Thank you for the opportunity to talk about some of the exciting things we’re doing at Georgia Tech to Design the Future.

This is a year of celebrations at Tech: 125th anniversary; 50th anniversary of matriculation of black students. In addition, there is some amazing work being done at Georgia Tech that is impacting not only our state, but our nation and our world.

We’re also celebrating excellence. For the last decade, we have been ranked among the top 10 in public colleges and universities.

This fall the Wall Street Journal printed the results of a survey of top corporate recruiters whose companies last year hired 43,000 new graduates across 29 industries. They ranked Georgia Tech 7th in the nation including choosing Tech as the number one preference for recruiting engineering graduates, number three for management information systems and number four for computer sciences.

A Georgia Tech education is one of the best investments students can make in their future. This summer the Atlanta Business Chronicle printed results of payscale.com’s annual college salary report. Georgia Tech is the best in the state, and among the best in the nation, for giving its graduates top earning potential.

This is also a year of celebration for ATDC. Started 30 years ago by a group of Tech alumni concerned about providing job opportunities for Tech graduates who wanted to stay in Georgia. They formed a Committee of 20. Georgia Tech alumni took some personal risks that led to ATDC’s early success. John Hayes and a few others organized the first venture capital conference in Atlanta to introduce owners of start-ups to the venture capitalists. Their total financing available from the Committee of Twenty was $100. John tried to win the sponsorship of a group that put on a similar conference in Silicon Valley. They were not interested, and said “It won’t ever happen in Atlanta.” Well, “they” were wrong. It did. Since 1980, ATDC has incubated more than 120 start-up companies who have made $100 million in profits.

Last spring Forbes Magazine named ATDC to its new list of the 10 technology incubators that are changing the world. It is the only incubator in the Southeast to be included in the Forbes list.

Two of the organizations that ATDC has partnered with closely over the years are the Technology Association of Georgia, and the Georgia Research Alliance. GRA supports the formation of technology companies through its GRA VentureLab commercialization program, which provides grants to help move technology from the laboratory into the marketplace. VentureLab helps with intellectual property issues, and works with companies earlier than ATDC does. Emory, Georgia State and the Medical College of Georgia, now Georgia Health Science University, are also involved.

They work to help new companies put together a management team. Typically, the Tech faculty member stays on as a consultant or as the chief technology officer and they bring in a person with experience to get the company off the ground.
There are numerous success stories. I'll share three.

One company started through ATDC is Suniva, an early-stage company assisted by Georgia Tech, located in Gwinnett County. Using technology developed at Georgia Tech’s University Center of Excellence in Photovoltaics, Suniva became the Southeast’s first solar cell manufacturer in early 2009. Earlier this year Secretary of Energy Dr. Steven Chu came to Atlanta to speak at one of Georgia Tech’s three spring graduation ceremonies. He called Suniva “An American Success Story” on the White House blog. He wrote “This center and this company are powerful examples of how clean energy technology can drive job creation in the U.S. and increase our competitiveness.” Suniva has created more than 150 clean energy jobs manufacturing high-efficiency silicon solar cells and modules.

Damballa is a computer security company that is developing and providing applications for disrupting botnets, which are collections of software agents, or software robots, that operate autonomously and automatically, usually for malicious purposes. The company is a spinoff from the Georgia Tech College of Computing, and was assisted by the ATDC, its VentureLab process, and the Georgia Research Alliance VentureLab. The company’s products work by finding and terminating the hidden communication channels that are used to control breached computer systems. Damballa’s customers include major banks, manufacturers, e-commerce and Internet service providers, government agencies, educational organizations and other organizations targeted by organized cyber crime operations. You might be interested to know that the company is named after a Voodoo snake god that protects against zombies.

A success story in consumer electronics is Qualtré, Inc., a Boston area-based developer of solid state motion sensors for consumer electronic applications. The company spun out of research in Tech’s School of Electrical and Computer Engineering. Founded in 2008, qualtre is developing the world’s first solid-state, multi-axis MEMS (microelectromechanical system) gyroscopes targeting mobile handsets, game controllers and digital camera image stabilization markets. The user experience for portable products in consumer electronics has been fundamentally changed with the advent of inexpensive motion sensors. Examples are Nintendo Wii and the Apple iPhone. MEMS gyroscopes are gaining popularity in these systems as users come to demand an even greater level of motion sensing in applications like gaming and even more accurate tracking of their movements for pedestrian navigation/location based services.

Georgia Tech is engaged in economic development. The Institute produces more than 300 invention disclosures annually. It is ranked second among the state’s patent producers, behind AT&T. In just the past year, Georgia Tech programs for existing industries assisted more than 3,000 Georgia companies, saving or creating 20,000 jobs.

We are developing solutions to global challenges: Making solar energy economical; improving environmental and economic sustainability, providing access to clean water, improving the urban infrastructure, advancing health informatics, curing diseases and securing cyberspace.

Here are several examples of what we’re doing. We’ve developed a new vaccine delivery patch that could allow persons without medical training to painlessly administer vaccines, while providing improved immunization against diseases like the flu. The patches contain micron-scale needles that carry the vaccine with them as they dissolve into the skin. A $10 million grant from the National Institutes of Health will fund the first human trials.

The Global Center for Medical Innovation (GCMI) is a partnership of four of Georgia’s leading research and health care organizations: Georgia Tech, Saint Joseph’s Translational Research Institute, Piedmont Healthcare, and the Georgia Research Alliance. The center is bringing together core members of the medical device community, established drug and device companies, investors, and early-stage companies. The center is taking advantage of one of Georgia’s major research strengths: the ability to bring engineering together with the biosciences to create new solutions for health care. It will be the Southeast’s first comprehensive medical device innovation center. The center, to be located near Tech, will provide comprehensive support services in one location, reducing the cost of developing and converting innovations into functional prototypes and clinical products.
Researchers at Tech are doing breakthrough work in graphene electronics. They have developed a new “template growth” technique for fabricating nanometer-scale graphene devices. The method addresses what has been a significant obstacle to the use of this promising material in future generations of high-performance electronic devices. It involves etching patterns into the silicon carbide surfaces on which epitaxial graphene is grown. The patterns become templates directing the growth of graphene structures. It allows us to make very narrow ribbons of interconnected graphene without the rough edges. It is a breakthrough because the rough edges cause electrons passing through the ribbons to scatter and reduce desirable properties of the graphene. The new technique has been used to fabricate an array of 10,000 top-gated graphene transistors on a 0.24 square centimeter chip, believed to be the largest density of graphene devices reported so far. Directing the research is Walt de Heer, a professor in the Georgia Tech School of Physics. The work of his team was recognized by the Royal Swedish Academy of Sciences in its background document on this year’s Nobel Prize in Physics.

Electronic biosensing could facilitate a new era of personalized medicine. The new platform we’re working on involves replacing microplates that are used now with microelectronics technology that includes disposable arrays containing thousands of electronic sensors connected to powerful signal processing circuitry. If they’re successful, this new electronic biosensing platform could help realize the dream of personalized medicine by making possible real-time disease diagnosis, potentially in a physician’s office, and by helping to select individualized therapeutic approaches. The device could quickly detect gene mutations in individuals that are indicative of cancer and then determine optimal treatment. It would electronically detect markers that differentiate between healthy and diseased cells. These are just a few of the things we’re working on.

We believe that a great university must not merely respond to changes after the fact, but must anticipate change and shape the future. The world is looking to us to provide leadership, creativity and innovation for the future.

That’s why for the past year, the entire Tech community has been focused on the development of a 25-year strategic vision to position Georgia Tech as the defining technological research university of the 21st century. The process was comprehensive and inclusive, involving faculty, staff, students, advisory groups and business and community leaders. We just launched our new plan on August 31. Our new Strategic Plan is designed to be a living document—with both short and long-term goals, flexible, changing over time to accommodate changing circumstances and anticipate and respond to the future.

**Five Major Goals**

Georgia Tech’s new plan outlines five major goals, and strategies within those goals.

To be among the most highly respected, technology-focused learning institutions in the world

To sustain and enhance excellence in scholarship and research,

To ensure that innovation, entrepreneurship, and public service are fundamental characteristics of our graduates,

To expand our global footprint and influence to ensure that we are graduating good global citizens,

And to relentlessly pursue institutional effectiveness.

As part of our 2nd goal, to Sustain and Enhance Excellence in Scholarship and Research, we said that we will identify and focus on several research areas, identify the appropriate local and global partners, and make Institute-scale investments.

Potential targets include: Transportation and Logistics; Nanoscience; Micro and Nanotechnologies; Power and Sustainable Energy; Health Information Technology; Integrated Bioscience, Bioengineering and Biotechnology (Health Manufacturing, Medicine, Policy & Management); Smart Materials
Technology-Related Policy, Law, National Security, and Ethics, and Technological Aspects of Neuroscience

In many ways, Tech is already known as an institute for innovation. This summer U.S. Secretary of Commerce Gary Locke, spoke at Tech during the last of four national innovation forums sponsored by the Department of Commerce. The day’s events centered on the role of universities in innovation, economic development, job creation and the commercialization of federally funded research. In his comments he said “America is not lacking for groundbreaking ideas. Nor are we short on entrepreneurs willing to take risks. What we need to do is get better at connecting the great ideas to the great company builders.

At Georgia Tech, innovation is part of our DNA, whether you’re a faculty member, alumnus, or a student. In fact, in the past year, 41 percent of Georgia Tech inventors were either undergraduate or graduate students.

Building on our reputation for innovation, we want to position Georgia Tech as the institution known for innovation worldwide, preparing students to be innovation leaders. Initiatives could include a formal creativity and innovation curriculum, and catalyzing entrepreneurial Tech faculty and student interactions with investors, alumni, and the business community. We will build on existing strengths. Here are a couple of examples. We have a very successful program called TiGER, a unique collaboration between Tech and Emory University Law School that puts together teams of MBA, law, and PhD students to focus on the commercialization of student research. It is nationally recognized for its success in developing entrepreneurs.

We’re looking to expand our InVenture Prize competition for undergraduate students —-a sort of American Idol for those who “invent” rather than “sing.” Not only do the winners receive cash awards; the two finalists receive a free U.S. patent filing from the Georgia Tech Office of Technology Licensing, each valued at approximately $20,000.

Here’s a brief video about last spring’s competition.

In closing, I want to share a powerful example of a faculty member and students working together to make a real difference. Dr. David Ku is our Lawrence P. Huang Chair in Engineering Entrepreneurship and a Regents Professor. Dr. Ku is an MD-PHD with dual roles in both Mechanical Engineering and Management. He was challenged by the head of virology at the U.S. Centers for Disease Control to develop a quick, economical way to diagnose pneumonia, the leading cause of death among children around the world. Pneumonia is a super infection that is often associated with other diseases such as tuberculosis and HIV, and a quick and accurate diagnosis is often critical. Dr. Ku challenged a team of ten Mechanical Engineering and Biomedical Engineering graduate students. They developed devices with valves, actuators, and computers, but he sent them back to the drawing board because each unit would cost around $200. He told them that they needed to design something that would help the poorest child in India, and be a “point of care” device that wouldn’t require a trip to a hospital or clinic. They did it. The new device is patent pending, so we can’t describe it in detail. I can tell you that it will provide a diagnosis within 30 minutes of testing at a fraction of the cost of their original design. It can be done anywhere, all over the world. Now, Georgia Tech MBA students are using it as a test case to develop a triple bottom line company for social entrepreneurship, factoring in profitability, and social and environmental good. Because we had support to establish the chair for engineering entrepreneurship, we were able to have Dr. Ku as part of Tech’s faculty. Because we have Dr. Ku and people like him, we are able to attract the best and the brightest students. Because we have the best and the brightest students, working together, they have created a device that has the potential to help save more lives than any other medical device in the world.

Thank you.