

STATUS OF THE HIGH-TECH ECONOMY IN GEORGIA
Presentation to the
BUDGETARY RESPONSIBILITY OVERSIGHT COMMITTEE
GENERAL ASSEMBLY OF THE STATE OF GEORGIA

GEORGIA TECH PRESIDENT G. WAYNE CLOUGH
January 24, 2003

(Title slide)

I'm honored to have this opportunity to tell you a little about the high-tech and telecommunications industries in Georgia and the opportunities for the future.

The image of high-tech industry that is reflected in the popular press is dominated by stories about the boom and bust of the "dot com" era of the mid 1990s and more recently by problems in the telecom industry. Some folks have wondered whether the "new economy" was just a flash in the pan and we would now go back to the "old economy." The answer to that is yes and no.

Following the heady times of the mid 1990s, many learned the hard way that the fundamental economic rules that governed the old economy have remained the same. To succeed in the long run, you have to offer a product or service that consumers or other industries need and want, enabling you to earn a profit.

(Slide: strong growth industries)

But the popular images deriving from the press obscure that fact that advanced technology has now permeated industry and society and has become an essential part of improving competitiveness and productivity. As this slide shows, the technology sector is not a flash in the pan. Looking back for 25 years, the predominate industrial sectors that outstripped the national average growth have been technology-based, and I will touch on many of these categories this morning.

(Slide: productivity)

Our economic health has always depended on productivity, which is a measure of the value of goods and services produced per unit of labor and capital investment. The traditional mindset is that you improve productivity by cutting costs and becoming more efficient, and that is still true. But advanced technology adds another ingredient.

(keystroke) In the new economy, you can also improve productivity by increasing the value of products and services to their users. And that is the contribution of a successful high-tech sector.

(Slide: defining high tech)

High-tech industry can be defined as companies that develop and market innovative new technology that either creates a whole new industry, like e-commerce or wireless communications, or lifts an existing or traditional industry to a new technological level. Just yesterday, for example, we broke ground at Georgia Tech for a research building to develop the next generation of technology for processing food and to help our traditional agribusiness industry to stay competitive.

High-tech industries are also characterized by a higher level of entrepreneurship and the associated higher-level risk, by a higher level of workforce skill, and by forward-thinking, imaginative leadership. They thrive on relationships with research universities that spawn and feed them and associate with locations that offer a skilled workforce, venture capital, and high-tech infrastructure.

That sounds like a pretty clear definition of high-tech industry, but it is surprisingly difficult to find reliable, meaningful numbers to measure it. There is no official data classification for high-tech industry, and economists vary widely in the data they choose to represent the industry. The job codes that are used to classify jobs were developed fifty years ago and do a poor job of sorting out high-tech industries. I'm going to give you a few numbers from the American Electronics Association, which tracks data for high-tech manufacturing, telecommunications services, computer software, and computer-related services; and these are areas where Georgia is strong. However, the AEA does not include biotechnology in its numbers, and we will get that a little later.

(Slide: Georgia's investments)

At the beginning of the 1990s, Georgia was not known as a high-tech state. However, the General Assembly and then-Governor Zell Miller wisely decided to take a coordinated, strategic, long-term approach to building high-tech industries through investing in the Georgia Research Alliance. A decade earlier, state government had created the nation's first university-based high-tech business incubator, the Advanced Technology Development Center (ATDC) that is run by Georgia Tech. ATDC has not only been successful on its own, but also has become a tremendous partner with the Research Alliance in helping to commercialize research discoveries. More recently the ICAPP program developed for the University System of Georgia has allowed a rifle shot approach to the creation of new academic programs in support of specific industry segments. All of these represent the kind of wise investment made by our state's elected officials that have paid off.

(Slide: Milken Institute)

These investments allowed Georgia to rise to a position as a recognized high-tech center in a relatively short time. By 1995, AEA data show we had the 11th largest science and technology workforce in the nation, and we have held that position over the past seven years in the face of stiff competition. The Milken Institute, another group that keeps a close watch on high-tech industry, tracks changes in high-tech economic activity through an index it has developed that focuses on the five categories that you see here: R&D, support for start-ups, education, skilled workforce, and the clustering of dynamic technology industries. I have noted two where Georgia does particularly well compared to other states.

(Slide: Map of Index)

If you take all of this data for each state, dump it together, and turn the crank, here is what you get. The green states are the top 10. Georgia ranks 15th which puts us in yellow, which is the second tier. But the only other second-tier state in the Southeast is North Carolina, and it ranks 17th. We have become the leading high-tech state in the Southeast on the Milken Index; we are beating the national average.

Slide: Bad news)

High-tech industry in general has been suffering from the economic downturn over the past two years. Venture capital investments peaked during the first half of 2000 for both Georgia and the nation, then dropped off sharply. The nation added only 100,000 new high-tech jobs in 2001. According to AEA data, Georgia added only 3,500, compared to the 14,600 jobs it had added in 2000.

(keystroke) But things were even worse in other places, and based on AEA data our 3,500 jobs were enough to make Georgia number one in the nation in technology employment growth for 2001.

The AEA recently released nationwide data for the first six months of 2002 indicating that the United States lost 113,000 high-tech jobs out of a high-tech workforce of 5.6 million, or a loss of about 2 percent. Discouraging as that may sound, however, there were some bright spots. First, job loss had begun to slow during the last two months of the period, and the drop from May to June was only 700 jobs – the smallest job loss in the past year and a half. Second, while the overall numbers were down, there were strong spots within the high-tech sector. Software, for example, gained 3,000 jobs during the first half of 2002.

(Slide: ATDC/GRA)

Georgia is actually well positioned through this whole economic downturn, thanks in large part to the investments by the General Assembly in ATDC, the Georgia Research Alliance, the recent broadband initiative, and ICAPP. These initiatives support the research that drives high-tech industry and help to commercialize it, and that process is continuing unabated. As you can see in this slide, the economy may be slowing, but ATDC and GRA continue at full speed in their engagement with Georgia's technology companies.

(Slide: VC map)

Georgia did very well in attracting venture capital during the 90s, and the tight conditions here today simply reflect what is happening all around the country. Venture capitalists have not only cut back on the amount of money they invest, but also on the amount of risk they are willing to assume. They are not only scrutinizing applicants carefully, but they have also shifted their focus away from the early development stages. The successful companies in this climate are those that can “bootstrap” their own way through the early development stages to the point of having a product on the market or ready to market.

To address the gap, Georgia Tech worked with ATDC to create a program called VentureLab to be more deliberate and systematic about identifying research discoveries with commercial potential and shepherding them through the early stages of commercialization. It is proving successful, and the Georgia Research Alliance is adopting it as a model to be implemented at the state's other research universities.

(Slide: 3 industries)

I'd now like to look briefly at three of Georgia's high-tech industries: 1) telecommunications, which is our largest high-tech industry; 2) computer software, which is Georgia's second-largest high-tech industry; and 3) bioscience and biotechnology, which is an area of tremendous opportunity for the next decade.

(Slide: Guynn quote)

First, telecommunications, which has been hard-hit by the economic slump. This quote from Jack Guynn's annual economic assessment earlier this month is especially true for telecom. In preparation for this presentation, I had conversations with a number of the state's leading telecom CEO's and the themes they related were the same. Telecommunications became overly promoted, and too many companies got in the market. In the end they were competing for the same customer base, which caused infrastructure and capacity to be overbuilt right at the time when the economy slowed. Suddenly there was no demand for equipment, and telecom equipment revenues nationwide fell by 25 percent during 2002. Here in Georgia, Lucent and Nortel were hit hard, and Scientific Atlanta's earnings for the past quarter of 10 cents a share look pretty good, even though they were down from the same time in 2001. BellSouth experienced a number of layoffs, but even so, we should remember BellSouth still has over 80,000 employees.

Georgia has especially felt the impact of the telecom slump because of the dominance of telecommunications in our high-tech industrial sector, and one of our longer-term goals should be greater diversification in our high-tech sector. While we rank 11th in overall high-tech employment, we rank 5th in the nation in telecommunications; and Atlanta is among the top metro areas in the size of its telecom workforce.

However, there is also an advantage to being a telecom center. As the industry consolidates to a more reasonable number of competitors, it will be consolidating in our direction. And as the economy gradually turns around over the next year or so, we are well positioned to run out on the leading edge of telecommunications.

(Slide: broadband center)

We have unique resources that bring university research into close coordination with the telecom industry, including the new broadband design center on Fifth Street in Atlanta that is being occupied as we speak. The investment that the General Assembly recently made in developing Georgia's broadband industry through research, workforce education, and a Telecom Seed Fund has proven successful even as the telecom industry takes a beating. Eighty invention disclosures have been filed, seven state universities have expanded their research and education programs, and the six start-up companies supported by the seed fund are doing well.

(Slide: Fast-Talk)

What you have to remember when you see stories about WorldCom declaring bankruptcy, for example, is that the news media focus on the big and the bad. Flying below the radar screen of the news media, Georgia has small telecom companies like newcomer CIENA that are not weighed down by excessive infrastructure or inventory like large companies, and are focusing their resources on research and development of the next generation of products. We also have telecom start-up companies that are emerging from our research endeavors, including LanCope, Quellan, Fast-Talk, and EGTechnology.

Wave7Optics, a Georgia telecom start-up that provides fiberoptic access systems for homes and businesses, has raised \$47 million since September of 2000 and will soon begin to export their

systems to Asia. Another thriving optical network start-up named Movaz secured \$70 million in funding last year to continue expanding its business. Barco, which manufactures flat-panel display units for radar scanners, has received several large orders and will double its manufacturing capacity to meet the demand. These are just some of the telecom success stories that the news media pay no attention to.

Smart new applications developed by these companies to utilize the emerging broadband infrastructure more fully will lead Georgia out of the telecom slump. However, before the telecom industry can thrive again, there are policy and regulatory issues that must be addressed. For example, the gap between the backbone network, which is overdeveloped right now and has parts that are sitting dark, and the end users in homes and businesses – the so-called “last mile” issue – is as much a public policy problem as it is an industry problem

(Slide: software doing well)

The software industry, Georgia’s second-largest high-tech industry, is a bright spot in the economic downturn. This industry added 3,000 jobs nationwide during the first half of 2002, even as the overall high-tech sector was losing 100,000 jobs. Georgia’s software industry reflects this national picture. Metro Atlanta alone has nearly 2,800 companies employing 35,000 people, and many of them are flourishing in the teeth of the economic downturn.

Let me give you just a few examples from around the state. In Warner Robins, Star Software Systems is moving out of the ATDC incubator into a newly renovated building a few blocks from Robins Air Force Base and is planning a 12,000 square foot expansion. During its two years in ATDC, the company grew from \$1.5 million in revenue to \$4 million in revenue and expects to reach \$8 or \$9 million by the end of this year.

Up the road in Macon, a software start-up company called Lossrun just attracted \$1.5 million in venture capital and a partnership with IBM to host and manage the program on its servers. In the lingo of commercial insurance underwriters, a loss-run is a claim history of a potential client, and it has always been a complex paper and mail process. Lossrun computerized this time-consuming task, and now has a growing list of clients.

GuardedNet, an Atlanta-based company that provides management software for all the different security programs computer networks use, received \$9 million in venture capital in November. This company bootstrapped itself through the development of its product, and now has a group of happy customers and a robust technology that solves real business problems and supports evolving needs.

KevSoft Corporation in Suwanee was launched in October of 2001 and received \$1 million in venture capital last August. After less than a year of existence, this start-up had 45 satisfied customers for its software to optimize a file server’s virtual memory, allowing more users per server.

And over in LaGrange, a software start-up called Politically-e is offering political candidates web-based solutions to manage and plan their campaigns.

(Slide: biotech quotes)

The third industry I want to touch on is bioscience and biotechnology. Nationwide, biotech has outpaced the S&P 500, growing by 15 percent over the past six years. By 2001, there were 22,500 bioscience and biotech companies in the United States employing 1.15 million people. And the pace of growth will accelerate, with 22 percent growth predicted between now and 2010.

Georgia is not one of the traditional biomedical centers of the nation; but the efforts of the Georgia Research Alliance, the growth of programs at the state's research universities in biotechnology over the past decade, and the presence of entities like the Centers for Disease Control have helped to put Georgia on the national map as the leading biotech center of the Southeast.

(Slide: biotech bar graph)

Georgia's biotech companies increased by almost 65 percent between 1995 and 2001, compared to a 37 percent increase nationwide. By the end of 2001, we had 502 biotech companies with more than 13,000 employees. This graph from the Metro Atlanta Chamber of Commerce only looks at small domestic companies within a narrow definition for biotechnology, but it illustrates two things: 1) Georgia now ranks 9th in the nation, putting us in a position to capitalize on the tremendous growth that is expected to occur over the coming years; and 2) Many of the states ahead of us don't have that much of a lead. So our goal is to move up the list.

Biotech brings together a wide range of disciplines, including biology, chemistry, agriculture, medicine, engineering, and computer science. Other states may be stronger than Georgia in this or that area on the list, but very few states can equal or exceed us in the combined strength of these disciplines taken together. For example, only three other states – California, Texas and North Carolina – can match or exceed us in the combined volume of the three fields of agriculture, biology, and medical science.

The gold standard for measuring biotech research is the amount of federal funding coming through the National Institutes of Health, which controls almost half of the money the \$50 billion federal government puts into research. By that measure Georgia almost doubled from fiscal 1995 to 1999, compared to a national average growth rate of 31 percent. In addition, commercial biotech research establishments in Georgia almost tripled between 1995 and 2001, and their workforce almost doubled.

The Georgia Research Alliance intends to step up its support for biotechnology research over the coming years. Our goal is that by the year 2010 Georgia will move up from 9th to 6th or better among the states, and that we will have started or attracted over 400 new companies with over 18,000 jobs. We especially want to develop strengths in three areas: vaccine development, agricultural biotechnology, and advanced medical treatment and devices.

(Slide: biotech characteristics)

The General Assembly can help us to build Georgia's biotech industry by creating a seed fund similar to the successful Telecommunications Seed Fund, and by creating an attractive business climate for biotech companies through measures such as a sales tax exemption for sophisticated

biotech equipment and by making the research and development tax credit we already have transferable.

There are many other positive high-tech stories I could tell you – about TSYS in Columbus, for example, which is the second-largest financial data processor in the nation with 20 percent of the market, and which had a growth in revenues of 20.5 percent last year while employing 5,200 people. Or the technology and companies emerging to serve our homeland security needs, like ScanTech Sciences, which is incubating at ATDC. This company uses a powerful 10-billion-volt electron beam for two scanning technologies. One can peer through up to 16 inches of steel and is being developed to scan container cargo coming through our ports. The other will be developed to kill bacteria, viruses, and insects on crop imports coming into the United States.

(Slide:high-tech companies map)

But in the interest of time, I am going to conclude by saying that high-tech industry in Georgia mirrors the nation, and it has suffered from the economic slump just like everybody else. However, there are also many positive indicators, and we are well positioned to lead the way in the recovery, thanks in large part to longer-term, systematic approach the General Assembly has taken to investing in research and providing support services for start-up companies.