supply, and ClearSpan. ESAPCO is recognized as an industry leader in the manufacturing of fabric structures and greenhouses. In addition, they provide a wide variety of supplies and products designed to help customers manage their business, farm, nursery, or home. ESAPCO's operations facilities are located in Dyersville, Iowa.

See the August 2012 issue of *CIRAS News* for the article "ESAPCO—A Company on the Move."

New CIRAS Staff



Pete Nadolny – Project Manager

Pete Nadolny joins CIRAS as a project manager specializing in product design. For the last five years, he served as a product manager and application engineer for the high purity water filtration device business at W. L. Gore & Associates. He was responsible for supporting field sales in the United States and Europe as well as aligning customer needs with internal business strategies and manufacturing capabilities. He also worked as a certified quality engineer for eight years in the semiconductor, pharmaceutical, medical, automotive, and telecommunications industries. Key responsibilities included supporting new product development, customer service, manufacturing, and supply chain quality assurance. Nadolny earned a BS in mechanical engineering from Virginia Tech and is currently pursuing an MBA with the Kelley School of Business at Indiana University.



Pamela Russenberger – Government Contracting Specialist

Prior to joining CIRAS, Pamela Russenberger was employed for nine years in the aerospace and defense industry. She is experienced in multiple facets of business management including contract management, financial management, master planning, proposal preparation, and data analysis with a focus on the pursuit and execution of government contracts. Russenberger earned a bachelor's degree in political science from Minnesota State University in Mankato and an MBA with a concentration in change management from the University of Colorado.



Glenn Volkman – Account Manager

Glenn Volkman recently joined CIRAS as an account manager. He was a business consultant with Des Moines Area Community College (DMACC) Business Resources for the last nine years, serving manufacturers and other businesses in Jasper, Madison, Marion, and Polk counties. Previously, he was a continuing education coordinator at DMACC and a full-time faculty member at Iowa Valley Community College teaching in the areas of industrial maintenance, manufacturing technology, and industrial electronics. Volkman also has six years of experience in the plastics industry. He earned a bachelor's degree in technology education from the University of Northern Iowa and an associate's degree in applied science in electromechanical technology from Kirkwood Community College.

CIRAS Fiscal Year 2012 Results

The Iowa State University Extension and Outreach Center for Industrial Research and Service (CIRAS) helps companies grow and prosper. The CIRAS mission is to improve the quality of life in Iowa by enhancing the performance of industry through applied research, education, and technical assistance. CIRAS has been working with companies in communities across Iowa for nearly 50 years and has a vision for Iowa of healthy communities through business prosperity.

CIRAS staff has expertise in the following:

- engineering
- biobased products and biorenewables
- energy systems
- management practices
- government contracting
- productivity
- growth services
- supply chains
- quality systems
- safety
- supply chain management
- sustainability
- community-business economic development

In FY12, 1,372 businesses from 97 counties in the state received assistance on projects or attended educational workshops

presented by CIRAS staff or partners. Companies responding to surveys reported a \$414 million total impact:

- \$352 million in sales gained or retained
- \$46 million in new investments
- \$16 million in costs saved or avoided
- 5,667 jobs added or retained

Over the past five years, CIRAS and partners have reported a cumulative impact from companies of more than \$1.5 billion (sales gained or retained, \$1.2 billion; new investments, \$255 million; costs saved or avoided, \$92 million) with 22,264 jobs added or retained as a result of the assistance they received.

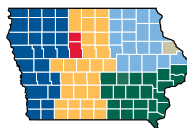
The center is supported in part by the Department of Commerce/National Institute of Science and Technology Hollings Manufacturing Extension Partnership, the Department of Defense/Defense Logistics Agency Procurement Technical Assistance Program, the Department of Commerce/Economic Development Administration University Center Program, and the U.S. Department of Agriculture BioPreferred program.

CONTACT INFORMATION



2272 Howe Hall, Suite 2620, Ames, Iowa 50011-2272 • Phone: 515-294-3420 • Fax: 515-294-4925
 ciras.info@iastate.edu • www.ciras.iastate.edu

Account territories: Account managers conduct initial needs assessments and match resources to client needs. Contact information for your local account manager is listed below.



Account Manager	Bioindustry	Economic Development	Energy	Engineering	Government Contracting	Growth Strategies	Management Practices	Productivity	Quality Management	Safety	Supply Chain Management	Sustainability	CIRAS Operations
Cox, Ronald • Director	•	•		•									•
Bangalore, Savitha													•
Barton, Leah													•
Basu, Ranojoy	•												
Bonnes, Gordon					•								
Clark, Susan							•	•					
Coacher, Robert													
Devlin, Steven	•		•										•
Fagle, Julie					•								
Galleger, Sean													
Gormley, Paul						•						•	•
Li, Haiyan													•
Martin, Brenda									•				•
Miller, JoAnn													•
Mohr, Jeff					•			•					
Muff, Brian									•				
Nadolny, Pete				•									
O'Donnell, Michael		•		•			•				•	•	•
Poe, Jim				•			•	•		•			
Pruszko, Rudy	•												
Reinig, Mark		•											
Riedl, Jessica	•											•	
Roberts, John				•									
Russenberger, Pam					•								
Schneider, Marc							•	•			•		
Srinivasan, Shankar				•									
Thach, Chris													•
Thompson, Derek													
Volkman, Glenn													
White, Beth					•								
Wilcox, Ruth				•									•
Willett, Michael								•					

CIRAS PARTNERS

Iowa State University
 Center for Crops Utilization Research
 College of Engineering
 Department of Environmental Health and Safety
 Engineering Career Services

Engineering-LAS Online Learning
 Industrial Assessment Center
 Institute for Physical Research and Technology
 Meat Science Extension

Des Moines Area Community College
 Iowa Area Development Group
 Iowa Association of Business and Industry
 Iowa Business Council
 Iowa Central Community College
 Iowa Farm Bureau Federation
 North Iowa Area Community College



THE INNOVATION CYCLE

Just Another Buzzword? *by Mike O'Donnell*

The word "innovation" has become the latest buzzword to take over the business world. It turns out it is not just a buzzword; academic studies and real-world examples indicate that effective innovation can be the key to long-term success. From world leaders like Google to Iowa companies like Hagie Manufacturing (winner of the 2012 Excellence in Innovation Award from the National Institute of Standards and Technology Manufacturing Extension Partnership), businesses have been using innovation to drive success for centuries.

Why is innovation suddenly becoming such a big deal? There are a lot of reasons, but one is that we recognize innovation is not just a "light bulb moment." Innovation can be a reliable, repeatable process in any business to create new ways of leapfrogging your competition. Lean manufacturing taught us that a system for continuous improvement can help reach new levels of speed and quality. A system for innovation can do much of the same—except this time the focus is on the top line: increased sales.

Innovation systems support the entire process from idea through delivery. Effective systems balance proven approaches that inject creativity into the business with

rigorous tools that push forward real opportunities and minimize risk.

Over the next year, CIRAS will be rolling out a variety of new services focused on helping Iowa's manufacturers innovate in a fast, reliable manner. From helping you come up with innovative ideas to analyzing and executing on those opportunities, these services will help you transform your business through proven tools across the innovation process. Whether you are already a leading innovator in your field looking to improve one aspect of your innovation system or a small manufacturer looking for a new edge, CIRAS' innovation experts will work with you to understand your specific opportunity, teach you tools that work for your situation, and coach you to embed innovation in your business.

You don't need to be high tech or invent a new product to be innovative. Innovation is the development of a novel process, product, service, or business model that has business value. Said simply, innovation is something new that somebody else will pay for.

To sign up for updates as our innovation services are released, e-mail modonnll@iastate.edu.