



Annual Report of Institutional Progress 2005-2006



G. Wayne Clough, President

Georgia Institute of Technology Annual Report of Institutional Progress 2005-2006

Table of Contents

Institutional Rankings and Recognitions.....	1
Achievements and Accomplishments in Strategic Planning.....	2
<i>A Student-Focused Education</i>	<i>3</i>
<i>An Enhanced Research Enterprise</i>	<i>5</i>
<i>Expanded Local, Regional and Global Outreach</i>	<i>7</i>
<i>A Supportive, Collaborative and Effective Administrative Infrastructure</i>	<i>9</i>
<i>Facilities Improvement and Expansion.....</i>	<i>10</i>
Progress in Assessing Institutional Effectiveness.....	11
Improving Student Retention and Graduation.....	11
Management of Campus Conflict and Change	12
Overall Institutional Health.....	13

Tables and Figures

Table 1: FY 2006 Capital Projects	10
Table 2: Dispute Management Processes.....	13
Figure 1: Enrollment by Student Level, Fall 1996 – Fall 2005	3
Figure 2: Research and Development Expenditures, FY 1997-2006.....	6
Figure 3: Retention Rates by Freshman Class, Fall 1998-Fall 2005	12

Georgia Institute of Technology

Annual Report of Institutional Progress

2005-2006

The 2005-2006 year was a strong one for Georgia Tech, with the achievement of a series of important milestones. Our vision calls for us to define the technological research university of the 21st Century and we are making progress towards this ambitious goal thanks to a remarkable team of Georgia Tech people.

Institutional Rankings and Recognitions

Georgia Tech continues its strong presence in national rankings. *U.S. News and World Report* cited Tech as one of the nation's top 10 public universities for the eighth consecutive year. Engineering was named among the top five best programs and this year all of our undergraduate engineering programs were ranked in the nation's top 10, something no other college of engineering can claim. Rankings for our business and computing programs placed them among the top programs nationally. In addition to its rankings for its academic programs, Georgia Tech was cited as among:

- Top 15 best values: *Kiplinger Newsletter*
- Top 15 best places to work: *The Scientist*
- Top 5 in the world for biotech startups and Top 10 in patents for U.S. universities: Milken Institute
- Top 5 best places for Hispanics students to study engineering: *Hispanic Business*
- Number one producer of African American engineering graduates: *Diversity Issues in Higher Education*

These rankings taken together illustrate the strength of Georgia Tech. The Milken ranking is seen as an endorsement of the investment Georgia Tech has made in biotechnology in the past decade, particularly given that the comparator institutions were from a global set, not just national.

The accomplishments of our students are a matter of great pride. In 2006, Jonathan Diaz, A.J. Friend and Andrew Martin were named Goldwater Scholars. Ryan Haynes received the Marshall Scholarship for graduate study at Cambridge University. A student team from the College of Architecture won an international competition in sustainable urban design to

revitalize and preserve a historic section of downtown Dubai in the United Arab Emirates. Students in the College of Management's International Operations Practicum were invited to Argentina to analyze the market, risks, and chances for success of three Georgia businesses with interest in setting up operations there. An interdisciplinary student team was one of 20 chosen in an international competition to develop an 800-square-foot house powered by solar energy and to be displayed on the National Mall in Washington, D.C. We are also proud that hundreds of our students traveled to the Gulf coast during winter and spring breaks to repair and rebuild houses for elderly, disabled, and needy Katrina victims.

Over half of our student-athletes made the dean's list in spring semester, three were named Academic All-Americans, and 42 Yellow Jackets were named Academic All-ACC. Eleven of Georgia Tech's 17 sports programs advanced to the NCAA post season competition. Highlights include a No. 1 ranking for our golf program by *Golf Digest*; a third appearance in the College World Series for baseball; and sophomore Kristi Miller ranked as the nation's top female tennis player while maintaining a 4.0 GPA. ACC titles were earned for golf and women's tennis and football was invited to a school-record ninth consecutive bowl berth. The men's lightweight 8 plus rowing team, a club team, won the gold medal at the national collegiate championship at Dad Vail Regatta. Finally, Buzz received the Blue Ribbon Trophy from Turner South as the ACC's favorite mascot.

The success of our faculty is also a key to the prominence of Georgia Tech. With eight new winners this year, Georgia Tech faculty have now earned 109 National Science Foundation CAREER Awards, the second highest total in the nation. The American Association for the Advancement of Science elected six Georgia Tech faculty as Fellows. James D. Meindl, Director of the new Nanotechnology Research Center, received the 2006 IEEE Medal of Honor for pioneering contributions to microelectronics. Barbara D. Boyan, of the Wallace H. Coulter Department of Biomedical Engineering and Elizabeth D. Mynatt, in the College of Computing were named to *Atlanta Woman* magazine's "Top Ten Innovators" list. Public Policy Professor Bryan Norton received the 2006 Distinguished Professor Award, Tech's highest faculty honor.

Achievements and Accomplishments in Strategic Planning

Georgia Tech's Strategic Plan encompasses seven goals which are critical to realizing the Institute's vision. Achievements and progress in planning for these goals are addressed in the remainder of this section of the report.

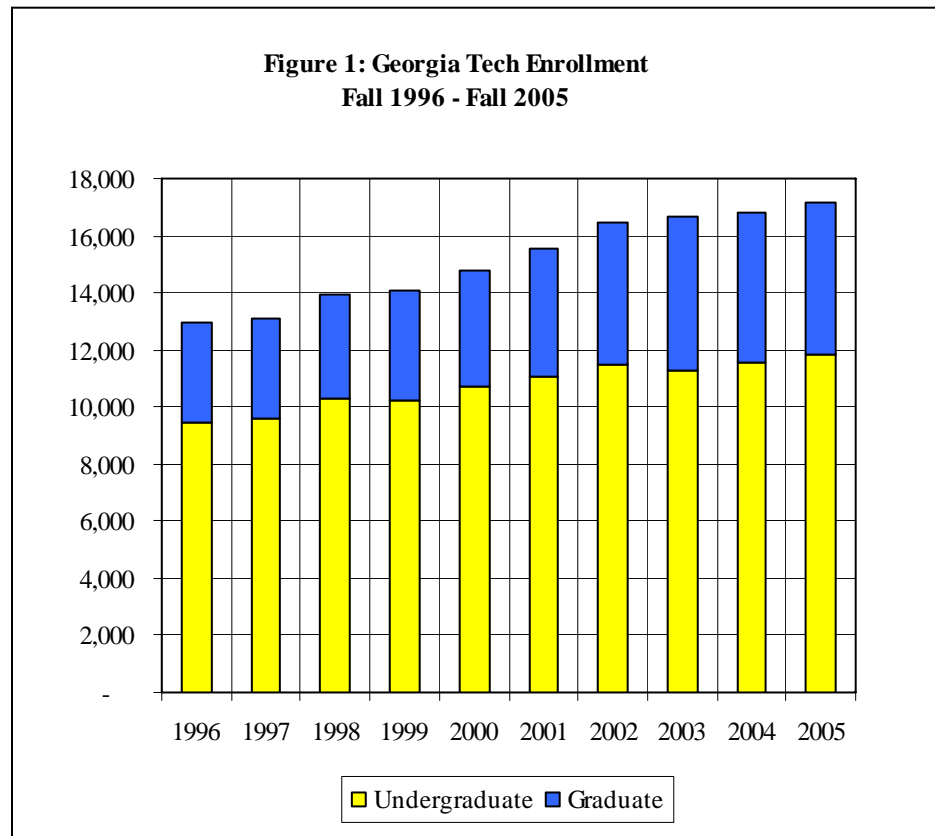
A Student-focused Education

Georgia Tech enrolled a record 17,135 students in fall 2005 with 11,841 undergraduates and 5,294 graduate students (Figure 1). Demand at the undergraduate level remained high with over 9,200 applications for the freshman class of 2005. A total of 2,462 freshmen matriculated with a record high SAT average of 1340 and high school GPA of 3.7. The class included the third highest percentage of National Merit Scholars among public universities. Minorities and women comprise 37 percent and 27 percent respectively of Georgia Tech's student population.

Over 900 students participated in study abroad opportunities last year. Following two years of work, the International Plan was launched, enabling students to add an international dimension to their major. Participants take courses in modern languages, global economics, and international affairs, and spend two terms abroad studying or working in a co-op assignment or internship. At our Georgia Tech Lorraine campus, new housing is being built that has allowed the initiation of a year-round undergraduate program. At the graduate level, an agreement was signed by President G. Wayne Clough in December 2005 in Shanghai with Shanghai Jiao Tong University (SJTU) for a dual degree program in electrical and computer engineering. Several Georgia Tech faculty have offices on the SJTU campus and are stationed there on a visiting basis. Over 50 undergraduate students participated in a study abroad at SJTU last summer.

A new Honors Program was endorsed by the Academic Senate and General Faculty Assembly and it enrolled over 100 enthusiastic students this fall. Georgia Tech's co-op

program remains the largest voluntary program of its kind with over 3,300 participants while 2,000 students have registered for internships.



The Library opened the East Commons, an innovative concept designed to encourage student collaboration through access to information technology. The space, designed with student teams and in partnership with our OIT professionals and a team from Herman Miller, offers access to a coffee shop, and allows for a flexible mix of information access tools to be assembled depending on the needs of student groups working on projects. The Campus Recreation Center, recently named as the best in the nation, celebrated its one millionth visitor, less than 19 months after opening. Georgia Tech hosted the 2006 NCAA Men's Swimming and Diving Championships drawing one of the largest turnouts in NCAA history.

POETRY at TECH presented multiple readings featuring nationally and internationally known poets, culminating in a reading by Michael Ryan and Doreen Gilroy to an overflow

crowd. The Woodwind Ensemble performed at the Shanghai International Arts Festival as well as in Beijing while “Nothin' but Treble”, Tech's female acapella vocal group, released its first professional studio CD. Living Game Worlds 2006, Tech's unique symposium on electronic games and digital media, featured Will Wright, creator of the Sims computer game series.

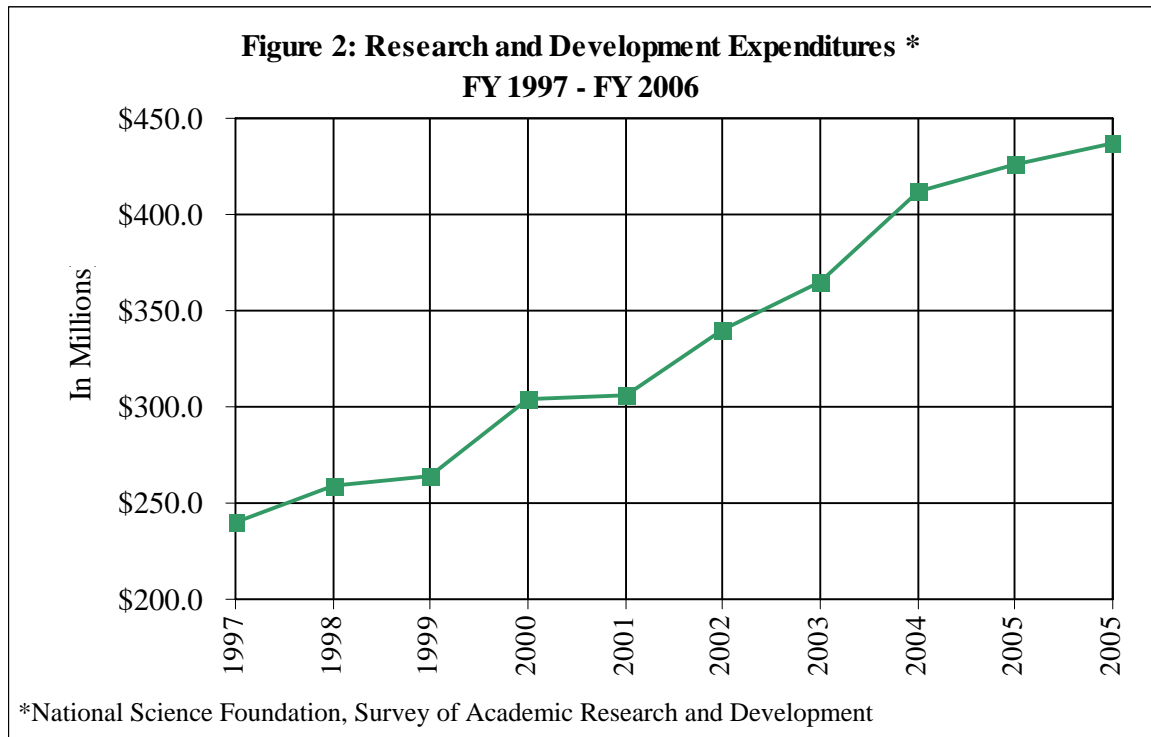
A total of 4,157 students graduated during the 2005 academic year. A record number of doctoral degrees were awarded. Georgia Tech graduates continue to be in high demand with almost 9,000 job interviews conducted on campus.

An Enhanced Research Enterprise

As reported to the National Science Foundation, research expenditures totaled \$438 million, placing Georgia Tech within the top 35 of the nation's universities and the highest in the state of Georgia. Our expenditure level ranks among the top five universities that do not have a medical school, and among engineering programs we rank second. New awards totaled \$346 million based on a record 2,317 proposals. New records were achieved in invention disclosures (365) and utility patent applications (84). Ten new companies were formed around technologies licensed by the Georgia Tech Research Corporation (GTRC). Over the past five years, 53 companies have been started based on Georgia Tech discoveries. Other highlights include:

- Georgia Tech and Emory University partnered to win three national centers of excellence in nanomedicine from the National Institute of Health. The Medical College of Georgia is a partner in the third of the three centers. Winning three of the centers of excellence in nanomedicine is seen as a strong validation of Georgia Tech's strategy of investment in this important area and of creating partnerships with collaborative institutions.
- Biomedical engineers developed molecular beacons that flare when they attach to a living cell infected by a virus, enabling scientists to see it grow, replicate, and infect other cells.
- Tech researchers worked with IBM to build the world's fastest silicon-germanium transistor.
- A \$12 million partnership between Georgia Tech and Chevron will focus on hydrogen and biofuels.

- Computing researchers are developing technologies for handicapped persons. CopyCat is a virtual sign language tutor for deaf students. Swan is a wearable audio navigation system for the visually impaired.
- RIM@Georgia Tech is a new Robotics and Intelligent Machines center created jointly by the Colleges of Computing and Engineering.
- The "Fragmented Aperature Antenna" developed by the Georgia Tech Research Institute has triple the bandwidth of conventional antennas, reducing the dozens of antennas that ships and aircraft now carry.



Georgia Tech was selected by the Industrial Development Agency of Ireland to open an applied research center in Athlone, Ireland. Operated by the Institute's applied research division, the Georgia Tech Research Institute (GTRI), the new facility will focus on four technology areas that mirror Ireland and Georgia Tech's research strengths—digital media, radio frequency identification (RFID), biotechnology, and energy. The new center will work with all seven of Ireland's research universities to help them commercialize research discoveries and to link them more closely with Irish industries.

Georgia Tech Lorraine and France's Centre National de la Recherche Scientifique (CNRS) partnered to create a joint international research unit to focus on telecommunications and

innovative materials research. This is the first partnership of its kind in France with an American university. CNRS, France's equivalent to the National Science Foundation, is Europe's largest and most influential scientific research agency. Its president, Catherine Bréchnac, is an adjunct Georgia Tech professor and distinguished visiting scholar in physics. Georgia Tech Lorraine was asked to participate in the process of setting the economic development agenda for the Province of Lorraine.

Georgia Tech inaugurated its new Health Systems Institute to help improve communication among the growing number of faculty and units working in healthcare, including patients, doctors, administrators, and insurers. The Institute will partner with local, regional, and national healthcare organizations to research, develop, implement, test, and distribute improved technologies for healthcare that will integrate state-of-the-art information, decision support, communication, and biomedical technologies. A major contract was signed with Children's Hospital of Atlanta to improve pediatric health outcomes. Echoing one of the core principles of the HSI is the work of Jeffrey Skolnick, a renowned systems biologist who joined the Tech faculty last spring as a Georgia Research Alliance Eminent Scholar in Computational Systems Biology. Systems biology integrates mathematics, physics, chemistry, and biology with high-performance computing and engineering to exploit the vast opportunities created by the sequencing of the human genome. For example, by applying bioinformatics and systems biology to the development of new drugs, Skolnick can reduce the number of compounds drug developers must screen by a factor of ten, creating cost savings and shortening the time to market.

Expanded Local, Regional and Global Outreach

Georgia Tech restructured its business and community assistance programs, bringing new and established programs together into an initiative called the Enterprise Innovation Institute (EII). It is designed to assist industry, entrepreneurs, economic developers, and communities become more competitive through the application of science, technology, and innovation. An early success occurred when Samsung Electro-Mechanics Company (SEM) opened its new North American radio frequency integrated circuit design center in the Technology Square Research Building. The Samsung center employs 50 engineers and

is expected to expand. Italy-based Pirelli also opened its North American headquarters at Technology Square last year and signed a five-year R&D agreement with Georgia Tech in telecommunications. The distributed incubators of the Advanced Technology Development Center division of EII are full with emerging companies at all locations, a good sign for the future.

Georgia Tech Savannah entered its sixth year with programs in electrical and computer engineering, civil engineering, and mechanical engineering. Over 550 students were enrolled in the programs between Georgia Tech's Savannah Campus and our partner institutions, Georgia Southern, Savannah State and Armstrong Atlantic. Georgia Tech Savannah enrolled 150 students at the junior, senior and graduate level while the remainder were enrolled at the freshman and sophomore levels at our partner schools. In addition to the Savannah campus, Georgia Tech students were enrolled in programs in Singapore; Metz, France; and Shanghai. Nearly 400 students took courses via the video option. Distance Learning and Professional Education (DLPE) continued to serve a worldwide constituency. During 2006, over 40,000 continuing education units (CEUs) were generated and gross revenues totaled nearly \$18 million, exceeding its target by 10 percent.

Through more than 300 events, the Alumni Association engaged over 73,000 Tech alumni, families and friends throughout the year. These events ranged from Homecoming Weekend, Student Appreciation Day and Family Weekend to the Alumni Career Conference. Additionally, over 100 Georgia Tech Alumni Clubs in the United States, Mexico and Europe held meetings throughout the year.

Georgia Tech's outreach to Georgia's K-12 community continued to grow. A successful pilot project used telecommunications to provide advanced calculus courses to 34 students in five Fulton County high schools. The distance learning class enables high school students to earn both high school and college credit. Georgia Tech's Institute Partnerships also encourages Tech students to volunteer as both mentors and tutors for K-12 students. At the elementary level, Institute Partnerships and Tech's Center for Education Integrating

Science, Mathematics, and Computing collaborate to provide math tutors at Bethune and Centennial Place elementary schools.

A Supportive, Collaborative and Effective Administrative Infrastructure

Efforts to improve the Institute's capital infrastructure and administrative processes and systems touched all departments and employees of the campus. The customer friendly web check payment offering for student tuition and fees was fully implemented (initially offered in spring semester 2005). Coupled with the discontinuance of the credit card payment option, a cost savings of over \$900,000 annually was achieved.

The Institute's effort to provide advanced networking facilities to its faculty and researchers was enhanced through the transfer of the operations of Southern Crossroads (SoX), an inter-networking aggregation facility, to Southern Light Rail, Inc. (SLR), combining the services of SoX with those of the National Lambda Rail.

Georgia Tech initiated its new University Leadership Program (ULP) for ten faculty members in key positions of academic leadership. The ULP was developed after the successful pilot year of the Masters Series Executive Development Program for staff. The staff initiative completed its second successful year.

Georgia Tech Staff Training continued to be strong with enrollments of 4,700 class seats in over 500 scheduled classes. More than 900 Georgia Tech staff were enrolled in one or more of four OOD certificate programs. With over 210 participants completing their certificate program in the Fall of 2004, OOD witnessed a sustained level of success two years later with over 230 Georgia Tech staff completing their certificate programs in 2006.

The Georgia Tech Security and Police Department oversaw a reduction in crime by 22.3 percent. This included a 40 percent reduction in motor vehicle thefts, and a 32 percent reduction in larceny theft. This accomplishment was realized by continued crime suppression and reduction efforts through partnerships with local law enforcement agencies and campus departments.

Total private support received by the Institute and its associated foundations was \$95.8 million, up 16 percent from FY 2003-04 (as reported to the Council for Aid to Education), representing one of the best fundraising years in the history of the Institute. Thirty principal gifts and commitments (\$1 million or more) led the broad increase in giving. Georgia Tech has raised over \$250 million during the quiet phase of its \$1 billion campaign. Highlighting the year was the naming of the H. Milton Stewart School of Industrial and Systems Engineering in honor of Carolyn and H. Milton Stewart (\$20 million gift). Additionally, the lead commitment was announced for the Marcus Nanotechnology Building in honor of the Marcus family (\$15 million gift).

Facilities Improvement and Expansion

Georgia Tech continued to implement development according to its Campus Master Plan. Buildings completed, under construction or in the design phase are summarized in Table 1. The historic Swann Building reopened after a complete renovation. It is the second in a series of renovations to rejuvenate the historic core of campus. The building houses the Modern Languages program and is expected to be a focus for integrating culture and language into the global context of numerous other disciplines.

Table 1: FY 2006 Capital Projects

New Facilities Opened

Renovated Swann Building (School of Modern Languages)
Molecular Science and Engineering Building
Family Apartments

New Facilities under Construction, in Design or Planning

Innovative Learning Resource Center
Klaus Advanced Computing Technology Building
Marcus Nanotechnology Building
Technology Enterprise Park

Progress in Assessing Institutional Effectiveness

A major effort was placed on assessing the effectiveness of the SACS approved Quality Enhancement Plan and its two new academic programs, the International Plan and the Undergraduate Research Opportunities Program (UROP). Early feedback from these activities has been used to guide the implementation of these campus-wide initiatives.

Assessment updates were received from all degree programs in AY 2005-06, and the Office of Assessment worked with academic the units to facilitate further improvement of academic assessment planning, implementation and use of results for ongoing adjustments. Units undergoing Comprehensive Program Review included all degree programs in the following units: School of Aerospace Engineering, School of Chemical and Biomolecular Engineering, and the Sam Nunn School of International Affairs. Comprehensive Program Review was conducted on the following interdisciplinary programs: Algorithms, Combinatorics, and Optimization, and Human Computer Interaction.

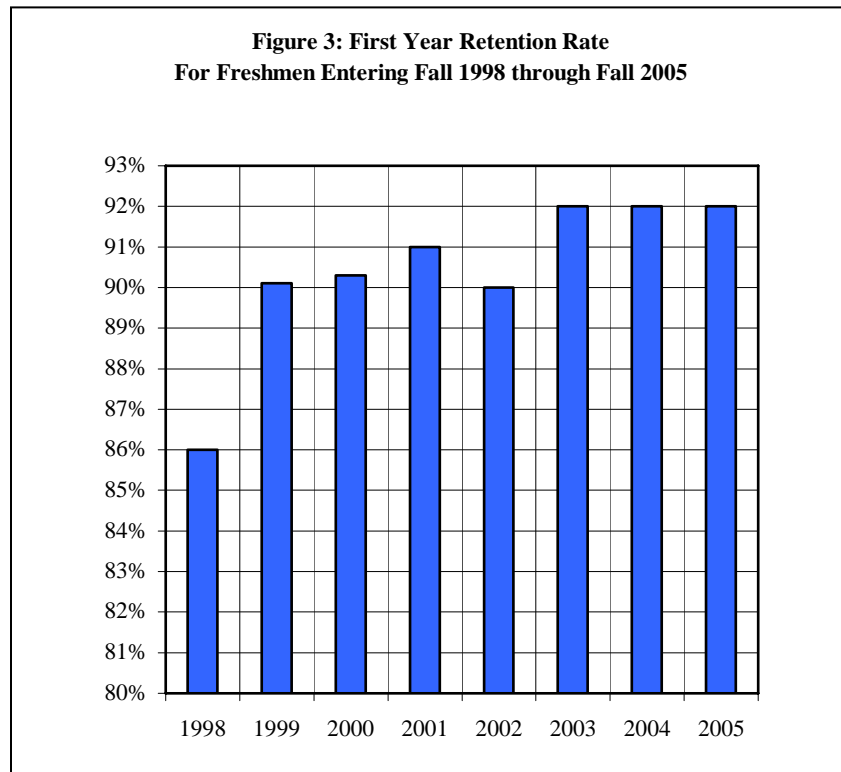
Continuing efforts to improve administrative processes were made with a special focus on risk management. With a kickoff at the Institute's annual retreat, risk management was to be a topic of discussion at all unit levels over the course of the coming year.

Our information systems security Internal Control Guide was recognized as a best practice in the State. Efforts to enhance information security systems continue based on technological and organizational improvements.

Improving Student Retention and Graduation

The fall 2005 class marks the seventh year with a freshman retention rate at or above 90 percent. The six-year graduation rate grew to 76 percent, an Institute high. Five years ago, Georgia Tech introduced a major undergraduate initiative based on the concept of a student-focused education, the first goal of our strategic plan. Examples of programs

designed to improve retention include mid-term grades, undergraduate research opportunities, Freshman Experience, servant-leadership initiatives and tutoring support.



Management of Campus Conflict and Change

Since July of 1995, Georgia Tech has established committees to investigate existing conflict resolution programs on campus; design new strategies for handling conflict through informal processes; and implement new programs models to meet the Institute's goal. The Dispute Management System and campus-wide training programs have been in operation since 1998. This system is comprised of "Multiple Entry Points" for managing campus conflict, including: Alternative Dispute Resolution (ADR)/Ombuds Office, Employee Relations, The Office of Diversity Management, Faculty Status & Grievance Committee, Impartial Board of Review, and the Dean of Students.

The GT Dispute Management Team which is comprised of the ADR/Ombuds Office, Employee Relations and the Office of Diversity Management addressed 91 cases of

employee concern during fiscal year 2006. Eighty-nine (89 percent) of the 91 cases were handled informally leaving only 10 cases (11 percent) to be handled through formal processes.

**Table 2: Dispute Management Processes
FY 2006**

Formal Disputes	10
Informal Disputes	64
Facilitated Discussions	17

A variety of campus training is continuously available and is sponsored by the Office of Organizational Development to inform employees on productive methods of dealing with conflict. During fiscal year 2006, 36 courses were facilitated for 449 employees on how to minimize conflict including.

Overall Institutional Health

The information provided in this report supports the assertion that Georgia Tech's overall institutional health is strong. Further validation of this was provided by the outcome of the Georgia Tech Economic Impact Study released in spring 2006. The study, sponsored by ten of Georgia's top companies, found that Georgia Tech provides a \$3.9 billion economic impact within the state—a return of almost \$15 for every state dollar appropriated to Tech. In addition, Georgia Tech directly or indirectly is linked to the creation of over 40,000 jobs in the state. In terms of patents and creation of new businesses Georgia Tech exerts the largest impact of any university in the USG.

Looking to the future, the report examined how Georgia Tech could best maintain its positive economic impact in face of the increasingly competitive global economy and drew important conclusions:

- The USG should work with Georgia Tech to develop management processes that allow for more flexibility and adaptability.
- Georgia Tech should be given more ability to control its tuition policy within the context of an agreed upon level of access by Georgia students.

- The USG and Georgia Tech should develop an MOU that allows Georgia Tech to have more autonomy in exchange for established levels of accountability and outcomes.

The coming year will be one in which Georgia Tech will work with the Chancellor in his efforts to improve the USG and in which we work with our sister institutions in a collaborative manner as we all seek to better serve the citizens of Georgia. On our own campuses, we will seek to establish positions of excellence in areas of importance to the state including energy, nanotechnology, information technology, logistics, biotechnology, healthcare and transportation. We expect to continue to improve our educational programs to address interdisciplinary growth areas and to develop the technological talent needed for the state's economic growth. We will also examine potential opportunities for international programs in Singapore, China and India.

Looking back over the past year we believe our efforts led to a better institution. Based on a visit to our Atlanta campus, the author and New York Times columnist Thomas L. Friedman praised Georgia Tech's approach in the new edition of his recent book, *The World is Flat*. He said, "What the Georgia Tech model recognizes is that the world is increasingly going to be operating off the flat-world platform, with its tools for all kinds of horizontal collaboration," Freidman wrote. This type of endorsement suggests our progress is visible and tangible.