

Strategic Plan for 2013-20 *(approved December 2012)*

Action Plan for 2013-16 *(approved March 2014)*

Key Performance Indicators *(approved March 2014)*

Iowa State University's College of Design is a recognized leader in design education with a range of disciplines found in few colleges of its type. The 2013-20 strategic plan provides focus for the years ahead as we build on this solid foundation.

Our mission is to:

Educate students to become successful designers, planners, artists, and scholars who enhance human experience and improve the natural, social, and built environment.

Serve as a resource for Iowa and beyond through research, creative endeavors, extension, and outreach.

We value:

Innovation, curiosity, collaboration, open exchange of ideas, diverse perspectives, environmental and social responsibility.

Our vision for the future

Faculty, staff, students, alumni, and partners will be leaders who imagine and respond to challenges and opportunities in a sustainable manner using innovative interdisciplinary approaches and technologies.

Goals & Tactics

This vision will be accomplished through progress on eight interrelated goals. Each goal is accompanied by two or three tactics, specific courses of action that will be taken in order to make progress the corresponding goals. The tactics and measures of progress comprise the college's action plan. While the strategic plan is for a seven year period, the action plan's duration is three years. This action plan will be assessed in fall 2016 after which a new action plan will be developed for 2017-20. Those providing leadership for each tactic will define the specific tasks that need to be accomplished, identify who will carry out the work, and monitor progress.

1. Cultivate internal and external interdisciplinary partnerships to generate **ideas and solutions** – designs, plans, artworks, concepts – that address pressing challenges and opportunities, and increase our understanding of the world.

Tactics

- a. Establish an annual thematic design charrette linked with a multidisciplinary option studio that brings teams of faculty, staff, students, and alumni from all of the college's disciplines in conjunction with business/organizational partners for the purpose of generating innovative ideas that address local, regional, and global challenges and opportunities.

Leadership: *Associate Dean for Outreach and Extension*

Measure of Progress: *Protocol developed and funding stream in place to support an annual charrette. Disciplinary breadth, self-evaluation of participants, implementation of dissemination strategy, organizations/communities/businesses served.*

- b. Create additional mechanisms and funding sources for incenting, supporting, and rewarding outstanding work that demonstrates the power of collaboration and diversity to fuel innovation and creativity.

Leadership: *Research, Extension, and Outreach Council.*

Measure of Progress: *Dollars invested.*

2. Promote the value of **design** in society.

Tactics

- a. Create one or more new undergraduate general education courses that demonstrate the value of design in society.

Leadership: Associate Dean for Academic Programs, Department Chairs.

Measure of Progress: Enrollment and student evaluations.

- b. Support one university-wide lecture each year by nationally/internationally known people whose work demonstrates the value of design, planning, and art in society.

Leadership: Dean; Lectures and Exhibition Committee.

Measure of Progress: Evaluation of lecture.

- c. Host a national symposium focused on the role of art and design in research universities inviting broad participation from the university community.

Leadership: Executive Cabinet.

Measure of Progress: Participation and conclusion in proceedings.

3. Continue to improve the **quality** of educational, research/creative, extension, and outreach programs.

Tactics

- a. Develop and implement a plan for increasing the excellence of each undergraduate and graduate degree program using the results of student outcomes assessments, accreditation review findings, the National Survey of Student Engagement (NSSE), and the Faculty Survey of Student Engagement (FSSE). Identify college-wide issues that need to be address and professional development needs related to teaching and learning.

Leadership: Associate Dean for Academic Programs; Department Chairs; Academic Affairs Council.

Measure of Progress: Improvement plans developed by the end of fall semester 2014 with implementation commencing spring semester 2015. Student outcomes assessment plans in place for every degree program and every course.

- b. Develop and implement a plan to increase the quality and quantity of research/scholarly/creative work, outreach, and extension activities in a way that draws on the strength of the college's studio-based pedagogy. In support of this initiative, develop a keyword accessible database of faculty research and research interests along with a mechanism for exploring potential collaborations.

Leadership: Associate Dean for Research; Associate Dean for Outreach and Extension; Research Extension, and Outreach Council.

Measure of Progress: Sponsored funding; peer reviewed/juried work; communities, organizations, businesses and clients served.

4. Promote a collegiate **culture** that nurtures the success and well-being of students, faculty, and staff.

Tactics

- a. Assess the extent to which the college's culture contributes to the success and well being of students, supports a diversity of backgrounds and perspectives, and encourages productive risk taking. Develop and implement a plan for making needed changes identified in assessment.

Leadership: Associate Dean for Academic Programs, Minority Liaison Officer, Student Affairs Council.

Measure of Progress: Evaluation completed, findings and recommendations distributed, plan of action created and implemented.

- b. Strengthen programs for mentoring and developing new and continuing faculty, lecturers, and staff.

Leadership: Faculty Mentor Coordinator, Equity Advisor, Executive Cabinet, Professional and Scientific Council.

Measure of Progress: Trend data on promotions and tenure.

5. Enhance opportunities for students to **celebrate** many peoples, cultures, and places.

Tactics

- a. Develop and implement a plan that ensures every student has at least one cross-cultural educational experience before graduation through studio courses that address diversity within the United States, global practice experiences, participation in a study-abroad program, participation in National Student Exchange, etc.

Leadership: Associate Dean for Academic Programs, Department Chairs.

Measure of Progress: Increase number and diversity of international and domestic options available to students. Percentage of students who have a cross-cultural experience.

- b. Develop and implement a plan to improve international students' academic and study abroad experience, and that draws upon their experience for the benefit of the college community.

Leadership: Minority Liaison Officer, International Programs Advisory Committee.

Measure of Progress: Plan developed and implemented.

- c. Increase the number of scholarships and total scholarship dollars available for students studying abroad or obtaining a cross cultural experience within the United States.

Leadership: Dean, Development Officer, Department Chairs.

Measure of Progress: Increase in private funding for study abroad and studios involving domestic travel.

6. Support and increase the **diversity** of backgrounds and perspectives represented in the college.

Tactics

- a. Develop and implement a plan for increasing the diversity of the undergraduate and graduate student body through recruitment and retention efforts with particular emphasis on racial/ethnic groups in Iowa and the nation that are underrepresented in the college.

Leadership: Associate Dean for Academic Programs; Student Services Coordinator; Minority Liaison Officer, Student Affairs Council.

Measure of Progress: Operational definition of diversity developed. Trend data on diversity of first-year cohort of undergraduate and graduate students.

- b. Develop and implement a plan for increasing the diversity of backgrounds and perspectives among faculty and staff through recruitment and retention initiatives. Appoint an equity advisor to provide leadership in carrying out these initiatives.

Leadership: Dean, Department Chairs, Equity Advisor

Measure of Progress: Backgrounds of new faculty and staff hired. Equity advisor appointed.

7. **Broaden access to the college's** knowledge, educational offerings, and outreach programs.

Tactics

- a. Secure additional private funds for a wide range of student scholarships and fellowships and increase visibility of scholarship and funding opportunities available to prospective and current students.

Leadership: Dean, Department Chairs, Development Officer.

Measure of Progress: New funds for scholarships, number of students receiving scholarships.

- b. Audit all media used to communicate the college's educational, research, extension, and outreach programs and accomplishments. Develop a plan for improving and expanding communication including redesign of the college's web site.

Leadership: Dean, Director of Operations.

Measure of Progress: All communication media audited; improvement plan developed; new web site created and evaluated.

- c. Develop new articulation agreements with community colleges.

Leadership: Dean; Associate Dean for Academic Programs; Department Chairs.

Measure of Progress: New agreements created, number of new students from community colleges.

8. Develop the college's **resources** – human, fiscal, physical – to maximize their impact by achieving a balance between enrollment, faculty, staff, and program offerings.

Tactics

- a. Diagnose faculty and staff workloads, resource implications of studio pedagogy, and space allocations for the purpose of determining the right size of faculty, staff, and infrastructure using a tool that makes pertinent information and decisions accessible to college leaders, faculty, and staff.

Leadership: Executive Cabinet.

Measure of Progress: Framework created and deployed.

- b. Develop a short-range plan for meeting office, teaching, and research space needs along with a long-range plan for transforming the college's holdings into state of the art facilities for teaching, research, and creative work.

Leadership: Executive Cabinet.

Measure of Progress: Actions taken and investments made.

Key Performance Indicators (KPI's)

The Board of Regents, State of Iowa and Iowa State University established the following set of KPI's, global measures of performance. To this all-university set, the College of Design has added six additional indicators. Longitudinal data will be used to monitor progress and determine targets for each indicator.

All-University KPI's

1. First-year retention of undergraduate students.
Target: Increase first year retention rates, target TBD.
2. Graduation rates of all undergraduate students, four- and six-year rates for four-year undergraduate programs.
Target: Median of peers by 2016.
3. Graduation rates of minority students, four- and six-year rates for four-year undergraduate programs.
Target: Close gap between graduation rates of minority and non-minority students 50% by 2016.
4. Outcomes assessment plans, assessment data, and continuous improvement plans.
Target: Outcomes assessment plans in place, data collected, and improvements made to 100% of degree programs.
5. Post-graduation placement rate of undergraduate and professional students in full-time employment, military services, or advanced educational program.
Target: Increase post-graduation placement, target TBD.
6. Private funds to support student scholarships and fellowships.
Target: Increase private funds available for student scholarships and fellowships, target TBD.
7. Scholarly publications and citations relative to AAU public universities.
Target: Increase scholarly publications and citations, target TBD.
8. Recognition of faculty – honors, awards, and fellowships received – relative to AAU public universities.
Target: Increase recognitions received by faculty, target TBD.
9. Research contracts and grants awarded.
Target: Increase 2% annually using three-year rolling averages.
10. Graduate student enrollment and Ph.D. degrees awarded.
Target: Increase graduate student enrollment and Ph.D. degrees awarded, target TBD.
11. Students enrolled in courses offered online.
Target: Increase number of students enrolled in on-line courses, target TBD.
12. Companies provided with technical and business assistances and number of clients served.
Target: Increase number of companies and clients served, target TBD.
13. Administrative processes, energy consumption, and other efficiency improvements.
Target: Measure trend data, increase efficiency, monetize annual cost-savings.

College of Design KPI's

The College of Design will utilize all ISU key performance indicators to assess progress on its strategic plan as well as the key performance indicators listed below.

1. Retention rates of undergraduate students admitted to the college's professional programs.
Target: TBD.
Note: All-university KPI#1 tracks first-year retention of undergraduate students. Since undergraduate students in the College of Design are admitted to a professional program in their second year, it is also important to track persistence in those programs.
2. Graduation rates of undergraduate students, five- and seven-year rates for five-year undergraduate programs.
Target: Median of peers by 2016.
Note: All-university KPI #2 tracks graduation rates for students enrolled in four-year undergraduate programs. Because two of the college's undergraduate programs are five-year programs, combining four and six-year graduation rates from these programs with those of four-year programs yields misleading, lower graduation rates for the college and university than if rates for four-year and five-year programs were separated. For this reason, the college will report these rates separately.
3. Graduation rates of minority students, five- and seven-year rates for five-year undergraduate programs.
Target: Close gap between graduation rates of minority and non-minority students 50% by 2016.
Note: All-university KPI #3 tracks graduation rates for minority students enrolled in four-year undergraduate programs. Because two of the college's undergraduate programs are five-year programs, combining four and six-year graduation rates from these programs with those of four-year programs yields misleading, lower graduation rates for the college and university than if rates for four-year and five-year programs were separated. For this reason, the college will report these rates separately.
4. Measure the trend data for all sponsored funding.
Target: TBD.
Note: All university KPI #9 tracks research contracts and grants. Because of the importance of funded outreach and extension projects, the College of Design will also track funding for all sponsored projects.
5. Measure the trend data for communities and not-for-profit organizations provided with assistance and number of clients served.
Target: TBD.
Note: All-university KPI # 12 focuses on technical and business assistance provided to companies. While outreach and Extension programs in the College of Design provide assistance to companies, they also provide substantial assistance to communities and not-for-profit organizations.
6. Measure trend data for all peer reviewed/juried work – publications, exhibitions, competitions, presentations.
Target: TBD, participation in Iowa State University's digital repository.
Note: All-university KPI #7 focuses on scholarly publications and citations in disciplines not represented in the College of Design. This college-level KPI is necessary to document peer reviewed/juried work of this college's faculty.
7. External recognition of students work.
Target: TBD.
Note: Many of the college's students enter national and international design competitions as well as engage in significant outreach projects. This college-level KPI allows the college to demonstrate the quality and impact of work accomplished by its students.

Today's world needs great universities like Iowa State. The world will feel much smaller in 2050, when 9.6 billion people are sharing the planet. Resources will be more precious and balancing the needs of humankind and the health of our planet will become increasingly difficult. At the same time, people will use technology in new ways, and cultures will be interconnected like never before. Significant challenges lie ahead.

Iowa State University has been tackling problems and improving lives since it opened its doors a century and a half ago. Founded in 1858, Iowa State readily embraced the ideals of the land-grant university -- open higher education to all, provide practical learning, and share knowledge and discoveries. ISU instructors soon gained a reputation for meeting Iowans where they lived, sharing university expertise in kitchens and farm fields. Today, faculty, staff, and students are continuing this tradition.

Mission: Create, share and apply knowledge to make Iowa and the world a better place.

Iowa State's focus has always been its students. The university emphasizes learning by doing. ISU students take advantage of many opportunities to engage in real-world class experiences and cutting-edge research, to study in other countries, and to test their leadership skills in 800-plus campus organizations. They are tomorrow's leaders and problem solvers and they're ready to get started. In addition to educating students, Iowa State faculty and staff are conducting basic and applied research to improve lives and sustain the planet. They are boosting crop production, protecting natural resources, perfecting biobased fuels, refining wind turbines, designing human and animal vaccines, improving firefighting gear, fighting Parkinson's disease, fostering economic growth and development, strengthening forensic science techniques, assessing the effects of media violence, devising defenses against cyber attacks, enhancing the quality of life through the arts and humanities, and educating the leaders of tomorrow. As a member of the Association of American Universities, and the Association of Public and Land-grant Universities, Iowa State is dedicated to conducting research and scholarship with local, national, and international impact.

As the land-grant institution in the very first state to adopt the Morrill Act, Iowa State University wholeheartedly supports the mission of sharing knowledge beyond the campus borders. It's no surprise that Iowa State pioneered the first statewide Extension Service in 1906. The extension experiment -- universities actively transferring their research and expertise to every corner of every state -- was immensely successful across America and remains so today. More than a million Iowans annually benefit directly from ISU Extension and Outreach programs.

As the world has gotten smaller, the scope of Iowa State's mission has increased. ISU faculty, staff, and students are dedicated to improving lives around the nation and the world. The Center for Statistics and Applications in Forensic Evidence is helping to improve forensic evidence to create a more objective criminal justice system. The Center for Sustainable Rural Livelihoods helps support a longstanding program to help Ugandans improve farming, launch home businesses, keep children in school, and build food security. Through these activities and many others, Iowa State presses forward, on a mission to help make the world safe and sustainable for generations to come.

Vision: Iowa State University will lead the world in advancing the land-grant ideals of putting science, technology, and human creativity to work.

Iowa State University of Science and Technology lives up to its name in many ways. Half of its undergraduates major in science, technology, engineering and mathematics. The campus is a hub of creative and entrepreneurial activity. ISU and the city of Ames are home to a national laboratory; five federal research labs; world-class programs in genomic-based agricultural breeding, health and biotechnology; renowned institutes in virtual reality, plant sciences and the bioeconomy; and the only university in Iowa with ROTC programs for all military services. The Iowa State University Research Park, which helps move discoveries to market, has launched numerous start-up companies, including some that are recognized worldwide for ingenuity and major contributions.

Iowa State University has the talent and the facilities to lead the urgent, global quest for solutions. Providing these solutions and preparing the next generation of leaders and problem solvers requires efforts from across campus. It is the combination of all of our academic colleges, units, and departments that create the

community of scholars necessary for this work. This university is and always has been a community of practical, hard working problem-solvers. Major investments in new research and educational facilities and an outstanding tradition of cross-disciplinary research bring all of ISU's colleges and departments together with global partners. Iowa State is dedicated to the belief that with hard work and innovation, future generations will have ample food and fuel, good health, and a safe, bountiful planet.

Goals

Demand for an Iowa State education is at an all-time high, thanks in part to first-rate programs, a rich student experience, excellent faculty and staff, a beautiful campus, affordable access, and high job-placement rates. To build off that success, this strategic plan includes four overarching goals – ensure that students receive an exceptional education, conduct high-impact research, improve the quality of life for all Iowans, and enhance the university climate for both the ISU community and visitors. Long after this strategic plan has expired and another is in its place, these important goals will continue to be a work-in-progress. No matter how much progress is achieved, there always will be ways to make things better for those who count on Iowa State for an education, assistance, or innovation.

Goal 1: Ensure access to the ISU Experience – including an exceptional education offering practical, global, and leadership experiences that shape the well-rounded citizens and informed critical thinkers needed in the 21st century

Subgoal: Improve the ISU Experience for underrepresented students by enhancing a transparent diversity and inclusion environment

Metric: Impact of campus climate on the educational experience of underrepresented students as measured by the comprehensive campus climate assessment system

Subgoal: Continuously increase retention and graduation rates for all students while closing the gaps in student success (as measured by retention and graduation rates) between student subpopulations (e.g., race/ethnicity, income, first generation, nationality, ability, gender, and veterans)

Metric: Track retention and graduation rates for student subpopulations

Metric: Student satisfaction with and access to quality student services

Subgoal: Provide learning opportunities to prepare students for lives and careers in a dynamic, global community

Metric: Number of undergraduate students who participate in at least two high-impact educational activities (e.g., course-based learning communities, study abroad, faculty-student research projects, capstone projects, service learning/community-based learning projects, honors program, internship/cooperative education)

Metric: The number of ISU students who impact economic development in Iowa by participating in high impact learning activities with Iowa public, private, and non-profit sectors

Subgoal: Continue efforts to provide an exceptionally high value educational experience

Metric: Total cost of education compared with peer institutions

Metric: Student debt at graduation

Metric: Student placement rates

Metric: Student satisfaction with housing and dining options

Metric: Faculty, staff, and student satisfaction that technology meets their needs and drives innovation

Subgoal: Grow the impact and scope of our graduate programs

Metric: Number of PhD degrees conferred

Metric: Graduate and professional student enrollment

Metric: Number of highly ranked graduate programs

Related Actions

Action: Continue to invest in areas identified by the [Student Experience Enhancement Council](#)

Metric: Senior administrators report on annual progress

Action: Support innovations and enhancement of high-impact educational activities across the university for undergraduate and graduate students

Metric: Senior administrators report on annual progress

Action: Build upon current activities to increase external funding to provide financial aid to enhance graduation rates and reduce student debt upon graduation

Metric: Fundraising in support of students

Goal 2: Enhance the university's research profile by conducting high impact research that addresses the grand challenges of the 21st Century

Subgoal: ISU will identify and invest in interdisciplinary priority areas as defined by [President's Interdisciplinary Research Initiative](#)

Metric: External funding, intellectual property license/option agreements, and citations related to the priority areas

Subgoal: Improve key research metrics

Metric: Competitive federal R&D awards

Metric: Faculty membership in the national academies

Metric: Number of prestigious awards held

Metric: Research funding from industry, foundations, and other public and private sources

Metric: Number of citations

Metric: Number of post doctoral scholars

Related Actions

Action: Continue to invest in areas that foster excellence in research and scholarly impact for all disciplines as identified in the [President's Enhancing Institutional Excellence Committee's report](#)

Metric: Senior administrators report on annual progress

Action: Build upon current efforts to diversify research funding among competitive federal R&D sources and other major sources of research funding (including industry, foundations, and other public and private sources)

Metric: Annual sponsored funding awards disaggregated according to competitive federal R&D and other major sources of research funding

Action: Build upon current efforts to attract and retain excellent faculty through the [Presidential High Impact Hiring Initiative](#)

Metric: Continue the Presidential High Impact Hiring Initiative and report the number of hires made through it

Action: Continue to invest in enhancing and modernizing research infrastructure including instrumentation and staffing

Metric: Senior administrators report on annual progress

Goal 3: Improve the quality of life for all Iowans through services and programs dedicated to economic development and the promotion of healthy communities, people, and environments

Subgoal: Increase the number of Iowa public, private, and non-profit sectors that receive direct assistance or benefit from engaging with the university's programs, services, and initiatives

Metric: Impact of ISU Extension and Outreach programs (e.g., number of Iowans participating in research-based educational programming in the areas of agricultural and natural resources, community, youth, family, and economic development)

Metric: Technical assistance provided through the Center for Industrial Research & Service (e.g., number of companies served, number of jobs added or retained, total dollar impact)

Metric: Business assistance provided through the Iowa Small Business Development Center (e.g., number of clients served, number of counseling hours, number of new businesses, number of jobs added or retained)

Metric: Technology transfer services provided (e.g., number of license/option agreements, total dollars in sales, number of companies started)

Metric: Growth of ISU Research Park (e.g., number of companies and affiliates, number of employees)

Related Actions

Action: Enhance and improve awareness of and access to research, technical, entrepreneurial, and professional development services for public, private, and non-profit sectors

Metric: The number of external organizations and individuals utilizing university research, technical, entrepreneurial, and professional development services

Action: Increase awareness of, access to, and utilization of the university's agricultural and natural resources, community, youth, family, and economic development programs and initiatives supporting diverse and under-represented populations

Metric: The number of individuals and organizations from diverse and under-represented populations participating in university community, youth, family, and economic development programs and initiatives

Metric: The number of organizations owned by individuals from diverse and under-represented populations participating in university community, youth, family, and economic development programs and initiatives

Goal 4: Continue to enhance and cultivate the ISU Experience where faculty, staff, students, and visitors are safe and feel welcomed, supported, included, and valued by the University and each other

Subgoal: Develop and implement a comprehensive campus climate assessment system to regularly evaluate the climate at Iowa State University as experienced by all. Regularly evaluate, disseminate and publicly report this data.

Metric: Continuous improvement in campus climate as measured by campus climate assessment system

Subgoal: Enhance the safety, health, wellbeing, and security of faculty, staff, students, and visitors

Metric: As measured by the developed campus climate assessment system and current safety/security reporting mechanisms

Subgoal: Create, expand, and invest in opportunities for faculty, staff, and students to connect and build meaningful relations with others while recognizing the multiple intersecting identities, perspectives, and developmental differences people hold (aligned with the ACPA NSAPA standard for social justice and inclusion)

Metric: Participation in these opportunities and the impact as measured by campus climate assessment system

Related Actions

Action: Enhance efforts to recruit, hire, train and retain diverse employees

Metric: Report on annual efforts and resulting changes in the number of diverse employees

Action: Enhance efforts to recruit, retain and graduate a diverse student body

Metric: Report on annual efforts and resulting changes in the number of diverse students

Action: Establish and deploy a visitors' code of conduct

Metric: Inclusion in university policies

Action: Supervisors will acknowledge and include employees' efforts related to diversity, equity, and inclusion in the annual performance evaluation process

Metric: Senior administrators report on annual progress

IOWA STATE UNIVERSITY GRAND CHALLENGE RESEARCH THEMES

January 2017

The White House Office of Science and Technology Policy defines grand challenges as *“ambitious but achievable goals that harness science, technology and innovation to solve important national or global problems and that have the potential to capture the public’s imagination.”*

ISU’s research strengths and commitment to the land grant mission place it firmly at the nexus of the current multi-pronged, transdisciplinary revolution to meet the growing challenges confronting humanity in the 21st century. To support the strategic goal of growing the scale and impact of ISU research, VPR and Colleges have identified a set grand challenge research themes that represent:

- Complex challenges connected to global problems, and potentially relate to state and local concerns,
- Emerging next-generation areas of research that connect to ISU strengths,
- Excellent opportunities for expanding sponsored funding and advancing key research metrics,
- Strong integration across institutional missions (research, education, engagement) and a commitment to promoting and evaluating societal impacts, and
- A clear case for faculty involvement from multiple colleges.

Using these criteria, the following strongly interconnected ***ISU Grand Challenges Research Themes*** have evolved:

1. *Enabling Healthy Lives*

The healthy lives research theme seeks to position ISU as one of the best universities in the world that provides transformative science-based solutions to pursuing a healthy lifestyle by recognizing the interdependencies of human, animal and plant health, in an environment persistently confronted with water issues, diseases both old and new, and an aging population.

2. *Building Sustainable Human and Natural Ecosystems*

Echoed in many agencies, the sustainability theme addresses the challenge of balancing current societal needs with the well-being of future generations by developing the scientific and societal underpinnings of sustainability in its broadest sense – from deciphering the food-energy-water nexus to creating vibrant and engaged communities with supportive cultural, social, economic and environmental conditions.

3. *Designing Next Generation Materials and Manufacturing Technologies*

As one of the top priorities of federal agencies and industry sponsors, the advanced materials and manufacturing research theme speaks to ISU's excellent foundations to create new materials and transformative manufacturing technologies by leveraging shared infrastructure facilities between federal and university laboratories and building strong public-private partnerships.

4. *Creating Data Driven Science and Information Systems for Societal Challenges*

The data and information systems research theme leverages ISU's strengths with increasingly powerful and interconnected data-driven systems to improve the lives and security of citizens, communities and organizations through new approaches to harnessing complex and dynamic data sources arising from nearly any context – from science and engineering, to business and policy making, to creative and humanistic endeavors.

5. *Developing Global Citizens and Our Workforce*

To fulfill ISU's vision of building the capacity to address grand challenges, the education and workforce research theme focuses on investigating the most effective ways of preparing our next generation of global leaders, problem solvers and lifelong learners through education and engagement that transforms and enriches not only pre-K, K-12, community college and university classrooms, but also their communities.