

# GTRI Insider

February 2006

## Cyber Safety for Kids

### GTRI Program is Foundation for the Future of K-12 Education in Georgia

With the proliferation of personal computers and cell phones, child molesters are no longer hanging out at playgrounds – the Internet has become their new venue for finding victims.

To help address this technological threat, Foundations for the Future (F3), a group of GTRI researchers who seek to improve learning in K-12 classrooms through technology access and use, is developing a cyber safety program for children and teens.

“Schools are fostering wonderful Internet learning skills, but we must also give children the capabilities to protect themselves,” says Claudia Huff, F3’s director. She refers to the Georgia Bureau of Investigation’s caseload of Internet crimes against children (including pornography and molestation) which has increased by more than 1,000 percent since 2001. “Our initiative will help youngsters change their online behavior, so they’re not a target for predators.”

The cyber-safety program will be a collaborative effort among Georgia Tech, the GBI, the Georgia Department of Education and the Georgia Emergency Management Agency. Last summer, representatives of this consortium traveled to New Zealand to study NetSafe, a highly successful program that takes a community approach to online safety.



In addition to new technology solutions, Georgia’s cyber-safety program will help schools set policies on how to handle incidents, such as discovering child pornography on someone’s computer. “There are certain technical procedures that must happen for evidence to be valid in court,” explains Dara O’Neil, an F3 staffer and researcher in GTRI’s Information Technology and Telecommunications Laboratory (ITTL).

“Yet awareness training remains a large component of the program,” stresses O’Neil. “Educators, parents and children need to take responsibility.”

“A case in point, O’Neil says, “is MySpace.com, an online community where participants can create custom Web pages, post pictures, write blogs and exchange e-mails.” A popularity contest of sorts is going on here as youngsters vie to get more hits on their Web pages. Many young girls post revealing photographs of themselves along

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## ... And The Best Dressed Award Goes To...

Gary Gimmestad and Leanne West of EOSL model the official conference T-shirts at the Directed Energy Professional Society's annual meeting in November 2005. The meeting was held on the Hawaiian island of Kaua'i.



## Researchers Hit The Roof

Nanotechnology Lab researchers from EOSL toured the world's largest roof mounted photovoltaic array atop the Campus Recreation Center to see a possible application for their carbon nanotube-based photovoltaic research concept.

FRONT: Charlie Higgins

BACK: Trevor McLeod, Mario Flores, Rodolfo Camacho, Kevin Rouse, Jud Ready, Stephan Turano

NOT PICTURED: Kelly Griendling, Victor Kumsomboone, Alex Morgan



# Director's Notes..

## Communicating for Success

Since joining GTRI in 2003, I have often spoken about the need to improve communication within our organization and with our key stakeholders. We have seen some great improvements in the past few years, and this publication is a perfect example.

It is becoming more common for researchers from different GTRI laboratories to collaborate with each other and with colleagues across campus. Our employees are also receiving and sharing more information than ever before, and the improvements have just begun.

I will soon be launching the GTRI Director's Blog on WebWISE. This will allow me to post specific questions each month and solicit your real-time feedback on each. It will be available to all employees and will serve as an electronic town square for discussing issues important to the growth of our organization.

In 2006, we will also see the launch of a new user-friendly version of WebWISE, as well as a newly designed external website. These are major projects that will be rolled out slowly and carefully. Their success will depend largely on the support of all GTRI labs and support units. I'm certain that working together we can get them done! These are just a few of the improvements you can expect to see this year.

As always I encourage you to e-mail any suggestions or comments you may have about the initiatives I mentioned or on any GTRI topic. My door and e-mail box are always open!

A handwritten signature in black ink that reads "Stephen E. Cross".

**Dr. Stephen E. Cross**  
Vice President, Georgia Tech  
Director, GTRI



The *GTRI Insider* is a quarterly publication created for employees and friends of the Georgia Tech Research Institute. It is produced by the GTRI Communications Office, with additional content provided by GTRI departments and labs. We welcome your comments and suggestions. If you have information or story ideas you would like to submit for consideration, please complete the form on the back cover of this newsletter or e-mail your submission to the GTRI Communications Office at [CommInfo@gtri.gatech.edu](mailto:CommInfo@gtri.gatech.edu)

# Research Security Update

By Steve Woodall, Director, RSD

At the outbriefing for our 2005 Defense Security Service (DSS) inspection, we were tasked by DSS to inventory all documents and then reconcile records for those documents in our Security Information Management System (SIMS). DSS asked that we complete this inventory prior to our next inspection scheduled for the week of August 14, 2006. With over 17,000 documents in the inventory, this task is a massive undertaking. We started in December with a target date for completion no later than June 30, 2006. This inventory will become an annual activity.

On any given day, one of seven Research Security Department (RSD) employees, armed with laptops specially designed for this mission, will visit one of nearly 200 document custodians and begin a review process. The laptops can access SIMS allowing corrections to the database to be made on the spot. One of the first things we do is apply a barcode to each document. This will greatly assist future inventories and day-to-day tracking of material. Documents also are reviewed for correct markings. In some cases, sponsor direction or follow-up is required.

To make it easier to understand the status of an account before and after the inventory, RSD with the assistance of OIT, designed a “before and after” report to give both the custodian and RSD employee a way to review what has been accomplished.

How are we doing? With efforts concentrated at Cobb County Research Facility and ITTL, we have reached the 20% mark. Our minimum target for the next five months will be to accomplish 16% a month. This will allow us to complete the inventory by the end of June.

Coordination for the inventories is accomplished with the help of laboratory management, security, and administrative personnel. This inventory process has been a team effort. We are constantly refining the process and have learned to critique the effort and make changes quickly. We appreciate the assistance of all those who have been part of the process.

For more information please contact Research Security Director Steve Woodall at [steve.woodall@gtri.gatech.edu](mailto:steve.woodall@gtri.gatech.edu) or 404-385-6542. ●



Ashley Irby

## > Up Close and Personal With...

### Ashley Irby

**NAME:**

Ashley (Riley) Irby

**WORKING FOR:**

Terry Hildebrand, Phyllis Means (ITTL/CSITD)

**WORK LOCATION:**

Will be GCATT

**GTRI EMPLOYEE SINCE:**

Summer 2000

**MOST MEMORABLE JOB EXPERIENCE:**

Can't really think of one.

**WHAT I LIKE MOST ABOUT MY JOB:**

The people - they are all great!!

**IF I WON THE LOTTERY, I WOULD:**

Buy a place to live close to work so I don't have to sit in traffic everyday.

**FAVORITE FOOD:**

Crab Cakes

**SOMETHING YOU PROBABLY DIDN'T KNOW ABOUT ME:**

I enjoy quilting

**SOMETHING ELSE YOU PROBABLY DIDN'T KNOW ABOUT ME:**

I love cooking and doing housework. I know it's odd, but I find that it relieves stress.

**PEOPLE TELL ME I RESEMBLE:**

I'm original!! Although unfortunately I've been told I look like Punky Bruster. I don't enjoy that comment.

**IF I COULD PICK SOMEONE OUT OF HISTORY TO HAVE LUNCH WITH, I WOULD CHOOSE:**

Jackie Kennedy

**THREE WORDS THAT BEST DESCRIBE ME:**

Talkative, Personable, and Nice

**ALL TIME FAV MOVIE:**

The Preacher's Wife

**RECENT BOOK READ:**

Harry Potter and the Half-Blood Prince. I LOVE Harry Potter.

**COMING FROM:**

Douglasville, GA

If you'd like to nominate a colleague to be featured in the next 'Up Close and Personal With...' please see the form on the back of this issue of the *GTRI Insider*.

## Project Director Program Graduates

By Suwana Murchison, PST

Congratulations to the 2006 graduates of GTRI's Project Director Program. GTRI Director, Steve Cross, presented each graduate with a certificate of completion. The Project Director Program focuses on broadening the knowledge and skills essential to successfully manage and lead research projects in GTRI. It is designed for Research Engineer and Research Scientist I and II with 3 - 10 years experience. The Project Director curriculum includes eight required courses and two electives. Participants are required to complete the required courses within 24 months of the date of enrollment.

"The instructors level of enthusiasm and immediacy made for a terrific course – they are mostly research staff who've experienced the things they are teaching."

David Zurn

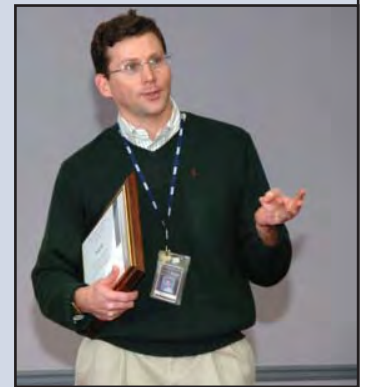
**2006 Graduates Pictured:** Melinda Higgins, Shaun Morber, David Zurn, Robert Hendry, Luke Starnes. ◉



Jim Beisner, (Proud Father) Hugh Denney, Melinda Higgins, Steve Cross



Shaun Morber



David Zurn



Jim Beisner, Robert Hendry, Steve Cross



Jim Beisner, Luke Starnes, Steve Cross

## Don't be Redundant Again!

Redundant phrases to avoid when writing reports, articles, or proposals: absolutely conclusive, agricultural crops, close proximity, complete monopoly, completely full, end result, exact counterpart, future plan, general plan, grateful thanks, lonely hermit, meaningless gibberish, mutual cooperation, new record, organic life, original founder, personal friend, personal opinion, true facts, ultimate outcome, violent explosion, vitally necessary. ([www.NewsBlues.com](http://www.NewsBlues.com)) ◉

DEPARTMENT  
OF REDUNDANCY  
DEPARTMENT

# Message from the Georgia Tech Office of Sponsored Programs: Using Grants.gov

By Michelle Powell, OSP

**G**rants.gov provides a unified interface for all applicants to find funding opportunities through a number of federal agencies. Neither password nor registration is required for faculty members using Grants.gov; simply find the solicitation, download it along with the PureEdge software, complete it offline, and email it to the appropriate contracting officer in the Office of Sponsored Programs. (But don't zip the file!) The contracting officer (CO) will then submit it via Grants.gov. Be sure to allow plenty of time for proposal submission as it can take up to 45 minutes per proposal to be accepted into the Grants.gov system. Georgia Tech's routing forms are still needed and require use of Internet Explorer. MAC users need to use a Windows Emulator or Citrix.

Once a proposal is submitted via Grants.gov, it will be forwarded to the proper funding agency which will run its own verification check. The agency can reject the proposal and require a resubmission, although this business practice varies by agency. Agencies have different forms and requirements. It is important to closely read each solicitation.

The U.S. Depts. of Energy, Justice, and Homeland Security have already begun using Grants.gov. The **ARO, Office of Naval Research, and AFOSR** will soon be converting to Grants.gov.

## National Institutes of Health (NIH)

Beginning in June, NIH will transition to Grants.gov for the R21, R33 & R03 applications. In October, NIH will transition to Grants.gov for the R01 applications. (More on their timeline at [http://era.nih.gov/ElectronicReceipt/files/Electronic\\_receipt\\_timeline\\_Ext.pdf](http://era.nih.gov/ElectronicReceipt/files/Electronic_receipt_timeline_Ext.pdf))

Once an application is transitioned to Grants.gov, paper copies will no longer be accepted. During this transitional phase, NIH is converting some of its business practices and terminology. For example, in a proposal budget NIH is moving toward "Person Months" versus the current "Percent Effort" to calculate salaries.

Faculty members are encouraged to have an NIH Commons account. NIH currently requires faculty members and the CO to both log in to the NIH Commons to verify the proposal that was submitted through Grants.gov. If you do not have an NIH Commons account, contact Nadia Zitman at [nadia.zitman@osp.gatech.edu](mailto:nadia.zitman@osp.gatech.edu) or 404-894-6944.

## National Science Foundation (NSF)

NSF's list of FY06 required submissions via Grants.gov

<http://www.nsf.gov/bfa/dias/policy/docs/grantsgovlisting06.pdf>

NSF's application guideline for Grants.gov

<http://www.nsf.gov/bfa/dias/policy/docs/grantsgovguide.pdf>

Grants.gov information has been added to the GT Office of Sponsored Programs website in the PreAward section under agency specifics for both NIH and NSF. Slides from previous Grants.gov Brown Bag sessions are available online at <http://www.osp.gatech.edu/education/quicktips.shtml>.

For assistance, visit [www.osp.gatech.edu](http://www.osp.gatech.edu) or contact Michelle Joy (Clark) Powell, Training Program Manager at [michelle.clark@osp.gatech.edu](mailto:michelle.clark@osp.gatech.edu) or 404-894-6945. ●

## Reportcentral (RC) Rollout – Greensheets Replacement

By Raj Vuchatu, Enterprise Systems Department

**R**eport Central, the "one stop shop" for all reporting needs, has rolled out in the second week of February. This particular release of RC includes financial reports (which will replace the existing Greensheets report). A number of new reports will be added to RC in the future.

Financial Summary report is replacing the Greensheet report. This new report has many benefits such as:

- Ability to report at all levels of WBS (Work Breakdown Structure) project structure (including the 5th level)
- Ability to export the data into EXCEL and PDF
- Ability to change projects number and dates on the same page of the report
- Ability to drill down to more details than before

RC is a framework developed to house all reports of GTRI/GT. This provides benefits such as:

- Easy navigation between various reports without having to re-enter project numbers
- One place to get all reports
- Standardization of navigation and features across all reports
- Rolled up reports at lab and division level
- Better look and feel

Please visit Report Central at <https://webwise.gtri.gatech.edu/rc> and send comments and suggestions to [webwise-feedback@gtri.gatech.edu](mailto:webwise-feedback@gtri.gatech.edu) or call Raj Vuchatu 404-407-6767. ●

# San Antonio Research Operations



- San Antonio is considered a Research and Development hub with facilities such as The Texas Research Park (the site for The University of Texas Institute of Biotechnology, The Cancer Therapy and Research Center for Drug Development, and dozens of other biotechnology related companies), the 311th Human Support Wing and the Air Force Research Lab at Brooks City-Base, the Southwest Research Institute, the Southwest Foundation for Biomedical Research, and the University of Texas Health Science Center at San Antonio.
- The military is the third largest economic driver in San Antonio equating to \$5.1 billion annually.
- San Antonio is home to three Air Force Bases and one Army Post (and is nicknamed Military City USA).
- San Antonio will become the national center of military medicine under the current Base Realignment and Closure (BRAC) plan.
- San Antonio is the location of the Air Force Center for Environmental Excellence (AFCEE) Headquarters.

*Remember the Alamo...* is close to the Georgia Tech Research Institute (GTRI) office in San Antonio! Certainly not an exact quote, but noteworthy in considering research opportunities and our growth potential. The GTRI San Antonio Office, under the direction of Dr. John H. Estes, IV, reports to the Environmental Systems Division of the newly created Health and Environmental Systems Laboratory (HESL). GTRI – San Antonio is responsible for strengthening collaborative activities with Texas A&M, while ensuring the diverse capabilities of GTRI are fully developed within the DoD community and performing various program support activities in the field of sustainability and energy management. Existing task order contracts under the purview of the San Antonio office provide a conduit between primary clients and GTRI research.

GTRI commonly works with other academic institutions, but formalized a relationship with Texas A&M University by joining the Texas Engineering Experiment Station (TEES), (part of the Texas A&M University System), in August 2000, forming the Brooks Energy and Sustain-

ability Laboratory (BESL). The consortium was formed to offer a variety of clients strategies, services, and training, to lower energy consumption and implement sustainability in the built environment.

The mission of the San Antonio Office is to provide direct support to BESL projects while simultaneously expanding research opportunities for GTRI and GIT. Since 2002, the staff in San Antonio has provided project management and technical expertise for a variety of projects. The primary clients have included the Department of Defense (DoD), the Texas State Energy Conservation Office (SECO), local San Antonio school districts, as well as architecture and construction firms.

What makes San Antonio an attractive area for research opportunities? Consider the following facts:

- San Antonio is the eighth largest city in the US.
- San Antonio’s primary economic driver is Healthcare and Biosciences generating \$13 billion annually and accounting for 14.5% of the total city’s workforce.

GTRI is part of two large Indefinite Duration Indefinite Quantity (IDIQ) service contracts with the US Air Force that offer GTRI significant growth potential.

The Global Engineering, Integration and Technical Assistance Program 2005 (GEITA05) was awarded by the AFCEE on December 28, 2004. GEITA05 is a task order contract with a current ceiling of \$850 million over five years (six years for task completion). This contract has a clause which will allow the ceiling to expand to more than \$1.5 billion. Since past GEITA contracts have rapidly reached the ceilings prior to the end of the contract, it is fully expected that the ceiling will be raised to the \$1.5 billion level.

The San Antonio Office is actively seeking development of new opportunities for GTRI under GEITA05. The primary focus has been in the areas of environmental assessment, indoor air quality, sustainability, policy development, and training, but is expected to expand as opportunities are identified.

GEITA05 is the most valuable contract within the San Antonio Office purview, but it is certainly not the only opportunity for growth.

The Air Force Air Combat Command (ACC) issued the contract for Environmental Compliance and Analysis Services (ECAS) in October 2004. ECAS consists of multiple awards of IDIQ contracts. The program ceiling is \$200 million. The task

ordering period is seven years with a delivery period of ten years. The ECAS contract is an Air Force contract but is available to other federal organizations that pursue a simple memorandum of agreement with the Air Combat Command.

GTRI is on a team providing services which include Environmental Assessments, Environmental Impact Statements, Strategic Planning, and Sustainability Training. Personnel in San Antonio and Atlanta are actively supporting a task order under this contract that is related to Asbestos and Lead Based Paint Management.

The GTRI San Antonio Office continues to work toward expanding opportunities for GTRI and is currently negotiating Master Research Agreements with three commercial engineering firms in San Antonio. If you have research programs that are applicable to either the GEITA05 or the ECAS scopes, contact Dr. John Estes [john.estes@gtri.gatech.edu](mailto:john.estes@gtri.gatech.edu) (210) 218-2516, or Don Landry [don.landry@gtri.gatech.edu](mailto:don.landry@gtri.gatech.edu) (210) 218-1591. ●

## VoIP and IT Modernization

By Jeff Jenkins, Director, ISD

In an earlier issue of the GTRI Insider, I wrote about our new Voice over IP system (VoIP) and the overall modernization of our computer network. I'm pleased to say that the modernization effort is going quite well. Firewalls are in place, redundant routers have been installed, and we're on track to integrate all of the labs into a collaborative work environment. The new VoIP system is rolling ahead nicely with roughly 500 phones deployed to date. The ELSYS five-member design team and the Information Systems Department (ISD) have been pushing hard to make sure the design is tight including several design reviews from external groups. EOSL has also played a strong role in the testing and development phase as they move forward with their lab modernization plan.

As you would expect, there have been a couple of questions along the way.

### How does 5-digit dialing work with VoIP?

As Georgia Tech updates its phone system, we are meeting with the campus team regularly to ensure our systems integrate as tightly as possible. On our system we've implemented a 7-xxxx 5-digit dialing plan as well as the standard campus 5-xxxx and 4-xxxx.

### Why aren't we implementing 100% of the new features the phones will support?

ISD has worked with all of the labs and management to explain the importance of replacing GTRI's existing phone system before adding all of the "bells and whistles". Once installation of the new system is complete new features can be easily added.

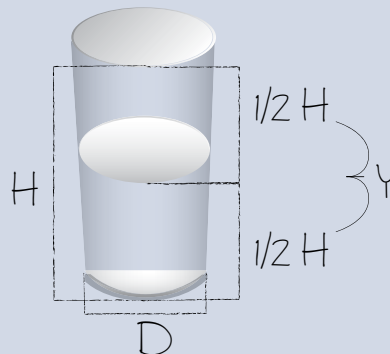
Thank you for your patience and support as we move through the VoIP installation process. In the end, GTRI will see a huge cost savings under the new system, and our employees will have access to amazing new features guaranteed to enhance efficiency.

For more information please contact ISD Director Jeff Jenkins at [jeff.jenkins@gtri.gatech.edu](mailto:jeff.jenkins@gtri.gatech.edu) or 404-407-7313. ●

## THE FUNNY BONE

### "Optimist/Pessimist"

To the optimist, the glass is half full. To the pessimist, the glass is half empty. To the engineer, the glass is twice as big as it needs to be. ●



$$\left( V = \frac{\pi d^2 h}{4} \right) / 2 = X$$

Where X is total volume  
of correct glass size

# It's All By Design

By Katie Andrews, SSD

**H**ave you noticed the recent beautification efforts at GTRI? Would you like to see more of these wonderful changes in your area?

GTRI Support Services would like to introduce to you a beautiful new idea - interior design at GTRI!

Katie Andrews is GTRI's very own interior designer, and she welcomes any suggestions and comments for the improvement of the overall look of our facilities.

A designer's job is to find creative solutions for enhancing the functionality and aesthetics of an environment. This helps raise productivity, improves the comfort of buildings, and keeps facilities looking modern.

GTRI is a technologically advanced organization, and we often have high profile visitors to our facilities. We cannot boast of our technical preeminence and then bring guests to facilities that are stuck in the 60's, 70', or 80's. First impressions speak volumes. We want our employees and our visitors to feel comfortable at GTRI. Imagine those meetings that last all day. Wouldn't they be easier to tolerate if you had a comfortable chair that provided good support and a color on the wall that was easier on the eyes?

A major goal of the Support Services Division is to make GTRI a more welcoming place for staff and visitors by installing the latest lighting technology, improving colors, and adding new furniture that fits today's advanced designs for a more ergonomic work environment.

If you have any suggestions for upgrades and changes, send an e-mail to [ssdhelp@gtri.gatech.edu](mailto:ssdhelp@gtri.gatech.edu). If you have any questions or would like to delve further into the creative mind of a designer, feel free to contact Katie Andrews at [katie.andrews@gtri.gatech.edu](mailto:katie.andrews@gtri.gatech.edu) or call (404) 407-6408. ◉



GTRI's very own Martha Stewart, Interior Designer Katie Andrews

## Personnel Support Team Training Opportunities

### Introduction to Mindmapping

Let the right side of your brain help you organize your next technical project in 10 to 15 minutes instead of hours. You'll create a significantly better final product in a fraction of the time and get the tools to dramatically improve your creativity and productivity. These innovative techniques and skills have been actively embraced in Europe for 10 to 15 years and are finally being discovered in the United States.

**Scheduled Date:** March 2, 2006

**Time:** 1:00 p.m. - 4:00 p.m.

**Location:** Centennial Research Building, Room 119

### GTRI Project Management

This intermediate-level class is designed for the young researcher ready to begin managing his or her own project for the first time. The class focuses on the fundamentals of sound project management from proposal through project closeout. Class exercises provide the students an opportunity to gain hands-on experience with common challenges that face GTRI project directors on a daily basis. Students are exposed to the tools available to the GTRI Project Director as well as the processes and procedures documented in the GTRI Project Directors Manual. This class is designed for GTRI research faculty.

**Prerequisite(s):** Introduction to GTRI Project Management, MS Project 2002 Level 1

**Scheduled Dates:** March 8-9, 2006

### Excellence in Industrial Contracting

Discover proven strategies used to obtain private industry contracts and examine the rewards, restraints, research management requirements, as well as other issues. The course features updates on recent changes in industry contracting procedures and provides an opportunity to meet personnel in the Industry Contracting Office. Designed for GTRI research faculty.

**Scheduled Dates:** March 22, 2006

**Time:** 8:30 a.m.-1:30 p.m. (includes working lunch)

**Location:** Centennial Research Building, Room 238

**To register:** <https://webwise.gtri.gatech.edu/Personnel/PDregister.html>

**These courses are free for all GTRI employees. ◉**

## Tuition Reimbursement Deadline: April 14, 2006

Approved applications for Summer 2006 must be in PST,  
430 Tenth Street, North Building, Room 117.



# Jam-up Documentation

By Gary Hulsey, ELSYS

**G**TRI's projects require many documents and careful documenting. GTRI's Engineering Process and Procedures Manual (EPPM), the Government's Data Item Descriptions (DIDs), and the ISSN: 1041-5653 standard, ANSI/NISO Z39.18-1995, all prescribe documents' contents, format and structure. Everything is specified - from a document's front matter, to its back matter, to the way units of measurement are formatted and presented. This is all well and good for standardization, consistency and predictability, but what about readability!

Readability means everything to the target audience. A document may include all necessary information, but if that information is not understandable, the document doesn't serve its purpose. There are several ways to make a document more readable and understandable - effective voice, conciseness and brevity, good grammar and adequate and correct punctuation.

The most effective voice is active voice - the subject acting on the object of the verb, not the other way around. Not only is active voice more direct, energetic and impactful, but it usually saves words.

In documentation brevity is the watchword. Shorter is better, and this pertains to words, sentences and paragraphs. Choose "used to collect" rather than "used in collecting" and "A project usually has one STP" rather than "There is usually a single STP for a project".

Good grammar makes a huge difference. Casual grammar is not appropriate for formal documents, but neither is stiff language and consistent super-technical language. Don't fear using the possessive - use "transmitter's signals", not "signals of the transmitter". And watch out for redundancies. . .this may be the worst - "revert back". It's just "revert"! Another example - rather than "A possible *solution* to solve this problem is to. . ." use "One *solution* to this problem is to. . ."

Punctuation can make or break the reader's interest in, and understanding of, a document. When phrases and sentences run uninterrupted ad infinitum, not only is the reader confused but also frustrated. Use commas liberally.

Not only will projects' sponsors appreciate and reap benefits from quality, clear and concise documents, but GTRI management, project managers, testers and maintainers will too! ●

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# GTRI Research Notes

Special thanks to the Georgia Tech Research News and Publications Office for the following stories

## Tech Researchers Develop Portable “Vein Finder” for Faster, More Accurate Injections

When medics are treating trauma patients, every second counts. Yet bruises, burns, and other physical conditions often make it difficult to locate veins and administer lifesaving drugs or solutions.

In response, a team of Georgia Institute of Technology researchers is developing an inexpensive, handheld device that uses Doppler ultrasound technology to find veins quickly.

“Depth and angle are the critical issues for vessel detection,” says project leader Michael Gray, a research engineer at the Electro-Optical (EOSL) Systems Laboratory within the Georgia Tech Research Institute (GTRI). “Even if you locate a vein at the skin’s surface, it’s still easy to miss when you try to insert a needle into the tissue below.”

The Doppler effect is a phenomenon that occurs when electromagnetic and sound waves interact with a moving object, altering wavelengths and frequency. For example, a police radar gun sends microwave signals to a moving car, and when signals bounce back, the change in their frequency provides a measurement used to determine the vehicle’s speed.

Doppler ultrasound is similar, except that acoustical waves are transmitted. Compared to static skin and tissue, blood is a moving substance, so ultrasonic waves reflected from blood vessels have different characteristics than transmitted ones, providing critical 3-D information about a

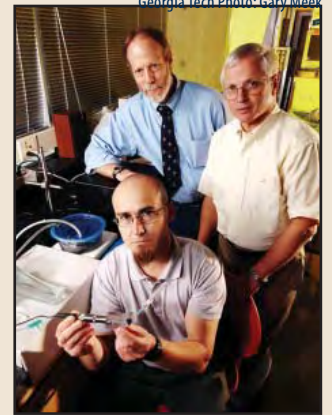
vein’s location.

Hospitals have sophisticated ultrasound systems to evaluate the heart, valves and vessels for general blood-flow studies. But this kind of equipment is impractical and too costly for field use.

“Although the use of Doppler technology isn’t new, the novel aspect of our vein finder is the system’s design, which makes it both portable and economical,” says Peter Rogers, a professor in Georgia Tech’s School of Mechanical Engineering.

The vein finder has proved highly effective in initial tests on phantom tissue, a model that simulates human tissue and blood vessels. Researchers have now begun adapting the device for human use.

To read more about this story visit: <http://gtresearchnews.gatech.edu/newsrelease/vein-finder.htm>



The research team developing a portable vein finder includes Francois Guillot (seated), James Larsen (left), and Peter Rogers

## Researchers Evaluate Products’ Usability for People with Disabilities

When the designers of photocopiers, ATMs, cell phones, televisions, printers, scanners and other equipment need help determining how well these devices can be used by people with disabilities, they can turn to the Georgia Tech Research Institute (GTRI).

GTRI’s Accessibility Evaluation Facility assesses a variety of products based on the requirements outlined in Section 508 of the federal Rehabilitation Act. Beyond evaluation, however, the researchers can recommend improvements to the products based on the concept of universal design.

“When we test products for accessibility, we conduct user testing and perform a checklist evaluation of the product based on technical standards for accessible design and sound human-factors design principles,” explained GTRI senior research scientist Brad Fain, who leads research in the facility. (Human factors design and engineering focuses on the interface between humans and machines.)

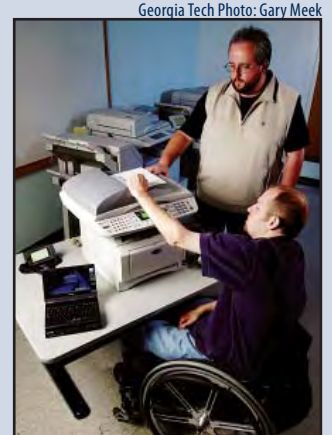
Research participants, recruited from the local

disability community, perform a series of tasks with the products being tested. Researchers monitor participants’ performance on these tasks. The results of this user testing and the checklist evaluation provide researchers with objective data about product accessibility.

“We can collect human performance data and provide it, along with our checklist evaluation results and design recommendations, to designers who can make changes in products to make them more accessible to people with disabilities, as well as everyone else,” Fain said.

That concept is called universal design, and it makes a product accessible to as many different types of users as possible. “It is user-centered design,” Fain explained. “The user is at the center, instead of the technology.”

To read more about this story visit: <http://gtresearchnews.gatech.edu/newsrelease/access.htm>



In the Georgia Tech Research Institute’s Accessibility Evaluation Facility, researcher Brad Fain and his colleagues assess a variety of products based on the requirements outlined in Section 508 of the federal Rehabilitation Act. Here, volunteer James Johnson, who uses a wheelchair for mobility, helps Fain assess a photocopier.

## Nanoengineered Silicon-Germanium Microchips May Herald New Applications from Radar to Space Exploration

Georgia Tech scientists and engineers are pursuing the dictum that “smaller is better” to develop a new breed of highly-integrated silicon-based microchips capable of operating in ultra-sophisticated radar systems – and in new generations of NASA spacecraft.

Their research is focused on silicon-germanium (SiGe) integrated circuit technology, which can provide cost savings, compact size and improved efficiency in the same way that advances in silicon technology have made consumer electronics smaller and less expensive.

This research is supported by the U.S. Department of Defense and is known as the “Silicon-Germanium Transmit-Receive Module Project.” A joint effort between the Georgia Tech Research Institute (GTRI) and faculty within the Georgia Electronic Design Center (GEDC) at Georgia Tech, its objective is to develop silicon-germanium technology for next-generation phased-array radar systems.

“The GTRI folks have a strong background in radar systems, while we have the silicon-germanium (Si-Ge) device and circuit expertise,” said John D. Cressler, Byers professor in Georgia Tech’s School of Electrical and Computer Engineering and a GEDC researcher. “We’ve teamed up to work on a new approach that literally has the capability to revolutionize the way radar systems are built, and this new GTRI-GEDC synergy is very exciting.”

Phased-array radar systems under development by the Department of Defense, such as the Theater High-Altitude Area Defense Radar, are large, bulky and consume huge amounts of energy to power thousands of modules and thousands of gallium arsenide chips to electronically direct the radar beams.

“We’re trying to put all the functionality of those complex modules onto a single chip, essentially reaching for the same level of functional integration in radar systems that has been going on in consumer electronics for the past decade,” explained co-principal investigator Mark Mitchell, a senior research engineer in GTRI’s Air and Missile Defense Division.

To read more about this story visit: <http://gtreresearchnews.gatech.edu/newsrelease/sige.htm>

Georgia Tech Photo: Gary Meek



Professor John Cressler holds a 200 GHz silicon-germanium integrated circuit wafer at a cryogenic probe station capable of measuring temperatures to 200 degrees below zero Celsius.

## Maintainer’s Support: GTRI Software Helps Aircraft Technicians Centralize Maintenance Tasks

Aircraft technicians these days are as likely to use a laptop as a printed manual and logbook, and to turn to the Internet for the latest job-status reports and technical information.

Engineers from the Georgia Tech Research Institute (GTRI) are assisting them, using current computer and database technology to help military aircraft maintainers get their work done more efficiently. A team from GTRI’s Electro-Optical Systems Laboratory (EOSL) has been developing and improving maintenance software for the U.S. Navy since 2000.

Called the Maintainer’s Electronic Performance Support System (MEPSS™), this software was initially developed for the Navy’s P-3C Orion patrol aircraft. A more recent version is now helping maintain the RQ-2 Pioneer Unmanned Aerial Vehicle, and

portions of the GTRI software are being used in other aircraft maintenance programs.

“The idea is to give maintainers all the information tools and decision-making capabilities that they need,” said Gisele Bennett, director of EOSL and principal investigator for the project. “From a simplified standpoint, you can almost look at it as an information portal, where you’re collecting and disseminating information to the maintainers.”

MEPSS is typically installed on a laptop computer. Technicians can check parts lists, consult manuals, and add information about their work as they go.

The system can be updated in a variety of ways – through a squadron LAN, a standalone server, CD-ROMs, USB devices, or the World Wide Web. A Web-enabled system gives maintainers access to up-to-the-minute technical

U.S. Navy photo by Photographer’s Mate 2nd Class Elizabeth L. Burke



A P-3C Orion assigned to the “Golden Eagles” of Patrol Squadron Nine (VP-9) circles Mt. Fuji.

and parts information, and helps them both access and share work-related information.

To read more about this story visit: <http://gtreresearchnews.gatech.edu/newsrelease/maintainer.htm>

# Awards & Outstanding Achievement

**Jud Ready** (EOSL) was recently selected as a “2006 Young Leader International Scholar” by TMS (The Minerals, Metals & Materials Society - [www.tms.org](http://www.tms.org)) and JIM (Japan Institute of Metals). Jud will present his research on “Single Wall Carbon Nanotube-Based Electrochemical Capacitors For Space Exploration Applications” in Tokyo at their annual meeting taking place in March 2006.

**Jeff Kemp** (SEAL) was elected to a three-year term for the board of directors for the Antenna Measurements and Techniques Association (AMTA) in November 2005. The board of directors is responsible for a yearly international symposium as well as bi-yearly regional short courses and conferences in the US, Europe, and Asia. Jeff will serve as the technical coordinator for AMTA in 2006.

In December 2005, Jeff was also elected as the secretary of the IEEE Atlanta Section. Jeff will serve as the Atlanta Section liaison for IEEE chapters in the Atlanta area.

**James C. Wiltse** (AO), Retired Principal Research Engineer Emeritus has been selected as a Fellow of SPIE – the International Society for Optical Engineering. According to the Society’s bylaws, a Fellow “shall be distinguished through his achievements and shall have made outstanding contributions in the field of optics or electro-optics or in related scientific, technical, or engineering areas.”

**Peter Lawrence and John Lu** (ITTL) recently received recognition from the Army Research Laboratory for their efforts in design and development of communication and signal processing subsystems for the multi-modal disposable sensor system under the Cave And Urban Assault Advanced Concept Technology Demonstration program for the U.S. Special Operations Command.

**Bill Melvin** has been selected as this year’s recipient of the AESS Young Radar Engineer of the Year Award in Memory of Fred Nathanson.

This award is presented annually by the Radar Systems Panel of the Aerospace and Electronic Systems Society of the Institute of Electrical and Electronic Engineers (IEEE) in honor of the late Dr. Fred Nathanson, a member of the Radar Systems Panel and a highly respected radar engineer, who had a lifelong interest in the education and development of others.

**Xavier Bryant and Ken Chaney** were chosen as RSD Employees of the Year.

**The GTRI Communications Office and Georgia Tech Research News and Publications Office** received a Special Recognition Award from the Council for the Advancement and Support of Education for GTRI’s ULTRA Armored Patrol media relations effort. This is GTRI’s first nomination and award in the media relations category.

If you’d like to submit an accolade for our next issue please e-mail [kenya.ervin@gtri.gatech.edu](mailto:kenya.ervin@gtri.gatech.edu) or [GTRInsider@gtri.gatech.edu](mailto:GTRInsider@gtri.gatech.edu)

## Routine Service Requests

By Rusty Embry, SSD

The Support Services Department (SSD) can generally handle routine service requests within three days or less from the time the request is received. Light replacement, toilet repair, minor leaks, cleaning, trash removal, conference room set-up are examples of routine requests.

### Submitting a routine service request is easy!

- Visit the Iservice website at <http://tma.gtri.gatech.edu/home.html>
- E-mail the SSD Helpdesk at [ssdhelp@gtri.gatech.edu](mailto:ssdhelp@gtri.gatech.edu)
- Call 404-407-7322 (on campus) or 770-528-7003 (Cobb County).

Those using Iservice or sending an e-mail will receive a tracking number that indicates the request is in the system. Then a second e-mail is then sent advising acceptance of the request along with a work order number and an estimated completion date.

### If you need help submitting a service request, contact:

**Rusty Embry** [rusty.embry@gtri.gatech.edu](mailto:rusty.embry@gtri.gatech.edu) at 404-407-7606;

**DeeAnn Reese** [deeann.reese@gtri.gatech.edu](mailto:deeann.reese@gtri.gatech.edu) at 404-407- 6563; or

**Paul Hawley** [paul.hawley@gtri.gatech.edu](mailto:paul.hawley@gtri.gatech.edu) at 404-407-6194. ●

# Saying Goodbye to the Electronics Research Building



Marlene Aldridge and Dave Millard bring new meaning to moving the mouse.

Look familiar? The young ERB without trees...

MAPS Mary McKenna came back after retirement to get the window she waited 25 years to get! (Too bad the blinds didn't work, again Randy proves his multi-tasking abilities by putting his engineering know-how to work...)

After years of being on the campus "demolition" list, it looks like it's finally going to happen... the ERB is being demolished to make room for the new Nanotechnology Research Center. Long-time occupants of the Electronics Research Building (ERB) have been saying good-bye, packing and stacking boxes during their move to 250 14th Street (the building formerly known as GCATT). Moving the entire Information Technology and Telecommunications (ITTL) lab has been no easy feat; however, the precision-like planning and coordination have gone off without a hitch. ●



ITT Lab Director Randy Case proves moving his own boxes aint beneath him.



Bob Schultz (almost) dancin' on the ceilin', says goodbye to his ERB office.



CND's Pam Buggs surrounded by a mountain of boxes.



## > Mystery History

Help us to identify a photo from the GTRI archives.

Do you know the person or project depicted? ...

Or, if you want to have some fun, make up a caption!

Send to [GTRIinsider@gtri.gatech.edu](mailto:GTRIinsider@gtri.gatech.edu)

To read feedback on prior Mystery History pictures, log in to WebWise and visit: <https://webwise.gtri.gatech.edu/corporate/comm/gtrinsider/index.html>



# SEAL Director to Retire After 34 Years

Thirty-four years after joining GTRI and working his way from rookie researcher to director of the Sensors and Electromagnetic Systems Lab (SEAL), Bob Trebits has announced plans to retire on May 1st, 2006. He has been with GTRI longer than any other active full-time employee, and is filled with colorful stories about the “good old days.”

Trebits began his GTRI career in 1972, before some of today’s younger researchers were even born. Fresh out of graduate school, he applied for a job in what was then called the Engineering Experiment Station (EES). He says the transition from student to researcher was a smooth one: “All I had to do was move my car to the other side of the physics parking lot and go to work.” Back then, EES had only a few hundred employees and most worked in Georgia Tech’s Electronics Research Building.

His first assignment was with a team working on electronic warfare projects. He quickly developed a reputation as an accomplished researcher and found himself in demand, traveling across the state and nation taking part in a number of interesting military research projects.

On one of his more memorable assignments, he spent several weeks living three miles off the coast of Panama City, Florida measuring the reflectivity of the sea surface from a Navy “Texas Tower” platform. He and his team would only return to dry land on the weekends. He laughs, remembering the first time he climbed on the platform out at sea. The boat his team arrived on had sailed away before they realized all of the doors were padlocked. Using their engineering handiwork, they were able to break the locks and get down to business.

He says the biggest change he’s seen over the years is the overall growth of the organization.

In the early days, technical work focused largely in the areas of radar, electro-optics, electronic warfare, and communications. Today’s GTRI is much more diverse.



“It’s been a great ride”

Of course with growth comes the need for new space. He says back in the 1970’s, “You could put two junior researchers and all of their stuff easily in a single office” That was before every office had a computer and printer, which he said was an “unexpected change brought on by technology.”

Trebits became director of GTRI’s Sensors and Electromagnetic Systems Laboratory (SEAL) in 1993. As of the 2005 fiscal year, his lab employed 120 people including 77 full-time researchers. The lab booked more than \$25 mil-

lion in research contracts during the same period, had 55 different customers (22 government and 33 industrial), and 110 distinct ongoing research projects.

One of his proudest achievements was delivery of the Bistatic Coherent Measurement System (BICOMS), installed at an outdoor test facility at Holloman Air Force Base near Alamogordo, New Mexico. Standing 40 feet tall, 66 feet long, 37 feet wide and weighing 90 tons it is the world’s largest mobile system for measuring radar cross section. It was designed and built at the Cobb County Research Facility which houses SEAL, disassembled and shipped to New Mexico and reassembled there during the summer of 1998.

Trebits leaves a legacy of technical excellence that will be carried forward as GTRI continues to grow. “We all owe Bob thanks for his many years of dedicated service,” said GTRI Director Dr. Stephen Cross. “SEAL has become a technical leader in RF systems. We’re known far and wide for our expertise in this area. Bob has served Georgia Tech well.”

“It’s been a great ride,” Trebits says. “I’ve gotten the chance to work with top notch folks both within GTRI, Georgia Tech, and the radar technical community. It’s been educational, it’s been fulfilling, and it’s been fun. Now, I feel qualified now to be a full-fledged member of the GTRI retiree’s (social) group.” ●

## Risk Mitigation Web Site

Risk management has never been more important for all organizations. Its potential impact is not something that only large, multi-billion dollar companies need to proactively manage. Risk can impact a organization like GTRI and given the fewer resources available to us to counteract it, can have far more devastating consequences.

To keep GTRI employees abreast of the potential risks they

may encounter, please continue to review the Personnel Support Team’s (PST) Risk Mitigation Web site that lists risk areas and training opportunities (both courses and information) available to employees. This Web site remains a work in progress, and employees should bookmark and visit it regularly for up-to-date information: <https://webwise.gtri.gatech.edu/Personnel/risk.html> ●

with their names, addresses and phone numbers. “They don’t realize that they’re making themselves vulnerable to online predators,” O’Neil says.

Currently, F3 is raising funds for the cyber safety program and seeking industry partners. The group hopes to launch the program in October, which is Cyber Safety month.

### Other new services at F3 include:

#### K-12 Network Applications and Integration Lab (NAIL)

Housed within F3’s learning facility at the GTRI Conference Center, this lab will allow K-12 educators throughout the state to seek advice from Georgia Tech engineers about school networks. At the lab, network systems and solutions can be modeled to gauge how well they might perform for a school district. “The idea is to help educators make fair comparisons about technology products rather than being influenced by vendors,” Huff explains.

#### Funding Forecast

Located on F3’s Web site ([www.f3program.org](http://www.f3program.org)), a new resource alerts educators to grants and funding opportunities, along with contests and award programs that can raise schools’ visibility. Free to Georgia educators, the forecast is updated weekly and e-mailed to subscribers. Funding opportunities are

organized by due date, along with details on eligibility, sponsors, and where to go for more information.

#### Updates to SeaMaven

A unique Web portal, SeaMaven ([www.seamaven.org](http://www.seamaven.org)) gives students access to near real-time data collected from naval platforms 60 miles off the coast of Georgia and enables them to participate in a variety of learning activities. Researchers are currently developing two new interactive games for the site: one on bioluminescence (the emission of visible light by living organism) and another on red tide and how algae blooms can be harmful to marine life.

In the latter game, participants would have a certain amount of time to adjust different environmental parameters, such as salinity, and see how it affects animated fish on the computer screen. “The idea is to beat the clock and keep the fish alive,” says Jim Demmers, an F3 staffer and senior researcher at ITTL. “SeaMaven’s mission,” Demmers says, “is to get youngsters interested in marine science and biology. Even if it’s not a career they choose to pursue, we hope it’s something they’ll remain interested in and support,” he explains, noting that researchers have completed preliminary work on the interactive games and now are trying to raise funds to move forward.

#### Newsletter Award

F3’s *Outta Site!* newsletter recently won a merit award from the Society for Technical Communication. The monthly newsletter, which is available in print and can be downloaded from F3’s Web site, helps elementary and middle school children and their families explore the Internet safely and guides them to novel educational sites.

#### Explorers Guild Expansion

Since 1999, F3 has been hosting monthly workshops to help K-12 educators learn about new technological tools and applications, with topics ranging from Web design to security measures like firewalls and filters. Up to now, the majority of workshops have been held on Georgia Tech’s campus. Now F3 hopes to take its Explorers Guild on the road, if funding permits, and host the workshop at various schools in northern and southern Georgia so more K-12 educators can take advantage of the program.

“We’ve had a terrific response to the Explorers Guild over the years,” Huff says. “And it has become even more important now that federal and state funding for technology education has shriveled. Despite less funding, technology is not going to hold still.” ●

## GTRI FUNDRAISING EFFORTS

**D**id you know that as a Georgia Tech employee or retiree you can designate your annual (or any) gift to Roll Call to directly support programs within GTRI? Employees and retirees can now designate where their gifts go – so why not direct the funds to GTRI?

You can earmark your gift to any of the following **GTRI accounts**:

<b>351172</b>	GTRI General Fund
<b>352993</b>	Research Faculty Leaders
<b>352994</b>	Shackelford Scholarships
<b>352995</b>	Equipment Funds
<b>357569</b>	DenTeC

If your gift is made in response to the Alumni Association’s annual solicitation or the Faculty Roll Call Campaign, you simply write the number of the account to which you want

to contribute anywhere on your gift form. You can also split your gift among more than one account. If you give online, put the account number(s) in the “special instructions” box provided.

We all want to support GT, so why not make your gift count for the future of GTRI? For more information please contact Tom Horton at tom.horton@gtri.gatech.edu or (404) 894-0239. ●

One of GTRI's goals is to hire the best, equip the best, and reward the best employees.

The following people have recently joined or retired from the GTRI team!

Welcome to the GTRI Family!							
START DATE	DEPARTMENT/LAB	NAME	TITLE	START DATE	DEPARTMENT/LAB	NAME	TITLE
11/7/05	BSSVC	RASHARD KELLY	SYSTEMS SUPPORT SPECIALIST II	12/1/05	EOSL	MARTHA W. DAWSEY	RESEARCH SCIENTIST I
12/1/05	BO	VICTOR J. LAWSON	TECHNICAL PROJECT DIRECTOR	12/1/05	ITTL	STEVEN B. LEE	RESEARCH SCIENTIST I
12/14/05	ISD	RODRICK WILLIS	COMPUTER SERVICES SPEC III	12/12/05	ITTL	DORESA K. MAY	SECRETARY ADMIN
12/15/05	SS	TONYA D. TYNER	ADMIN ASSISTANT I	12/12/05	HESL	KRISTEN M. BELLAMY	RESEARCH SCIENTIST I
11/1/05	ELSYS	SCOTT C. BANKS.	RESEARCH ENGINEER I	12/12/05	ISD	SCOTT R. HARLAN,	SYSTEMS SUPPORT SPECIALIST I
12/15/05	ELSYS	KENDAL D. HINTON	RESEARCH ENGINEER I	12/19/05	STL	DAVID W. LANDGREN	RESEARCH ENGINEER I
11/14/05	STL	KELLY EM STEVENS	RESEARCH SCIENTIST I	1/3/06	ELSYS	TAN MINH TRAN	RESEARCH SCIENTIST I
11/17/05	ITTL	SCOTT E. MAURER	OFFICE AUTOMATION SPECIALIST	1/5/06	BSSVC	JULIE H. MCCOY	ASSOC DIR ACC SVCS - GTRI

Goodbye From the GTRI Family!							
RETIRE DATE	NAME	TITLE	DEPARTMENT/LAB	RETIRE DATE	NAME	TITLE	DEPARTMENT/LAB
11/1/05	RICKY L. MOORE	PRINCIPAL RESEARCH SCIENTIST	STL	1/1/06	JOHN T. SCOVILLE	SENIOR RESEARCH ENGINEER	ATAS
12/31/05	ANDREW R. MUZIO	SENIOR RESEARCH SCIENTIST	ATAS				

## We Want to Hear from You!

The GTRI Communications Office welcomes and looks forward to your feedback on our new employee newsletter – the *GTRI Insider*. Based on your input, we'll make sure that we focus on topics and stories that matter to you. If you have news, ideas, or suggestions to share concerning stories and features you would like to see in future issues, please let us know

by completing and returning this form. You are also encouraged to nominate GTRI employees we can feature in the Up Close and Personal With... section of future issues.

You can fax completed forms to 404-894-9875 or send it via campus mail to Kathryn Knox in CRB 222A/mail code 0801. You can also e-mail your comments to [GTRIInsider@gtri.gatech.edu](mailto:GTRIInsider@gtri.gatech.edu)

Please print or type:

Name: \_\_\_\_\_

Lab/Department: \_\_\_\_\_

Phone (day): \_\_\_\_\_

Cell (optional): \_\_\_\_\_

E-mail: \_\_\_\_\_

Comments/Suggestions/Ideas: \_\_\_\_\_

My suggestion for a future employee profile in the "Up Close and Personal With" section is:

Employee's Name: \_\_\_\_\_ Lab/Department: \_\_\_\_\_