Chancellor talks state budget at general faculty meeting

David Terraso
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Chancellor Thomas Meredith was on campus again last Tuesday, this time to speak to the spring meeting of the general faculty and general faculty assembly. President Wayne Clough invited the chancellor, who praised Tech's growing academic prestige while offering a frank assessment of the state budget.

"Congratulations on your commitment and reputation for academic excellence," said Meredith. "Tech is not afraid to use the talent on this campus to make life better, not only here, but all around the nation."

He also spelled out the challenges ahead. The University System of Georgia is experiencing substantial growth at the same time that it's facing massive budget cuts. According to Meredith, approximately 253,000 students are being educated in the System this year, a 7 percent rise over last year. At the same time, the system experienced a state budget cut of $184 million, with a possible 1 percent additional cut before the fiscal year ends on June 30. Georgia Tech's share of the cut was approximately $18 million.

What this means for Tech is "larger classes, sections of classes that students can't get, which means students will have to be in school longer," said Meredith, which translates into higher education costs for students. "There is a growing gap between students who want our services and those who can afford our services," he said.

Those students are getting smarter and staying in school. This year, the average SAT score among freshmen entering the University System was 1030, compared to 1026 last year. Tech's average rose to 1355 from 1331. Retention in the system is up, as well, with 75 percent of students transitioning from their freshman to sophomore year. Tech's retention rate is 91 percent. Added to that is an 8 percent increase in the number of students taking classes full time. "The challenge," said Meredith "is to maintain the quality we have in this System. To help the universities do that, Meredith has created a task force to study what Georgia will look like 10 years into the future and help the System determine how to handle the growth."

"Georgia has a lot of room to grow. Nationally, the state ranks near the bottom when it comes to the number of 18-24-year-olds getting an education beyond high school. If Georgia were near the top, the System would have close to 550,000 students," said Meredith. "Georgia leads the nation in consolidating from their freshman to sophomore year."

Assembly continued, page 3

Pipe dreams: Internet2 as a test bed for technology

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I

n the early '90s — before phrases like "World Wide Web," "Internet service provider" and "domain name" entered the general lexicon — most of the electronic information exchange occurred between universities and research organizations, as professors and scientists shared data along a network relatively free of commercial traffic.

The dotcom revolution changed that. Almost overnight, the Web's infrastructure was taxed with millions of surfers, limiting the amount of bandwidth available for academic use. John Mullin, associate vice president and chief information officer for the Office of Information Technology (OIT), said the effect was a lot like driving on the interstate at midnight versus rush hour.

"It was a bad thing for education," he admitted. As the Internet gradually became a place for political discourse, personal expression and ordering pizzas, he said, universities and research consortiums lost the ability to do the kind of high-performance computing tasks necessary for distance collaboration. Moreover, new technologies being developed required performance beyond the capability of today's Internet. What was needed was a separate network, dedicated to education and research experimentation.

For example, when studying climate change, scientists in the School of Earth and Atmospheric Sciences may rely on massive amounts of data provided by a federal organization such as the National Oceanic and Atmospheric Administration in order to create models predicting future climates. When bandwidth is congested, transmission of data is slowed considerably, frustrating the progress of research. With that information readily available, however, studies are

Internet2 continued, page 2
"A lot more people were prompted to think about genet-
sics by seeing ‘Gattaca’ than
going to the Human Genome
Project Web site. Culture serves as
a public sphere where these
anxieties can be worked
through."
—Eugene Thacker, an assistant
professor in the School of
Literature, Communication and
Culture, on the general public’s
lack of education of the issues
surrounding DGA research.
(New York Times)

“I think that the people at
Georgia Tech, at Emory, the
Carter Center — they are all
well known in both South and
North Korea. Atlanta is clearly
one of the important diplomat-
ic places for South and North
Koreans.”
—Former Sen. Sam Nunn,
namesake of Tech’s School of
International Affairs and co-
chairman of the Nuclear Threat
Initiative, on the city’s role
in working to defuse rising ten-
sions between North Korea and
the United States.
(Atlanta Journal-Constitution)

Internet2, cont’d from page 1

performed more quickly, and more
sophisticated models are developed.

Adding to the frustration was the
fact that many of the federal govern-
ment’s principal funding agencies —
NASA, the National Science
Foundation and the Department of
Defense, among others — tended to
favor more multi-institutional
research proposals. Effective meth-
ods of distance collaboration were
needed.

“We could no longer get the
bandwidth we needed for research
and education,” said Mary Trauner, a sen-
or research scientist for academic
and research technologies in OIT.

Returning control to academia
So in 1996, a group of research uni-
versities initiated the Internet2 net-
work project, a high-speed system
between regional connection centers —
called gigapops — to encourage
and facilitate the kind of research
that would benefit from such a net-
work. This new backbone, a network
called Abilene, held two advantages.
First, it would return the control of
traffic to academia, eliminating the
congestion associated with commer-
cial traffic. Second, it would take
away distance as a barrier for scien-
tific collaboration.

In addition to being one of the
project’s charter participants, Tech
has the added responsibility as one
of Abilene’s “core nodes,” or access
points, to the Internet2 network (see
graph, above right). Other research
universities connect to the network
g via a gigapop known as Southern
Crossroads, or Sox, a 2.4-gigabit
connection which routes traffic through
out the country’s 15,000-mile fiber
optic cable network. By the end of
2003, Abilene plans to have all of its
core nodes upgraded to a speed of
10 gigabits per second.

Cos D’Angelo, who manages
the network backbone team as part of
OIT’s Operations and Engineering
directorate, is responsible for main-
taining the electronics that connect
the campus network. Additionally,
the team works to maintain and oper-
ate the Sox gigapop. In serving as
the regional aggregator, Sox is able
to provide more bandwidth while
sharing the costs of operation.

To put things in perspective, 10
 gigabits per second is roughly 15,000
times faster than a typical home
broadband connection. At those
speeds, an uncompressed, feature-
length movie can be transmitted in
approximately six seconds.

Video on demand
Tech’s principal interest in
Internet2’s resources is in the form
of video applications: videoconfer-
cencing and streaming video. Trauner
says that administrators and profes-
sors at Tech are gradually warming
up to the use, enhancing collabora-
tion in the lab and communication
in the classroom.

Tech will continue to utilize the
existing Internet for services now
regarded as routine: e-mail, personal
Web access and newsgroups.

Service-oriented functions such as
videoconferencing occupy a portion
of this new network, but applications
are being developed in numerous dis-
ciplines as well (see sidebar, above).

While adding network infrastructure
to support the kinds of applications
being planned is a major aspect of
Internet2, it is not expected to be a
replacement for today’s commercial
Internet. Rather, Internet2 will likely
serve as a test bed: the experiments
and applications pioneered here may
influence new ways to use the
Internet, potentially fueling another
high-tech boom.

“I industry really plays a big role
in bringing products to the Internet
that are supported, stable and even
standardized,” said Trauner, but pure
research and experimentation are
still academia’s domain.

The high-performance connectivity available through Internet2 enables collaboration
among institutions and resources in a way not possible on today’s Internet.

Applications being developed and used are helping to reshape specialties in:

Bioscience
At the University of California at Los Angeles Laboratory for Neuro Imaging (LONI),
high-resolution brain data is collected from MRI scans, digitized slices of cryosectioned
brains and light microscopes. Software recreates a 3-D model of the brain, generates a
“road map” that allows a particular brain to be compared against other brains, and
allows the development of population-based, digital brain atlases. These atlases store
information on how the brain varies across age and gender, across time, in health and
diseases such as Alzheimer’s, and in large human populations.

Arts and Humanities:
The Recording Studio that Spans a Continent demonstrated, for the first time, how 12
uncompressed high-quality audio channels could be streamed over Internet2’s Abilene
network to create a live recording and surround sound mix for a live audience in Los
Angeles. In September 2000, the McGill University Jazz Orchestra played in Montreal,
while engineers were mixing the recording at the University of Southern California in Los
Angeles. The broadcast quality video (known as MPEG-2) was transmitted over the same
Internet link as the audio, allowing audience members to watch the performance on a
large screen.

Teaching and Learning:
In a large lecture teaching environment, undergraduate students aren’t able to interact
with instructors and materials as much as they’d like. At Northwestern University,
Professor David Uttal is using technology to address those limitations. A Blackboard
Web page for Introductory Psychology not only features a broad range of resources for
students — from the syllabus to the final grades — but also provides 24-hour access to
videos used in the lectures. Videos file are streamed over Internet2 networks.

Source: Internet2
Rosser, Philobos honored for contributions to science, technology

Over Valentine’s Day weekend in Denver, the American Association for the Advancement of Science (AAAS) and the Association for Women in Science (AWIS) recognized Sue Rosser, dean of the Ivan Allen College, for “distinguished leadership in research on the theoretical and applied issues for women in science and for service to the science education community on curricular and classroom techniques to attract and retain women and minorities in science and engineering.”

Each year the AAAS Council elects members whose “efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished.”

The mayor of Denver proclaimed February 16th “Women in Science Day” in honor of the 2003 fellows for their dedication to and focus on issues concerning women in science, engineering, mathematics and technology.

IN BRIEF:

Gulp! Some facts about bottled water

Athletes and exercisers make up a large group of consumers who buy bottled water. The March issue of Georgia Tech’s Sports Medicine and Performance newsletter addressed some of the facts about bottled water and tap water:

- Any product sold as bottled water for human consumption has to meet state and federal standards and has to be sealed in a sanitary container.
- FDA rules exempt bottled waters that are packaged and sold within the same state.
- Approximately 20 percent of these states do not regulate bottled water.
- Almost 25 percent of all bottled water is simply tap water that has been processed and bottled.
- In 1996, about 10 percent of community tap water systems in the United States did not meet EPA treatment or contamination standards.

In spite of those statistics, bottled water and tap water (in major communities) are both relatively safe, according to sports nutritionist Chris Rosenbloom. “About 85 percent of bottled water produced and distributed in the United States is represented by the International Bottled Water Association, which helps producers and distributors meet mandated guidelines.”

However, some of the things we do with our bottles of water may not be so safe. Run your sports bottle through the dishwasher on a regular basis. Also, most bottled water is not fluorinated, and dentists have been noticing an increase in cavities in children who drink only bottled water.”

Enhancing undergraduate research

Hands-on experience is invaluable to any student’s education beyond the classroom. An institute initiative to get more undergraduates lab experience has proven to be very successful, and many have cited the mutually beneficial relationship fostered through faculty-mentored research.

Established in 2001, The President’s Undergraduate Research Award (PURA) was created to help increase awareness of the research generated at Georgia Tech, and to create more opportunities for students to participate. Applications require a faculty/student pairing, with PURA monies given each semester to qualifying undergraduates for use within the school or college of their faculty sponsor. Awards may be used for research materials or salary for research or to travel to a professional conference and give a presentation.

Awards are made through the Office of the Vice Provost for Undergraduate Studies and Academic Affairs, and applications are online at www.undergradresearch.gatech.edu, under “Institute-wide Opportunities.” The deadline for summer awards is April 1.

WLC names “Women of Distinction”

As last month’s Women’s Leadership Conference, awards were given to six “Women of Distinction,” for “demonstrating outstanding leadership, inspiring others and improving our communities.” Honorees included Jane Ammons (Outstanding Faculty), Sandi Bramblett (Outstanding Staff), Cindy Smith (Outstanding Alumna), Katie Hudson and Celeste White (Outstanding Graduate Students), and Amber Yousef (Outstanding Undergraduate).