Tech’s BOLD New Campus
Authentic Leadership
Bill George, IE 64, former CEO of Medtronic, explores what some of today’s powerful executives are lacking in excerpts from his new book. Editorial cartoons by Clay Bennett, who won the Pulitzer Prize in 2002, are featured with the article.

Proof of Concept
Alumna Jani Macari Pallis is working in collaboration with Philadelphia’s Franklin Institute Science Museum as the principal investigator for the Wright Again project, studying the Wright brothers engineering collection that details the discovery of flight.

The Sky’s the Limit
M.L. Brittain, Georgia Tech’s fourth president, knew a $300,000 gift establishing the Daniel Guggenheim School of Aeronautics in 1930 meant engineering would soar.

Bold New Campus
Georgia Tech has experienced a decade of campus growth and development that President Wayne Clough says is “nothing short of revolutionary.” The most dramatic development is the opening of Technology Square across the Downtown Connector, which could anchor a high-tech corridor in Midtown Atlanta.

Annual Report
Despite a struggling economy and budget cuts, the 56th Roll Call surpassed its goals, attendance at Alumni Association events during Homecoming was up and a new Executive Networking Program was launched.

Cover: President Wayne Clough is the visionary behind Technology Square, a “remarkable addition to the Tech campus” and the new home of the DuPree College of Management. It’s the crown in a decade of campus growth and development.

— Photo by Gary Meek

Photo courtesy of Wright State University
7 Feedback

9 Tech Notes
Clough: Invest in ‘Seed Corn’
Tech Creating Online Catalog
Bacteria Savor Toxic Feast
Nunn School Wins Security Grant
Nation Loses Hero
Out of Vogue
Rankings Keep Tech in Top 10
‘Great Place to Walk’

57 Pacesetters
Honel Nelson and Andre Moore: Representing Rap
Van Page and Jeff Tuomi: Safe Storage
Ronald Johnson: Engineering Success
Todd Simmons: Furniture Mover

70 Faculty Profile
Ali Adibi: Research exciting, teaching important

72 Photo Finish
Buzzing the Game
**Acts of Kindness**

I read the article about my former classmate Charley Kohlhase in the Summer 2003 GEORGIA TECH ALUMNI MAGAZINE. It is exciting to know what a great career he has had.

One thing the article did not mention is that Charley was a kind, patient and thoughtful student at Tech. He significantly helped me, a struggling basketball jock, with my calculus homework. I have never forgotten his acts of kindness to me and probably appreciate them more now than I ever did.

I had a satisfying career in the world of aerospace. I was a "worker bee" at Boeing, NASA and Lockheed. I have been retired for 13 years but have worked another eight years, on and off, as a contractor.

Lenny Cohen, AE 57 Cornelia, Ga.

**Altering Earth**

I read with delight and great satisfaction the Summer GEORGIA TECH ALUMNI MAGAZINE. Every issue has articles of wide interest and timeliness. I was especially caught up in the article “Rational Imagination” about Charles Kohlhase — such great talent and intellect.

I have a seemingly silly question, but one that is interesting to ponder. Will the continuous out-pumping of underground resources such as oil, the relocation of massive amounts of metal ore, the erection of gigantic masonry and the impounding of water in giant and various sites ultimately cause changes to the rotational speed and “wobble” of our planet?

G. Inman Sewell, IM 57 Mukilteo, Wash.

Charles Kohlhase, Phys 57, responds: Consider first an ice-skater whose spin increases when the arms are drawn close to the body, or whose spin decreases when the arms are extended, an effect resulting from the conservation of angular momentum. In like manner, if mass is moved from locations closer to Earth’s spin axis to locations farther away (and nothing fills in the holes), then the spin rate of Earth will indeed slow down — but the amount is miniscule. The mass of Earth is about 6E24 kilograms (6 times 10 to the 24th power kilograms), and the equatorial radius is about 6,378 kilometers. The amount of crude oil extracted each year is about 5E12 kilograms and that of iron ore about 1E12 kilograms, both some trillion times smaller than the mass of Earth. According to a study by several Belgian scientists, the heavier atmosphere which results from a predicted 1 percent increase in CO2 each year of 25E12 kilograms will result in a slowdown in the length of Earth’s day by about a microsecond each year.

Thus, the effect of extracting crude oil and iron ore, raising it at most a few tens of meters, will be much smaller. My hand calculator did not have the precision to work out the exact amount of slowdown, but it is very, very small, far less than a microsecond each year. On top of all this, normal variations in the motion of the oceans and atmosphere may be at least as significant as the buildup of CO2 over the foreseeable future. Unbelievably, it is claimed that scientists can measure the length of a day to an accuracy of about 1E-5 seconds. By the way, the mass of all human beings is roughly 0.4E12 kilograms, so they could all climb very tall trees, remain there forever, and have a negligible effect.

G.T.
Clough Urges Congress Invest in ‘Seed Corn’

Federal funding of basic research in the physical sciences is essential if the United States is to maintain its standard of living and continue being a world leader, Tech President Wayne Clough told a U.S. Senate subcommittee July 29.

Clough, who chaired the President’s Council of Advisors on Science and Technology, told the Energy and Natural Resources Subcommittee that research and development funding was becoming dangerously imbalanced.

“If we want to maintain our standard of living and our position of world leadership, it is crucial that we invest in long-term, fundamental research, which is conducted largely at universities and national labs; that we maintain a balance across the disciplines so that they move forward together; and that we pay attention to the education of the next generation of scientists and engineers,” he said.

“All of these things on which the well-being of future generations depend are essentially in the hands of Congress.”

An indication that the United States is in danger of slipping in its leadership role is the decline in the number of doctoral degrees awarded, Clough said. The number of PhDs awarded in the United States in the sciences peaked in 1998, he said. Engineering doctoral degrees peaked in 1996 and declined by more than 15 percent by 1999.

“The federal government is a key to sustaining the research that we do at universities and encouraging our collaboration with private industry,” Clough said.

The single difference between research conducted by private industry and research performed at universities is “we educate the workforce of the future,” he said.

“When we do research, we are educating young people, we’re preparing them to take important roles in society, and if we’re not doing that, you’re going to lose the seed corn for the future.”

Tech Creating Library of Congress Online Catalog

Elementary school teachers lecturing their students on the history of manned space flights soon will be able to access film clips from Apollo missions online — thanks in part to Georgia Tech’s Interactive Media Technology Center.

Tech is one of three universities awarded a $900,000 National Science Foundation grant to build Moving Images Collections, an online catalog of film, TV and digital video clips for the Library of Congress.

Rutgers University and the University of Washington also will be involved in the development of MIC, which will be the first online catalog in the nation to gather moving images and integrate them into one reference source accessible over the Internet.

The project will be completed over two years in collaboration with the Library of Congress and the Association of Moving Images Archivists and will focus on conveying scientific concepts to students from kindergarten through graduate school. The online catalog will be made available to teachers and students through a Web portal that will allow users to conduct targeted searches that create customized displays.

Ed Price, IMTC research director, and his team will develop the Web portal technology, search engine and user interface and design the interactive Web site.

Initially MIC will provide access to more than 80,000 images from such archives as the Library of Congress, Cable News Network, National Geographic Television, the National Library of Medicine, the Oregon Health and Sciences University, the University of Washington’s Research Channel and the Smithsonian Institution.

IMTC was founded in 1989 to develop computer models for Atlanta’s pitch to the International Olympic Committee. The two high-tech multimedia tours showing what Olympic facilities would look like helped the city land the 1996 Summer Games.
Sometimes you can find a needle in a haystack. Frank Loeffler, an assistant professor in Tech’s School of Civil and Environmental Engineering, did. At the successful end of a five-year quest, he found naturally occurring bacteria that can eat a certain type of toxic pollutant.

First he found what he was looking for in a dirt sample, taken from a Michigan dry cleaner’s site, where the soil was contaminated with chemical leftovers of solvents used to dry-clean clothes. Back in the lab, he realized that something in the sample was chowing down on the toxic chemicals.

“The observed toxic compounds were completely decontaminated to nontoxic end products,” Loeffler says, still sounding bemused.

Loeffler and a team of student researchers spent the next five years finding that one particular type of bacterium that had a particular yen for those particular pollutants. The research team did it by carefully removing everything else in the sample — hundreds of thousands of other bacteria, the equivalent of finding that proverbial needle by dismantling the haystack one straw at a time.

In the end, they became the first to isolate the disk-shaped bacterium, designated BAV1 of the Dehalococcoides group, in a pure culture.

Their work, outlined in a July article in *Nature* magazine, represents a significant advance in understanding how to clean sites contaminated by tetrachloroethene and trichloroethene, possible carcinogens. In addition to dry cleaning, the solvents were used to degrease airplane parts.

“This is not just science to fill papers and put them on the shelves, but this has an impact on the public to help people and make their lives safer,” Loeffler says.

Tech has licensed the technology to Regenesis, a California firm providing bioremediation products that clean contaminated soil and groundwater.

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**Sam Nunn School Wins Grant to Study Security Issues**

The Sam Nunn School of International Affairs has been awarded a $1.24 million grant from the John D. and Catherine T. MacArthur Foundation to study international security issues, including the threat posed by weapons of mass destruction.

“The program is actually off and running,” says school chair William Long. “We have hired a faculty member, a new staff person and we have taken on 10 predoctoral, postdoctoral and midcareer scientists and engineers for a yearlong program researching international security issues, including safeguarding dangerous materials, controlling the spread of weapons delivery systems and protection of nuclear information systems from attack.

“The questions involved in international security are broader now, so there is a need for a wide range of science and engineering expertise on almost any security issue — homeland protection, anti-terrorism — it all involves science and technical advice.”

The Chicago-based MacArthur Foundation is trying to replenish a generation of scientists and engineers whose expertise helped policy-makers deal with international security questions, Long says.

“During World War II and the Cold War, scientists concerned themselves with nuclear matters and they still do, but we also have to deal with weapons proliferation, infrastructure protection and information security.”

Long says the foundation discovered that policy-makers train separately and lead separate lives from their science and technical counterparts.

“There’s not a lot of incentive for them to cross over,” Long says. “We’d like to use this program as an avenue for high-powered scientists and engineers to be able to brief the policy-making community so they can see how our research is relevant to theirs.”

Allison MacFarlane, an expert on control of nuclear materials, was hired from MIT to fill a dual faculty position in the Nunn School and the School of Earth and Atmospheric Sciences.

Long says the school worked with the foundation for more than a year to develop the grant initiative. “After the initial grant has been used, we intend to make this study a permanent part of the Sam Nunn School.”

The foundation distributed $50 million in similar grants to nine U.S. colleges and several research groups.
Nation Loses Hero

Gen. Ray Davis dies at age 88

Flags on state buildings in Georgia were lowered to half-staff Sept. 8, the day Gen. Ray Davis, ChE 38, was laid to rest. One of the United States’ most decorated soldiers, he died of a heart attack Sept. 3.

A plaque heralding Gen. Davis’ heroism was dedicated on Georgia Tech’s campus in May. He was one of four Tech heroes who received the Medal of Honor and who are saluted with plaques on a wall outside the Wardlaw Center.

He was awarded the Medal of Honor for leading a battalion under withering fire during the Korean War to rescue a rifle company from annihilation and opened a mountain pass for the escape of two trapped Marine regiments."

Gen. Davis fought in World War II, Korea and Vietnam before retiring as a four-star general in 1972. He ended his military service as assistant commandant, the second highest-ranking member of the Marine Corps.

In addition to the Medal of Honor, he was awarded the Navy Cross, two Distinguished Service medals, two Silver Stars, two Legion of Merit awards, a Bronze Star and a Purple Heart.

After his retirement from the military, he served as executive vice president of the Georgia Chamber of Commerce and later chaired the national committee to establish, build and dedicate the Korean Veterans Memorial in Washington, D.C. Less prominently, Gen. Davis taught Sunday school at the First United Methodist Church in Conyers, Ga., for more than 20 years.

On the floor of the U.S. Senate the day after the general’s death, Sen. Zell Miller of Georgia lauded the “true American hero.”
Out of Vogue

Tech’s nuclear reactor decommissioned

Nuclear reactors and fur coats may have gone out of vogue, but in the 1960s they were all the rage. A 1965 advertisement for Rich’s furs in Vogue magazine featured mink-clad models inside Georgia Tech’s new nuclear reactor facility. Today that ad prompts a chuckle from Nolan Hertel, director of Tech’s now decommissioned reactor.

The Rich’s connection came from Frank H. Neely, ME 04, the executive vice president of the department store chain who helped raise the funds to bring the nuclear reactor that would bear his name to campus. "At the time it was built, the complex cost $4.5 million, which was the largest construction project Georgia Tech had undertaken to that point," says Hertel, a faculty member in the Institute’s nuclear engineering program.

Tech announced it would decommission the reactor in 1997. "The same day I was officially told I was the director was the same day that Georgia Tech sent the letter to the Nuclear Regulatory Commission. So I’ve never operated the reactor," Hertel says.

His primary job has been pushing the mounds of paperwork required by the NRC to free Tech of its operating license. The cost of dismantling the reactor and disposing the waste was pegged at $7.5 million.

"It costs a lot to bury anything that is even supposedly radioactive. Some of it is buried at a cost of several hundred dollars a square foot," Hertel says, adding that Tech’s waste was shipped to sites in South Carolina and Utah.

The work was completed more than a year ago. The Institute has been waiting for the NRC to sign on the dotted line voiding the contract and officially ending Tech’s days as a university with a research reactor.

"It’s just a big dome shell now. It still looks like there’s something there, but when you come inside, there’s just a big hole in the floor where the reactor was," Hertel says.

The decommissioning process has gone smoothly, albeit slowly because of the grind of government paperwork. Hertel says Tech’s reactor had both a model beginning and model ending.

High Marks: Annual Rankings Keep Tech in Top 10

U.S. News & World Report has ranked Georgia Tech ninth among the nation’s top public universities and the rate of alumni giving No. 1.

Tech made the magazine’s Top 10 for the fifth year in a row and this year moved up a slot to 37th among all U.S. universities.

"Year-to-year fluctuations in these rankings sell magazines, but it’s the consistency of performance over the years that measures academic quality," says President Wayne Clough. "I’m pleased to see that with increasing enrollments and decreasing budgets we continue to be ranked among the elite in American higher education."

Georgia Tech’s peer assessment, the school’s perceived quality among other universities, was high enough to be ranked among the top 20 in the nation. However, Tech ranked 65th in faculty resources and 69th in retention and graduation rates. The Institute also scored low in the percentage of classes with less than 20 students.

“Unfortunately, our current budget situation, combined with increasing demand for a Georgia Tech education, will make it difficult to make notable progress in those areas,” Clough says. “One counter to that problem, however, is the generosity of our alumni. Our alumni giving rate is first among all public universities and 18th overall. That is a very strong endorsement by our alumni as to the value of their education.”

The College of Engineering moved into the top five nationally. The School of Industrial and Systems Engineering again ranked No. 1, followed by the aerospace engineering program at No. 2 and civil engineering No. 4, down from the third spot last year. The graduate engineering program ranked fifth in the country.

U.S. News ranked the DuPree College of Management 36th in the competitive business school rankings and cited the co-op program, the largest in the country, as a “program to look for.”

“It is another very solid showing,” says Clough. “We’re consistently ranked among the nation’s elite public universities and our College of Engineering and its programs continue their national prominence. For our School of Industrial and Systems Engineering to rank Number One in the entire nation year after year after year is truly impressive.”
Georgia Tech’s $180 million high-tech development already has secured a low-tech foothold in the community as the recipient of a Golden Shoe award.

Technology Square received the honor as one of the most pedestrian-friendly developments in metro Atlanta. Developer and alumnus Kim King’s Centergy One, which neighbors Technology Square and houses the Advanced Technology Development Center, also received a Golden Shoe.

Sally Flocks, president of Pedestrians Educating Drivers on Safety, says Technology Square is a “great place to walk around and it really connects Georgia Tech with Midtown. The on-street parking makes walking safer because it provides a layer of protection between pedestrians and traffic.”

Technology Square came to life in Midtown this summer with the relocation of the DuPree College of Management, Global Learning Center, Economic Development Institute, Advanced Technology Development Center, Center for Quality Growth and Regional Development and VentureLab.

The new home of the DuPree College features a glass-fronted courtyard that provides pedestrians with a view inside the facility. The building’s entrance is set back from West Peachtree Street and the streetscape is open to natural light, preventing it from feeling like an alley.

Similar features are incorporated into the Georgia Tech Hotel and Global Learning Center. A planned park across the Downtown Connector and incorporating the Fifth Street Bridge also will emphasize pedestrian-friendly spaces.

Pedestrians are flocking to the new Georgia Tech Bookstore, managed by Barnes & Noble and located in 50,000 square feet at the corner of Fifth and Spring streets. Restaurants and shops — including Moe’s Southwest Grill, Posh Day Spa, Starbucks, LA Fitness, St. Charles Deli, Marble Slab Creamery and Modern Care Cleaners and Newstand — also are springing up in the complex.
Thank you, Enron and Arthur Andersen. The depth of your misconduct shocked the world and awakened us to the reality that the business world was on the wrong track, worshiping the wrong idols and heading for self-destruction. Like the proverbial frog that dies when temperatures are gradually increased but immediately jumps out when tossed into a boiling pot of water, we needed this kind of shock therapy to realize that something is sorely missing in many of our corporations.

What’s missing? In a word, leadership. Authentic leadership. What began as a few executives charged with violating the law morphed into issues of corporate governance and the failure of our governance systems. As we begin to understand these same issues at a deeper level, we realize that the missing ingredients in corporations are leaders committed to building authentic organizations for the long term.

Every generation has corporate thieves who break the
law to reward themselves. This time around the excesses are not limited to a few. I believe deeply that the vast majority of corporate CEOs are honest leaders dedicated to building their companies. Unfortunately, far too many leaders got caught up by the short-term pressures of the stock market and the opportunities it brought for personal wealth. Under these pressures and enmeshed in the quest for personal gain, they wound up sacrificing their values and their stakeholders.

Our system of capitalism is built on trust — trust that corporate leaders and boards of directors will be good stewards of their resources, providing investors with a fair return. There can be no doubt that many leaders have violated that trust. As a result, investors lost confidence and withdrew from the market. In the process, many people got hurt, not just the perpetrators.

A Time/CNN poll taken in the summer of 2002 reported that 71 percent of those polled feel that “the typical CEO is less honest and ethical than the average person.” In rating the moral and ethical standards of CEOs of major corporations, 72 percent rated them “fair” or “poor.”

In the midst of the current crisis, we must ask ourselves: Where have all the leaders gone? Where are today’s versions of James Burke of Johnson & Johnson, Walter Wriston of Citicorp, John Whitehead of Goldman Sachs and David Packard of Hewlett-Packard? These people not only built great enterprises but were statesmen in the business community and leaders in addressing societal issues as well.

In contrast, most leaders of today’s best-run corporations remain silent. Are they afraid that by speaking out they may invite scrutiny of their companies? In so doing they give the impression that they have something to hide or are also part of the problem. Only a few CEOs, such as Henry Paulson of Goldman Sachs and Henry McKinnell of Pfizer, have been willing to condemn these practices publicly, recognizing the larger issue is one of public trust in the capitalist system.

Paulson’s acts were doubly courageous, as he risked not only criticism from his peers but his customers as well.

Andy Grove, chairman of Intel, commented recently, “I find myself embarrassed and ashamed to be a businessman.” These sentiments were echoed by a rising star at Medtronic, the medical technology company I led for a dozen years. He told me how angry he was at the executives who had damaged the reputations of all business leaders, saying he was reluctant to tell friends that he too is a corporate executive.

Our system of capitalism is built on trust — trust that corporate leaders and boards of directors will be good stewards of their resources, providing investors with a fair return.
Capitalism the Victim of Its Own Success

How did we get in this situation? Is this a recent phenomenon or have these activities been going on all along?

We are witnessing the excesses of the shareholder revolution that began 15 years ago. In its early stages, pressure from shareholders did much to improve the competitiveness of American corporations, as companies trimmed unnecessary expenses, improved profitability and increased cash flow. However, the financial rewards from their actions, both corporate and personal, were so great that companies and shareholders alike developed an inordinate focus on short-run results. In a booming stock market, it all seemed to be working.

Then capitalism became the victim of its own success. Instead of traditional measures such as growth, cash flow and return on investment, the criterion for success became meeting the expectations of the security analysts. Investments were cut back to reach earnings targets, limiting the company’s growth potential.

Driven by speculators and security analysts, expectations kept rising, just as companies were struggling to make their numbers. Companies that met or exceeded the “magic” earnings number were handsomely rewarded with ever-rising stock prices. Those that fell short, even if they recorded substantial increases, were inordinately punished and shareholders demanded replacement of the CEO. No wonder many CEOs went to extreme measures to satisfy shareholders!

Revenues and earnings do not escalate forever, especially in the face of economic downturns, events like Sept. 11 and operating problems. To offset financial problems, many executives stretched the numbers and the accounting rules well beyond their intended limits. Some of these accounting schemes, like calling operating expenses “capital equipment” to avoid the P&L and booking revenues before they were earned, violated even the most basic rules of accounting. Now the chickens are coming home to roost.

In the past five years, stock options went from modest perks to mega-grants for top executives, especially CEOs. Because options had no cash impact and were not charged against profits, many executives and boards viewed these grants as free. The effect was to shift CEOs’ focus almost entirely to getting the stock price up — by whatever means necessary. Realizing they could not sustain their earnings, many CEOs cashed in their options for huge gains just before their stock collapsed.

The general public played a role in this tragedy as well. In idealizing the high-profile personalities who ran these companies, we made them into heroes. We equated wealth with success and image with leadership. To our dismay, we have learned that these celebrity CEOs have been filling up...
their personal coffers at their shareholders’ expense, while destroying the pensions and life savings of thousands of people.

The media turned these short-term earnings artists into the folk heroes of the business community. While making wealth, image and star power the criteria for success, the media overlooked the many solid corporate leaders building quality companies for the long term. Ken Lay, Bernie Ebbers and Dennis Koslowski were the focus of intense media worship before their fall. Just one year before he was led off to jail in handcuffs, Business Week named Koslowski CEO of the Year for being first on its “Nifty Fifty” list of top stock performers. These three executives alone have destroyed more than $300 billion in shareholder value.

Back in 1998 I met with one of these leaders to talk about acquiring one of his companies. In our brief meeting, he explained how his offshore headquarters enabled his company to avoid U.S. taxes, how he automatically issued pink slips to 25 percent of the workers on the day he acquired their company and how he shut down every research project or investment that didn’t pay off in the first year.

As I walked out of his office, I held onto my wallet and decided to cancel further talks with him. You cannot do business with people you do not trust.

The Case for New Leadership

In response to the violations, policy-makers and politicians have crafted new laws and regulations to close the loopholes. Although some changes in regulations are appropriate and necessary, they do not address the deeper issues at stake here. It is impossible to legislate integrity, stewardship and sound governance.

Somewhere along the way we lost sight of the imperative of selecting leaders who create healthy corporations for the long term. The lessons of building great companies like 3M, Coca-Cola, Johnson & Johnson, General Electric, Pfizer and Procter & Gamble were lost in the rush to get the stock prices up. We forgot that those of us who are fortunate enough to lead great companies are the stewards of legacies we inherited from past leaders and the servants of our stakeholders.

The lessons from this crisis are evident. If we select people principally for their charisma and their ability to drive up stock prices in the short term instead of their character and we shower them with inordinate rewards, why should we be surprised when they turn out to lack integrity?

We do not need executives running corporations into the ground in search of personal gain. We do not need celebrities...
to lead our companies. We do not need more laws. We need new leadership.

We need authentic leaders, people of the highest integrity, committed to building enduring organizations. We need leaders who have a deep sense of purpose and are true to their core values. We need leaders who have the courage to build their companies to meet the needs of all their stakeholders and who recognize the importance of their service to society.

Challenges Confronting Emerging Leaders

In recent years I have gotten to know many rising leaders. Almost without exception they have solid values and a sense of purpose. They are looking for something different in their lifetimes — the opportunity to contribute to a worthwhile cause through their work, to make a difference in the world, to find a reasonable balance between their work and home lives, and, most of all, to work for a company where they trust the leaders and share a common set of values with them.

In my discussions with them, I hear a common set of questions:

• What’s the purpose of my leadership? Do I really want to devote my talents to business?
• How can I find a job where I can make a real difference?
• Do I have to check my values at the office door?
• Is it possible to have a meaningful career and a successful family life? Is it worth it to work so hard?
• How can I stay true to my values when there are so many pressures to compromise?
• How do I balance the conflicting needs of my customers and my employees with the requirement to make the bottom-line numbers?
• Can I develop close relationships with my subordinates and still achieve my objectives?
• Do I have a responsibility to our society, for the environment, for global sustainability, for the gap between rich and poor? What can I do?
• How can I stay true to my values when there are so many pressures to compromise?
• How do I balance the conflicting needs of my customers and my employees with the requirement to make the bottom-line numbers?

There are no easy answers to these questions, yet that shouldn’t keep us from talking about them. These are precisely the questions that I have wrestled with throughout my life, as have so many of my peers.

The real difference between my generation and the next is that the aspiring leaders of today are demanding answers to these questions before they commit to a company and a career path. To that, I say, “Bravo!”

It’s the Customer, Stupid

The steady erosion from a customer-oriented enterprise to an internal bureaucracy is not unique. In fact, the problem is typical of many large U.S. and European corporations over the last 15 years. As the pressure from shareholders for short-term financial results has mounted, the focus on customers...
has declined. It’s not that the CEO decides to de-emphasize customers. Rather, top management’s emphasis on internal processes, making quarterly earnings and endless budget and operational reviews sends a powerful message to the organization that “customers come second.”

I witnessed the same phenomenon at Honeywell in the mid-1980s when I was promoted to sector head. To restore the company’s external focus and leverage the company’s broad capabilities, I organized a cross-corporate initiative on customers. The CEO challenged the amount of time and energy I was spending with customers, saying, “That’s the sales department’s job.” His comments sent me a clear message about what was important.

Much to my surprise, I found similar tendencies at Medtronic when I joined the company in 1989. In its early years, the company had been very customer focused, largely due to the passion of founder Earl Bakken.

As the company grew, however, new managers lost sight of the imperative to serve customers personally and wound up spending most of their time in internal meetings. This led to a growing rift between the sales organization and the home office.

When I joined Medtronic, I knew a lot about high-technology businesses but virtually nothing about medicine. My predecessor encouraged me to get into the field with physicians to observe implant procedures and let them teach me the business.

It was the best thing I ever did. I not only learned how Medtronic’s business works through the eyes of our customers, I got to see the mission play out in hospital operating rooms, where the patient’s life depends upon the physician’s skill and the capability of Medtronic products.

By spending so much time in hospitals working with doctors, I gained a deep appreciation for the challenges of their work and a real passion for Medtronic’s business. The numerous questions I asked internally upon my return from these visits sent the message to Medtronic’s executives that they too needed to be in hospitals with physicians and patients.

I decided to make “customer and patient focus” the company’s major leadership initiative. My early experiences in the field had a powerful influence in shaping my views on the kind of company we wanted to be: patient-centric, customer-focused, innovative, unsurpassed in quality and service. Easily said, but very difficult to achieve.

Customer Focused Quality was launched in early 1990 as Medtronic’s leadership strategy for the 1990s. Recognizing the power of personal observation, we insisted that engineers, scientists and managers get into hospitals to witness implant procedures.

After the CFQ announcement, one engineer came up to me with fire in his eyes and said, “Look, I didn’t get a master’s degree in EE from MIT just to sit around hospitals doing nothing.” In response, I asked him how he could design pacemakers without observing implants to see what difficulties physicians were having.

The Heart of the Matter

Top management must be the role model for customer focus, make sure that managers do not slip into an internal orientation.

Executives must recognize the employees who are actually serving customers — by creating innovative products and services, by producing quality products and by providing direct sales and service support — and provide the environment that empowers and rewards their efforts.

A Medtronic district manager who left a vice president’s job with a major competitor brought this point home clearly to me. He told me he decided to leave after the company’s CEO attacked him publicly at a sales meeting, saying, “Your problem is that you’re always thinking about your customers’ interests. Your job is to represent the shareholders’ interests.”

If we examine organizations that are highly customer focused, they are usually headed by leaders with real passion for serving the company’s customers. Sam Walton of Wal-Mart, Dick Kovacevich of Wells Fargo, Steve Ballmer of Microsoft, Roger Enrico of PepsiCo, John Chambers of Cisco and Marilyn Nelson of Carlson Companies are just a few of the leaders who come to mind.

These leaders set the standards for their organizations to follow and then create the motivation and incentive systems to reinforce external focus on customers. Serving customers becomes the organization’s overarching goal and unleashes the power of employees to use their hearts and their passions to serve.

Executives must recognize the employees who are actually serving customers — and provide the environment that empowers and rewards their efforts.
I n 1999, Jani Macari Pallis stepped into the spacious, climate-controlled area where the Franklin Institute Science Museum in Philadelphia keeps its aeronautical engineering collection of Wright brothers artifacts.

“My eyes were bugging out,” says Pallis, a mechanical and aeronautical engineer, as she put on a pair of white gloves so she could handle the fragile documents. “I thought all of these things were lost over the years. There was drawer after drawer and box after box of drawings and artifacts from the Wright brothers’ workshop.”
A Georgia Tech alumna, she is the first engineer within the
memory of the Franklin Institute staff to examine the
artifacts, original drawings, journals and even scraps of wall-
paper on which Wilbur and Orville Wright detailed the dis-
covery of flight.

“It’s a national treasure,” Pallis says. “Few people know
it exists. It is just amazing.”

During the past five years, the Franklin Institute has
been making a concerted effort to get the word out about its
remarkable collection.

That’s how Pallis became involved. She is working in
collaboration with the Franklin Institute as the principal
investigator for the Wright Again project, which commem-
orates the 100-year anniversary of the Wright brothers’ first
flight on Dec. 17, 1903.

Pallis is founder and chief executive officer of Cislunar
Aerospace, an engineering and research firm located in San
Francisco. She received her bachelor’s and master’s degrees
at Georgia Tech in health systems engineering in 1975 and
1977, went on to earn a second master’s in mechanical engi-
neering from the University of California at Berkeley and a
doctorate in mechanical and aeronautical engineering from
the University of California, Davis.

“What Jani Pallis and Cislunar bring to the Franklin
Institute are the eyes of engineers,” says Karen Elinich, direc-
tor of the institute’s educational technology programs.

“We are science educators, we’re not scientists. When we
look at the Wright brothers’ engineering documents, we
understand them, but not the way an aerodynamicist does.
When Jani looks at it — through her eyes, we see new
things,” Elinich says.

When the Franklin Institute began offering online access
to the Wright Collection in 1998, it linked to Cislunar’s origi-
nal Web site, which featured “First Flight.” Cislunar — a
word referring to the space between Earth and the orbit of
the moon — had also created “The K-8 Aeronautics Internet
Textbook” for NASA.

The Wright brothers took meticulous notes while developing the
1903 Wright Flyer. The Franklin Institute is now home for many
such artifacts.

“Cislunar takes very sophisticated physics and aerody-
namics and boils them down in such a way that it is very kid-
friendly and teacher-friendly,” Elinich says. “We asked if we
could link to it. We told Jani what we were up to and she was
intrigued.”

Pallis was amazed to learn about the museum’s collection,
which she was invited to come and see.

“It is the privilege of a lifetime to touch the documents
and then work with them and interpret them,” Pallis says.

The museum actually has two areas for the Wrights’ collec-
tion — the “stacks,” for documents and drawings, and the
vault, where artifacts are kept.

Although the museum has a 1911 Wright flyer, the signif-
icance of its Wright brothers collection is in what Elinich calls
the “small stuff” — drawings, documents, notebooks and all
of the airfoils.

“They are small things, but when you put them together
as a collection, they are without peer historically,” Elinich
says. “They are the artifacts that enabled man to fly. It’s a
very dramatic story.”

Orville Wright left the collection to the Franklin Institute partly because of
its early recognition that the Wright brothers were the first to fly. The insti-
tute medal recognized the brothers for scientific achievement.

“The Franklin Institute was the first scientific institution in the world to give
public credit and recognition to the Wright brothers for having flown first.
Orville never forgot that,” Pallis says.

Orville Wright kept the collection until his death in 1948, when it was
handed over to the museum.

Pallis says the Wright brothers were “pack rats” who left impressive
documentation. But it was selective

Jani Macari Pallis holds a model airfoil
used by the Wrights in their wind tunnel.
documentation. While they kept wallpaper scraps on which they had made calculations, they left out some of the essential “how-to” information.

“They became very concerned about people taking their ideas,” Pallis says. “There are things that exist and then there are things that they decided never to document. It’s really clear to me why it’s not easy to reproduce one of their vehicles. They didn’t want them reproduced.”

The Wright Again Web site posts daily journal entries made by the Wright brothers 100 years ago showing their trials, frustrations and successes as they worked to build the first flying machine. The museum’s Web site includes film footage, animation, the Wright Aeronautical Engineering Collection and journal entries. The Franklin Institute opens its aviation hall in October.

Orville, who had once been a printer, had neat columns and wrote in a penmanship that resembles calligraphy, Pallis says. Wilbur’s notations were more robust. “You can tell Wilbur’s handwriting,

“You can see day to day how these fellows progressed,” Pallis says. “You can go back and see all the early aerodynamic theory and how incredibly wrong it was, and you can see Orville and Wilbur Wright step-by-step prove it wrong. These guys have documented corrections.”

The collection includes all of the airfoils the Wright brothers used in their wind tunnel tests in 1901 to determine the wing shape of the first flyer, a small thing that is no small thing, Pallis says. It demonstrates proof of concept. “The Wright brothers were experts at proof of concept — proof that it works.”

The airfoils and data sheets are the most important part of the collection because “theories and data on generating lift was wrong before the Wright brothers,” Pallis says. “That changed everybody’s perception about how to create and control lift.”

When the Wright brothers built and attempted to fly a glider at Kitty Hawk, N.C., in 1901, they used the lift data accumulated from the leading experts of the time. But

“They are the artifacts that enabled man to fly. It’s a very dramatic story.”
attempts to fly the glider in 1901 were near disasters. They were dejected as they rode the train back to Dayton, Ohio, where they owned and operated Wright Cycle Co., building, selling and repairing bicycles. An exasperated Wilbur told Orville he believed man would not fly for another 50 years. “We saw that calculations upon which all flying-machines had been based were unreliable, and that all were simply groping in the dark,” Wilbur wrote. “Having set out with absolute faith in the existing scientific data, we were driven to doubt one thing after another, till finally, after two years of experiment we cast it all aside, and decided to rely entirely upon our own investigations.”

At their cycle shop, they immediately went to work building a wind tunnel, an elongated wooden box with a fan at one end that blew a constant stream of air against fixed miniature wings. “They’d never seen a wind tunnel. They just designed one,” Pallis says. A glass panel in the top of the tunnel allowed them to observe and measure factors of lift and wind resistance. “There was a balance in there on which the airfoils (wing shapes) were mounted,” Pallis says. “The lift of the airfoils would balance the drag of calibrated flat plates and they would read off what the angle was. Then they would convert it just using simple trig. That was the extent of their mathematics.”

The original wind tunnel no longer exists, but the museum has a replica built to Orville Wright’s specifications.

The Wright brothers’ interest in flight began as boys when their father, an Evangelical minister, gave them a helicopter-type toy operated by a rubber band. Orville, about 8, and Wilbur, about 12, built replicas of the flying toy. Pallis says the Wright brothers renewed their interest in flying in 1896, when Orville was recovering from typhoid fever. Sixteen years later, in 1912, Wilbur died of typhoid. “What they accomplished between two bouts of typhoid — one for Orville and one for Wilbur — is amazing.”

The Wright brothers’ fascination about the possibility of a heavier-than-air flying machine became much more serious a few years later. “We knew that the Smithsonian Institution had been interested in some work on the problem of flight, and accordingly, on the 30th of May 1899, my brother Wilbur wrote a letter to the Smithsonian inquiring about publications on the subject,” Orville wrote.

The Smithsonian received the letter on June 2, 1899. “I am an enthusiast, but not a crank in the sense that I have some pet theories to the proper construction of a flying machine,” Wilbur wrote. “I wish to avail myself of all that is already known and then if possible add my mite to help on the future worker who will attain final success.”

Wilbur received some pamphlets from the Smithsonian and a note that for $1 he could buy the book “Experiments in Aerodynamics” by Smithsonian secretary Samuel P. Langley. Wilbur bought the book.

In the summer of 1899, the brothers designed a biplane kite that they believed could be adapted to a glider. Air pressure tables giving optimum wind speed for gliders had been published by Otto Lilienthal, who made about 2,000 flights before his death resulting from a glider crash in 1896.

The Wright brothers learned that Kitty Hawk, on the outer banks of North Carolina, was among the windiest places in the United States. It also had high hills ideal for launching a glider and wide sand beaches ideal to cushion landings.

The Wright brothers traveled to Kitty Hawk every year from 1900 to 1903 to test their gliders. Their 1900 glider could only get off the ground when the winds were dangerously high. The tests in 1901 proved very unsatisfactory. But the glider they built in 1902 based on their own wind tunnel tests soared on nearly 1,000 flights. They had designed a craft that could fly.

The 1903 Wright Flyer was larger and sturdier than the 1902 model to accommodate a motor, transmission, two rear-mounted propellers and two rudders, one for up-and-down

“I am an enthusiast, but not a crank in the sense that I have some pet theories as to the proper construction of a flying machine,” Wilbur wrote.
Wright Brothers Web Sites

The Franklin Institute opens its aviation hall in October, but its Web site http://sln.fi.edu/wright/index.html features pages on the Wright brothers and the anniversary of flight. It includes animation, film footage, the Wright Aeronautical Collection, wallpaper samples and links to Wright Again and First Flight.

The Wright Again Web pages — www.wrightagain.com — post daily journal entries made by the Wright brothers 100 years ago showing their trials, frustrations and successes as they worked to build the first flying machine. It contains computer simulations, wind tunnel tests, lesson plans and pages dedicated to the celebration of first flight.

Classroom tragedy spurred Jani Pallis to launch company

By John Dunn

While working on her graduate degrees in mechanical and aerospace engineering, Jani Macari Pallis spent several years as a volunteer working with precollege students at NASA Ames Research Center at Moffett Field, Calif., in the heart of Silicon Valley.

That was the impetus for her to start her own company, Cislunar Aerospace, a San Francisco engineering and research firm, while still a PhD candidate at the University of California, Davis.

Pallis, HS 75, MS HS 77, went on to earn her master’s in mechanical engineering at the University of California, Berkeley. In 1992, she was working on her PhD at the University of California, Davis, studying under professor Joseph Steger, a pioneer in computational fluids, when, at age 48, he collapsed in class and subsequently died.

“Joe had eight PhD students,” Pallis says. In addition to stunned grief, the students found themselves suddenly without financial support to continue their studies. “Without Joe, our funding was gone.”

Pallis recalled NASA seeking proposals for projects to help stimulate an interest in aeronautics among precollege students. “I had a good feel for what NASA had and what it might need. I took a deep breath and started this company. I proposed that we do the first online textbook on aeronautics for kids — kindergarten through eighth grade in English and Spanish and include sign language.”

Three months after its incorporation, the company received about $1.1 million from NASA to develop an engineering curriculum on aeronautics for precollege students and educators. Several of the PhD candidates joined Pallis’ company and worked on the project. “It gave us enough money to finish our education,” she says.

Preparing science and math subjects for kindergarten through eighth grade is more difficult than preparing them for high school students, she says. “You have to be sure you're distilling the science, but not really watering it down.”

In meeting with a class of fifth-grade girls, the teacher explained that they were about to learn about aviation, airplanes and NASA. Pallis saw that the girls had almost no interest in the subject.

“What about butterflies and baseballs?” Pallis suggested, and the girls’ interest perked up. So Pallis’ group added curriculum on the aerodynamics of animals, marine life and sports.
“The aerodynamics of animals and the aerodynamics of aircraft — it’s all the same principles,” Pallis says with a smile.

While most of her classmates moved on after earning their doctorates, Pallis, who earned her PhD in mechanical and aeronautical engineering, ran the fledgling company as president and chief executive officer. Cislunar continued to get contracts from NASA and also to conduct research and development for the Department of Energy, the U.S. Air Force, Daimler Benz and Quantum Parachutes.

Pallis has applied aerodynamic principles to study sports. She has used the same science and engineering skills for a variety of water sports as well as tennis, volleyball, winter and wheelchair athletics. As the lead aerodynamicist from Cislunar Aerospace to the Hawaiian America’s Cup XXX (1999-2000), she and her staff conducted computer simulations on new sail and mast designs.

Pallis works with Gaastra Sails’ world champion sailors and designers and coordinates sports science and medicine efforts for them. She is the technical adviser to the International Tennis Federation’s Wheelchair Tennis Medical Commission and assists the U.S. Olympic Committee Coaching and Sport Science Division in sports aerodynamics, numerical methods and high-performance computing.

“The aerodynamics of sports is the heaviest hit part of the Web site,” Pallis says. “We found out it wasn’t just kids coming to our site. We were getting questions from coaches and professionals.”

Although Pallis has coordinated leading-edge technology projects at the national level, she is especially known for her ability to develop and teach difficult science materials and math concepts in an easy-to-understand manner. She has led several educational projects including “The K-8 Aeronautics Internet Textbook” (wings.avkids.com) with NASA, Aerodynamics in Sports (wings.avkids.com/Tennis) with NASA and the Internet Activity Center (www.swe.org/iac) with the Society of Women Engineers.

She was the faculty director for Get SSET! (Sport Science, Engineering and Technology), a weeklong residential academic camp for rising ninth- and 10th-grade girls conducted at the Massachusetts Institute of Technology sponsored by the New Balance Educational Foundation and the Society of Women Engineers.

Her research interests include photogrammetry, instrumentation of athletic wheelchairs, numerical methods for free surfaces, aerodynamics and hydrodynamics of sports, and the correlation between sports equipment design, performance and injuries.

She is supported by the U.S. Tennis Association and the Christopher Reeve Paralysis Foundation to conduct a wheelchair tennis injury epidemiology study to determine injury prevalence and subsequently develop training protocols to reduce injuries.


Along with her colleague George Hung from Rutgers University, she is the senior editor of a new series of academic books on bioengineering and science in sports including “Biomedical Engineering Principles in Sports” (Kluwer Academic Academic Publishers, 2003).
The Sky’s the Limit
Guggenheim Award established School of Aeronautics

By Kimberly Link-Willis

M. Brittain knew a Guggenheim Award would send Georgia Tech’s engineering program soaring.

Apparently not everyone on campus was reaching for the stars like Tech’s fourth president, who called the $300,000 gift that established the Daniel Guggenheim School of Aeronautics in March 1930 the Institute’s greatest honor.

In his 1948 book, “The Story of Georgia Tech,” Brittain wrote:

“Either because they were still dazed by the glamour of their athletic victory in the Rose Bowl or more likely because, conscious of their hard work and the stern academic proficiency required of them, the Tech students took in their stride as a matter of course the receiving of the greatest honor ever bestowed upon the school or for that matter upon almost any Southern college, for it was quietly received without fanfare. Less than half a column was given to the news in the Technique and the Alumnus when the notice came of the receipt of the Guggenheim gift.”

Brittain quickly went about establishing the school.

“I secured Montgomery Knight, at that time engaged in research work at Langley Field, for the new head, planned for a building to cost $100,000, planned to expend $50,000 for wind-tunnel and other equipment, and finally to invest one-half the funds in 5 percent bonds for endowment against financial troubles — already looming ominously in that year of 1930,” Brittain wrote.

As it nears its 75th anniversary, the now-named School of Aerospace Engineering continues to stand out nationally and look onward and upward.

“Tech has the second largest faculty in aerospace engineering in the country, if you don’t count the Air Force Academy. The largest is MIT and Tech is a close second,” says Robert Loewy, school chair and William R.T. Oakes professor.

“All of our faculty except two of 30 are involved in research. We do nearly $14 million a year of sponsored research. Some of it is for NASA, some of it is for the Army, the Navy and the Air Force. Roughly 20 percent is for industry.”

Loewy says groundbreaking research has been conducted within the school’s walls from the beginning.

“The first director, Montgomery Knight, developed one of the first jet-powered rotors for a helicopter. He built a full-scale version of it and did substantial testing of it at Tech in the ’30s. The blade that he designed and had built is still in the lobby of the Montgomery Knight Building,” Loewy says.

The Guggenheim Building was dedicated on June 8, 1931, and classes began in September with 18 students, two faculty members and a budget of $10,000, according to a history of the school written by Robin Gray, Regents’ professor emeritus. The School of Aeronautics graduated its first students, 13 of them, in 1932.

Loewy says in the early 1950s professor Walter Castles did some of the earliest theoretical work on the aerodynamics of rotors.

“Until he did his work, everybody assumed that the flow generated by the rotor was uniform over the disk area. He accounted for the fact that the wake of the rotor induces flow velocities on the disk that are not uniform,” he says. “He was the first one that I know of to do substantial work of that kind.”

“I secured Montgomery Knight for the new head, planned for a building to cost $100,000 and planned to expend $50,000 for wind-tunnel and other equipment.”

Loewy adds Ben Zinn, now a Regents’ professor, to the list of the major contributors to the school and the field.

“The very fundamental theoretical things he did for unsteady combustion allowed people to solve the problems of rocket instabilities,” he says.

The name change to the School of Aerospace Engineering occurred on July 1, 1962. A model shop was torn down in 1967 to make way for the Montgomery Knight Building, dedicated the following year.

Breakthroughs in aerospace research continue at Tech today.

“Professor John Olds has sponsorship from NASA to investigate promising advanced launch vehicles for space,” Loewy says. “The goal is to get into orbit with a single-stage launch vehicle. Now we have multiple stages. Pieces are dropped as the spacecraft is launched. It’s a great technological challenge to make one go up to space and come back and land without throwing away anything. To do that requires advances in structures, materials, propellants and rocket engines.”

Loewy says faculty member Erian Armanios works with advanced composite materials. “It was a composite that failed on the Columbia when it was struck by the insulation from the oxygen tank. He’s doing research into the failure modes of composite materials to try to improve them.”

Loewy, who came to Tech in 1993 to assume the school chair, has been an innovator himself.

“I spent part of my time in industry with rotorcraft people. I still consult in industry for rotorcraft and I am the chairman of the board of the American Helicopter Society. But my real disciplinary specialty is structural dynamics and aerelasticity. I’ve done analyses on space launch vehicles and on space satellites as well as fixed-wing aircraft.”
Robert Loewy, chair of the School of Aerospace Engineering, stands with the jet-powered rotor designed by Montgomery Knight and displayed in the building named for the man tapped to lead the program when it was founded with a Guggenheim grant in 1930.
At age 77, Loewy has seen many exciting advances during his long career.

“The change from reciprocating engines to turbo machinery was a tremendous advance. That advance has really made possible modern transportation and jet fighters and has played some role in rockety. Rockety is sort of an additional track, in parallel. Robert Goddard, who was the father of rockety in the United States, was sort of going along in parallel with the Wright brothers, later of course, but in parallel.”

Like Brittain and the Wright brothers, Loewy is fascinated by the possibilities.

“Aerospace is a very exciting and stimulating field. Something new is happening all the time. It’s a field that plays a very important role for the benefit of society,” he says. “Where at one time people were interested in making airplanes that went higher, faster and farther, now economics plays an often definitive role and, of course, they’re interested in launch vehicles that can put people in space and on planets.”

Loewy can’t predict when we’ll see a man on Mars. “We have the technology now. It’s just very, very expensive and it’s more an issue of whether the public wants to see money spent to do that.

“We will almost certainly see supersonic transports again, even though the Concorde is now being put in mothballs. There will be a second generation, but it will be a much more advanced generation and much more economically sound. The improvement will be somewhat in speed, but mostly in economics and in reduced sound levels and in being more environmentally friendly in terms of the effluents,” Loewy says.

“I also would like to think there will be a second airway system in countries like the United States. One would essentially be a long-range system like we have now and another would be a shorter-range system where there would be a lot more airports. These would be closer to the departure points and destination points so as to improve the air transportation available to the public.”

It has been said that Brittain went to his grave in 1953 never understanding why the Guggenheim Award garnered such little attention in 1930.


Brittain probably would feel gratified today to see the technological advancements in aerospace engineering and the achievements at Georgia Tech.

The School of Aerospace Engineering will celebrate those achievements when it marks the 100th anniversary of the Wright brothers’ flight during a daylong event on Oct. 21 including lectures from industry and research leaders. GT
Tech’s BOLD News
During the past decade, Georgia Tech has experienced a phenomenal period of growth, development and expansion that President Wayne Clough says is “nothing short of revolutionary.”

Technology Square, which opened this fall and will be dedicated on Oct. 24, is the crown jewel in an impressive treasure chest of gems spread across campus — a life sciences and technology complex, the Campus Recreation Center, a new student health center, a renovated John Sayler Coon Building, the Library West Commons, an expanded Bobby Dodd Stadium at Grant Field and a new Russell Chandler baseball stadium. More gems are being mined — the Advanced Computing and Technology Building and renovation of the student center commons are two.

Among the hustle and bustle of construction, another revolutionary change to the campus environment is the emergence of green spaces — oases of lawns and trees nestled among the academic halls.
Dr. Cindy Smith, Biol 78, right, is director of the student health center that opened in March on Ferst Drive next to the Campus Recreation Center. The two-story, glassed building features admissions, examination rooms, a pharmacy and the X-ray departments placed in a rotational flow from the entrance. The facility also has a dental clinic. A women’s clinic, psychiatric offices and Wellness Center are located on the second floor.
Campus Recreation Center

Lee Wilcox, vice president of Student Affairs, top, stands inside the new Campus Recreation Center. The first phase of the $44 million center opened this fall and includes an enclosed aquatic center and indoor track. Construction began in July on the second phase of the recreation center, which is scheduled for completion in September 2004.

Student Center Commons

Richard Steele, ChE 85, director of the Student Center, stands with a rendering of a renovated Student Center commons in the former bookstore, now under construction, that will be equipped for wireless Internet connections, a mall area for retail shops and places to eat and gather.
Richard W. Meyer, above, dean and director of Libraries, collaborated with the Office of Information Technology to give the Library West Commons a technological overhaul. To assist students with their studies, the refurbished West Commons has 125 computers equipped with a suite of software products connected to the campus network. "The library isn't about books," Meyer says. "It's about efficient access to intellectual ideas." Nationally, library leaders see that "the digital transformation of intellectual communication imposes the most fundamental shift in intellectual endeavors since writing was invented," Meyer says.
A renovated Bobby Dodd Stadium at Grant Field features a new north end zone that seats 15,678 people in two levels and includes 10 luxury suites, lounges for both letter winners and players, a media area and football coaches offices that overlook the field. Bobby Dodd Stadium was packed to a capacity 55,000 fans for the season's first home game Aug. 30 as Georgia Tech defeated Auburn 17-3. Across the Downtown Connector, Technology Square can be seen, opposite, top left.

Russ Chandler Stadium

Athletics Director Dave Braine, above, poses inside the Russ Chandler baseball stadium, one of the top collegiate ballparks in the country after undergoing a $7 million reconstruction for its 2002 season. The stadium has new locker rooms, a new grandstand, a seating capacity of 4,354, new lighting and a new scoreboard, video board and sound system.
A student crosses the courtyard of the Life Sciences and Engineering Complex, opposite, which includes the Ford Environmental, Science and Technology Building, above, the Whitaker Building for the Wallace H. Coulter Department of Biomedical Engineering, the Institute for Bioengineering and Bioscience, and in the near future, the Molecular and Materials Science Building. Gary B. Schuster, top left, dean of the College of Sciences, and Judith A. Curry, top right, chair and professor in the School of Earth and Atmospheric Sciences, are both in the Ford ES&T building, which was dedicated in May and is the largest academic building on campus.
The $23 million Whitaker Building houses the Georgia Tech-Emory University Wallace H. Coulter Department of Biomedical Engineering. Larry V. McIntire, top left, is chair of the joint Georgia Tech-Emory department and Barbara D. Boyan, top right, is the Price Gilbert J r. Chair in Tissue Engineering. At right, biomedical engineering students Yi Yin, left, a junior, and Charmi J ani, a senior, conduct research in the System Physiology Lab.
College of Computing

Richard A. DeMillo, PhD ICS ’72, left, dean of the College of Computing, gives a preview of what’s ahead at the construction site of the new Christopher W. Klaus Advanced Computing Technology Building. Ground was broken on the facility in July and is scheduled for completion in July 2005.

Graphics Visualization and Usability Center

Aaron Bobick, above, director of the Graphics Visualization and Usability Center, is plugging into new quarters at Technology Square. The new accommodations will allow the GVU center to more easily collaborate with businesses in Midtown and the Greater Atlanta community. The GVU center leads the forefront of research in human-computer interaction, including wearable computing, robotics, computer vision and intelligent sensing.
Global Learning Center

William J. Wepfer, right, vice provost for Distance Learning and Professional Education, is surrounded by an array of monitors at the Global Learning Center at Technology Square. The distance learning program connects students from their homes or job sites to Tech’s vast educational resources. The Global Learning Center, below, is Atlanta’s most technologically advanced conference center and is available for corporate and association meetings, executive programs and training and development events.

Economic Development Institute

In the Economic Development Institute Building adjacent to Technology Square, Wayne Hodges, right, administers economic development programs. Hodges is associate vice president for economic development and technology ventures and manages the overall coordination of Georgia Tech’s Economic Development Institute, the Advanced Technology Development Center and Georgia Tech VentureLab.
The College of Management

Georgia Tech’s College of Management is the premier tenant at Technology Square, an eight-acre extension of the campus that vaults the Downtown Connector. Terry Blum, above, dean of the college, poses in the 189,000-square-foot building that houses classrooms, offices and learning resource space that includes executive education and interdisciplinary centers. At left, students relax in the college’s courtyard.
Randall Engle, right, chair of the School of Psychology, stands before the newly renovated John Sayler Coon Building, the former domain of mechanical engineering that is now home for the psychology school. Anderson D. Smith, associate dean and Regents’ professor, poses inside the building that houses offices, labs and conference centers equipped with the latest audio-visual technology. The ground floor will house the Center for Conservation and Behavior that will be directed by Terry Maple, former director of Zoo Atlanta.
Constructing Innovative Programs

The Alumni Association follows a strategic plan first developed in 2001 that is refined regularly through staff management and oversight of the Executive Committee. Responsibility for conducting the programs and activities to further the plan’s objectives is divided among eight departments with task force managers assigned to each strategy.

Administration handles three different areas of the Association’s business — the financial planning and accounting functions, the management of the building and the technologies required to run the business and the management of the Association’s database operations including gift and biographical entry for all Georgia Tech alumni, friends, parents and supporters.

Alumni Relations and Business Development manages Georgia Tech Alumni Clubs, affinity groups and coordinates student recruiting outside the state of Georgia and is responsible for building external revenue through the Association’s travel program, corporate affinity relationships and sponsorships and the sale of advertising in the Association’s publications.

Campus Relations is responsible for working with Alumni Association-affiliated student groups including the Georgia Tech Student Foundation, the Ambassadors and the Student Alumni Association to promote collaboration, meaningful programming and stronger ties to the Alumni Association; serves as the liaison between the Association and campus units; manages Georgia Tech’s Parents Program.

Career Development and Human Resources creates and manages formal programs and services to help alumni advance their careers and manages human resources functions for the Association.

Communications provides primary, ongoing contact for Tech and the Association with alumni through publication of TECH TOPICS, the GEORGIA TECH ALUMNI MAGAZINE and the electronic newsletter BUZZwords. Also manages the Association’s Living History program through which alumni and others are interviewed to create video archives of personal remembrances of Georgia Tech’s history and traditions.

Event Management develops, executes and evaluates all major Alumni Association events and devises new activities and event marketing practices to increase alumni engagement with Tech and the Association.

Marketing Services builds a research base to guide the strategies and implementation plans of other departments and anticipate future needs and potential services. Also creates and maintains a dynamic Web presence for the Association.

Roll Call manages annual fund-raising campaign to the alumni base, students, parents, friends, faculty and corporations.
This has been a year of significant progress during a time of significant challenges. Despite the realities of harsh economic times and severe budget cuts, the Alumni Association met its objectives on time and under budget.

Thanks to you, our Annual Fund surpassed its goals both in dollars and donors. Our 56th Roll Call raised a record $7,415,699 from 26,320 donors. Your Roll Call contributions are Georgia Tech’s largest source of predictable unrestricted funds.

Fund raising is one of our primary objectives in support of Georgia Tech, but Roll Call is only one of four areas of emphasis. We are also very much in the friend-raising business as we serve our almost 100,000 alumni worldwide. The other areas of emphasis are engaging the Georgia Tech community, communicating with alumni and managing alumni records.

Engaging the Georgia Tech community — We are guardians of such great Tech traditions as Homecoming. We are innovators of such new events as Buzz Bash during Homecoming and Gold & White Honors, a celebration honoring alumni who have distinguished themselves in support of Georgia Tech and their communities. Also, Alumni Career Development sponsored the 20th Alumni Career Conference and launched a new service, an Executive Networking Program for senior-level executives who are unemployed. This new program was recognized as the best new alumni career services program in the nation.

Communicating with our alumni — We publish the award-winning GEORGIA TECH ALUMNI MAGAZINE and TECH TOPICS. BUZZwords, our monthly electronic newsletter, is subscribed to by more than 40,000 alumni. And our Web site attracted more than 1.2 million user sessions during the fiscal year.

Managing alumni records — Our data management program continuously updates biographical and data records, including e-mail, telephone and professional information. This past year we updated more than 85,000 records and now have more than 45,000 e-mail addresses. We did all of this with 99 percent accuracy. We want you to keep in touch with Tech and your classmates.

It was a busy year as the Alumni Association hosted more than 200 events, from Homecoming gatherings to leadership workshops to tailgate parties to career seminars. We enjoy what we do and we try to make the experience valuable and enjoyable for you.

We are committed to building your “lifelong connection to Georgia Tech.” We are also helping Georgia Tech to “define the technological university of the 21st century.” Thank you for your support of Georgia Tech and for allowing me to be your president this year.

Robert L. Hall, IM 64
President
How We Serve Alumni

Total Expenses .......... $5,566,724

- Administration ......................... $1,961,116
- Career Development ..................... 254,260
- Communications ........................ 770,331
- Alumni Relations & Business Development .......... 669,972
- Roll Call .................................. 645,521
- Campus Relations ....................... 299,745
- Event Management ..................... 703,586
- Marketing Services ..................... 262,193

Highlights for Fiscal Year 2002-03

The Georgia Tech Alumni Association strives to perform at its best every single day. The essence of our business may be grouped into four areas:

- Providing opportunities for interaction, service — and fun.
- Communicating with our constituents.
- Gathering and managing information.
- Fund raising.

Within each of those four areas, selected highlights from the 2002-03 fiscal year follow:

Homecoming boasted an overall 39 percent increase in attendance at alumni events last fall, led by higher participation in Buzz Bash and Alumni Seminars. The third-annual Bash drew about 1,000 participants and featured food, music and a fireworks show. Nearly 200 alumni attended at least one of 10 seminars. Alumni Association-sponsored events included reunions of the classes of 1977, 1962, 1952 and Old Gold, Lunch with the President, a Ramblin’ Wreck Parade breakfast and a pregame tailgate party.

The Student Alumni Association hosted Adopt-a-Student during Homecoming drawing 30 student and 30 alumni participants.

In observance of the 50th anniversary of women at Tech, the Association and Women’s Advisory Committee hosted a panel discussion during Homecoming highlighting issues that have affected women in the workplace over the past 50 years.

The Gold & White Honors dinner was inaugurated in early spring to recognize outstanding service on behalf of alumni and the Institute. About 180 people attended the event honoring award recipients Anthony Priest, Outstanding Young Alumnus; Joel Cowan and Jim Carreker, Dean Griffin Community Service Award; Charles Liotta, Ward Winer and James Moore, Honorary Alumnus designation; and Bobby Joe Anderson, Shirley Mewborn, Tom Patton (posthumously) and Ray Kytle (posthumously), Joseph M. Pettit Alumni Distinguished Service Award.

This year the Georgia Tech Alumni Executive Network was created to provide networking opportunities for pre-1988 graduates who are anticipating or experiencing a career transition. An average of 75 alumni attend the monthly meetings. Geographic-based subgroups also have been formed. The Executive Network program...
Homecoming boasted a 39 percent increase in attendance at alumni events last fall. The annual Buzz Bash drew nearly 1,000 and featured food, music and fireworks.

received a national 2003 Seal of Excellence Award in Alumni Relations from the Council for the Advancement and Support of Education.

The 20th annual Career Conference provided an opportunity for about 1,000 job-seeking alumni to visit with representatives of 43 companies interested in hiring Tech graduates. The event was held April 3 at the Cobb Galleria and included a Young Alumni Networking Reception and several educational workshops.

Plans for a Young Alumni Career Program were finalized. The program, designed for alumni who graduated after 1997, will offer roundtable discussions on career issues and networking opportunities.

Career advisement services were provided to more than 500 alumni during the year.

Plans continued toward the implementation of JacketNet, a Web-based networking tool for alumni. It will incorporate JobNet as well as resume and job-posting databases. JobNet contains the resumes of more than 3,500 alumni.

At the annual Phoenix Dinner, 88 members of the Burdell Society ($25,000) and Phoenix Circle ($10,000) levels of Roll Call giving were honored for their generosity. The affair was hosted by Alumni Association president Robert Hall and his wife, Charlene, and Tech President Wayne Clough and his wife, Anne.

The record-breaking success of the 56th annual Roll Call was celebrated with the Presidents’ Dinner in May. The evening of dinner and dancing was attended by 650 guests.

Family Weekend attracted 650 families to Tech this past fall for a weekend of information sessions and campus tours, capped by a pregame tailgate party.

Next Generation Weekend, held concurrently with Family Weekend, was held for high school students with parents or other family members who are alumni to learn more about Georgia Tech. Participants also were invited to attend the pregame tailgate party with Family Weekend guests. A Legacy Brunch was held in the Basil Garden of the Alumni/Faculty House with 40 alumni present.

Attendance at tailgate parties during the year averaged 215 people.

For the third year in a row, the Alumni Association supported Sting Break, a campus-wide party that attracted at least 2,000 students and was named “Best Campus Event” by the Technique.

The 31st annual George C. Griffin Pi Mile Road Race brought 317 preregistered runners to the April 12 event.

Throughout the year, alumni represented Georgia Tech at hundreds of high school college fairs across the country, interacting with literally thousands of potential Tech students.

A Productive Year

Leadership Georgia Tech, an orientation program for club leaders, brought together 140 alumni representing 57 clubs for speakers and workshops centered on the theme “Maintaining a Dynamic Club in Today’s Competitive Environment.”

Also during Leadership Georgia Tech, President’s Awards were given to clubs in Augusta, Ga.; Greenville/Spartanburg, S.C.; Houston; North Metro Atlanta; Northeast Tennessee; and Washington, D.C. Ramblin’ Wreck Awards went to the Central Florida, Golden Isles, Triangle, Western North Carolina and Atlanta Intown clubs. Buzz Awards were received by clubs in Albany, Ga.; Charlotte, N.C.; North Alabama; Space Coast (Fla.); and West Georgia.

The Alumni Association established a presence overseas with a new Georgia Tech Club in Europe. The group’s first meeting was held in Paris.

Plans started for development of a streamlined and more effective club tier structure, which is expected to be instituted next year.

Thirty clubs participated in TEAM Buzz National Community Service Day. The Student Alumni Association hosted its annual exchange program with the Georgia Power Georgia Tech Club. About 30 alumni and 30 students participated in the monthlong program, which allows students to get a firsthand look at the working world.

The Young Alumni
Advisory Committee was created to address major issues facing young alumni and their engagement with the Alumni Association: social activities, networking, athletics and Roll Call participation. The full committee gathers quarterly after meetings of the board of trustees.

The Alumni Association and other campus units sponsored a Grad Salute to provide graduating seniors with the chance to purchase caps, gowns, rings and announcements for convocation. The event was well-received — 70 percent of spring graduates took advantage of the opportunity. Parent volunteers were enlisted to help with the graduation reception and Connect with Tech events.

As the Alumni Association has done for many years, new graduates of Georgia Tech were presented with a senior gift and a miniature diploma. The Women’s Advisory Committee was instrumental in planning the annual Women’s Leadership Conference, which was attended by 400 alumni and other members of the Tech community.

The Women’s Advisory Committee of the Alumni Association awarded funds from its $25,000 Roll Call Challenge Grant to the Women’s Resource Center and Women in Engineering Scholarship Program.

Alumni dinners attracted 58 hungry student participants and 31 alumni hosts.

Georgia Tech’s Student Ambassadors inaugurated a campus-wide awards program to honor outstanding faculty, staff and students. The ceremonies were held at the Ferst Center and included a reception for guests and honorees.

The Georgia Tech Student Foundation allocated $15,000 to 13 student groups on campus.

Air Force ROTC and International Affairs affinity groups were established, broadening the Alumni Association’s reach and providing new avenues for better serving its constituencies.

Campus Relations collaborated with FASET, the freshman orientation program, to include the teaching of Tech traditions and history during the event.

Travel Program destinations included Holland and Belgium, London, Cuba, Rome, the Amazon, Italy and Paris.

The Volunteer Committee of the board of trustees founded Advocates, trained volunteers serving as representatives of the Alumni Association. Advocates provide information about Association services and activities, and provide an alumni presence at various campus and alumni events.

The annual reunion of former trustees provided an opportunity for past board members to renew acquaintances and maintain their ties.

Engaging, Involving

The “Driving Excellence” 2001-02 Georgia Tech Alumni Association Annual Report earned an Award of Excellence from CASE District III.

TECH TOPICS’ circulation surpassed 100,000 and the ALUMNI MAGAZINE reached 32,000. Subscribers to the monthly electronic newsletter BUZZwords topped 40,000.

The 50th anniversary of women at Tech was recognized in special issues of both TECH TOPICS and the GEORGIA TECH ALUMNI MAGAZINE.

The Tech Connection newsletter, sent to 10,000 Georgia Tech parents, was

Mission statement

The mission of the Georgia Tech Alumni Association is to promote and serve our alumni and the Institute.

We will continually create meaningful and relevant programs for current and future alumni to foster lifelong participation and philanthropic support.

We will communicate the achievements of the Institute and our alumni, maintain its traditions and engage the campus community. Underlying all that we do is the belief in the value of education, the commitment to integrity and exceptional customer service, and a pledge that we will perform in a fiscally responsible manner.
Our Annual Fund surpassed its goals both in dollars and donors. Alumni Roll Call contributions are Georgia Tech’s largest source of predictable unrestricted funds.

were added where appropriate for Alumni Association-sponsored activities.  
Post-event surveys were conducted among participants at programs including Homecoming, Family Weekend, Career Conference, travel tours and Next Generation Weekend. Data gathered from the surveys will help improve logistics and planning for future events.  
Focus groups and surveys were conducted with student donors and non-donors on behalf of the Georgia Tech Foundation. In an effort to unify the Alumni Association’s image, an online survey was conducted to ascertain alumni preferences for a new logo and tag line.  

Fund Raising  
The 56th annual Roll Call, Georgia Tech’s largest source of unrestricted funds, raised a record $7,415,699 from 26,320 donors — a noteworthy feat by itself, but especially remarkable given the country’s difficult economic times. The effort edged past the goal of $7.4 million and bested the targeted number of donors by 233.

Many fund-raising activities exceeded targets for 2002-03.  
Phonathons surpassed goals for dollars and number of donors. The number
The extravagant lifestyles of many record company executives and their artists is a far cry from what Honeil Nelson and Andre Moore hope to do when they succeed in the business. Nelson, IE 01, and Moore, EE 02, are the chief executive officer and chief technology officer, respectively, of Medu Records, started in 2002 with partner Frank Graham, who is also a recording artist on their label.

Both Nelson and Moore were born in Jamaica but moved to the United States when they were children as their families searched for a better way of life.

“Where I was born is on the very edge of civilization,” Nelson says. “We had no running water and no electricity. I walked two miles to school.”

With the success they hope to achieve in the recording industry, Nelson and Moore want to help disadvantaged young people in their home country. “Growing up in Jamaica, you are in one of the poorest areas in the world, but there is a lot of talent there. When you have those two things in combination, there is a lot of frustration,” Nelson says.

“Because of our upbringing, we do not see having wealth as an opportunity to exploit those resources, we see it as a requirement to help others. The hip-hop industry is not respected because of what they do with their money. That disturbs us. We want to make sure a portion of our profits go to kids in Jamaica who have the talent, but who don’t make it because their education is cut off at age 15.”

Nelson’s father, a carpenter, moved his family to Springfield, Mass., and Moore’s father, a tailor, settled about 80 miles away in Albany, N.Y. But Nelson and Moore did not meet until they were students at Georgia Tech.

The men became friends and often discussed starting a record company while they were students.
“We both have a soft side when it comes to music,” says Nelson. “Music defined popular culture as I grew up and I have always maintained an interest in it.”

Nelson, 24, performed in a reggae group with friends when he was in middle school and Moore, 25, is a drummer who has performed with African music groups.

“Two things formed our decision,” Nelson says. “One is our philosophy and the other is that it is a very lucrative, if high-risk, business. We felt hip-hop music, in particular, has attained a level of success and popularity globally. We also feel that none of the other record labels out there are able to touch all of those cultures. Most have a very limited scope and perspective.”

The word Medu is taken from the Egyptian words “mdu ntr,” loosely pronounced “medu neter” and meaning divine speech. Nelson says they want the company to bring a more professional, refined face to a genre that suffers from a “thug mentality.”

“Many record companies that specialize in rap or hip-hop are run by people who capitalize on the fact that they have been in prison,” Nelson says.

The idea became reality after the partners watched a television program profiling a popular artist and record company executive and his rise from street hustler and rapper to record company owner.

“We saw how he’d done it and we said to each other, ‘We can do better than that,’” Nelson says. “Many of these record label executives come from a very limited background. Going to Tech and being raised in a very mixed area, racially and culturally, we have a very diverse view of what the world looks like.

“We believe hip-hop music is appealing across lines of race, gender and age and that it should have that kind of representation. We can have artists who can be what they want to be, but to take hip-hop and rap to the level of popularity of pop and rock music, you have to change that reputation the music has and bring in a new level of acceptability on the business side,” he says.

“What is different about us is we are a very business-savvy organization. We aren’t just in this for fun.”

True to his Tech background, Nelson spends much of his time researching industry trends and preparing the company’s business strategies — he has short-term, two-year, three-year and five-year plans already formulated — in order to keep them on time and under budget, an important factor since the business is currently run from the partners’ apartment and funded with their personal assets.

Moore has set up a network of computers in the apartment and maintains the company Web site, www.medurecords.com. Moore also develops music production software and designs the CD covers.

Graham is the talent scout for the company and is also a rap artist who records for the label under the name Frank Legato.

Currently, Medu Records has four groups signed to the label and released its first CD, a compilation of tracks from all of its artists, in September. Atlanta radio station WHTA-FM, also known as Hot 107.9, is currently playing a single from the CD by Medu artists Lost Soulz, a hip-hop group from Detroit.

Breaking into the Atlanta radio market is a huge step for Medu, Nelson says.

“The major record companies look to Atlanta to see what is happening in the music scene here because it is a thriving music market. There is a lot of competition, but our strategy, drive and background supercede any competition we may have,” Nelson says. “Getting air play every day in the market and getting spin in clubs is really the most important thing.”

Moore says an advantage of being in a flourishing music market is access to the best professionals in the business.

“This is a great place to focus because there are a lot of engineers and mixers here and we can get access to people who mix and engineer for established stars and that brings attention to your artists.”

They also continue to focus on helping others and plan to travel to Jamaica in January to buy books and other school supplies for students starting the new term that month.

Before they can pass on their wealth, they have to earn it, but Nelson says it is all in the plan the partners have worked out for the company.

“It typically takes a record company three to four years to become profitable. We feel we can do it in half that time. We’ve done more work in the last 12 months than many companies do in three or four years,” Nelson says. “We feel if we can succeed in Tech’s engineering program, there’s nothing we can’t succeed at using the problem-solving approach you learn there.”
Safe Storage
Former roommates succeed in protecting data

By Neil B. McGahee

Throughout the high-flying 1990s, venture capitalists invested in sexy-sounding e-business start-ups, gambling that astronomical profits existing only on paper would make them wealthy.

It was a financial roller coaster — too much money chasing too few good ideas — and by March 2000, the dot-com boom had imploded. According to the Wall Street Journal, more than $3 trillion was lost on the tech-heavy NASDAQ Composite, 500 dot-com companies had failed and a half million high-tech jobs were gone.

That same month, Atlanta-based CapSure, a company providing automated, online data-backup software to small and medium-size businesses and individuals, was founded by former Georgia Tech roommates Van Page, IM 76, and Jeff Tuomi, IM 77.

No strangers to technology-driven companies, Page and Tuomi had played pivotal roles in building information-processing and Internet-based businesses as well as three start-up ventures.

“When I had my own company, one of our challenges was keeping good accurate backups,” Page says. “We had an awful lot of equipment in different facilities, and I was never 100 percent confident that those backup systems were secure. After I sold the company, I went out to a trade show in Las Vegas looking for something else to get into. I learned about a new technology called storage area networks, data storage designed for huge Fortune 500-type companies that create tons of information.

“I began wondering if there was a way for one company to buy that hardware and let lots of companies share it. I had done that essentially with a telecommunications company I had owned — bought a big switch and sold time to thousands of other companies,” Page says.

Page found that most of the other players in that arena were mostly mom-and-pop companies using a PC in the basement with a DSL connection — insecure and certainly not something you would want to sell to business. A successful plan would involve building an infrastructure that would provide customers with redundancy and the security of knowing their data was off-site protected.

“I called Jeff with the idea,” Page recalls. “I really wanted to bounce the idea off him. His response was, ‘I’m in.’”

Storage technology was booming and Tuomi was in a position to provide a lot of assistance and a number of technical people already working for him. They shared available resources and built the company around a relatively inexpensive server to test the market. Soon demand exceeded the capacity of the server and it was replaced by a $500,000 storage system.

“At this point marketing and advertising was very low-budget,” Tuomi says. “We were really naive about marketing on the Internet world so we created a Web site and sat back and waited for something to hit. It didn’t hit.”
The pair realized the need for a marketing campaign and began hiring independent sales representatives, using pay-for-click services and sharing clientele with companies like CompUSA, Computer Troubleshooters and Oracle.

But it took a story published in the United Kingdom to propel CapSure to the top. David Hewson, an English freelance technology writer, wrote an op-ed piece in the Sunday Times of London venting his frustration after losing a 70,000-word manuscript when his PC crashed.

“Being of a cautious nature,” Hewson wrote, “I now have a 4 pound-a-month ($6.95) online backup service, CapSure, a wonderful program that saves up to 100 mb of my documents at the end of each working day.”

Across the pond, Page was spending a lazy Sunday afternoon at home occasionally checking a monitor tuned to the Web site. The hit counter was spinning like a slot machine in a Three Stooges movie. Hundreds of orders were coming in every minute.

If Hewson’s computer failure prompted thousands to enlist CapSure’s data protection, Sept. 11 cemented the company’s success.

“I can see the World Trade Center fire across the river,” a New Jersey caller told Page. “I have to do something now.”

It was the first of many calls that day and the fledgling company — barely a year old — found its initial business plan was suddenly obsolete.

“We went from a proactive mode to a reactive one in a matter of hours,” Tuomi says. “All planning went out the window. We were really concerned because you only get one shot in Internet-based business.

“We had anticipated controlled growth and this tremendous surge of business threatened to affect the level of service we had to provide in order to succeed. We had to increase spending drastically to cover just the technology we suddenly needed. Fortunately we had the financial coverage we needed.”

CapSure’s product is deceptively simple. Working with most Windows-based systems and an Internet connection, a customer’s files are automatically encrypted and transmitted to a storage-area network. Each client has a user ID and password to retrieve files at any time. In July, CapSure, now with more than 1,400 clients in 24 countries, added an additional product, WEB Restore, which allows clients to retrieve information from computers anywhere in the world.

“Tech taught us to be empirical rather than intuitive in our analysis of a problem,” Page says. “When other Internet-based businesses faced similar problems, they folded. We just did what we always did at Tech, peeled back each issue and solved that problem, then moved on to the next issue. And here we are.”

Pace Setters

Engineering Success

Military career saved Ronald Johnson from crime-riddled streets of Chicago

By Maria M. Lameiras

It is a long way from the west side of Chicago to the U.S. Army Corps of Engineers headquarters in Washington, D.C., and Maj. Gen. Ronald Johnson has made every step between the two determined to succeed.

Johnson, MS OR 85, was promoted to major general and appointed director of military programs for the Army Corps of Engineers this summer. He also was awarded the 2003 Black Engineer of the Year Award for Professional Achievement from U.S. Black Engineer & Information Technology magazine, the Council of Engineering Deans of the Historically Black Colleges and Universities and Lockheed Martin Corp.

Born and raised by his mother and grandparents in a neighborhood rife with drugs, crime and violence, Johnson says he was fortunate to escape the streets that claimed members of his family and his friends.

His father, whom Johnson met only once when he was about 9 years old, was imprisoned for armed robbery. His older brother died before age 40. He has one younger sister, challenged by drug addiction.

“When I was growing up, I didn’t know how rough it was because you only know what you know,” Johnson says.

Johnson was motivated to excel at school, where teachers inspired him and pushed him to stand out and where he discovered the Junior Reserve Officers Training Corps program.

“There was something fascinating to me about the JROTC program. It must have been the structure or the discipline or something,” Johnson says.

A retired warrant officer, Donald Lesch, directed the school’s JROTC program.

“He became a sort of father figure to me. I looked up to him and I was a little afraid of him. He knew how to push the right buttons to get me to do what he wanted me to do without me knowing it,” Johnson says.

Although he says he looked up to Lesch, Johnson still was swayed by the lives of his brother and the friends he hung out with on the streets. Lesch turned that tide by prodding Johnson to apply to West Point.

“If it weren’t for him I probably would have gone the way all of my buds and my brother went. I wanted to be like my brother. My brother, to his credit, would harass me and tell me to go home and read a book,” Johnson says.
says, “Mr. Lesch tricked me into going to West Point. One day during my senior year, Lesch said to me, ‘You ought to apply to West Point.’ I said something like, ‘I’m from the west side. West Point is for punks.’”

Lesch shrugged and replied, “You’re right. If you don’t think you can handle it, you shouldn’t go.”

Johnson took the bait, applied and was accepted to the nation’s most prestigious military college.

“I wanted to quit many times, but I couldn’t go back and tell people it was too hard,” says Johnson, who graduated from West Point in 1976.

While stationed in Germany in 1977, Johnson was notified that he had a visitor.

“I went walking up the hill and when I got to the top I could see this gentleman standing there in a long green trench coat. It was warrant officer Lesch and he was standing there saluting me,” Johnson says. “He was now a JROTC professor of military science in Hanau, Germany, and he’d kept track of me and was following my career. It was a special moment.”

He and his mentor still keep in touch and Johnson is proud that Lesch and his wife think of him as a son. “They are very important people in my life,” Johnson says.

In his military career, Johnson has commanded at every level — company, battalion, brigade, division — and, in 2001, became the first African American officer to be appointed commanding general and division engineer for the Army Corps of Engineers’ Pacific Ocean Division. He served in that capacity for two years before being promoted to major general and transferred to Corps of Engineers headquarters.

Over the past 27 years, Johnson has also been assistant commandant of the Army Engineer School, executive officer and senior aide-de-camp to the secretary of the Army, a senior service college fellow at the Joint Center for Political and Economic Studies in Washington, D.C., an instructor and assistant professor of math at West Point and company commander and operations officer for the Army District Recruiting Command in Atlanta and Marietta, Ga.

While in Atlanta, Johnson met his wife, Iris. He also was selected to teach at West Point. The post required a master’s degree and he landed at Tech.

Johnson says he surprised himself in graduate school.

“I found it to be very easy because I had the discipline. It was a way of life in the Army,” he says. “My experience in the Army and at West Point allowed me to sort through what was important and discard what was unimportant. I really surprised myself. I wouldn’t say it was an easy process of doing the work, but I was more mature and I didn’t have the distractions an undergrad would have. I enjoyed it.”

As director of military programs, Johnson describes his job as “chief operating officer for an $8 billion construction management firm.”

“We are responsible for the execution of the military construction programs, which consists of everything people use to live, work and play including dormitories, barracks, other facilities, airfields, fuel hydrant systems, the national missile defense program and the reconstruction of Iraq, including restoration of the Iraqi oil system,” Johnson says.

He also is the “design and construction agent” for all Army and Air Force projects.

“It’s an incredible job and I’m glad they don’t leave it up to me to do by myself,” he says. “We’ve got great people all throughout the Corps. We have 35,000 people, of which only 400 are uniformed military. The rest are civilians — accomplished civil engineers, biologists, environmental engineers, human resources and public affairs experts, controllers — and they all contribute to our capability to run a design and construction organization of this magnitude.”

Johnson would like to see a better understanding of the function and purpose of the Corps of Engineers.

“We don’t do a good job of telling our story. People don’t know that the U.S. Army Corps of Engineers is not all uniformed personnel. They don’t know we have a role in the nation’s emergency management and that we are the engineer of choice for the Federal Emergency Management Agency, which is in the Department of Homeland Security,” he says.

Johnson says the Corps of Engineers is rewarding for both military and civilian employees.

“We can offer them a challenge they won’t get in a normal construction organization. They wouldn’t even begin to get the level of responsibility they get in the Corps. We cannot begin to pay our people like civilian firms, but the payment comes in job satisfaction and the impact you make on people around the world,” he says. “I say the more money you have, the more money you want. If I can jump out of bed every morning and be excited about going to work, that’s what I’m about.”
There are no woodworkers standing ankle deep in sawdust inside Cotswold Furniture Makers in Atlanta.

Instead there is store owner Todd Simmons, who connects American craftsmen with clients who have an appreciation and pocketbook for handmade furniture in the Arts and Crafts tradition.

There are scars on the showroom floor from a soda fountain that sat inside what was once a drugstore on Peachtree Road in Buckhead. The building has a history, as does American furniture making in the Craftsman style of the late 19th and early 20th centuries.

“I’m not a furniture maker and I’m certainly not an interior designer. But I do have a great appreciation for the furniture. Everything in this store is handmade by craftsmen from around the country. I think of this gallery as a collection of craftsmen we represent,” says Simmons, ISyE 91.

“Quality above everything else” sets Cotswold Furniture apart, Simmons says. “Poorly made furniture is very easy to spot. Can you guarantee your furniture for life? Is it that good? Is the finish perfect to the touch?

“The family of craftsmen nationwide that are in the business of handmade furniture is very small. It’s easy to see why. It’s very difficult to make money doing it. One of the reasons why I was so attracted to them was to bring business to their art.”

Simmons drew “retail inspiration” from shops he visited in Illinois, where he earned his MBA at the University of Chicago and worked part time for American Airlines.

A licensed private pilot, Simmons planned for a career in the airline industry and returned to Atlanta in 1995 to work in marketing at Delta.

“I was happy at Delta. I had a major role in the 1996 Olympics project. Coming out of that I was promoted twice and I was certainly in a good position there,” Simmons says.

But his mind kept drifting back to those furniture stu-
“Without the integrity of the craftsmen and artists, we’ve got nothing here. The price is an indicator of the quality of our work. I can say with confidence that there’s no finer furniture made. Our furniture is very clean. It takes its inspiration from 100-year-old designs.”

100 now, including artists and craftsmen,” says Simmons, noting that five craftsmen — from Ohio, Vermont, Virginia, California and Pennsylvania — make 80 percent of the furniture Cotswold sells.

All the furniture is made to order and crafted from American hardwoods, primarily cherry, oak, walnut, ash and maple. A chair can take more than three months from the time it is ordered to delivery.

Gifts, including pottery and clocks, range in price from $100 to $1,000. Dining tables cost anywhere from $1,500 to $10,000. The accompanying dining chairs run from $500 to $1,500 apiece. A leather-covered lounge chair with down cushion will set a client back $3,500. Beds cost between $1,500 apiece. A leather-covered lounge chair with down cushion will set a client back $3,500. Beds cost between $1,500 and $2,000 and lamps with hand-pressed paper shades are priced between $300 and $1,000.

“Our furniture is very clean. It takes its inspiration from 100-year-old designs,” says Simmons. “Just this year we started an exclusive line of furniture called Lullwater, named after the park and Druid Hills street.

“Without the integrity of the craftsmen and artists, we’ve got nothing here. The price is an indicator of the quality of our work. I can say with confidence that there’s no finer furniture made.”

Simmons found the Buckhead storefront in late 1997. “When the space emerged, suddenly everything was in place. I had the studio, the craftsmen, the money and the marketing plan about how we were going to pursue this idea.”

He told himself, “If you don’t do this, you will always regret clearly seeing an opportunity and just walking away from it.”

Simmons took the leap and left his Delta job in February 1998. The furniture gallery opened its doors in May.

“My wife, Melissa, was totally on board,” he says. “She knew I was passionate about this. She knew in the beginning we would struggle and certainly we did.

“The day this place opened was easily two and a half years if not more of planning and work. It was not happenstance. This was certainly not just an idea on a napkin.”

For the first two years of business, the store operated as The Mission Chair. “We realized that name was a little too restrictive to potential customers. People had no idea about the custom work,” he says.

The new name reflected the history of fine furniture making. The Cotswolds area of England, where furniture makers constructed pieces with hand tools, is credited with building the Arts and Crafts movement in the late 1800s.

One thing that has surprised him is that as the business has grown, so too have the demands on his time, even though he now has four employees. “You imagine you’ll establish a management structure and you’ll kind of move into the background. It’s been exactly the opposite of that. My responsibilities have grown.”

Still, Simmons is looking “beyond Atlanta,” particularly since many of his customers come from Tennessee, Alabama, Florida and North Carolina to buy furniture at Cotswold. A growing market is in office furniture as high-profile clients want to fill their high-rise suites with Simmons’ high-end desks and credenzas.

“This is not a franchise. People ask me that all the time. I actually take that as a compliment. I take it to mean that it looks professional, it looks put together. The reality is that it is anything but that. We’re a collection of independent craftsmen. I am simply the person to get them all together,” Simmons says.

“Expansion is a move that won’t be taken lightly. I envision a four- to five-store operation. That’s the most capacity that our existing craftsmen could even grow to. Remember, they’re making everything by hand.

“We have to be mindful of the kind of relationship we have with our customers. This is not a cash-and-carry type of store. We’re the reverse of that. It’s so customer intensive and so relationship intensive, and that’s a key point.

“Customers would walk away if we were no longer able to meet their needs, go to their houses and offices and meet with the architects and designers. That’s what sets us apart. Anyone can open a store where you come in, buy something and leave. Every piece of our furniture is made to order.”

GT
Ali Adibi’s research could lead to a faster Internet, blood tests without drawing blood and more efficient detection of substances that pose a threat to the environment.

In the three years since he took a position as an assistant professor in Georgia Tech’s School of Electrical and Computer Engineering, Adibi has collected an impressive array of teaching and research awards, grants and contracts, bringing in more than $3.6 million in research funding.

Adibi has also garnered the appreciation of his students, perhaps the least tangible reward, but the most gratifying to him.

“When you start as a faculty member, you have virtually nothing — zero funds, no labs, some space, no experience. You and your students have to do everything. You have to educate your students, train them in the lab and develop ideas of your own without much help,” says Adibi.

“By your fifth or sixth year, you have a self-running group. You have postdoctoral students, graduate and doctoral students and senior students training your junior students. You develop new ideas with them and have your research group, but then you have to learn how to find funds for your research.”

Adibi now supervises 13 PhD students, two postdoctoral students and six undergraduate students in research projects and teaches graduate and undergraduate courses. This year, he hosted two high school students — one from Pennsylvania and the other from Puerto Rico — in his labs as part of NASA’s Summer High School Apprenticeship Research Program.

“I always try to develop a sense with my students that we are colleagues in this, that there are no barriers between us. I emphasize that I am there for them and I often work with them on weekends with review and problem solving,” Adibi says, adding that he writes about 20 recommendation letters per year for students seeking to go on to graduate and postgraduate study.

“I think the job of a professor entails three things. One is research, one is teaching and one is service, including professional service on panels, in conferences and organizing meetings of professional organizations.
I consider all of them enjoyable. I find research the most exciting, but teaching is the most important," he says. "These kids are the future of engineering and science and you are developing their backgrounds, so you’d better do a good job."

Among his many mentors, Adibi counts current and retired professors who were once his advisers. He earned his master’s in electrical engineering at Tech in 1994.

"I am always open to learning and I feel I have a lot to learn. I enjoy being able to go to senior professors and asking for and getting advice. There are many people who have done a lot to help me and I am willing to listen to any person who is willing to give me advice," he says. "I try to collect all of the information and find the best way to solve the problem I face."

Adibi is being recognized as an exceptional professor. This year he received a CAREER Award from the National Science Foundation in February and the Class of 1940 Howard Ector Outstanding Teacher Award from Tech in April.

Adibi says he returned to the Institute after his doctoral and postdoctoral work at CalTech in part due to the collaborative, multidisciplinary work being done by Tech researchers.

"The fact that it is a Top 10 school and that I knew my colleagues and the faculty from my time here added up to the conclusion that Tech was the best place for me," he says.

The major focuses of Adibi’s research include Chip-scale WDM devices using photonic crystals, biological and environmental sensing, holographic data storage, holographic optical elements for optical communications and optical networking. He is the author of one book, two patents and about 30 journal papers and has served as chairman of the Photonic Bandgap Materials and Devices Conference in Optoelectronics in San Jose, Calif., for two years. He will again chair the conference in January.

In collaboration with Duke University, Adibi was awarded $750,000 of a $3.75 million award for research that may lead to the development of optical biosensors to read a person’s blood-alcohol content without drawing a sample.

"We are developing sensors that measure the effect of alcohol on light. In theory you could use this scanner on a person and gauge their blood-alcohol content without having to draw a blood sample.

"If this idea works, it can be applied to glucose and other constituents of the blood and to measure the concentration of carbon dioxide, carbon monoxide and other elements in the environment," Adibi says.

In May, Adibi received a NSF grant for development of discreet devices used in optical communications. Optical microprocessors, which are many times faster than traditional microprocessors, could be used to speed up the data-routing process.

Although data moves very rapidly along fiber-optic cable in transmission, the process of data transfer currently is slowed at "switching stations" that route the information, Adibi says.

"The Internet requires more and more and more speed every day. Next-generation optical packet switching is crucial in developing the speed that will be required on the Internet five to 10 years from now," he says.

"The devices we are working on will be very compact and very efficient and will help achieve the faster speeds required by the Internet."

The newest area of research Adibi is pursuing is the development of optical telescopes for an optical deep space network with the Jet Propulsion Lab in California.

"Instead of a single huge telescope for deep space communications, we are developing a way of getting the same performance using an array of smaller telescopes. It is much less bulky and less costly and in the future may facilitate communications between deep space and Earth," he says.

Adibi, who says he works at least six days a week, manages to maintain a balance between the research, teaching and service components of his career.

"Often I have many demands on my time and it becomes overwhelming, but teaching is the last thing I would sacrifice," he says. GT
Buzzing the Game

Only the birds and Buzz can get such a spectacular view of newly renovated Bobby Dodd Stadium at Grant Field. These photographs, shot during the Georgia Tech-Auburn game on Aug. 30, show the expanded upper deck and a capacity crowd of 55,000 fans who saw the Jackets sweep to a 17-to-3 victory. GT