

Staying on Top



Winning the Job Wars of the Future

A Competitiveness Plan for the
Research Triangle Region, North Carolina

March 2004

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Letter from the Chair

In the 1950s, a group of innovative leaders conceived the idea of the Research Triangle Park (RTP), an idea that changed the economic course of the region. As successful as that idea has been, it alone cannot ensure a prosperous future. Over the past few years, the 13-county Research Triangle Region has faced the decline of traditional industries, layoffs from leading businesses and the advent of global white-collar outsourcing.

When we look to the future, amidst considerable uncertainty, some economic realities seem clear. We are entering a time of increasing global competition for new jobs and investment. That competition will be fierce, and there will be regions of the world that win – where standards of living will rise and jobs will be plentiful – and regions that lose. We believe that we can improve our region’s chances of economic success through collaboration, education, innovation and action.

In 2001, Harvard University competitiveness expert Dr. Michael Porter completed a comprehensive analysis of the Research Triangle Region. In his report, *Clusters of Innovation*, Porter predicted that “future U.S. competitiveness will not hinge just on policies and investments at the national level but on the capacity to foster clusters of innovation in regions across the country.” Clusters are interconnected businesses and support organizations in a specific industry.

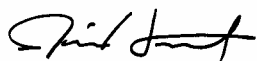
Porter’s primary recommendation was that the Research Triangle Region create a new economic vision that builds on the foundation laid by RTP, focuses on building and attracting innovative and emerging industry clusters, and expands prosperity to a larger geographic area, including the more rural counties surrounding the urban core.

A 37-member task force of business and higher education leaders, the Future Clusters Competitiveness Task Force, used the results of the Porter study and dozens of other studies to create this action blueprint. Specifically these actions will:

- ▶ Strengthen the region’s existing clusters by improving collaboration among companies and organizations.
- ▶ Diversify our economy by recruiting a wider array of clusters and focusing on opportunities at the intersection of our strongest clusters.
- ▶ Spark creation of more homegrown businesses.
- ▶ Identify regional investments needed for competitive advantage.
- ▶ Invigorate the economy across a broader geographic area.
- ▶ Develop the region’s capacity to meet its goals.

Staying on Top is a five-year, \$5 million strategy to generate 100,000 new jobs and increase employment in all 13 counties in the region. Dozens of organizations will work together to implement 30 actions that will nurture the growth of industry clusters that will shape our economic future.

In this effort, we aligned organizational agendas, made political boundaries transparent and focused on improving our future. We invite all to join as partners, to help improve the quality of life and standard of living for all citizens of the Research Triangle Region.



James B Hunt Jr.
Chair, Future Cluster Competitiveness Task Force
March 2004

Executive Summary

Staying on Top is a five-year, \$5 million action agenda to generate 100,000 new jobs and increase employment in all 13 counties of the Research Triangle Region of North Carolina. Dozens of organizations, called “institutional partners,” are collaborating to implement 30 actions that will support the growth of key emerging “clusters,” interconnected businesses and support organizations.

This initiative grew from the findings of a 2001 study by world-renowned Harvard University economist Dr. Michael Porter, who conducted a comprehensive analysis of the Research Triangle Region. In his report, *Clusters of Innovation*, Porter concluded that the region required a new economic vision to remain competitive. A 37-member task force of business and higher education leaders used Porter’s studies and new research to create an action blueprint.

The action plan calls for institutional partners to pursue these five strategies:

- ▶ Promote the growth of industry clusters where the region has a competitive advantage.
- ▶ Use a balanced approach of targeted recruitment, global branding, business creation and existing business retention.
- ▶ Integrate higher education into economic development efforts.
- ▶ Develop creative, inclusive approaches to rural prosperity.
- ▶ Create agile leadership networks to respond to market challenges, changes and opportunities.

Partners will focus their collaboration on 10 industry clusters, chosen because the region is a world leader in their research and development and for their potential to create significant numbers of new jobs in both rural and urban areas of the region. The 10 areas are:

- ▶ Pharmaceuticals
- ▶ Biological agents and infectious diseases
- ▶ Agricultural biotechnology
- ▶ Pervasive computing
- ▶ Advanced medical care
- ▶ Analytical instrumentation
- ▶ Nanoscale technologies
- ▶ Informatics
- ▶ Vehicle component parts
- ▶ Logistics and distribution

Key components of the plan’s success will be:

- ▶ Narrowly targeted recruitment of industry clusters.
- ▶ A comprehensive regional leadership network capable of responding to market challenges, changes and opportunities.
- ▶ Innovative new initiatives, such as a regional retention strategy, rural “mini-hubs” and university portals.
- ▶ Continuous monitoring of competitiveness indicators.

Overview

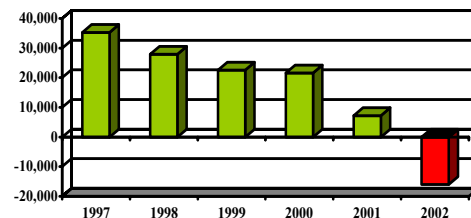
A Call to Action

Dr. Porter has said “regional development involves some inheritance and serendipity but also purposeful action.” While the Research Triangle Region has enjoyed 40 percent job growth and 70 percent wage growth since 1990, the last few years have produced threats and opportunities that cannot be ignored.

Recession Impacts

The recent recession hit the Research Triangle hard. Unemployment has risen steadily over the past five years, with the recovery providing limited relief. New job creation has slowed dramatically. While 107,000 new jobs were created from 1996-2000, there was no net gain in new jobs 2000-2002. Wages, which rose 6.6 percent annually between 1997-2000, rose only 2.1 percent on average the past two years.

New Regional Jobs 1997-2002



Manufacturing Churning

Manufacturing Jobs Lost Since 1990

Apparel	80%
Textiles	48%
Furniture	42%

Manufacturing jobs in the region grew from 98,790 in 1991 to a high of 125,290 in 1998. But those gains eroded in the years that followed. The region counted only 103,451 manufacturing jobs in 2002. Traditional sectors of textiles, furniture and apparel were hit particularly hard. Fifty-four percent of all jobs in those sectors were lost during the past 12 years. New manufacturing jobs are concentrated in emerging industry sectors, such as pharmaceuticals, plastics and machinery.

Stalled Rural Economies

Some areas of the region were left out of the economic successes of the 1990s. While some counties experienced robust growth over the decade (Wake, 52 percent; Franklin, 46 percent; Johnston, 42 percent) others, particularly in the more rural counties, experienced slow growth or lost jobs (Vance, -5 percent; Warren, 2 percent; Person, 5 percent).

Intense Competition for Our Industries

While this region is one of the nation’s leaders in biotechnology, more than 40 states and most regions of the world now target biotechnology for recruitment. Global competition for computer and communication equipment jobs has resulted in manufacturing jobs being transferred to lower-cost areas. The latest trend is outsourcing of white-collar jobs to India and China.

“The United States now has to compete for every job going forward. That has not been on the table before. It has been assumed we had a lock on white-collar jobs and high-tech jobs. That is no longer the case.”

— Craig Barrett CEO, Intel (2003)

Strained Public Resources

The recent recession led to budget shortfalls for state and local governments across North Carolina, as it did nationwide. Limited resources force communities to make hard choices. It also spurs local officials to take a critical look at which specific public investments are needed to ensure long-term prosperity.

While recession, increased competition and budget shortfalls have threatened the Research Triangle Region's economic health, some emerging trends are providing significant opportunities for action.

Regionalism Embraced

Key players in the public and private sector now recognize that a regional approach is key to future success. As the North Carolina Rural Economic Development Center said in its recent *Choices for a New Century* report, "Thinking regionally will not be an option in the future; it will be a matter of survival." Regional business leaders created the Research Triangle Regional Partnership 14 years ago to coordinate regional recruitment because they recognized the importance of collaboration in attracting new investment. That trend has accelerated, with widespread acceptance among local, state and national officials and economic developers providing a strong foundation for creating innovative regional strategies.

Opportunities in Emerging Technologies

The Research Triangle is home to world-class research in a wide range of emerging fields. Developments in such areas as bioinformatics, photonics and proteomics provide a rich source of innovation for future job creation if the region will develop the infrastructure necessary to compete for new jobs in those areas. Converting the region's vast R&D assets into high-paying jobs will be the region's greatest challenge and opportunity in coming decades.

The Importance of Place and the Creative Class

Richard Florida writes in *Rise of the Creative Class*, "...despite what you have heard from the great gurus of the Internet and the Digital Age that space and place is going to be important, geographic place has become the most important economic and social organizing unity of our time. A place provides a thick labor market, filled with opportunities. You pick a place that you want to live in and then you move and change jobs in that place." Tending one of our greatest assets, our region's quality of place, is a regional responsibility that requires collaboration and continuous attention.

Staying Competitive in the New Economy

While many factors threaten our region's economy, we are ideally positioned to compete.

The region is widely recognized for these key competitive assets, considered prerequisites for winning in the knowledge-based global economy:

- ▶ Research and development funding.
- ▶ Internationally renowned research universities.
- ▶ High quality of life.
- ▶ Worker training resources, including those from top-flight community colleges.
- ▶ Global reputation of Research Triangle Park.
- ▶ Relatively low cost of living and doing business compared to other technology regions.
- ▶ Highly educated work force.
- ▶ Existing base of "new economy" companies.

"Competitiveness is an economy's ability to produce goods and services that meet the test of international markets while its citizens earn a standard of living that is both rising and sustainable over the long run."

— Howard Rosen

Taken together, our assets reflect a “creative place,” ideally positioned to successfully compete for the jobs of the future. The Research Triangle Region ranks in the top 10 of national and international measures of competitiveness, including:

- ▶ #4 among U.S. regions (Public Policy Institute)
- ▶ #6 among U.S. metro areas (Beacon Hill Competitive Index)
- ▶ #6 among U.S. regions (Richard Florida’s “Most Creative Regions”)
- ▶ #8 of 125 global regions (World Knowledge Competitiveness Index)

Other recent rankings include the #1 Boom Town for Job Growth (*Business 2.0*, 2004), #1 Place in the United States to Live and Work (*Employment Review*, 2003), #1 Place to Live (*MSN America’s Best Places To Live*, 2003) and top 10 in dozens of other rankings, from 25-year economic performance to best places for starting a business.

The 1998 *At the Crossroads* report said “the competitive position of North Carolina in the global economy of the future likely will rest on the ability of businesses and universities to work together to create and commercialize new products and processes...the most mature economies produce knowledge and generate wealth. As loci of control, they develop national or international headquarter locations. Their personnel needs are skewed toward knowledge workers while their infrastructure needs are tilted toward knowledge resources.”

The Research Triangle Region has built its knowledge resources – its intellectual capital – over the past 50 years. Average education levels in the region have risen from less than seven years in 1950 to more than 14 years in 2000. More than 40 percent of adults hold a four-year college degree. The region boasts one of the highest concentrations in the world of people with advanced degrees.

The work of economic development is to match a place with what investors want and need. Over time, the needs of investors change. To remain competitive, public and private leaders in the region must constantly monitor business trends and local conditions to understand the future needs of existing and potential investors and develop the region’s assets to meet them.

The Research Triangle Region has been remarkably successful over the past 50 years by anticipating what businesses need and making it available. The Research Triangle Park, North Carolina Biotechnology Center, MCNC, Council for Entrepreneurial Development and the North Carolina Community College System’s industry training programs are key examples of where being first gave the region and state a competitive advantage.

Competitive Advantage through Innovation

The state’s Vision 2030 Plan, “Science and Technology Driving North Carolina’s New Economy,” reported on an Arthur Little study that found that 84 percent of global executives cited innovation as the most critical business success factor. The report explained “a global transformation is under way that is redefining the basis of economic competitiveness at every level, from individual firms to industry sector, from regions to states to nations.”

“It is not the strongest that survive, nor the most intelligent, but the ones most responsive to change.”

— Charles Darwin

Innovation occurs at the intersection of expertise, diversity and opportunity. Institutional partners will use the following actions to increase innovation in the Research Triangle Region:

- ▶ Increase communication opportunities among business, academia and government.
- ▶ Offer innovation assistance to high-growth companies.
- ▶ Inform public officials of changes or new actions that need to be taken.
- ▶ Measure innovation to develop specific strategies.

“Innovation occurs for many reasons, including greed, ambition, conviction, happenstance, acts of nature, mistakes and desperation. But, one force above all, seems to facilitate the process, the easier it is to communicate, the faster change happens.”

– James Burke. *Connections*

While most people envision innovation occurring only in the most high-tech industries, innovation can and must occur across all industries.

Porter’s model focuses on increasing innovation to raise production. That, in turn, raises the standard of living. Increasing innovation that flows from the region’s universities, that occurs when people and companies share ideas, and that is born from the creativity of our people has been a central theme of this effort.

Regional business and academic leaders have developed a new vision to guide our economic development that is based on the belief that successful regions no longer depend on natural resources or low-cost manufacturing, but on the intellectual abilities of their people.

The Research Triangle Region’s vision is to be a world leader in intellectual capacity, education and innovation to enhance productivity and economic growth and achieve a superior quality of life for all our citizens.

Areas of Opportunity

While the region's opportunities are great, resources are limited. The task force sought to identify how the Research Triangle Region could apply its limited resources to support competitive success for our industries and our region.

A comprehensive analysis of growth opportunities in the region, conducted for the task force by RTI International identified 30 technology strengths and 120 growth opportunities. These are areas for which the region's academic, government and corporate research and development lead the world in innovation and achievement.

From the list of 30, RTI identified eight areas that hold the highest potential for boosting economic growth in the near term. The eight are: **pharmaceuticals, biological agents and infectious diseases, agricultural biotechnology, pervasive computing, advanced medical care, analytical instrumentation, nanoscale technologies and informatics**. These eight draw on the region's most competitive and innovative R&D assets. They represent the region's best opportunities for strong and sustainable job creation and business investment and growth.

The eight growth priorities were selected on these factors:

- ▶ Size of projected market opportunities.
- ▶ Strength of existing R&D base and industry clusters in the region.
- ▶ Prospects for job creation, cluster recruitment, new venture creation and rural economic development.
- ▶ Cross-cutting nature of research and technology to contribute to multiple clusters or to enable growth at the intersection of existing clusters.
- ▶ Funding trends within government and private sectors.
- ▶ Sustainability of job growth in the face of global competition.

North Carolina's 2002 Economic Development Strategic Plan tasked each region to: "Complete regional cluster analysis to understand regional strengths and opportunities and develop strategies and tactics to address knowledge-based job creation."

Although universities and businesses will continue to pursue growth opportunities in all of the areas identified by RTI, the institutional partners working on this initiative will collaborate to focus new resources on these eight growth priorities.

In addition, the region will focus on two additional industry sectors that are important for job creation in more rural parts of the region: **vehicle component parts and logistics and distribution**. These two growth opportunities were identified in a study by The University of North Carolina at Chapel Hill's Office of Economic Development, which identified cluster targets of opportunity for the region. The research supports the notion of building on existing clusters, such as pharmaceuticals and medical technology, but revealed the importance of continuing to focus on these two traditional industry sectors that continue to be viable job creation opportunities. These two bring to 10 the areas of focus for the action plan.

Business and higher education leaders from the eight emerging technology areas have met and identified actions that need to be taken to ensure the region remains a world leader in these areas and promote job creation. Dozens of specific recommendations were made and incorporated into the work of the institutional partners.

Several key themes emerged. The region needs to create opportunities for greater interaction among and between the business and academic communities through cluster networks, special events and on-going partnerships. Targeted investments, such as a regional biosafety laboratory, a pervasive computing test bed and a DNA bank, would strengthen the region's competitive position.

Finally, while the region focuses on strengthening the clusters, all institutional partners must react quickly to new growth opportunities as they emerge. This strategy provides for careful and continuous monitoring to identify new opportunities that the region may exploit.

RTI's report, *R&D Inventory and Analysis of Growth Opportunities in the Research Triangle Regions*, describes the eight high-potential opportunity areas and region's competitive assets in each of them. The eight are described in brief below:

Pharmaceuticals

Pharmaceutical and biopharmaceutical R&D represents the most important research and technology-intensive industry in the Research Triangle Region.

The region offers resources to support the complete life cycle of pharmaceutical development, including:

- ▶ Quality university life sciences programs and corporate research organizations that produce discoveries that are transferred to emerging or existing companies, resulting in new therapies or R&D tools.
- ▶ Local research universities, medical schools and nonprofits that provide research services, as well as preclinical and clinical trials, in support of drug development efforts undertaken by companies ranging in size from small to large.
- ▶ The Triangle's contract research organizations (CROs), which provide pharmaceutical research, testing, development, preclinical trials, clinical trials and associated services to ensure compliance with U.S. Food and Drug Administration (FDA) regulations.
- ▶ Corporate and contract pharmaceutical and biomanufacturing plants.

The Research Triangle is one of very few places worldwide where such a critical mass exists. North Carolina receives substantial grant funds from the National Institutes of Health (NIH) and, within North Carolina, the Triangle receives the most NIH grants of any region. The public's desire for quality health care will continue to drive the search for new discoveries, new drugs and advanced treatments. Aging populations in most industrialized countries will also favor growth of the pharmaceutical industry.

Merck CEO Raymond Gilmartin told *Business 2.0* (April 2004 issue) magazine that the Research Triangle Region is one of the country's "Clusters of Innovation."

Biological Agents and Infectious Diseases

The terrorist events of Sept. 11, 2001, highlighted the nation's basic needs for safety and security. Near-term trends in government funding will stimulate new and targeted R&D. A tremendous opportunity exists for the Research Triangle Region to leverage its strengths in the area of biological agents. The needs and opportunities in this area are not limited to bioterrorism, as disease outbreaks often result from natural causes. Opportunities include not only public health but also protection of the environment, water supplies and food sources (plant and animal) from natural or terrorist exposure to biological agents.

Infectious disease is back in the spotlight due to a convergence of events and threats, including emerging or re-emerging infectious disease (e.g., HIV/AIDS, mad cow disease, West Nile virus, SARS), drug resistance across all classes of microbial pathogens and bioterrorism.

Successful solutions to such threats will pull from many technology sectors in which the Research Triangle Region has or can establish leadership, including:

- ▶ World-class public and environmental health research organizations.
- ▶ Discovery and development of new infectious disease therapeutics.
- ▶ Agricultural disaster research, exemplified by recent efforts to create a not-for-profit institute to catalyze the research, development and growth of this industry.
- ▶ Sensors and sensor webs, analytical instrumentation and data mining, which will be critical to monitoring, early detection of outbreaks and characterization of new strains of pathogens.
- ▶ Nanomaterials research, which will provide improved barrier systems for infection control.

Agricultural Biotechnology

Agricultural biotechnology (agbiotech) encompasses a set of technologies – genomic science, functional genomics, bioinformatics and genetic engineering technology – that improve yields and enable new agricultural products when applied to crop plants and livestock. Examples include the creation of new animal breeds or crop varieties with improved characteristics, enhanced nutritional values, faster growth and disease resistance. Advances in these technologies also enable expansion of agriculture into alternative, non-food, non-fiber products, including pharmaceuticals, chemicals, biomaterials and enzymes. Although the agricultural commodities and alternative product markets have very different structures, to a great extent the same underlying R&D supports them.

The Research Triangle Region is strongly positioned to capitalize on the growth opportunities in both markets. The region has several assets that work synergistically to create biotechnology applications for food and fiber products:

- ▶ North Carolina State University's research program in agricultural biotechnology, one of the nation's largest.
- ▶ Strong research programs in statistics, biology, botany, chemistry, genetics, medicine and engineering at North Carolina State University, The University of North Carolina at Chapel Hill, Duke University and others.
- ▶ Several programs focused on transferring university R&D to the large agricultural industry in the state, as well as NC State's leadership role in efforts to facilitate commercialization of agricultural intellectual property.
- ▶ Three of the world's largest agribusiness companies: Bayer CropScience, Syngenta Biotechnology and BASF.
- ▶ Entrepreneurial environment and ready access to investment capital and incubator infrastructure, which combines to nurture start-ups.
- ▶ Large agricultural industry and leadership in poultry and hog production, providing commercial pathways for launching improved agricultural commodities.
- ▶ Research and product divisions of several major pharmaceutical companies, including GlaxoSmithKline, Wyeth and Biogen Idec.

Pervasive Computing

Pervasive computing is the ultimate embodiment of communication networks. It enables on-demand access to information from anywhere at anytime, changing the way information is gathered, stored and shared. Creation of pervasive computing networks involves integrating wireless technologies, optical communications and computational hardware and software – all areas of strength in the Research Triangle Region. Pervasive computing networks will be accessed by a new generation of electronic devices, including sensors, wearables and advanced

handhelds. These devices will deliver a variety of enhanced or new services over the network, such as communications, data retrieval and exchange (including video) and remote monitoring.

The creation of pervasive computing networks is currently being driven by open standards created by multinational corporations. The rise of these networks will create opportunities for the region in new electronic products and services, including the following:

- ▶ Medical devices that enable monitoring of patients in real-time and improve the quality of health care in rural areas.
- ▶ Wearable electronics that are incorporated into textiles or miniaturized to be worn unobtrusively on the body.
- ▶ Sensor networks deployed at remote locations for various uses, including inventory tracking, precision agriculture and homeland security.
- ▶ Laboratory information management systems, especially to support pharmaceutical/ biotech research and clinical trials. By integrating a wide variety of sensors that monitor ongoing research with databases of results and analytical techniques, virtual laboratories can be created that support greater productivity and improved collaboration.

Advanced Medical Care

In the next 10-20 years, combined advances in several fields – medical devices and diagnostics, drugs and drug delivery systems, genomics and proteomics, biotechnology, telecommunications and informatics – are expected to revolutionize medical care. Examples of advanced medical care may include use of genetic analysis to determine predisposition to certain diseases, to design a customized wellness program to counter such predisposition, to recommend periodic tests for monitoring patient status, and to develop an individualized therapeutic approach in the event of early onset of disease. Other examples include:

- ▶ Diagnostic tests to identify early cellular and molecular changes that are characteristic of a given disease.
- ▶ Injectable nanomachines that deliver localized drugs, clean arteries, selectively destroy cancer cells or repair organs.
- ▶ Gene therapy to treat brain tumors or stimulate angiogenesis.
- ▶ Remote, cost-effective monitoring of patient progress during and after treatment using wireless sensors and telecommunications.

The Research Triangle Region offers world-class health care institutions that will continue to lead in the evolution of quality health care. The region also has strong R&D competencies in key fields that support advanced medical care, including therapeutics development, genomics/proteomics, gene therapy, medical devices, medical diagnostics, sensors, informatics, information technology (IT) and communications. The region also has infrastructure and supply chains across the pharmaceutical, health care services, biotechnology, IT hardware and imaging industries. Leveraging these resources to lead advancements in medical care and establish dominance in personalized medicine will lure life sciences companies and health care consumers to the region, stimulate new investment, and foster growth of new and existing companies.

Analytical Instrumentation

Analytical instrumentation is increasingly incorporating advances in photonics, imaging, combinatorial methods and informatics. The result will be a permeation of sensors and other analytical instrumentation in a variety of fields including chemistry, civil engineering and security. The Research Triangle Region is poised to contribute to this revolution in three main areas: optics/photonics, combinatorial methods and informatics.

Photonic methods will continue to revolutionize analytical instrumentation by providing new radiation sources and sensors. Tunable lasers will replace traditional spectroscopic light sources and enable the miniaturization of chemical analysis equipment such as spectrometers.

This trend will promote the rise of advanced, low-cost, lab-on-a-chip technologies that provide point analysis in the field. In addition, sensors made from optical fibers and gratings will be employed in a variety of applications, including corrosion monitors on bridges, chemical sensors in factories, and remote monitors for precision agriculture. The Research Triangle Region's knowledge base in analytical chemistry, particularly high-throughput screening methods, and optical technologies provide a strong foundation for start-up companies targeting these applications.

Combinatorial methods and high-throughput screening have become commonplace in pharmaceutical and biotechnology laboratories. However, these methods have been slow to progress to other disciplines, such as catalysis, polymer science and nanotechnology. The pharmaceutical and biotechnology industries in the Research Triangle provide the region with a strong foundation in combinatorial methods. The region can continue to play a major role in developing and applying combinatorial methods and high-throughput screening to the health industry, and can spearhead the application of these methods to other technologies.

Nanoscale Technologies

Recent advances in chemistry enable molecular-level engineering of complex structures such as polymers, metals, ceramics, proteins and genes. Novel electrical, mechanical, optical and catalytic properties of nanostructured materials have garnered worldwide attention. Exploration of these capabilities has just begun, but the field has already produced advances in pharmaceuticals, composites and biotechnology. Nanotechnology is an enabling technology, cutting across many industry sectors and potentially creating new industries. The Research Triangle Region is well positioned to capitalize on the emergence of these nanoscale technologies, particularly for life science applications.

Nanoparticle applications are the nearest to market and the most diverse. The use of self-assembled monolayers, nanoporous membranes and other surface-science nanotechnologies will create a new paradigm in chemistry. These modified materials can serve as molecule-sized chemical factories for creating pharmaceuticals and biochemicals with tailored structure-property relationships (i.e., rational drug design) and optical activity, which will facilitate the creation of medicines personalized to individual DNA structures. In addition, nanoscale technologies will give rise to new composites useful in drug delivery, medical sensors, tumor labeling, cell transport agents, automotive materials, bio-compatibility agents and architectural structures. Finally, controlled manipulation, assembly and measurement of nanoscale materials is essential to creating new and useful products.

Informatics

Informatics includes a broad range of information technologies, computer hardware, software and IT services used to manage and analyze data to drive innovation and create business advantage. In the knowledge economy, competitive advantage derives largely from an organization's ability to make effective and timely use of internally and externally generated data.

Informatics is already firmly established in the Research Triangle Region, home of the largest industrial employers of knowledge workers, and should provide sustainable growth into the future. R&D investments in IT provide synergistic cross-cutting benefits to other clusters. However, future opportunities will increasingly derive from software and related services rather than hardware. With some exceptions for general-purpose software, like operating systems, investment should focus on particular application areas. Three areas with significant cross-cutting potential are critical to the continued growth of the region's informatics sector:

- ▶ Distributed computing
- ▶ Analytical software techniques
- ▶ Imaging and visualization systems

Action Agenda

“What makes a plan capable of producing results is the commitment of key people to work on specific tasks.”

– Peter F. Drucker

Staying on Top calls for focusing and coordinating the region’s business, academic and economic development resources on a shared vision and strategy for creating jobs.

Strategy 1:

Organize economic development strategies around industry clusters where the Research Triangle Region has a demonstrated or emerging competitive advantage.

- 1.1 Develop and manage cluster support networks for targeted clusters.
- 1.2 Establish a regional alliance to develop a strategic plan for curriculum support to targeted clusters.
- 1.3 Develop a regional workforce coordination strategy to anticipate and support the changing needs of business.
- 1.4 Recruit conferences and events in targeted clusters.
- 1.5 Provide ongoing research and intelligence gathering to identify emerging cluster opportunities.

Supporting the Growth of Clusters of Innovation

Clusters are developed using four key strategies:

- Organizing service delivery to address cluster businesses’ needs collectively.
- Targeting investments in innovation, entrepreneurship, and recruitment to clusters.
- Increasing cluster networking and learning for competitive advantage.
- Improving the workforce and its readiness for work in the cluster.

Source: UNC-Chapel Hill Office of Economic Development report, *Best Practices in Implementation of Cluster-Focused Strategy* and research by Regional Technology Strategies Inc.

Strategy 2:

Create plentiful job opportunities using a balanced economic development approach of targeted recruitment, global brand recognition, business creation and existing business retention and innovation.

- 2.1 Develop a five-year marketing campaign to guide recruitment and branding initiatives.
- 2.2 Develop a coordinated and sustained recruitment program that is research-directed and cluster-focused.
- 2.3 Develop and implement a sustained brand recognition campaign that enhances the region’s image for recruitment of targeted companies, headquarters operations, entrepreneurs and intellectual capital.

Targeting Business Investment

A predictive model will be used to determine which companies will likely increase capacity in the next 24 months. Businesses will be targeted that help complete and support the region’s targeted clusters.

- 2.4 Develop and implement a regional retention and expansion program to support and strengthen the competitiveness of businesses in the region.
- 2.5 Expand the Small Business & Technology Development Center’s Management Education Services to targeted high-growth cluster companies.
- 2.6 Expand the Center for Entrepreneurial Development’s Leadership Circle program’s infrastructure and integrate new strategic partners to facilitate effective mentoring relationships between successful entrepreneurs and high potential entrepreneurs.
- 2.7 Expand the Center for Entrepreneurial Development’s Expert Teams program to match the business community with academic and other inventors, researchers and innovators to help bring university and other technology commercialization efforts to market faster and easier.
- 2.8 Create a media strategy targeting local, regional and national outlets that promotes the region’s enhanced entrepreneurial and creative-class climate and its benefits to the region.
- 2.9 Increase the quantity, variety and the quality of capital available in the region.

Strategy 3:

Integrate the region’s higher education resources into all economic development efforts.

- 3.1 Develop economic development portals and single points of contact for each institution of higher education.
- 3.2 Develop higher education rapid-response teams for each targeted cluster.
- 3.3 Develop demand-driven specialized cluster programs, expertise and services to be housed at the region’s community colleges.
- 3.4 Connect industry leaders with the higher education community to develop strategies for maintaining the region’s national leadership in industry training and support.

“Today the relationship is undergoing a fundamental change, as universities begin to understand just how much they stand to gain from closer ties to the business community, and companies realize just how rich the opportunities can be on college campuses.”
 — Universities: Your New Best Friends, INC.com

Strategy 4:

Develop creative, inclusive approaches to improve rural prosperity.

- 4.1 Pilot an innovative rural “mini-hub” as a tool for concentrated rural development.
- 4.2 Create a rural entrepreneurship initiative that includes agricultural entrepreneurship as a component.
- 4.3 Create a dialogue between urban and rural hospitality organizations to develop cross-marketing opportunities.

Mini-hub: An Innovative Rural Strategy
 A mini-hub is an enhanced industrial park intended to serve as a growth pole outside an urban area, suitable for targeted businesses. Several local governments share both the costs and the resulting tax revenues.

Strategy 5:

Create agile leadership networks to respond to market challenges, changes and opportunities.

- 5.1 Develop a regional leadership network to address issues of economic competitiveness.
- 5.2 Develop an annual unified federal and state legislative agenda to ensure continued regional competitiveness.
- 5.3 Develop an outreach and economic development information program for local elected officials throughout the region.
- 5.4 Expand air service from Raleigh-Durham International Airport to key markets.
- 5.5 Convene an annual “State of the Region” event to examine economic progress and on-going challenges.
- 5.6 Convene partners who can address key transportation issues.
- 5.7 Build connections among urban and rural opinion molders and leaders to address competitiveness issues.
- 5.8 Develop a training program for professionals in the economic development field (broadly defined) to provide continuing education on New Economy developments and new techniques to improve competitiveness.
- 5.9 Develop a regularly updated regional development plan detailing infrastructure capacity and planned additions to capacity (roads, water, sewer, school classrooms, bus, electricity, etc.)

“We must boost rural leadership and give rural communities greater civic capital to work on the difficult challenges they face.”

– Rural Prosperity Task Force 2000

Creating the Capacity to Act

The Research Triangle Regional Partnership (RTRP) will lead the effort to identify resources and develop the capacity to complete the 30 action strategies detailed in this plan.

RTRP seeks to raise \$5 million over five years from these sources:

- ▶ **Institutional Partner commitments** to complete actions using redirected existing resources
Goal: \$2,250,000
- ▶ **Increased private fundraising** through partnerships with regional business organizations
Goal: \$1,250,000
- ▶ **Grants from national and regional foundations** to support specific components of the plan
Goal: \$750,000
- ▶ **Corporate or public sponsorships** for specific components of the plan
Goal: \$500,000
- ▶ **Income generation** from specific components of the plan
Goal: \$250,000

Measuring Results

Job growth in the region as a whole and in each of its 13 counties will provide the primary measures of success for this initiative.

Additional measurement tools will include:

- ▶ Annual report to evaluate progress.
- ▶ Annual State of the Region event and report to measure economic progress and regional competitive factors against goals established by the institutional partners.
- ▶ An innovation index.
- ▶ Periodic reports on process measurements, including maintaining business, institutional partner and public sector involvement.

“However beautiful your strategy, you should occasionally look at the results.”

– Winston Churchill

Measurable results will be developed for each action item in the plan to monitor value and impact.

Responsibilities and Timeline

Actions	Responsibility (lead organization in bold)	Start
Organize Strategies Around Industry Clusters Where The Research Triangle Has a Competitive Advantage		
1.1 Develop/Manage Cluster Support Networks for Targeted Clusters	RTRP/Institutional Partners*	2005
1.2 Develop Community College Strategy to Support Clusters	NCCCS & RTRP	2006
1.3 Create Regional Workforce Coordination Plan	NCDOC & RTRP	2006
1.4 Attract Cluster Events & Conferences	Regional CVBs & RTRP	2005
1.5 Update Cluster Research	RTI & SBTDC	2007
Balanced Approach -Targeted Recruitment, Branding, Business Creation, and Existing Business Retention		
2.1 Develop 5-year Marketing Plan	RTRP	2004
2.2 Initiate Cluster Driven Recruitment Effort	RTRP , NCDOC, NC Biotech Center	2004
2.3 Implement Global Branding Campaign	RTRP	2005
2.4 Create a Regional Retention & Expansion Program	Regional EDCs, SBTDC, RTRP	2004
2.5 Expand Management Education Services to high-growth companies	SBTDC	2004
2.5 Expand "Leadership Circle" Entrepreneurial Program	CED	2004
2.6 Expand "Expert Teams Program to Link Business-Universities	CED	2004
2.7 Media Strategy to Promote Entrepreneurial Impacts	CED & RTRP	2006
2.8 Implement Strategy To Increase Capital	CED	2004
Integrate And Align Higher Education Resources Into Economic Development Efforts		
3.1 Develop Economic Development Portals at Universities	UNC President , Universities	2005
3.2 Develop University Cluster Rapid Response Teams	UNC President , Universities	2004
3.3 Develop Community College Cluster Capacity	RTRP & NCCCS	2006
3.4 Connect Education-Business to Improve Industry Training	SBTDC & RTRP	2006
Develop Creative, Inclusive Approaches To Improve Rural Prosperity		
4.1 Develop Rural "MiniHub"	Kerr-Tar COG , EDCs, RTRP	2005
4.2 Develop Rural Entrepreneurial Initiate	NC Rural Center	2004
4.3 Build Synergy Between Urban & Rural CVBs	Urban CVBs & RTRP	2005
Create Agile Leadership Networks to Respond to Market Challenges, Changes, & Opportunities		
5.1 Create New Triangle Leadership Network	RTRP & GTRC	2004
5.2 Create Annual Unified state & Federal Legislative Agenda	NCEITA, Chambers, RTRP , Others	2005
5.3 Create Economic Information Program for Local Elected Officials	RTRP & GTRC	2005
5.4 Increase Air Service at RDU	RDU , CVBs, Leaders & RTRP	2004
5.5 Annual "State of the Region" Event to Benchmark Progress	RTRP	2004
5.6 Broader Collaboration for Transportation Solutions	RTA	2004
5.7 Network Urban & Rural Industry Leaders	NC Rural Center & RTRP	2005
5.8 Create Regional Development Capacity Plan	Regional COGs & RTRP	2007
5.9 Create Economic Developer Education Program	RTRP	2005

* See list of Institutional Partners on page 21

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Chapel Hill/Carrboro Chamber of Commerce
Chapel Hill/Orange County Visitors Bureau
Chatham County Economic Development Commission
Council for Entrepreneurial Development
Durham Convention and Visitors Bureau
Franklin County Economic Development Commission
Granville County Economic Development Commission
Greater Durham Chamber of Commerce
Greater Raleigh Chamber of Commerce
Greater Triangle Regional Council
Harnett County Economic Development Commission
Institute for Emerging Issues
Johnston Community College
Johnston County Economic Development
Johnston County Visitors Bureau
Lee County Economic Development Corporation
MCNC
Moore County Partners in Progress
North Carolina Biotechnology Center
North Carolina Citizens for Business and Industry
North Carolina Community College Systems
North Carolina Department of Commerce
North Carolina Rural Economic Development Center
North Carolina State Economic Development Partnership
North Carolina Electronics & Information Technology Association
Orange County Economic Development Commission
Person County Tourism Development Authority
Pittsboro-Siler City Convention and Visitors Bureau
Raleigh Convention and Visitors Bureau
RDU Airport Authority
Region K Council of Governments
Regional Transportation Alliance
Research Triangle Foundation
Research Triangle Regional Partnership
RTI Center for Technology Application
Small Business & Technology Development Center
Smithfield-Selma Area Chamber of Commerce
The University of North Carolina at Chapel Hill Office of Economic Development
Vance County Economic Development Commission
Vance County Tourism Department
Warren County Economic Development Commission

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 Duke Power
 First Citizens Bank
 Greater Raleigh Chamber of Commerce
 IBM
 The News & Observer
 North Carolina Biotechnology Center
 Novozymes
 Progress Energy
 Quintiles
 RBC Centura
 Research Triangle Foundation
 Research Triangle Regional Partnership
 RTI International

Facilitating Partners

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Research

Research was a critical component of this initiative. Results from Dr. Michael Porter's *Clusters of Innovation* study laid the groundwork for the project. Six additional research projects conducted by local partners during 2003 guided the task force's recommendations and actions.

Complete reports and extensive additional project information may be found online at the www.researchtriangleregion.org.

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Winning the Job Wars of the Future

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