Innovation in a changing world
Technology 20 years ago

The IBM Portable PC 5155 with a 9-inch text display and 256 K of RAM was introduced in February 1984. It cost $4,225.

“640 K ought to be enough for anybody..”

Bill Gates, 1981

1984 Buick Riviera
Powerful trends reshape the world

- High-speed communications / Internet
- End of the Cold War political constrictions
- Removal of trade barriers
- Terrorist attacks; wars in Afghanistan, Iraq
- Emergence of technology-based economies in other nations
- Sustained investment in higher education in countries like India and China
The world of 2020

- 8 billion people, a 25% increase over 2000
- Balance tipped toward urbanization
- Population in developed nations aging; “youth bulge” in underdeveloped nations
- Of every 100 people in the world:
  - 56 will live in Asia
  - 16 will live in Africa
  - 4 will live in the United States
Future issues

- Water shortages
- Global warming
- Energy demands
- New diseases
- Increased competition for technology sector
Future issues, opportunities

- Water shortages
- Global warning
- Energy demands
- New diseases
- Increased competition for technology sector
- Biotechnology revolution
- Nanotechnology revolution
- Sustainable technology
“U.S. high-tech leadership is not guaranteed. That is all there is to it. We have it. We enjoy it. We have been here forever, but it is not guaranteed going forward. If we lose that leadership and if we don’t have it as a driving force in our economy, it will have an impact on our ability to maintain and further improve our standard of living in the future. That is a reality.”

George Scalise
Semiconductor Industry Association
Member, PCAST
“Just as energy is the basis of life itself and ideas the source of innovation, so is innovation the vital spark of all human change, improvement and progress.”

Theodore Levitt
Edward W. Carter Professor Emeritus
Harvard University
Samuel Morse telegraph, 1844

Alexander Graham Bell telephone, 1875

- Global
- Interdisciplinary
- Sparked other inventions
- Promoted interaction, openness
- Transformational

Innovate America: Thriving in a World of Challenge and Change
“The world leaders in innovation and creativity will also be world leaders in everything else.”

Harold R. McAlindon
Author and innovative business consultant
“Georgia Tech will define the technological research university of the twenty-first century and educate the leaders of a technologically driven world.”

The Strategic Plan of Georgia Tech
Enduring traditions…
Enduring traditions…
push Tech toward the leading edge
Eroding state funding

- $51 million cut from Georgia Tech’s state funds since July 1, 2001 (27 percent)
- State funding this year is about the same as 3 years ago, but we have 1,250 more students
- State funds have shrunk from 34% of Georgia Tech’s budget to 25% over the past decade
State funding shortfall

Without cuts
Actual funds

FY 01 FY 02 FY 03 FY 04 FY 05

$0 $50 $100 $150 $200 $250 $300
The most important ingredient: outstanding people
Incoming freshmen

- 2,600 students (+18%)
  - 782 women (+28%)
  - 153 African Americans (+21%)
  - 105 Hispanics (+48%)
  - 116 international (+35%)
- 1337 average SAT
- 8 perfect SATs, 1 perfect ACT
- 5 sets of twins
Students shine

Blair Dowling, winner of the Phi Kappa Phi Scholarship Cup for the best scholastic record of the 2003 graduating class: Homeland Security Fellowship

Goldwater Scholarships:
Thomas Oliver
Mark Callaghan

Laurence Ralph: Mellon Fellowship in Humanistic Studies

Gabe Brostow: Marshall Sherfield Fellowship

Monique Gupta: Churchill Scholarship

Jia Xu: Marshall Scholarship
Solving problems at home and abroad
Innovative undergraduate initiatives

- Student computer initiative; Web-enhanced curriculum
- Mid-semester grade reports and follow-up help for lagging students
- Undergraduate research opportunities
- Expanded international study options
- Enhanced student life/leadership options
Students studying abroad

[Graph showing the increase in students studying abroad from '93-'94 to '03-'04.]
Cross-disciplinary education builds understanding
Creating innovative programs

Board of Regents Award for Excellence in Teaching: School of Modern Languages

Price Institute Innovative Entrepreneurship Educators Award: TI:GER (Technological Innovation: Generating Economic Results)

McEver Program for Engineering and the Liberal Arts:
Offers unique seminars that consider the impact of engineering on the liberal arts and vice versa
Professional master’s degrees

- Human-Computer Interaction
- Bioinformatics
- Quantitative & Computational Finance
- Prosthetics and Orthotics

Participating Colleges:
Sciences
Ivan Allen
Computing
Engineering
Management
Students innovate

A student team from GT and Emory placed third in the Idea-to-Product 2003 International Competition

GT Motorsports won the Formula SAE in Australia

“Diametric” won Delta Campus MovieFest, trip to Hollywood for students

Computing team competed in international programming in Prague

Kittredge middle-schoolers enjoy ARCHITech
Excelling on the court, in class

15 of 17 teams in post-season play
Lacrosse, rowing, parachute clubs go national

First basketball team from Georgia to play in
Division I-A National Championship Game

Volleyball team finished its season ranked 8th in the nation

Baseball team won 20 straight, became NCAA Atlanta Region Champs
Clubs make their mark

Women’s crew won a gold, men’s crew two silvers at the national championship.

Men’s lacrosse won the Southeastern Lacrosse Conference championship and competed in the national championship tournament.

Parachute club team GT Inviscid beats perennial favorite Air Force Academy to take the national championship.
Faculty honored

National Medal of Technology: Russell Dupuis, elec and comp engineering

Presidential Early Career Award for Scientists and Engineers: Julia Kubanek, biology

Descartes Prize (prestigious European award for collaborative research): Jean-Luc Bredas, chemistry & biochemistry

Presidential Green Chemistry Challenge Award: Charles Eckert, chemical & biomolecular engineering, and Charles Liotta, chemistry
Rankings remain high

- Georgia Tech remains among top ten public universities
  - Peer assessment score in top 30 of all universities, tied with Emory and Georgetown
- All engineering programs in the top 15
  - 4 engineering programs in the top 5
- College of Management moves up to #34
  - 3 programs in the nation’s top 15
- Co-op program among 11 “Academic programs to look for”
- #1 among publics in % of alumni who contribute
Four campuses on three continents

Georgia Tech-Atlanta

Georgia Tech-Lorraine

Georgia Tech-Savannah

Georgia Tech-Singapore
Interdisciplinary research stimulates ideas
Research Thrusts

- Nanotechnology
- Microelectronics/telecommunications
- Sustainable Technology
- Biotechnology/nanomedicine
- Photonics/optics
- Logistics
- Manufacturing
Georgia Tech-Emory Biomedical Engineering Professor Shuming Nie is one of the first scientists in the world to utilize nanotechnology in the biomedical field. He is the principal investigator for two research grants totaling $10 million awarded by the National Institutes of Health just last week.
Strong research growth

Expenditures

Awards

Strong research growth
Research milestones

- $342 million in awards; ~$425 million in expenditures
- Invention disclosures: 277
- NIH: $17.2 million (doubled in past 2 years)
- $106.8 million in active contracts with interdisciplinary centers
- Ovarian Cancer Institute
Bringing innovation to fruition
VentureLab: from Tech lab to commercial market

Professor Barbara Boyan  
Jacket Micro Devices
VentureLab: from Tech lab to commercial market

Professor Barbara Boyan

Jacket Micro Devices

Advanced Technology Development Center

Radatec’s radar-based sensor for large rotating machinery

CAMotion’s algorithms make robots faster, more flexible
Building partnerships at home and abroad
GLCC connects us to the world... and global partnerships take us there.
Preserving and creating special places
Creating an innovative campus

Biotechnology Complex

Klaus Advanced Computing Building

Technology Square
...that also supports campus life

Stamps Student Center Commons

Campus Rec Center
Transforming the Fifth Street Bridge
Innovation in a changing world