The GTRI Connector

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Some sound advice

• A lot of trouble in this world is caused by combining a narrow mind with a wide mouth.

— *Anonymous*

• A slip of the foot you may soon recover, but a slip of the tongue you may never get over.

— *Ben Franklin*

• An apology is a good way to have the last word.

— *Anonymous*

Grace to retire

Dr. Donald J. Grace, Director of GTRI for nearly 16 years, has announced that he will retire sometime within the next 12 months.

In a letter to Georgia Tech President J. Patrick Crecine, dated May 28, Dr. Grace said, "I will be 67 next February, and feel that the time is right for me to relinquish the directorship. Under the circumstances, I assume you will want to initiate a search for a new GTRI Director in the near future. I will be most pleased to assist in such a search in whatever way you deem appropriate and would be delighted to participate in the transition process for the new Director."

Dr. Grace assumed the directorship of GTRI (then called the Engineering Experiment Station) in August 1976. He came to EES from the University of Honolulu, where he was Director of the Center for Engineering Research for three years. Prior to that, he was Director of Research with Kentron Hawaii Ltd. for another three years. From 1951 to 1969, he was at Stanford University, where he received his Ph.D. in electrical engineering and served in many senior positions, including the following: Associate Dean, School of Engineering; Director, Stanford Instructional Television Network; senior researcher and director in the electronics laboratories; and electrical engineering professor.

In addition to heading GTRI, Dr. Grace currently is a vice president of Georgia Tech and an adjunct faculty member of the School of Electrical Engineering.

When Dr. Grace came to EES in 1976, it had a total research volume of approximately $11 million and a staff of 665 persons. Today (FY91 figures), those totals stand at $100.5 million and 1,444 employees. Under his leadership, GTRI has grown, matured and gained an international reputation for excellence.

In his letter to President Crecine, Dr. Grace thanked GTRI employees for their part in GTRI's success: "I offer my heartfelt appreciation to all of the GTRI staff for their dedication and participation in our successful R&D joint venture. I hope to be of active service in helping to position GTRI for an outstanding future." ❑

Lab changes announced

GTRI Executive Associate Director Bob Shackelford has announced several changes in the laboratory structure of GTRI, effective July 1.

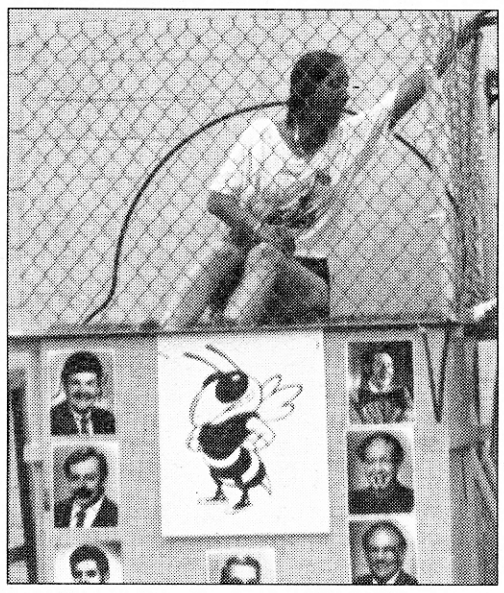
• The Electro-Optics and Physical Sciences Laboratories have agreed to merge their staffs and programs into one organizational unit. According to Shackelford, "The Executive Council feels that significant opportunities exist for expanding the vital programs represented by these two Laboratories into areas of high-visibility non-DoD technology, and that combination of the two staffs will facilitate additional growth in the areas of sensors, optoelectronics and manufacturing technology."

Dr. Robert S. Hyde will serve as director of the new laboratory, which is as yet unnamed.

• The Advanced Technology Laboratory (ATL) will be disestablished, and its personnel assigned to other laboratories. Most of them will go to the Microwave and Antenna Technology Development Laboratory (MATDL), with others going to the Threat Systems Development Lab, the Communications Lab, and Signature Technology Lab.

Capitalizing on the underwater acoustics expertise in ATL, the Office of Interdisciplinary Undersea Research will be established within MATDL. "This office will enhance and build on the ongoing, strong research relationship with the School of Mechanical Engineering and take advantage of the other disciplines within GTRI to focus on the increased applied research opportunities within the undersea research area," Shackelford said.

The Executive Council felt the move was necessary because of changes within the support base impacting ATL and MATDL. It extended its thanks to the study groups under Evan Chastain and Jim Cofer who made valuable input to the decision process. ❑



Wanda Fox (MAPS) achieved a historic 'first' at the Spring Fling picnic this year: she was the first female volunteer in the infamous GTRI dunk tank. For more pictorial highlights of the picnic, turn to pages 4 and 5. (Photo by Janice Rogers)

"I offer my heartfelt appreciation to all of the GTRI staff for their dedication and participation in our successful R&D joint venture."
— Don Grace

Observed & Noted

A new task ordering contract with the Air Force opens the door for researchers throughout GTRI and in the academic departments to propose projects in the communication, radar and laser areas. *For details, see page 2.*

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The third article in the series on STGC-funded projects describes an improved acoustic-optic radar warning receiver that may provide future combat pilots with faster and more accurate warning of hostile radar activity. *You'll find it on pages 2 and 3.*

■

Your support is requested for Phil Kennedy's second run for research. *Turn to page 3.*

■

Read about the Spring Fling *on page 3* and look at the picnic pictures *on pages 4 and 5.*

Look closely! You might see yourself or at least a dozen friends!

■

GTRI's Resource Management Program (RMP) interfaces with Oracle to provide managers and project directors quick, easy and flexible access to accounting and contracts data. *Details are on page 6.*

■

The State of Georgia has a new retirement contribution plan for temporary and part-time employees. Questions and answers are in the DIALOGUE BOX *on page 7.*

■

GTRI staffers have been very busy, with many PROFESSIONAL ACTIVITIES to report. *Read about them on pages 7 and 8.*

Georgia Tech
RESEARCH INSTITUTE

News & Notes

"This (the Electronic Combat Test Improvement Contract) is the beginning of a new era with lots of opportunities for Georgia Tech."
—Jerry Carey

Air Force contract opens 'a new era for GTRI'

By John Toon, RCO

A research team led by GTRI has won a broad-based U.S. Air Force task ordering contract that will fund a wide range of projects involving the test and evaluation of Air Force electronic combat systems. The Georgia Tech team includes the TRW Corporation and two small businesses located in the Eglin Air Force Base (Florida) area: Computer Science and Applications, Inc. and Manufacturing Technology, Inc.

The Electronic Combat Test Improvement Contract (ECTIC) could fund up to 200,000 hours of engineering services per year during the next five years—a total of up to one million cumulative hours.

"This is the beginning of a new era with lots of opportunities for Georgia Tech," says Gerald I. Carey, GTRI associate director. "I am proud of the teamwork from the Georgia Tech staff members who worked hard to prepare this competitive proposal. I think it portends good things for Georgia Tech."

The contract award was announced by Major General Michael J. Butchko, commander of the 3246th Test Wing at Eglin Air Force Base.

The program attracted proposals from a number of major defense contractors, including some Fortune 500 corporations. Because the broad ECTIC contract was awarded competitively, individual tasks funded through it will not require sole source justification—or additional competitive bidding.

The GTRI team qualified to conduct work in 15 different testing areas in sensing spectra ranging from UHF and VHF through microwave, millimeter wave, infrared and laser, explains George McDougal, associate director of the Concepts Analysis Laboratory and manager of the proposal effort.

The contract could fund such tasks as feasibility studies, hardware design and redesign, software design, hardware prototyping, threat simulators, technical documentation, threat system exploitation, system integration, instrumentation, test and evaluation support, database formulation, and on-site engineering support.

"The contract spans everything from paper studies to the design, development and delivery of large, one-of-a-kind hardware systems," McDougal says. "Options are available to almost everyone at GTRI or in the academic departments who are working in communication, radar or the laser areas. I would encourage everyone who is involved in research in any of the indicated areas to explore the possibilities of this contract."

Although the effort will be monitored through Eglin, research tasks may come from any Air Force unit having a need for the kind of services the contract specifies.

Meeting the needs spelled out in the contract will require a team effort from Georgia Tech scientists and engineers, McDougal says. Ensuring the quality and timeliness of the contract deliverables will be crucial, since the performance of each participating group could affect future contract awards to other units, he warns.

"The bottom line for this contract will be quality," he notes. "The government reserves the right not to award further tasks if the contractor has exhibited unsatisfactory or marginal performance on previous tasks. We need to be very realistic in cost estimates and performance period estimates, and we must deliver high-quality products within time and specifications. We can't afford any failures or late deliverables."

The contract will open opportunities for Georgia Tech students as well. McDougal expects that the fundamental and applied aspects of the contract will provide opportunities for thesis and dissertation work within the educational objectives of Tech's academic colleges. The contract also could tie into a new test and evaluation master's degree program under development in the schools of Industrial and Systems Engineering and Electrical Engineering.

At presentations at the Cobb County Facility and in the Centennial Research Building, Carey and McDougal thanked those who worked to prepare the proposal. They included Austin Blochberger, Mike Cooper, Jim Cofer, Wade Garnto, Adrienne Harrington, Tom Miller, Al Nelson, Joe Parks, Judy Parks, Bill Rogers, Ben Slocumb, and Gene Toph.

The four-volume proposal was one of the largest ever produced by GTRI, involving input from at least half of the laboratories as well as academic colleges. ❑

General Faculty Assembly representatives elected

The following 33 persons have been elected by their peers to represent GTRI on the General Faculty Assembly for the next two years:

Admin/Services: Charlotte Batson and Bob Zimmer
AERO: Marilyn Smith
ATL: Duane Tate
CAL: Tim Floyd
CMDL: Mark Smith
COML: Richard Moss
CSITL: Lisa Sills and Jack Wallace
EDL: Joel Duke, Charles Estes, and Jan Youtie
EEEL: Louis Haller
EOL: Michael Rowan and Robert Shelton
ESML: Lee Evans and Danial Mack
ESTL: Kenneth Smith and Paul Middendorf
HRL: Wayne Miller
MAL: Trent Farill
MATDL: Glenn Hopkins and Bradley Newton
MSTL: Garth Freeman
PSL: Nile Hartman
RIDL: Teddy Lane and Don Strausberger
RSAL: Guy Morris and Sam Piper
STL: Paul Mackie
TSDL: Derrick Bunting, Kay Lindsey, and Charles Wilson

In Memoriam: Bud Suddath

GTRI joins the Georgia Tech community in mourning the sudden passing of F.L. (Bud) Suddath, 50, on June 17 of a heart attack. Dr. Suddath was Vice President for Information Technology and Executive Assistant to the President. A recipient of both bachelor's and Ph.D. degrees from Tech, he joined the Tech faculty in 1985 as professor of chemistry and biochemistry and director of the supercomputer support group. ❑

Spotlight on Internal Research

This is the third of a series of articles reporting on internal research projects funded by GTRI's Senior Technology Guidance Council (STGC).

New radar warning receiver faster, more accurate

By John Toon, RCO

An improved acoustic-optic radar warning receiver developed at Georgia Tech may provide future combat pilots with faster and more accurate warning of hostile radar activity.

Optical signal processing techniques allow the receiver to simultaneously handle a wide range of frequencies and analyze several signals in parallel—while providing frequency resolution precise enough to separate hostile signals from friendly ones.

"As the density of the signal environment increases, the possibility of making a mistake increases because the signals are so close together," says Harold Engler of GTRI's Concepts Analysis Laboratory. "You can diminish the risk of making an error with this approach."

Military pilots flying above enemy territory need to know when a hostile radar system is tracking them so they can take defensive action. In areas with large numbers of potentially hostile signals, even small improvements in processing time and accuracy can be significant. "The aircraft must receive all of these signals and somehow process them to quickly decide which ones require attention and where the source is located," Engler adds.

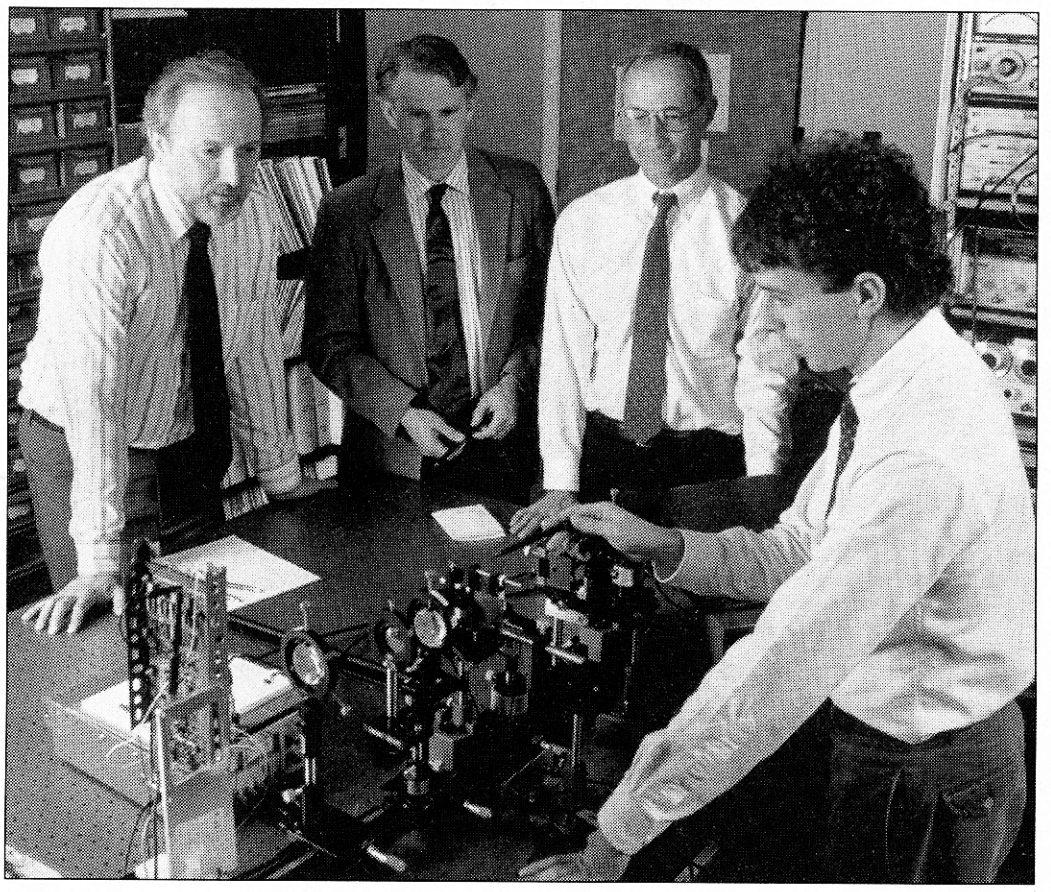
An interdisciplinary research team composed of Engler (CAL), David Hartup (CAL), and Allen Garrison (EOL) of GTRI—along with William Rhodes of Tech's Center for Optical Science and Engineering—designed and tested the enhanced optical system.

"We have developed a new type of architecture that has advantages over previously developed optical processing architectures while avoiding some of the major problems inherent in electronic processors," Hartup says. "The system generates accurate information about the burst rate and center frequency of each signal it receives."

The engineers considered using electronic signal processors operating in parallel, but the number of processors required and the problems of interconnecting them made that approach too difficult. "If you were to try to do the same thing electronically, you would need at least a hundred or as many as a thousand processors," Hartup notes. "Electronically it can be very complicated, but optically it can be very simple."

Two acousto-optic cells, each with a specific processing task, form the heart of the radar warning receiver.

At the first cell, a transducer converts electronic signals from potentially hostile radar emitters to acoustic energy. That energy is then coupled into the cell, where



(L-R) Researchers Harold Engler, William Rhodes, Allen Garrison, and David Hartup examine a laboratory-scale version of their acousto-optic radar warning receiver. (Photo by Gary Meek)

the acoustic energy affects its optical properties. Infrared laser light is then passed through the cell, which diffracts the light in a different direction for each center frequency it receives.

The diffracted light then strikes a second acousto-optic cell, which further diffracts the laser light so that the burst rate associated with each center frequency can be determined. Finally, detectors convert the diffracted light patterns to electrical signals which can be displayed.

Although the types of processing performed by each acousto-optic cell have been independently demonstrated before, the researchers say the novel combination of the processing steps gives the Georgia Tech architecture several performance advantages over existing radar warning receivers. The new system provides automatic separation of signals, eliminating the need for an extra processing step to de-interleave information from multiple signals. At the same time, the processor keeps the frequency and burst rate of each signal together, avoiding the need to re-associate separate measurements of these signal parameters.

The researchers hope to enhance their system by adding an ability to automatically match the diffraction patterns against a known library of threat radars. This step will add an optical emitter identification feature.

The researchers also hope to miniaturize the receiver equipment, which is now operating as a laboratory-scale proof-of-concept prototype.

A patent application has been submitted to protect the processing architecture, which was developed with internal Georgia Tech funding. Information on the research was published in April 1992 in the *GTRI Technical Journal.* It also has been published in *Proceedings of the SPIE.* ❑

Overcast skies don't dampen Spring Fling

By Lee Hughey, RCO

This year about 950 GTRI employees and invited guests, including President Pat Crecine and Vice President Demetrius Paris, attended the fifth annual GTRI Spring Fling picnic on May 20 under overcast skies. They enjoyed good food, many games, the Georgia Tech Mascot "Buzz," countless door prizes, and the ever popular dunk tank.

The Burger Bowl area again was the site for a carnival fair of 11 games, the dunk tank, horseshoes, badminton, volley ball and soccer. The games included Spin Art, Two-hole Golf, Muffin Tins, Tin Cans, Tip the Cat, Leaping Hippos, Pin Z, Vee Ball, Pachinko, Tic-Tac-Toe, and Mini Basketball. All the games tested players' skill and agility, and everybody won something just for playing.

Another highlight of the picnic was the famous GTRI dunk tank, which featured seven volunteers. They were Wanda Fox, MAPS; Harry Vann, FMD; Bob Lang, RSD; Charlie Brown, OOD; John Burke, RSD; Robin Poole, CMDL; and Ed Gilmore, RSD. They were great sports, and everyone had fun dunking their favorite persons.

Lunch featured hot dogs and hamburgers with all the trimmings, plus cole slaw, iced tea and lemonade. Cotton candy, popcorn, potato chips, drinks, ice cream, fudgesicles and popsicles were also served around the midway area.

GTRI Director Donald J. Grace was master of ceremonies for the prize drawings, assisted by DW Senn and Ida Taplin, for the awarding of 60 door prizes. Other members of the Picnic Committee delivered the door prizes as they were awarded.

The first prize went to retiree Jerry Webb, a $50 gift certificate to Red Lobster, donated by VALIC. Other winners included: Harold Knouse, TSDL, a one-night stay with breakfast for two from the Atlanta Marriott Northwest; Tom Autry, ESML, a charcoal grill from Littrell Ace Hardware; Bill Howard, OOD, two adult and two children's tickets to Zoo Atlanta; Tam Muto, Accounting, a $65 gift certificate from Classic Carwash; Dirk Holcomb, RCO, a $50 check from Arko Executive Services; and Paul Hawley, MSTL, a $100 check from Arkenbright, Inc. Other prizes came from 38 other contributing organizations and businesses. This year for the first time, people whose names were drawn who were not present received a consolation prize, and 47 were sent out.

Picnic co-chairman Lee Hughey thanked all the volunteers who ran the games; monitored the food lines; served cotton candy, chips, popcorn, drinks, and ice cream; gave out balloons; staffed the Picnic Headquarters table; and helped set up and take down the picnic facilities. Recognition was given individually to Willie Harvey, for helping fabricate a new dunk tank, and to Grover Richardson and Luther Ward, who completed the tank and set up it up, along with a PA system, at the picnic site. Two people who helped out with graphics, posters, invitations, signs, and T-shirt designs—Judy Wiesman and DW Senn—also were recognized.

Special thanks were given to the Picnic Committee members: Cheryl Barnett, Carey Floyd, Wanda Fox, Delora Gould, Bill Howard (co-chairman), DW Senn, and Ida Taplin. "The group could not have been more dedicated, cooperative, and hard-working," Hughey said. ❑

Georgia Tech has applied for a patent on a new optical processing architecture developed at GTRI for an improved acoustic-optic radar warning receiver.

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Run for research

Dr. Phil Kennedy is running for research again—this time in the Peachtree Road Race on July 4. He is seeking sponsors who will donate money to aid his research program in neural prosthetics.

Kennedy has developed a system that will allow paralyzed patients to control devices to aid in restoration of movement and to communicate with assistive devices. The system is being perfected for human implantation. The money raised will be used for continued development of the system and will be spent on equipment, materials and supplies, as well as personnel expenses.

Sponsors may make a flat donation or pledge so much for each minute less than 60 that it takes Dr. Kennedy to run the 6.2-mile course. Money should be donated to the Georgia Tech Research Corporation (GTRC) and is tax deductible, since GTRC is a 501-C-3 not-for-profit corporation. GTRC also will match donated funds.

Kennedy raised $600 in pledges when he ran in the Atlanta Marathon last fall.

To phone in your sponsorship or to get further information on Dr. Kennedy's research, call him at 894-4257. ❑

GTRI Spring Fling Picnic 1992

Montage—G.K. Webb Photographs—Margaret Barrett


COMMITTEE
Good Humor
Ice Cream

Queries & Quotes

"RMP has the potential for making a large change in the way we think and do things.... With the latest RMP enhancements, we have the potential to reduce paper exchange significantly. RMP also can greatly simplify the task of submitting monthly financial reports to sponsors."
— Tom Brown

Focus on Quality

RMP provides Oracle capability

By Martha Ann Stegar, RCO

Calling all lab directors and project directors! How would you like to obtain accounting data in electronic form three hours after close out—rather than on paper several days later? Or query the Accounting and OCA databases for selected information? Or download selected accounting information into spreadsheets and manipulate the data to generate custom reports—without laboriously retyping computer printout data back into your computers?

Now you can—through RMP. For three years, a GTRI team has been developing a comprehensive management information tool called the Resource Management Program (RMP), a Lotus-with-Oracle based software program tailored to GTRI project and budgetary needs. The team includes Tom Brown, Ron Creswell, Jamie Patrick, Tony White, Wanda Fox, and Somnath Mishra. Their latest enhancements will enable managers to do all the above—and more.

"RMP has the potential for making a large change in the way we think and do things," Tom Brown says. "Now, nearly all administrative data at GTRI are distributed on paper—for example, the Accounting green sheets and OCA contract deliverables information. With the latest RMP enhancements, we have the potential to reduce paper exchange significantly. RMP also can greatly simplify the task of submitting monthly financial reports to sponsors. By allowing project directors to work with data electronically—thus getting paper out of the loop—RMP speeds up the task and lessens the chances for error."

Traditionally, lab and project directors have had to wait for paper copies of relevant data before being able to generate reports, make decisions, and the like. Now—thanks to the wonders of the Oracle relational database and its client/server architecture *(see diagram)*—such data are available in user-friendly form for PC computer access shortly after the start of each business day. And Oracle's Structured Query Language (SQL) capability allows the user to ask questions of the database, retrieve data of particular interest (such as financial details for a specific project or all projects scheduled to terminate in the next 90 days), and create reports tailored to those interests.

"All this can be done in the familiar PC environment," Brown stresses. "Oracle provides a transparent interface with the UNIX Server, giving the user the power of UNIX without having to deal with it."

This is the way the system works: Currently, GTRI accounting data are maintained in COBOL, and OCA contracts and deliverables data are maintained in M204, neither of which is very user-friendly. A snapshot of the data from these systems is converted to ASCII files daily, and for accounting, also at monthly close out, and placed on the GTRI01 IBM mainframe. Every day, through a file transfer protocol (FTP), the ASCII files are transferred to an applications server, where SQL*LOADER automatically retrieves them and converts them to Oracle table structures. An individual PC user equipped with Oracle software then can query these read-only tables on the database server to retrieve the desired data or produce the desired report. Useful query tools for the PC include Oracle's SQL*Plus and OracleCard and Lotus 1-2-3, enhanced with Oracle's DataLens driver product.

Potential uses, according to Creswell, include timely generation of financial reports for sponsors, management-level reports on corporate "health," and deliverables status by project, lab, project director, type of deliverable, or other desired parameter. It has contract development applications, too. For instance, it could extract relevant experience information for proposal writers, and provide persons planning to visit a prospective sponsor with a descriptive listing of previous projects for that sponsor.

Ultimately, the entire Georgia Tech campus will be converted to the Oracle-based integrated administrative database system mandated by President Crecine—the Administrative Information Management System (AIMS). In the meantime, the isolated "islands of information" written in incompatible computer languages, such as GTRI accounting and OCA contracts data, are fully accessible only through Oracle's Structured Query Language (SQL). RMP, which provides a structure for the GTRI user to capture and manipulate this information, is geared to provide an interim solution until the third phase of AIMS conversion—incorporating OCA, GTRI Accounting, Grants and Contracts, and similar research financial information sources—takes place in the future.

Brown emphasizes that the progress to date has been the result of strong support and participation by Art Vandenberg, director of Information Systems and Services (ISS) in Tech's Office of Information Technology; Billy Atcheson, Julie Blankenship, and Jerry Head of GTRI Accounting; Jack Dell and Duane Hutchison of OCA; and Carolyn Mahaffey, manager of MAPS. "It's good to see these diverse groups all pulling together toward a common goal," he says.

According to Brown, they now have the last two years of accounting information on line via Oracle in the client/server mode, which makes it easier and cheaper to use. Client/server architecture allows the PC and the server to share the workload, he explains. Under the old technology, the PC acted as a dumb terminal—everything was done on the master machine.

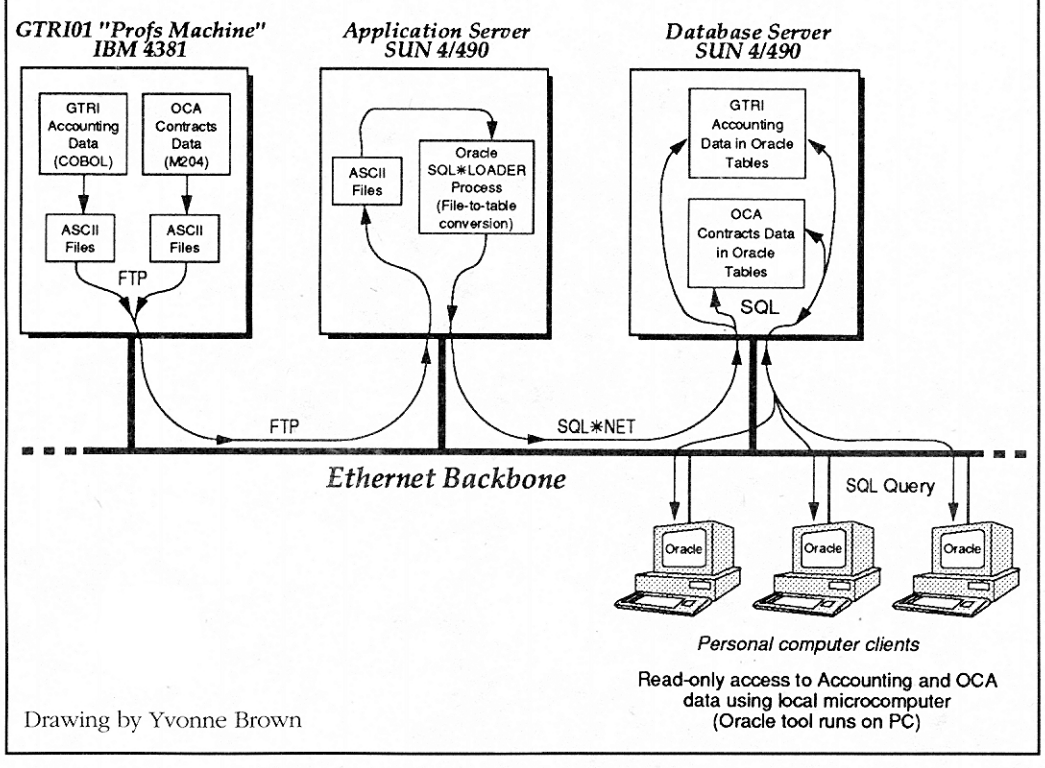
Conversely, when Brown and Creswell began developing RMP three years ago, they started with their application software on the individual PC. Now the software is primarily on the server, and the PC downloads it from the network when it needs it. In this way, every user is assured of having the latest software upgrade at his or her fingertips.

What does it take to access this wealth of information? All MAPS units have the hardware and software to exploit this capability—and it's part of their job to do so for lab directors, project directors, proposal writers, contract developers, and others with a need for such data.

For those wanting to set up their own access, the recommended hardware is a 386-class PC with at least 6 megs of memory. Clarke Stevens of the Aerospace Lab, with guidance from the RMP group, is working on adapting the RMP software for the Macintosh. To date, he has demonstrated SQL*Net connectivity and has been able to query the database. Work with Mac-specific software tools to allow use of the data is under way.

The computer must be directly connected to Ethernet; a serial port or NIU won't work, Brown says. Oracle software is available free, but purchase of suitable network communications software is the responsibility of the client. And the client must secure a user account. For further information, please contact Tom Brown (853-0834) or Ron Creswell (853-0835). ❑

GTRI Oracle Database and Client/Server Architecture



Drawing by Yvonne Brown

Dialogue Box

I'm a student employee, and I received a notice in my last pay envelope stating that, effective July 1, all temporary and part-time employees will have to start paying into a new mandatory retirement plan for employees not participating in the Teachers Retirement System or Optional Retirement Plan. How will this affect me?

It won't. Students who are working while regularly enrolled and attending classes at Georgia Tech do not have to contribute to this plan. Employees with F1 or J1 visas are also excluded, as are persons qualified as bona fide independent contractors. But all other temporary, seasonal, and part-time employees of the State of Georgia, including the University System of Georgia, are covered by this new plan.

The salient points of the plan, as set forth in your payroll notice, are as follows: The Georgia Defined Contribution Plan legislation passed during the 1992 session of the Georgia General Assembly created a plan designed to provide *mandatory retirement coverage for temporary and/or part-time employees* ***in lieu of Social Security***. *The new plan requires each employee to contribute 7.5% of his/her salary with no matching contribution by Georgia Tech. However, both Georgia Tech and the employee must continue to contribute 1.45% for Medicare.*

If you are in a temporary or part-time status (non-student) as of July 1, you will receive additional information regarding these changes during the month of July, along with a membership application on which you can designate both a primary and a contingent beneficiary.

Why did the State come up with this plan?

A new federal law (OBRA '90), passed in 1990, contained a provision that all employees were required either to be members of a pension plan or participate in Social Security. Since temporary and part-time regular employees who work less than 50% time aren't eligible to participate in the Teachers Retirement System (TRS) or the Optional Retirement Plan (ORP), the State decided to provide this new plan just for them.

What about retirees who come back to work part-time for Georgia Tech or hourly as needed?

Rehired retirees who are receiving benefits from either TRS or ORP will have to participate in the Georgia Defined Contribution Plan.

Who will administer this plan?

The Board of Trustees of the State Employees' Retirement System (ERS) will administer the Georgia Defined Contribution Plan. Interest will be credited to each member's account on a quarterly basis. The rate of interest will be determined by the Board of Trustees based on the rate of return on investments less administrative expense.

What are the retirement benefits?

Benefits are based solely on the amount contributed to each participant's account plus interest accumulated. Members who have accumulated at least $3,500 in their account are eligible to retire at age 65 with the option of receiving a periodic payment based on mortality tables and interest accumulation as adopted by the Board of Trustees.

When temporary or part-time employees terminate, how do they get their money back?

A contributing member who terminates employment may apply for a refund of contributions and interest. Refunds are mailed no later than the last business day of the month following the month of the last payroll deduction.

*(**Note:** For more information about the retirement plan, Georgia Tech contacts are John Grovenstein (894-8373), Benefits Manager, Office of Human Resources, or Beverly Edwards (894-5571), Assistant Payroll Manager, PARS. Or you may call The Employees' Retirement System at 352-6400.)* ❑

Professional Activities

EW Program Review held

The 14th Annual Electronic Warfare Program Review was held May 5-7. For the first time, it was held jointly with the ECCM Assessment Analysis Program Review. Attendees included 57 people from the Air Force, Army, Navy and various DoD agencies, along with numerous Georgia Tech personnel. A kickoff VIP breakfast sponsored by GTRI Director **Donald Grace** was attended by Georgia Tech President **J. Patrick Crecine** and the Air Force managers of the two projects that sponsor the reviews each year.

Advanced Technology Lab

Istvan Nogradi presented a paper entitled "Hardfet Modulator" at the 1992 Power Modulator Symposium, held at Myrtle Beach (SC) June 23-25.

Communications Lab

Eric Barnhart participated in a panel discussion on Personal Communications Networks at the 1993 National Telesystems Conference, held in Washington (DC) May 19-20.

Economic Development Lab

David Swanson presented a paper at INNOVA 92 in Paris while vacationing in Europe in early June. He began a term as president of the national Technology Transfer Society at the organization's 17th annual meeting, held June 24-26 in Atlanta.

Three staffers presented papers at the above conference: **Jan Youtie**, "Overcoming Obstacles to Commercializing University Research"; **Carol Aton**, "Results from Testing Transfer Models"; and **Paolo Chiappina**, "Technical Assistance: Analyzing Project Success Potential."

The 1992 *Survey of Georgia Manufacturers*—a joint effort of EDL, KPMG Peat Marwick, and the Georgia Chamber of Commerce—was issued in late May. Among other findings, the survey reveals that 75% of respondents give Georgia high marks as a place to do business. Also, nearly 60% plan to expand their operations in the next three years; of those, 80% plan to do so in Georgia.

Electromagnetic Environmental Effects Lab

Hugh Denny gave a report on the MST Radar Facility at Tirupati, India May 29 to the Atlanta chapter of the IEEE Electromagnetic Compatibility/Instrumentation and Measurement Society.

At the Command, Control and Communication Intelligence (C^3I) Conference in Utica (NY) June 1-5, **John Rohrbaugh** presented a paper entitled "First Electromagnetic Performance Monitor (EMPM)," and **David Millard** presented a paper entitled "A System E^3 Modeling and Simulation Tool."

Donald Clark attended the IEEE Electromagnetic Compatibility Society meeting in Boulder (CO) May 9-14 as an elected board member.

Environmental Science & Technology Lab

At the Technology Transfer Society annual conference June 24-26 in Atlanta, **Jim Walsh** presented a paper, "Using Toxic Release Inventory to Identify Firms for Technical Assistance." **Leigh McElvaney** was a co-presenter with **Carol Aton** of "Results from Testing Transfer Models."

Steve Hays has been elected president of the Georgia chapter of the American Society of Safety Engineers.

John Nemeth and **Claudia Huff** served on the program committee of the University System Symposium for Research, "Designing Tomorrow's Sustainable Environment Today," held May 8-9 in Athens. Presenting papers at the symposium were **Paul Middendorf, David Jacobs, Gayle Goewey, Jim Walsh, Edd Valentine, Chuck Ross, Kasra Ghaffari, Carol Foley, Charlene Bayer, Chris Downing**, and **Aristotelis Tympa**s.

On June 11, **Ted Courtney** presented a paper on OSHA and ergonomics at the Annual International Industrial Ergonomics and Safety Conference in Denver (CO). He also recently gave a presentation on VDT ergonomics to Region IV OSHA staff and lectured on Georgia Tech's ergonomics research in apparel manufacturing at an apparel industry conference at Clemson University. In addition, he was interviewed on the National Public Radio program, "The Best of Our Knowledge," concerning ergonomics and represented GTRI at the March meeting of ANSI Z-365 Committee on Cumulative Trauma Disorders.

Nancy Davis was deputy general manager for the 39th annual conference of the Society for Technical Communication held in Atlanta May 10-14. **Claudia Huff, Rae Adams, Stephanie Babbitt**, and **Leigh McElvaney** served on the planning committee.

Stephanie Babbitt made a presentation on scanning techniques May 16 to a communications graphics graduate class at Southern Tech.

Materials Science & Technology Lab

Kathryn Logan has been elected vice chair of the Engineering Ceramics Division of the American Ceramic Society. She also is the Division program chair for the next annual meeting, to be held in April 1993 in

Continued on page 8

Focus on Folks

This month, the DIALOGUE BOX returns with questions about the new retirement plan for temporary and part-time employees. If you have a question or suggestion for the DIALOGUE BOX, please send it to GTRI CONNECTOR, RCO/GTRI 0800 or PROFS MSTEGAR. We will route it to the proper person for action. If it is of general interest, it may be selected for publication. Otherwise, if you include your name, you will receive a personal reply.

Focus on Folks

This month, we welcome three baby girls to the GTRI family. Congratulations to their parents!

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Professional *(From page 7)*

Cincinnati. In addition, she recently was inducted into Gamma Beta Phi (a national scholastic honor society).

Tom Moss won an SAIC (Science Applications International Corporation) campus-wide competition for the best student paper this year. The paper, coauthored by **John Hanigofsky** and **Jack Lackey**, was entitled "Thermodynamic Analysis for the Chemical Vapor Deposition of Composite Coatings from the Al-B-Ti-N-H-Cl-Ar System." Moss is a senior in the School of Materials Engineering and has been a co-op in MSTL for the past three years. The award included $500.

Microwave & Antenna Technology Development Lab

Glenn Hopkins recently presented a paper, "An Equivalent Circuit Model of a Plated-Through-Hole Interconnect for Multilayer Stripline Circuits," at the 1992 IEEE MTT-S International Microwave Symposium in Albuquerque (NM). Prof. **Robert Feeney** (EE) was the coauthor.

Modeling & Analysis Lab

Chris Barnes coauthored a paper, "Large Block RVQ with Multipath Searching," that was presented at the 1992 International Symposium on Circuits and Systems.

Physical Sciences Lab

Chemical Physics Branch personnel played a major role in the XXth Informal Conference on Photochemistry, held in Atlanta April 26-May 1. This high-visibility conference attracted over 200 leading researchers in basic and applied photochemistry, including two Nobel prize winners. **Paul Wine** organized the conference and chaired a session on photodissociation dynamics. **Tony Hynes** chaired a session on optical diagnostic techniques. **Mike Nicovich** presented a paper entitled "Temperature-Dependent Kinetics Studies of the Reactions $Br(^2P_{3/2}) + H_2S \leftrightarrow SH + HBr$ and $Br(^2P_{3/2}) + CH_3SH \leftrightarrow CH_3S + HBr$," coauthored by **Kevin Kreutter, Cor van Dijk**, and **Paul Wine. Fred Eisele** presented a paper entitled "Ion-Assisted Tropospheric OH Measurements," coauthored by **David Tanner**. Poster presentations were made by **Mike Nicovich, Peyton Thorn, Andy Pounds, Bob Stickel, Harald Berresheim, Christie Shackelford**, and **Jeff Cronkhite**.

Fred Eisele and **G.H. Mount** had an article, "An Intercomparison of Tropospheric OH Measurements at Fritz Peak Observatory, Colorado," published in the May 22 issue of *Science*. Eisele also is coauthor with **Harald Berresheim** of "High-Pressure Chemical Ionization Flow Reactor for Real-Time Mass Spectrometric Detection of Sulfur Gases and Unsaturated Hydrocarbons in Air," which appeared in the February 1 issue of *Analytical Chemistry*.

The March 19 issue of the *Journal of Physical Chemistry* had an article by **Mike Nicovich, Kevin Kreutter, Cor van Dijk**, and **Paul Wine** on their temperature-dependent kinetics studies of several atmospheric reactions *(see above)*.

Paul Wine presented two papers at the American Chemical Society meeting in San Francisco April 7 and 8: "Laboratory Investigations of Free Radical Chemistry in Cloud Water," coauthored by **Mian Chin, Christie Shackelford, Jill Steidl**, and **Mike Nicovich**; and "Laser Flash Photolysis Studies of Radical-Radical Reaction Kinetics" (invited), coauthored by **Peyton Thorn, Jeff Cronkhite, Ed Daykin**, and **Mike Nicovich**.

At the International Symposium on Environmental Sensing, held in Berlin, Germany, June 22-26, **Paul Wine** presented an oral paper entitled "Laser Flash Photolysis Studies of Atmospheric Free Radical Chemistry Using Optical Diagnostic Techniques." Coauthors were **Mike Nicovich, Tony Hynes, Bob Stickel, Peyton Thorn, Mian Chin, Jeff Cronkhite, Christie Shackelford, Zhizhong Zhao, Ed Daykin, Cor van Dijk, Shouzhi Wang**, and **Jill Steidl**.

Chris Summers was an invited panel member to review proposals on vapor growth for NASA's Microgravity Materials Sciences Program.

Recent publications include: **D. Rajavel and C.J. Summers**, "Gas Source Iodine n-type Doping of Molecular Beam Epitaxially Grown CdTe," *Applied Physics Letters*; **C.J. Summers, B.K. Wagner, R.G. Benz II**, and **D. Rajavel**, "Chemical Beam/Gas Source Epitaxial Growth of HgCdTe" (invited), Tenth Anniversary Issue, *Chinese Journal of Infrared Physics*; **H.K. Chiang, C.J. Summers**, and **R.P. Kenan**, "The Analysis of a Novel Optical Two-State Switch," *IEEE Photonics Technology Letters*; **P. Aristin, A. Torabi, A.K. Garrison, H.M. Harris**, and **C.J. Summers**, "A New Doped Multiple Quantum Well Avalanche Photodiode," *Applied Physics Letters*; **P. Aristin, A. Torabi, A.K. Garrison, H.M. Harris**, and **C.J. Summers**, "Evaluation of New Multiple Quantum Well Avalanche Photodiode Structures," *Proceedings of the International Symposium on GaAs and Related Compounds*; and **C.J. Summers, B.K. Wagner, R.G. Benz II**, and **D. Rajavel**, "Chemical Beam/Gas Source Epitaxial Growth of HgCdTe," *Chinese Journal of Infrared and Millimeter Waves*.

Radar & Instrumentation Development Lab

Gene Greneker served on a panel of experts that fielded questions from attendees at the 8th Annual Joint Government-Industry Symposium on Security Technology, held in Williamsburg (VA) June 2-4 and sponsored by the Security Technology Division of the American Defense Preparedness Association. ❑

Personnel News

Computer Science & Information Technology Lab

Congratulations to graduating student employees **David Aylesworth**, now an RE I, and **Ron Chadwick**, now an RS I.

New employees are RE I **David Huggins**, who transferred from Information Technology in May, and RS I **Claye Hart**, who came on board this month.

Concepts Analysis Lab

Kathie Coogler-Prado has transferred to OHR's Rambler program as a technical writer/editor. She has been an associate editor of the GTRI Connector for the past two years, with the exception of a few months on maternity leave, and we will miss her.

Environmental Science & Technology Lab

Judy Truett has transferred from RIDL to ESTL.

Microwave & Antenna Technology Development Lab

Lynette Powell has been promoted to data processing specialist. She also recently received a $1,000 award for Outstanding Research Support at the Faculty-Staff Honors Banquet.

Mercedes Saghini is transferring to the School of Chemistry June 30 and is being promoted to senior administrative secretary.

Sherri Odom terminated June 12.

Office of the Director

Sara Hodges, daughter of **Mark Hodges** (RCO), is a student employee for the summer.

Threat Systems Development Lab

TSDL has announced the following terminations: **Albert Nelson** on June 10, and **Susan Nowell, Bill Leverett**, and **Tom Hoshstrasser** on June 30. **Jerry Burge** will retire June 30. ❑

Personal Notes

Achievers

Congratulations to **Nancy Kelley** (EOL), who received her BA from Brenau College on May 30.

Sports News

On May 20, three ESML staffers—**Kim Cole, Robert Raboud, Neil Lareau**—and Ronnie Anderson (a friend of Kim Cole) participated in a charity golf tournament at Bobby Jones Golf Club. The tournament was held to benefit the Bobby Dodd Center. There were 18 foursomes, many including celebrities such as state and local politicians, professional athletes, and members of the news media. The ESML foursome started slowly by bogeying the first hole, but followed that with 14 pars and 3 birdies to finish at 2 under par. Their score ranked near the bottom of the pack, but a reliable source stated that they were the best looking foursome on the course and they played mediocre golf with great style.

Cradle Roll

Kathy and **Dennis Folds** (CAL) are the proud parents of new baby daughter Caroline Grace, born May 1.

Kris and **Phil West** (CAL) had a baby girl, Ilsa Lynn, May 18. Ilsa is their first child.

Teresa and **Derrick Bunting** (TSDL) welcomed a baby girl, Natalie, June 9.

Our Sympathy

... to **Art Brown** (EDL), whose mother passed away in late May.

Far & Wide

Nancy Davis (ESTL) celebrated May Day in Moscow as one of 400-plus American Friendship Force ambassadors. ❑