The real star was Simon, a humanoid robot being developed at Tech to explore intuitive ways robots can interact with humans. The breakthrough research that Georgia Tech is doing in robotics is gaining national and international attention. But so are initiatives like our National Transportation Center, our cutting-edge leadership in cybersecurity, our work with unmanned aerial vehicle technology, our research at the intersection of life sciences, the physical sciences and engineering, or convergent science, and dozens of other areas of transformative research.

In the fall of 2010 we launched our 25-year strategic plan, Designing the Future, and with it Georgia Tech’s vision to define the technological research university of the 21st century. As stated in the vision, “As a result, we will be leaders in influencing major technological, social, and policy decisions that address critical global challenges. ‘What does Georgia Tech think?’ will be a common question in research, business, the media, and government.”

Powerful examples of progress toward that goal are unfolding almost daily. As the people of Georgia Tech continue their tradition of excellence in teaching and research, the Institute’s educational and economic impact will continue to increase. We are committed to leadership in improving the human condition in Georgia, the United States, and around the globe.

Sincerely,
G. P. “Bud” Peterson, President

On the cover: An artist’s rendering of the Engineered Biosystems Building currently under construction and scheduled for completion in 2015. The latest addition to the biotechnology complex.

www.gatech.edu/president

The Sunday, January 27, New York Times ran a story on robots that interact with humans. It included references to work at several research universities, but it featured Georgia Tech.

A Georgia Tech video study shows that picky eater fish threaten endangered coral reefs.

A recent study concludes that devastating Pakistan floods of 2012 could have been predicted, saving thousands of lives.

The microneedle patch shows potential for advancing global measles vaccination efforts.

The Georgia Tech–Panama Logistics Innovation & Research Center will provide critical support for Panama’s future development.

Our global positioning strategy includes the goals of expanding the world’s footprint at Georgia Tech, expanding and leveraging Georgia Tech’s impact around the globe, and embracing and supporting globally engaged students.

Georgia Tech partners internationally on everything from research and teaching to logistics. Currently 43 percent of Georgia Tech graduates have some form of international experience during their undergraduate career, compared to the U.S. national average of less than 10 percent. Georgia Tech students represent 118 countries. Tech has more than 15 dual and joint degree programs with leading universities around the world.

Georgia Tech faculty, staff, and students have a global impact. For example, through research and related startup companies, Georgia Tech is a major driver for cyber security and innovation. In January, former Georgia Tech Information Security Center Director Mustaque Ahamad shared cyber security solutions being developed at Tech at the World Economic Forum in Davos, Switzerland, which President Peterson also attended. The program allows for information sharing among governments and corporations around the world.

Our faculty are researching endangered coral reefs in Fiji. They are creating a model to forecast flooding in Pakistan as many as 10 days in advance. They are contributing to the development of instruments to remotely measure hurricane intensity. They are developing a microneedle patch to advance world measles vaccination. And, they are advancing nanotechnology research in an international joint laboratory between Georgia Tech and the French Centre National de la Recherche Scientifique (CNRS) at Georgia Tech-Lorraine, as well as on our Atlanta campus. The Georgia Tech–Panama Logistics Innovation & Research Center will bolster the supply chain and logistics systems to power Panama now and in the future.
Georgia Tech’s national leadership spans from space to energy, with numerous faculty, staff, and alumni serving on panels and councils, testifying before Congress, serving as media experts, and in other positions of leadership.

Visibility continues to grow. In March, Henrik Christensen, Georgia Tech’s KUKA Chair of Robotics in the College of Computing, presented “A Roadmap for U.S. Robotics: From Internet to Robotics-2033 Edition” to the Congressional Robotics Caucus. The report outlines the progress of robots in multiple industries over the last five years and identifies goals for the coming decade. It highlights robotics as a key economic enabler with the potential to transform U.S. society.

U.S. Air Force General Philip Breedlove, a 1977 Civil & Environmental Engineering alumnus, was confirmed by the U.S. Senate to head up NATO Forces in Europe. His new assignment as NATO’s Supreme Allied Commander in Europe will make him the first Air Force general to lead U.S. and NATO forces in more than a decade. In fall 2012 researchers from Tech were awarded three grants totaling more than $9 million from the U.S. Department of Energy’s Advanced Research Projects Agency — Energy (ARPA-E) to develop transformative energy technology solutions.

Researchers exploring the complex stream of cellular signals produced by the body in an injury have developed designer blood clots with artificial platelets to treat injured soldiers on the battlefront. The Georgia Tech Manufacturing Institute (GTMI formerly MaRC), under the leadership of Ben Wang, became one of the newly created Interdisciplinary Research Institutes. The GTMI brings together top researchers and thought leaders from the varied disciplines that shape manufacturing — science, engineering, policy, robotics, and management — to help define and solve some of the greatest challenges facing U.S. industry today. It complements Georgia Tech’s presence in the national discussion on manufacturing, including leadership in advanced manufacturing.

GTMI is one of several interdisciplinary research institutes at Georgia Tech that bring together a mix of researchers — spanning colleges, departments, and individual labs — around a single core research area. A Georgia Tech education continues to be one of the best investments a student can make. For the second year in a row, Tech was named No. 1 in the nation for return on investment by SmartMoney magazine. Upon graduation, Georgia Tech students are in high demand. Georgia Tech is the gold standard for retention and graduation of students in science, technology, engineering, and mathematics (STEM) fields — with 94 percent freshman retention and an 80 percent six-year graduation rate.

Georgia Tech is doing its part to contribute qualified graduates who will help solve some of the grand challenges before us now and in the future. As one of the nation’s top public research universities, Georgia Tech has a commitment to encouraging and equipping young people to further their education and prepare for careers in STEM fields. Through our Center for Integrating Science, Mathematics, and Computing (CISTEM), we are leading the way in expanding K-12 STEM education, offering nearly 30 different programs for K-12 students and teachers.

Georgia Tech has several programs to accomplish that goal.

The Institute is taking a leading role in creating an Innovation Zone in Midtown. What was a blighted location just ten years ago is now fast becoming the center of the entrepreneurial community in the Southeast. The mixed-use area is a testament to what is possible through a partnership between higher education, the state, and business and industry. In February 2013 USA Today ran a feature on Atlanta’s aspirations to be the new Silicon South. It cited that the National Venture Capital Association ranked Atlanta as the No. 12 city in the nation for tech startups in 2012.

Helping us move into the top ten is the Enterprise Innovation Institute (EI2), Georgia Tech’s primary business outreach organization, providing a comprehensive program of assistance to business, industry, entrepreneurs, and economic developers. EI2 accelerates startup formation through education programs, assists startups through incubators, and amplifies commercialization impact through support programs. Today there are more than 40 startups operating out of our Technology Square space in Centergy One, and Georgia Tech is assisting more than 350 startups statewide.

Recognizing EI2’s experience with commercialization, last summer the National Science Foundation named Georgia Tech one of two founding nodes of its Innovation Corps, or I-Corps network, along with the University of Michigan. EI2 commercialization specialists have already taught 75 NSF teams from around the country.

The Advanced Technology Development Center, or ATDC, is a technology accelerator that helps Georgia entrepreneurs launch and build technology companies. It is the oldest and largest of its kind in the U.S., and is widely regarded as one of the best. A unit of EI2, ATDC has helped launch more than 140 companies that, together, have created thousands of jobs and attracted more than $1 billion in investment. In spring 2013 Georgia Tech announced plans to strengthen resources in ATDC to help meet the growing demand for support to Georgia technology entrepreneurs and startup companies.

Georgia Tech partners with the Georgia Department of Economic Development to attract new business and industry to the state. In November 2012, Panasonic officially opened its new automotive innovation center in Centergy One in Tech Square. Panasonic benefits from having access to Tech students and graduates who are helping to develop the next generation of in-vehicle multimedia entertainment systems. Penguin Computing recently opened a sales, support, and engineering office in Centergy One.

Companies benefit from Tech’s School of Interactive Computing, the Digital Media Program, and the Institute for People and Technology (IPaT) located in Tech Square. IPaT recently initiated a pivotal partnership between Georgia Tech and Midtown Alliance to spur the growth of Midtown as an innovation district that capitalizes on technical inventions, entrepreneurial activity, and community engagement.

Research universities play a key role in regional economic ecosystems. They attract business and industry, partner in research, help to get innovations from the lab to the marketplace, and educate students who often become the intellectual talent that business and industry seeks.

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Research universities play a key role in regional economic ecosystems. They attract business and industry, partner in research, help to get innovations from the lab to the marketplace, and educate students who often become the intellectual talent that business and industry seeks.
Georgia Tech continues to be one of the nation’s leading public research universities.

Groundbreaking research is under way in research institutes, centers, and laboratories throughout the campus, inspiring game-changing ideas and new technologies that will drive economic growth while improving human life on a global scale. We believe that much of the research that will change our world will be interdisciplinary in nature. As a result, we continue to work to create the world’s foremost innovation ecosystem to help move the results toward commercialization.

This will provide our industry partners with a competitive advantage while benefiting the economy and society. A good example of interdisciplinary research is the recent work to discover microorganisms in the troposphere. The project was a partnership between NASA, the National Science Foundation, and researchers in Tech's civil and environmental engineering and earth and atmospheric sciences programs.

The cochlear implant is widely considered to be the most successful neural prosthetic on the market. The implant helps deaf individuals perceive sound by translating auditory information into electrical signals that go directly to the brain. Despite their prevalence, cochlear implants have a long way to go before their performance is comparable to that of the intact human ear. Led by Pamela Bhatti, School of Electrical and Computer Engineering, researchers at Georgia Tech have developed a new type of interface between the device and the brain that could dramatically improve the sound quality of the next generation of implants.

Tech’s research strategy focuses on creating transformative opportunities, strengthening collaboration, and maximizing economic and societal impact. Twelve core research areas can be found in our academic units, research institutes and centers, the Georgia Tech Research Institute, and the Enterprise Innovation Institute. They include the following:

- Big Data
- Bioengineering and Bioscience
- Electronics and Nanotechnology
- Energy and Sustainable Infrastructure
- Manufacturing, Trade, and Logistics
- Materials
- National Security
- Paper Science and Technology
- People and Technology
- Public Service, Leadership, and Policy
- Robotics
- Systems

Georgia Tech remains among the top 10 in research expenditures among universities without a medical school. In 2012 Georgia Tech’s research expenditures were $689 million. An interdisciplinary, highly collaborative environment that permeates the entire university and a successful history of partnering with business, industry, and government set Georgia Tech apart and contribute to an immensely successful track record.

Georgia Tech’s impact is multiplied through collaboration, both internally between programs of study and externally with education, business, government, and communities.

Children’s Healthcare of Atlanta and Georgia Tech announced a $10 million joint investment in June 2012, strengthening a research commitment to develop technological solutions to improve children’s health. The common vision is to become the global leader in pediatric technologies. Georgia Tech and Children’s have 125 collaborations to develop new products and processes that will create economic opportunities and improve quality of life.

The collaborative agreement between Georgia Tech and Children’s Healthcare of Atlanta earned the Georgia Bio Public Private Collaboration Award. One aspect of this collaboration is Georgia Tech’s SimTigrate design lab, which gave Children’s Healthcare of Atlanta Sibley Heart Center doctors and nurses the opportunity to test various devices to implement electronic medical records during a simulated patient encounter.

The Engineered Biosystems Building, now under construction, extends Tech’s vision for interdisciplinary research on today’s grand challenges in biomedical science and human health. It will provide a highly interdisciplinary space that enables collaborative research in three areas: biochemical technology, cellular therapies, and complex systems biology. Research neighborhoods in the facility will bring together top-tier researchers for a common purpose, providing the infrastructure that fuels great ideas. It will foster economic development opportunities and enhance Georgia’s competitiveness. It is being made possible through both an investment from the state of Georgia and private philanthropy. Support from the Coulter Foundation and others resulted in the Parker H. Petit Institute for Bioengineering and Bioscience (IBB). IBB is one of the first institutes in the country to develop an interdisciplinary model that combines bioscience and bioengineering. It has a variety of collaborative projects in India, Ireland, Egypt, Norway, and the United Kingdom. Tech leaders, faculty and students are partnering with the residents of the Home Park, Vine City, Centennial Park and English Avenue neighborhoods on two partnerships. Ivan Allen College Dean Jackie Royster and College of Architecture Dean Alan Balfour united members of the Tech campus with interest in the Westside communities to form the Georgia Tech Westside Task Force. Its goal is to connect efforts across Tech, so that by partnering and sharing resources, the groups can accomplish more.

The Westside Communities Alliance also seeks to build or strengthen partnerships with external organizations such as businesses, nonprofits, neighborhood associations, public schools, police and fire departments, other universities and residents. Their mission is to share Tech’s expertise and culture of service with its neighbors.
At Georgia Tech, we work to create a climate of innovation across all areas of study.

While you would expect a focus on innovation in the nation’s largest and one of the best engineering programs, innovation is an intrinsic element of our programs in computing, architecture, liberal arts, sciences, and business. It is also emphasized in extracurricular activities such as industry-sponsored student competitions. In March 2013, Georgia Public Broadcasting aired live the final round for InVenture Prize, a competition to create incentives for undergraduate student innovation in a fun, high-profile event. This year, Google sponsored the first prize award.

A program called “Ideas to Serve” is part of our Institute for Leadership and Entrepreneurship in the Scheller College of Business. It is a competition for current students and recent alumni who have early-stage product ideas or venture concepts geared toward creating a better world. Arts@Tech provides students with opportunities that enable them to become innovators and nurture their artistic talents. Arts@Tech fuses programs and events spanning the arts spectrum at the intersection of technological innovation and creative expression. It includes performance/exhibition, from big stage productions to small traveling exhibits; research with everything from music technology to weaving portable computing; education combining artistic creativity with technological innovation; and community partnerships, initiatives, and collaborations.

As part of teaching our students to be innovative, we are challenged to use innovation in our teaching methods, including presenting students with realistic and complex problems and empowering them to develop solutions in self-directed learning.

Online education has become a tool that not only enhances a traditional college education, but also helps people to participate in lifelong learning. Georgia Tech’s Distance Learning offers 40 areas of study to students ages 16 to 85. Our Distance Calculus Program, for example, provides advanced level calculus courses to hundreds of students throughout Georgia who might not have those courses in their high schools. Seven percent of Georgia Tech’s 2012 freshman class participated in the program before coming to Tech.

Georgia Tech has taken a leadership role in MOOCS, or Massively Open Online Courses. Coordinating the effort is our Center for 21st Century Universities (C21U). In its first year of offering MOOCS, Georgia Tech has enrolled more than 200,000 students. These students have access to some of the best professors, course material, and opportunities for online interaction around the globe in their quest for continuous learning.

The challenge in higher education is to think carefully about the added value that can be offered, blending the best of an in-person experience with the convenience of technology, including opportunities for virtual collaboration and discussion.

Georgia Tech students are among the most high-potential students in the nation, if not the world. Many entering freshmen have been involved in leadership activities before they set foot on campus, and continue to lead in the more than 400 student organizations and in community volunteer efforts. Georgia Tech students excel in the classroom, on the playing field, and even in their spare time. The challenge in higher education is to think carefully about the added value that can be offered, blending the best of an in-person experience with the convenience of technology, including opportunities for virtual collaboration and discussion.
Much of Tech’s global reputation can be attributed to the faculty and staff, who pursue excellence in teaching, research, and administration.

Tim Lieuwen, executive director of the Georgia Tech Strategic Energy Institute, was appointed to the National Petroleum Council by the secretary of the U.S. Department of Energy to advise on matters related to oil and natural gas. Lieuwen leads Georgia Tech’s Carbon Neutral Energy Solutions laboratory. Georgia Tech faculty continue to receive numerous prestigious awards. The Institute has 182 faculty who have won NSF CAREER Awards, among the highest number received nationally by any institution. Seven faculty members were named American Association for the Advancement of Science (AAAS) fellows: Shuming Nie (BME), Andres Garcia (ME), Paul Goldbart (PHYS), Julia Kabanek (BME), Arthur Ragauskas (CHEM), Mohan Srinivasan (MSE), and Theebhard Vot (BME). Erik Verriest (ICE) was elected to the Royal Flemish Academy of Belgium for Science and the Arts. Farrokh Ayyazi (ICE) was named an IEEE Fellow. Most recently Ajeet Rohatgi (ICE) was named a Georgia Research Alliance Eminent Scholar. AAAS has named Farzad Baratunde Cola (ME) recipient of the AAAS Early Career Award for Public Engagement with Science. For the fourth consecutive year, Georgia Tech was named to the Chronicle of Higher Education’s “Great Colleges to Work For” list. Providing our people with state-of-the-art facilities, sustainable communities, and efficient business systems enhances productivity and work satisfaction. Adding new buildings like the Engineered Biosystems Building, replacing 50-year-old steam lines for energy savings, and collecting accolades for having a “green campus” benefit all of Georgia Tech’s diverse community. Georgia Tech has a strong commitment to diversity, and we are purposeful in creating an inclusive environment where diversity can thrive. We continue to enhance our culture of collegiality, collaboration, global perspective, intercultural sensitivity, and respect through programs such as the annual Diversity Forum, the MLK Week Celebration, and the Ivan Allen Jr. Social Courage Prize events that promote thoughtful interaction. Winning the Regents’ award in the program/department category across the University System was the Wallace H. Coulter Department of Biomedical Engineering. The Department implements an innovative problem-driven learning approach. Lauren McDow, career advisor in the Scheller College of Business, received a “Chancellor’s Customer Service Excellence Award of the Year” from the University System of Georgia. Zachary Hayes, associate registrar, received the GeorgiaBEST Scholarship of Teaching and Learning Award. For Public Engagement with Science, Baratunde Cola (center) received the AAAS Early Career Award for Public Engagement with Science. Students, faculty, and staff thanked Ernest Scheller Jr. at a reception in his honor in September.

In fall 2011 a steering committee led by president G. Wayne Clough and Georgia Tech’s College of Management as the Ernest Scheller Jr. College of Business. The generous gift of Ernest Scheller Jr.’s “Great Colleges to Work For” list. Providing our people with state-of-the-art facilities, sustainable communities, and efficient business systems enhances productivity and work satisfaction. Adding new buildings like the Engineered Biosystems Building, replacing 50-year-old steam lines for energy savings, and collecting accolades for having a “green campus” benefit all of Georgia Tech’s diverse community. Georgia Tech has a strong commitment to diversity, and we are purposeful in creating an inclusive environment where diversity can thrive. We continue to enhance our culture of collegiality, collaboration, global perspective, intercultural sensitivity, and respect through programs such as the annual Diversity Forum, the MLK Week Celebration, and the Ivan Allen Jr. Social Courage Prize events that promote thoughtful interaction.

Through the generosity of Georgia corporations as well as individuals, the Institute is continuing to pursue its goal of making a Georgia Tech education within reach of every qualified in-state student, regardless of family income. Georgia Tech would not be the outstanding institution it is today without the engagement and support of those who share the Institute’s vision for the future and are committed to helping it achieve ever-increasing levels of excellence.

A golden example is the Campaign Georgia Tech, the most ambitious campaign in the history of the Institute. Through the generosity and engagement of many, the Institute surpassed the $1.2 billion mark toward a goal of $1.5 billion by December 2015. Alumni continue to lead the campaign, contributing more than 45 percent of the total. There have been almost 69,000 donors to date. This spring’s campaign activities included meet and greet events with alumni and other friends in Asia.

The generous gift of Ernest Scheller Jr. in 2012 resulted in the naming of Georgia Tech’s College of Management as the Ernest Scheller Jr. College of Business. Members of the executive leadership team evaluated each project’s final report along with their recommendations in May 2012, and allocated funds to support the continued development and implementation of the initiatives. Tangible evidence of progress abounds. Investments in the Engineered Biosystems Building and Technology Enterprise Park demonstrate a continued institutional commitment to reengaging Tech’s approach to life sciences. Continued growth of the faculty has already had an impact on both research priorities as well as classroom instruction, and initiatives such as the startup accelerator Flashpoint are helping to position Tech as an institution synonymous with innovation and economic development.

The plan was designed to be a living document, and together we’re making significant progress on our five strategic goals. As we continue to translate the plan into action, our strength comes from the ongoing collaboration and innovation for which Georgia Tech is so well known.