Graduate Student Symposium
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Good afternoon. To those of you from industry, I would like to welcome you to our campus. As you can see from all of the construction, we are in the midst of preparing for this summer's Olympic Games. As someone who lives on this campus, I never thought I'd see the day when anything could be louder than a fraternity party in full swing. I was less than thrilled when the roar of jackhammers bounced my wife and I out of bed one morning—proving me wrong. But, I do hope you have a chance to see our Olympic campus. We are proud to host the Olympic Village and look forward to welcoming the world this summer.

Today, it is my pleasure to speak to you about the future of the research university. Specifically, the future as it relates to our continued collaboration with industry.

As those of you from industry are well aware, the mid-1970s began a sea change that brought us to the end of the cold war and to a world where the United States found itself and its products forced to compete against newly powerful economies from the east and the west. Traditional industries, the "leading indicators" of our economy, felt the impact of the new competition first and were forced to undergo dramatic changes to survive.

It has taken a little longer for those of us in higher education, "the so-called lagging indicators" to catch on. In fact, we are still in the process of dealing with a rapidly evolving landscape that has been characterized by the University of Michigan'sPresident James Duderstadt as follows:

"There is an increasing sense among American higher education's leaders and constituencies that the 1990s will represent a period of significant change on the part of our universities. If we are to respond successfully to the challenges, opportunities, and responsibilities before us, we will need to develop the capacity to transform ourselves using entirely new paradigms that better serve a rapidly changing society and a profoundly changing world."

The Research University System and Its Challenges

The challenges Dr. Duderstadt speaks of are myriad and the modern research university system in the United States today finds itself in a paradoxical situation. Surveys show we are one of the few institutions held in high regard by most Americans, but at the same time, we've endured harsh criticisms. Yet, the fact remains—the research university is one of the greatest developments of the 20th century. This institution is the central reason why the United States each year reaps the largest numbers of Nobel Prizes, has the most vibrant economy in the world, is the source of some of the world's greatest technological breakthroughs.

Pressure on the public persona of higher education and the research university comes at a time when other issues are posing challenges to our campuses. Challenges such as the expected downsizing of the federal research agenda, a more competitive research environment, and a steadily growing drumbeat for accountability in financial and productivitymatters. These challenges are in addition to the normal, everyday challenges

found when more than 10,000 18 - 23 year olds are gathered together in one place.

It is apparent from this list of challenges, that even if the external criticism of the research university were not correct, American research universities must reassess our roles and futures.

To achieve this goal, it will require innovative thinking, adaptation of new management strategies, and a willingness for universities to collaborate with government, other institutes of higher education, and industry.

Industry As a Key to Future Success

I'd like to concentrate on just one of those keys for future success—collaboration with industry. At Georgia Tech, we have placed priority on our industrial relationships. We've begun asking our industry partners: "How well do we serve your needs?"

So far, the answer seems to be that we're doing a good job.

But, that we can certainly do better.

What are we doing right?

We must be doing something right because rankings show that industry holds us in high esteem. We are ranked number six in the country for industry-sponsored research and with regard to engineering, ranked second in the country by practicingengineers.

Perhaps even more important than rankings is the fact that thirty percent of Georgia Tech's research funding comes from industry. In light of the expected downsizing of the federal government, that's good news.

Today, I'd like to discuss four areas where research universities are not only beneficial to industry, but can help industry in ways that no one else can.

I. Interdisciplinary research

I'll tackle interdisciplinary research first. Besides the Georgia Tech Research Institute, an entity that last year brought in more than $98 million in research awards, there are more than 63 research centers on this campus. The research conducted runs the gamut from microelectronics to biotechnology to energy analysis. Because of the wide variety of researchers on our campus, our research centers are able to bring together a diverse and knowledgeable research staff.

Examples of these research centers include our Packaging Research Center, created, in part, to help the American electronics packaging industry regain worldwide prominence. In less than one year and a half, the PRC already has 19 industry affiliates.

The PRC is located within the Manufacturing Research Center, an umbrella organization for interdisciplinary manufacturing-related activities at Georgia Tech. A major goal of the MARC is the creation of a dynamic synergism between its industrialpartners and Georgia Tech's faculty and students.

II. Neutral, Collaborative Research

Neutral, collaborative research is another area where we benefit industry. As an example, consider the utter chagrin of Coca Cola officials if a Coke researcher invited a Pepsi researcher to the lab to work together to create a new soft drink technology.

However, if both belonged to a center at Georgia Tech, the two groups could work together for their mutual gain.

The newest example of this type of partnership at Georgia Tech is called NEETRAC, (the National Electric Energy Testing, Research, and Applications Center). NEETRAC researchers will conduct a wide range of research, development, and education programs to serve the interests of the electric utility industry. The NEETRAC facility was actually donated to Georgia Tech from the Georgia Power Company. Georgia Power found the facility too expensive and turned it over to Georgia Tech. Currently, we're in the process of transforming it into a membership-driven organization engaged in a broad agenda to serve the overall interests of the electric power industry. For Georgia Power and the center's other industrial affiliates, the benefits are enormous. They will reap the same rewards from new technological discoveries, without the high overhead of maintaining a center.

III. Consulting/Advice
As you can see, the research rewards we offer are plentiful. However, we have much more to offer industry than straight research. Georgia Tech also is an excellent resource for diversebusiness consulting and business stratagy.

For example, our Economic Development Institute, a division of GTRI, is a network of field offices conducting technology transfer, economic development, and technical assistance activities for companies across Georgia. Recent activities include implementing an energy conservation program at a Milledgeville yarn-making company resulting in a $19,000 decrease in its energy bill and providing facility design and consultation to a French pharmaceutical company relocating to Georgia. Tech's help with the move and economic development capabilities was later cited by the company as a primary reason for relocation

Within EDI, we also offer programs for nascent companies. Our Advanced Technology Development Center is an incubator for high-technology start-up firms. We've put hundreds of companies on the path toward success. In 1994 alone, ATDC's 58 graduate companies posted revenues exceeding $200 million.

IV. Students

Numbers aside, perhaps the most obvious as well as the most valuable benefit we provide to industry is our students. We consistently educate and train industry's future workforce—and leaders.

Because educating students is our top priority, all of our campus research centers have an educational component—facilitating interaction between students and industry activities even before our students have graduated.

Improving Service to Industry

As you can see, we offer many benefits to industry. The question becomes: What can we do better?

We have recently taken that question to more than 20 of our industrial partners. The answers we received were not surprising—especially in light of the innate differences between "leading" and "lagging" indicators.

Essentially, industry would like to see universities run more like a business. When ask to cite their frustrations with research universities, comments ranged from too much red tape to a surfeit of administrative layers to unreliable deadline estimations to arguments over intellectual property policies.

It is ironic, perhaps, that the very areas cited by industry have been learned and developed, in part, because of our frequent interaction with our other important partner, government. Through trial and error, we have learned to easily work with government; it is now imperative that we learn to work as well with industry.

The following guidelines are some of the methods we have adapted to better interact with industry.

1. Communication. To continue to improve, we must know what industry wants and expects from us. To be able to deliver, we must communicate.

2. Cultivate understanding. The cultures in education andindustry are very different. The more we understand how the other works, the easier it will be to communicate and work

together.

For example, take deadlines. To put it simply: research projects cannot always be defined by time. Whereas a business person can say: "Complete this project in a week," it is not reasonable to say to a researcher: "find a cure for cancer by next Friday." In order for universities to best serve industry, an understanding regarding our capabilities must be reached.

3. Negotiate a middle ground. Both sides must be prepared to negotiate and give ground. For example, intellectual property policy is a frequent problem between industry and education. From an industry standpoint, the desire to own research they pay for seems reasonable. From an education viewpoint, the project paid for is only a small snapshot of the entire picture. Perhaps a researcher has been working for 30 years on a certain principal and invents a new technology while working on a project for industry, should that researcher sign away rights to the 30 years of work that led up to his discovery?

Publishing rights are another good example. Industry often wants to keep new technology a secret in order to move ahead of the competition. A researcher may wish to immediately publish his discovery.

Both sides have valid points and we are endeavoring to negotiate to find middle ground. We are in the process of coming up with a set of guidelines to cover intellectual property policy and other project policies to ensure we do not have to head back to the negotiation drawing table every time we begina project.

4. Last, we will change to better serve business when possible.

Two examples are cutting down the red tape and streamlining administrative process. Those improvements have already begun.

In conclusion, just as American businesses overhauled its systems in the 70s and 80s, the American research university is currently undergoing a similar sea change.

Just as businesses who did not change, did not survive, we too are faced with this very real threat to our future.

Satisfying our industrial partners is one key to this successful future. History has demonstrated industry's ability to change and move forward, it is now up to the American research university to write the next chapter in that history.

We plan for that history to include Georgia Tech as one of its success stories.

Thank you.