Faculty Profile

Q&A *with* Stephen Cross

New GTRI director shares his leadership style and vision.

PHOTO BY NICOLE CAPPELLO

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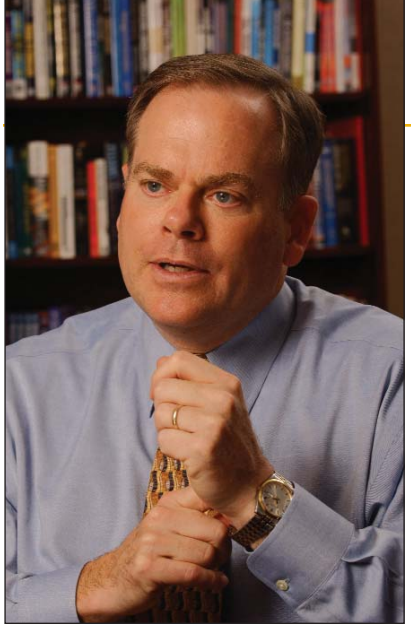
Previously, Cross was the director and chief executive officer of the Carnegie Mellon Software Engineering Institute and a professor of computer science at Carnegie Mellon University. Cross succeeds Edward Reedy, who retired after 33 years of service at Georgia Tech. GTRI is the applied research arm of the Institute. More than 1,200 GTRI employees perform or support more than $120 million in annual contract research for more than 200 clients in industry, government and academia around Georgia, the nation and the world.

Q. In what ways do you expect to contribute to GTRI, and in a larger sense, to Georgia Tech?

A. We have a great heritage and technical program here, but we can do more. I will challenge people to move into some new areas such as the life sciences and biotechnology.



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And my own faculty appointment in the School of Industrial and Systems Engineering may lead to some new research opportunities for us, as well.

I believe new ideas occur at the boundaries of technical and scientific fields. That is one reason why the university's multidisciplinary focus is so right for our future. A recent example at Georgia Tech is research on dental and craniofacial imaging, which is evolving into partnerships with the Medical College of Georgia (MCG) and the dental industry. This work incorporates GTRI's knowledge of aerodynamic flow control and other technologies originally developed for national defense; the advanced manufacturing and visualization knowledge of our colleagues in Georgia Tech's schools and colleges; and MCG's experience with composite materials.

Researchers in these varied areas have joined forces to develop technology allowing doctors to create very accurate, three-dimensional visual craniofacial records, which can later be used to understand and plan new surgical and restorative procedures. Dentists can use it to create more accurate crowns, for example. The result is less tapping and grinding. The crown fits the first time it is placed in the mouth, and it fits more accurately. The patient experiences less discomfort, less time in the dentist's chair and a reduced chance of having bacterial or structural problems with the crown later on. A challenge in dentistry is thus being met by combining different domains in a multidisciplinary, innovative effort.

I want to challenge our research faculty at GTRI and in the colleges of Science and Engineering to address some "grand challenge problems." We need to continue to set high standards and goals and then work hard to achieve what others think is impossible.

An example of a "grand challenge" is to build an artificial hand, an intelligent prosthesis, which could play the piano. That would require a systems solution integrating technologies in robotics, microelectronics, MEMS, nanotechnology, lithography, software and human-computer interaction. I don't know whether we'll ever achieve this, but this is the sort of vision we should have. We should set goals so far beyond what our minds can imagine right now.

Q. How would you describe your leadership style?

A. It's a combination of the best practices I've learned from the leaders I've worked for. It's nothing I've invented. A book called *"The Leadership Challenge"* by Jim Kouzes and Barry Posner outlines the style by which I lead. I suppose another way to describe this is servant leadership. I was impressed to find out that Georgia Tech has an endowed chair in servant leadership, held by Arnold Stancell, and offers a class in this area. Servant leaders are more effective leaders. They work quietly behind the scenes and don't try to get attention for themselves. This just fits my style, and I've been fortunate enough to work under many leaders with this style.

Basically, I want to enable people to do their jobs better than they are able to do them now. My job is to support them in several ways. One is to model the way, so I'm trying to show by example how a leader in GTRI should operate through my own research in the School of Industrial and Systems Engineering, through my communication, and by creating and inspiring a shared vision with GTRI research faculty, staff and the rest of the university.

Another thing is this: While I'm by nature quiet and easygoing, I'm also driven to achieve great results, and I challenge existing processes.

We can always do things better. It's never acceptable to say, "This is the way we've always done it." My personal motto is that "progress begins when you deny the present concept."

Q. Why is accountability an important issue to you?

A. One of our key core values at GTRI is integrity. So that's one reason accountability is important.

Another is this: We're measured not so much on what we say, but on the results we get and how we get them. We do what we say and we always strive to do more and to do better than we think is possible. Everybody is accountable for what they say they're going to do and for giving their best effort to do it. Everybody is hired to do a job we need them to do and everyone will be evaluated on the results and held accountable for them. We need to be accountable to our employer and our customers. We all have customers – some are internal customers and some are external customers. Our customers are our most important stakeholders. I'm accountable to external customers who fund GTRI's research program, but I'm also accountable to the GTRI research faculty, its staff and the university.

At the same time, we need to have a culture where people can make mistakes and learn from them. We need to have a culture of prudent risk-taking here.

Q. How would you summarize the unique contributions that GTRI can make to the mission of Georgia Tech — and to the state of Georgia?

A. We are the applied research arm of the university. Our vision is to create technical solutions through innovation. We have the ability here to create prototype solutions to unprecedented problems…. We can take new technology and apply it to social, industrial and government problems and solve them.

Over time, this capability will attract new companies to Georgia. The work we're doing in dental technology is a good example.

We're also working closely with other Georgia Tech units, such as the Advanced Technology Development Center, Economic Development Institute and VentureLab. One of the great things about Georgia Tech is that we have all the pieces here to make it work. Companies want to come to the Atlanta area to be in close proximity to the research organizations at Georgia Tech, so they can benefit from our knowledge and ideas.

An expanded version of Research Horizons' interview with Cross is available on the Web at **www.gtresearchnews.gatech.edu/reshor/rh-f03/**.

Q. How would you characterize the future of non-profit research institutes like GTRI?

A. GTRI has a bright future. We have an ambitious goal – to be the best non-profit research organization in the world, not by claim, but by any objective benchmarking criteria. This will take some time, but I have no doubt we can achieve it. One reason for this confidence is that we are an integral part of a great research university. Our position within the university is unique and in sharp contrast with applied research institutes at other research universities. The Georgia Tech strategy is to weave GTRI more synergistically into the overall university strategy. That contrasts with many other major research universities that have sold their applied research institutes or elected to decommission them.

I know this is important to Georgia Tech alumni, too. I just attended my first Georgia Tech Advisory Board meeting and met many influential alumni who either had a cooperative education assignment or their first work experience through GTRI. That is another significant attribute of GTRI – our support to the educational mission of the university, and our role in training and developing the engineers of the future with co-op and other work opportunities we offer. The bottom line is simple – we are an integral part of the university and its plans for the future. This speaks well for our future, which is only limited by our potential and how hard we work.

— Jane M. Sanders

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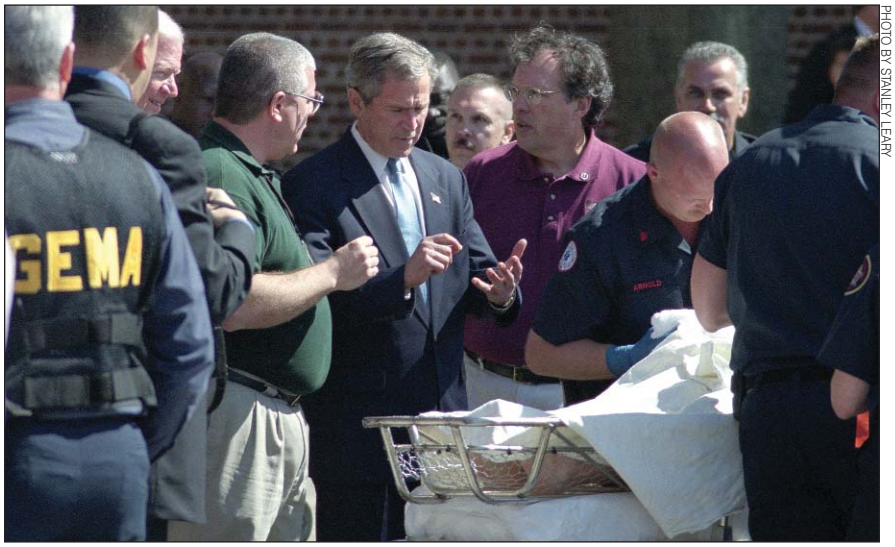
PHOTOS BY GARY MEEK

Top: GTRI's Logistics and Maintenance Applied Research Center uses the latest information technology to provide integrated logistics, supply chain management, systems sustainment and predictive diagnostics for the Defense Department.

Above: Aeronautics and acoustics research has been a large area of study at GTRI for decades.

Below: GTRI researchers worked with Georgia first responders to demonstrate new emergency response technologies for President George W. Bush in spring 2002.



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