

JANUARY 2000

TECH NEW YORK:

A Framework for Public/Private Action



Executive Summary

Report to the Speaker

of the Council

of the City of New York

Prepared by

Industrial Technology
ITAC 
Assistance Corporation

 **Battelle**
... Putting Technology To Work

Acknowledgments

The Project Team was composed of Sara Garretson, Matthew Mitchell and Benjamin Segal (ITAC); and David Hochman and Walter Plosila, Ph.D. (Battelle). The project team would like to acknowledge and express its gratitude to the following persons and organizations for their assistance:

City Council Finance Staff: Dr. Larian Angelo (Chief Economist) and Regina Poreda Ryan (Policy Analyst).

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Hon. Peter Vallone
Speaker of the Council of the City of New York
New York, N.Y.

Dear Speaker Vallone:

We are pleased to present to you the final report of a project that you and the City Council funded in the 1999 budget.

Tech New York: A Framework for Public/Private Action is the outcome of a nine-month study to identify strategies to develop New York City's undeniable potential as a major technology center in the "New Economy."

The Framework was prepared by ITAC, a not-for-profit organization that promotes technology-based economic development in New York City. The City Council provided funding through a contract with the NYC Economic Development Corporation. We retained the Battelle Memorial Institute as consultants for the research and writing of the Framework.

The report provides a comprehensive and cohesive portrait of the challenges and opportunities that New York faces in building a stronger, technology-driven economy based on the considerable but under-appreciated assets already in place. The attached Framework recommends a series of 17 specific actions within 5 broad strategic areas, and suggests a plan for implementation. In addition, there is a comprehensive, 200-page analysis providing backup research and analysis that we will be forwarding to your staff.

I was particularly pleased to hear your announcement during the final phases of preparing this report that you support the need for a Technology Office in New York City. We are also encouraged that the New York City Economic Development Corporation is implementing the technology investment program funded by the City Council last year and has begun to act on our recommendations for City-wide technology districts and a promotional or "branding" campaign. We applaud the Council and the Administration and pledge our support in implementing these and other actions in this report.

We at ITAC appreciate the opportunity to have served our City by working on so important a project. We stand ready to assist the Council in working through the implications of our findings, and assisting in turning plans into action.

Respectfully submitted,

Sara P. Garretson

A handwritten signature in cursive script that reads "Sara P. Garretson".

Executive Director

Executive Summary

New York City is in the midst of an economic transformation driven by technology and business imperatives. The challenge for all of us—technology firms, government officials, and advanced service providers—is to extend recent successes and create long-term, sustained growth in which all sectors of the economy benefit. To address this challenge, this report (1) provides an understanding of the role of high-growth technology firms in the City's economy and (2) makes concrete recommendations for public/private action that will help the City to improve its competitive position.

Background: The New Economy and the City's Future

In the past seven years, technological innovation has brought a profound economic transformation of a scale not seen since the industrial revolution. High technology has not just produced the

"Today a New Economy is clearly emerging: it is a knowledge and idea-based economy where the keys to wealth and job creation are the extent to which ideas, innovation, and technology are embedded in all sectors of the economy."

—*The State New Economy Index*,
Progressive Policy Institute, July 1999

determinants of economic success, we have entered the age of a so-called "New Economy."

Internet and e-commerce revolution, but has significantly altered almost every other business sector, from manufacturing to biomedicine and health care. In fact, the technology sector broadly defined has grown four times as fast as the national economy as a whole since the 1990-91 recession, and twice as fast in the decade before.¹ With scientific and technical knowledge becoming critical



"In the New Economy, the standard economic policy tools are no longer enough to support the needs of the small and mid-sized entrepreneurial firms."

—ITAC, *Tech New York*, 2000

Despite the general orientation of the Northeastern states to an older, industrial economy, the New York City metropolitan region holds a relatively high standing in the New Economy.

A recent Milken Institute study ranks the NYC metropolitan area 9th on a list of Top 50 technology centers in the United States.² At the state level, a similar analysis by the Progressive Policy Institute ranks Connecticut 5th, New Jersey 8th, and New York State just 16th on a "New Economy" vitality index. A more aggressive strategy for technology-based economic development in the City is likely to pay significant dividends to the State of New York and to the region as a whole.

Once, the City's economy benefited from the economies of agglomeration—those forces that encourage companies to invest, even in the face of high costs, in places like New York where there are dense networks of suppliers, workers, financiers and customers. However, it is now the economics of dispersion that have become key. As economists have observed, nearly anything can now be made anywhere using capital and knowledge from another place and shipped for sale to yet another locale. The New Economy rewards firms that are nimble, those that can assemble strategic partnerships and "virtual companies" across global boundaries, taking advantage of what the workforce in each metropolitan region does best.

For years manufacturing and back-office operations have dispersed from New York City to lower-cost locations. How will the City retain its competitive position now that even higher-value financial, business and research services can be dispersed around the globe? In the days when heavy physical capital was key to competitiveness, local governments could attract development by building common infrastructure like ports and offering private firms subsidized financing for the plants and equipment they needed. Today's companies

depend on business relationships and intellectual capital that no government can provide directly.

This report focuses on what New York City should do to create the environment and to encourage the synergy that will ensure success. The City needs to follow several key strategies to ensure it is positioned as a place where entrepreneurial technology firms want to invest, and technology-trained employees want to be employed. This report recognizes as strong advantages for the City recent gains in quality of life and the continuing attractiveness of its cultural amenities to well-educated technology workers. However, it also advises that the City will always be a high-cost location to do business, and must deliver value commensurate with that cost in order to thrive. Central to this value proposition is the symbiotic relationship between the City's large, world-leading firms that need the latest technology to avoid becoming irrelevant, and the small, fast-growing entrepreneurial firms providing that technology.

5 Strategies for Success

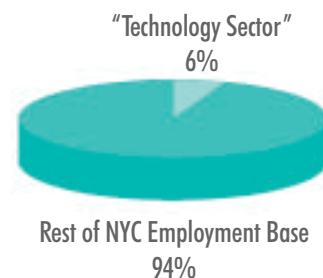
- Improve the business climate for technology enterprises and promote success
- Build a stronger technology-entrepreneurial culture that builds on the City's unique attributes
- Address and invest in the advanced infrastructure necessary for technology firms
- Build stronger R&D partnerships between business and universities
- Build leadership mechanisms and service delivery system

Technology and the City Today

Technology is quite significant to the City's economy, although the relationship is obscured by questions of scale and definition. As of 1997, some 184,500 persons were employed in firms conventionally classified as technology businesses, up from 175,500 in 1995.³ This is a large pool of

technology workers compared with most other U.S. metro areas, and anecdotal evidence suggests that technology job creation has exploded since the most recent formal data. *However, the City's overall payroll of 3.3 million jobs overshadows technology employment strictly defined, obscuring its true importance.* This misapprehension is even more striking because a wide range of traditional business sectors and occupations are taking on technological characteristics and demands at an accelerating pace.

Employment in Technology Sectors as a Share of Total NYC Employment



The effect can be seen clearly in two technology sectors where there has been demonstrable recent success in the City. New media, for example, has developed from nothing as a business sector in the last five years and now accounts for as many as 100,000 jobs in the region, the vast majority in the City itself.⁴ This makes New York City one of the world's unchallenged leaders in new media. To take another example, the software industry now claims 30,000 employees in the region, according to a study by the City comptroller (not including "captive" programmers at firms classified in other business sectors, including financial services). That makes the region 6th in the nation in information technology jobs, and 4th in the number of firms, suggesting a firm size smaller than the national average, and a vital, entrepreneurial sub-sector.

So why are these results invisible—both to City residents who don't think of themselves as living in a technology center, and to corporate decision makers who routinely site technology facilities in regions competing with New York City? The answer lies in the huge size of those areas in which the City *is* specialized. There is broad consensus among

most economists that the City economy is not driven primarily by entrepreneurial technology firms, but rather by (1) FIRE (financial, insurance and real-estate) firms; (2) the “creative/cultural complex”⁵; and (3) health care and life sciences. In fact, further analysis showed that the technology sectors in which the City is most specialized and which are growing the fastest are the ones that serve firms in these “primary driver sectors.”

The central dilemma for the City is: *the dominance of large firms in the primary driver sectors obscures the important role that entrepreneurial firms play in supplying them with critical advanced technology while creating jobs.* The result is that entrepreneurial technology firms can become marginalized

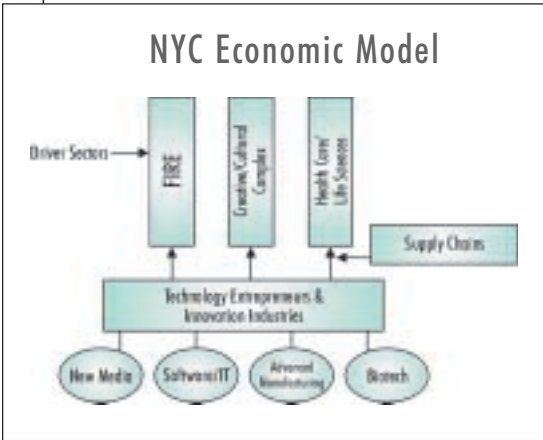


City Theatrical in the Bronx has added computer controls to its theatrical lighting.

Silicon Valley, Route 128 or Research Triangle—the City has the potential to build a technology base that is tightly integrated with the world’s largest, wealthiest, and most powerful community of corporate customers.

Without access to the latest technology solutions, firms in the City’s primary driver sectors could easily lose their dominance to companies elsewhere in the world that learn how to compete more efficiently based on technology solutions. All firms in the City’s primary driver business sectors must have the latest technology to meet their customers’ needs.

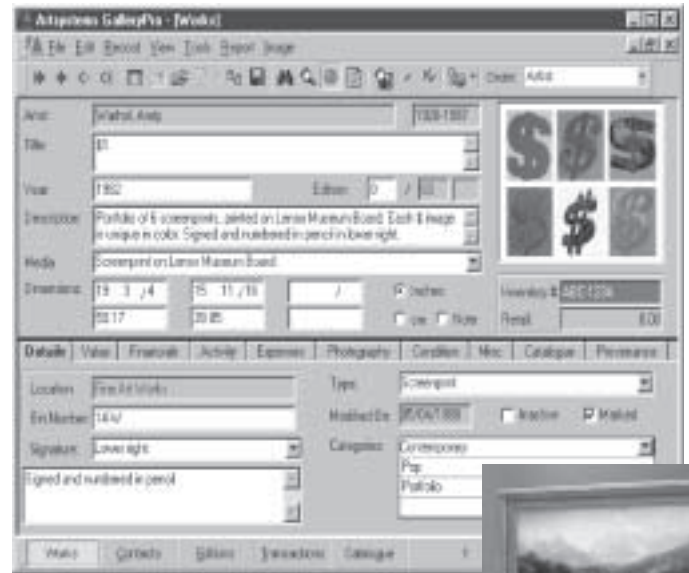
This model also suggests that targeting specific technology sectors does not make sense; rather, diversity is an advantage on which to build. *Framing a technology strategy for the City is really about finding ways to recognize relationships as key to the City’s long-term economic success, and then to cultivate them.* The potential for synergy between large and small firms clearly exists if the City is prepared to lay the groundwork. As in other regions, public and private investments will follow a broad consensus on what is truly important.



in the business community’s self-image, and therefore isolated from mainstream initiatives in economic development. This isolation

holds even in the face of a high-tech revolution sweeping both large and small firms alike. To clarify the true importance of smaller firms, the Framework suggests a visualization of the economy that shows the primary driver sectors as “pillars” of the City’s economy, connected by supply chains to a foundation of vendors, including business service providers and entrepreneurial technology firms. The supply chain is critical to firms at both ends.

Without this built-in customer base, the City’s entrepreneurial technology firms would not have done as well as they have. Unlike any other region of the U.S.—including those most often identified as technology leaders, such as



ArtSystems produces Gallery Management Software for the “Cultural Complex.”

Competitive Analysis of the City and Its Peers

New York City is not the only metropolitan region facing the challenge of defining its role in the New Economy. Considering its global leadership in finance and communications, the City's most serious competitors are probably overseas, in population centers like London, Paris, Tokyo or Frankfurt. However, within the U.S. the closest and most apt comparisons are with Los Angeles and Chicago—which like New York are large, globally oriented, high-cost, and thought of mostly in terms of conventional business sectors like finance or entertainment. Neither region is a technology leader yet, but both have expressed their aspirations to become so. Both cities have developed explicit strategies, and both are tightly integrating their efforts with support from their respective state governments.

Even more threatening, however, is the effort that is waged by smaller communities. Ever since the successes of Silicon Valley and Route 128 (which were due to federal defense procurement, networking, indigenous venture capital, and enlightened private universities), regions around the nation have hungrily pursued the same goal. Whether in the fast-growing regions of the Southwest and Southeast, or in the old, industrial heartland of the Midwest, conscious efforts are under way to reinvent communities that will be competitive in the New Economy. Often it is local economic crisis that spurs these efforts—a manufacturing recession, or a decline in energy prices, for example. Other cities have been proactive and, even in the face of low unemployment, launched plans to compete on the basis of high value rather than low cost.

In this competitive environment, New York City's principal strength is clear. It is America's premier City for those very business sectors (finance, communications/culture, and health care) that must have the latest in technology in order to compete globally. The City's key strength is that it is already home to these "key customers." Equally clear is the City's principal vulnerability: high costs, and a tendency of the technology community to fragment as a consequence of

its small size relative to those very sectors that so successfully make New York the "Capital of the World." What stood out after a complete strategic analysis was mainly that this represents a singular moment in the City's history.

The success in the last several years in improving the quality of life in the City has improved the degree to which one can seriously envision the City as a major technology center. There is an opportunity that must soon be grasped to energize the community of technology entrepreneurs; to connect them with each other and with their customers; to integrate the needs of the technology community with the output of the City's educational system at both the university and K–12 levels; to put to work the enormous vitality and significant technical training of the City's immigrant community; and to stimulate the City's academic community to think not just of research prestige but of economic impacts as one of its measures of success. If these connections are made now, both technology entrepreneurs and large firms alike will benefit for years to come. If they are not made now, the very foundation of the City's economy is subject to dispersion, as entrepreneurs in other regions find ways to apply technology to the endeavors in which the City has, until now, been unmatched. Then these entrepreneurs will expand and grow elsewhere.

Lessons from Competitive Regions

- Fill the early-stage financing gap for entrepreneurial technology firms
- Mentor and nurture technology entrepreneurs
- Make universities—both public and private—partners in local economic development
- Develop commercial real estate suitable for R&D or technology uses
- Create intermediaries to bridge the cultural gap among industry, government and academia
- Promote a new civic identity based on technological and entrepreneurial leadership

Technology Vision, Strategies and Actions

The project team developed a vision statement that builds on the City's competitive advantages and overcomes barriers to strengthening our position within the New Economy. We then used the vision statement to guide the development of five strategies and fifteen public-private actions described in the following pages.

Strategy 1: Continue to improve the technology business climate and image

Because of the unique nature of the City's primary driver sectors and their interrelationship with producers of advanced technology, the City's technology base is not well understood or appreciated, let alone encouraged. This strategy should be framed to address the critical weaknesses in self-image and national image stemming from problems of scale. Attention to image is the first step in a process of building consensus for various changes in City practice and policy that would make a real difference to technology-oriented companies. *The City needs to build a stronger image as a technology user and producer and conduct its business in ways that reflect the importance of technology to its long-term future.*

Business Climate Actions

- Establish a marketing and image campaign to give the City a technology "brand"
- Establish a technology advocate within City government
- Evaluate regulations, taxes, and incentives as they affect technology firms
- Encourage the purchase of local technology products by government and large firms
- Promote housing options Citywide for the technology workforce

Strategy 2: Build a stronger culture of technology entrepreneurship

Firms in the City's primary driver sectors have already contributed greatly to the existence of the current technology

base in the City. But these firms, and the business-services sector that serves as a nexus between these companies and their entrepreneurial vendors, need to be further involved in building a true culture of entrepreneurship. The immigrant population base, the City's role as a center for arts and culture, its status as a center of financial innovation, and the advantages afforded by its sheer density—all these are important factors that can be built upon. The City's base and approach may be different than in other regions, but it clearly has the potential, as demonstrated most recently with new media, to become a dynamic home to technology firm formation. *There must*

be a commitment to support City-based technology entrepreneurs with targeted, early-stage financing, expert counseling, and business-to-business mentoring.

Entrepreneurial Culture Actions

- Establish comprehensive, in-depth support for technology entrepreneurs
- Enable City pension fund investment into locally managed venture firms committed to early-stage financing
- Provide "pre-seed" financing for technology ventures
- Organize a pool of private "angel" capital across all technology sectors

Strategy 3: Invest in the technology infrastructure

Public agencies have historically helped build the infrastructure that enables private investors to create jobs

Vision of Success

The economy of New York City will become stronger and more diverse as:

Firms in the primary driver sectors grow and locate here because of the City's technology-producing assets

Technology entrepreneurs create and grow new businesses here

University innovation strengthens both technology entrepreneurs and firms in the primary driver sectors

The public sector responds to business needs by creating an environment conducive to growth

and wealth. Bridges, waterways, highways, public transit, and other physical infrastructure have been critical to the City's past growth and development as a worldwide center of commerce and gateway to America. The impact of the digital and bio revolutions on what we make, how we work, and where we work requires a broader perspective on infrastructure and real estate. *Public investment must focus on what will not otherwise be built by the private sector: technology-ready space, at reasonable cost, with good access, in settings that promote sustained interaction among technology entrepreneurs, colleges and universities, and large corporate customers.*

Technology Infrastructure Actions

- Use technology districts to build on the strengths of each borough
- Focus on technology firms' needs in planning for telecom infrastructure and airport and transit access

Strategy 4: Build stronger, sustainable business higher education partnerships

Increased collaboration between business and higher education will become ever more necessary as the City seeks to take advantage of the higher speed of technology development and application. The single biggest asset of technology firms anywhere is their employees—specifically, their skills and knowledge. The City's technology firms are eager to hire from local public and private universities, provided that graduates are trained to high standards in relevant skills. *Partnering in research, education, and training with community colleges, senior colleges, and universities will become increasingly important to the growth and competitiveness of the City's technology firms.*

Business/Higher Education Partnerships Actions

- Use CUNY to pilot-test enhancements to university licensing offices
- Provide financing for technology firms to draw resources from universities

- Establish more cooperative education and internship programs in technology
- Promote retention and return of tech-trained graduates

Strategy 5: Build leadership mechanisms and service delivery system

The City encompasses a web of public agencies, non-profit organizations, business service providers, and business and industry—a totality whose mass, complexity, and density tend to isolate any efforts to focus on technology businesses. The City has a broad set of powerful resources, but these have not always been focused on complementary and reinforcing goals. Under strong, high-caliber leadership, an array of key players could be mobilized in ways that complement each other. The result, as has happened in other regions, would be an even stronger technology base. *There must be organized intermediary groups that serve as catalysts, advocates, and facilitators. These public/private partnerships must "steer" the City's transition to a New Economy in ways exemplified by other regions of the country that have enjoyed technology boom times.*

Leadership Mechanism Actions

- Create public and private steering and leadership entities
- Support collection of data on growth of small technology firms

Implementation Strategy

To carry out these actions, there are roles to be played by the private sector, the public sector and various non-profit intermediaries. The formation of two new entities will be required: one inside government and one in the private sector.

The City should create a **Mayor's Office of Technology Enterprise** to perform the inside-government roles of advocacy and expediting. This office can be modeled on those successfully run by many states of *smaller size than New York City*. It can be staffed by professionals with experience in technology-based business. It should have certain core functions, such as staffing the regulatory review process, that it handles with internal staff. It should also be equipped to issue grants or contracts to outside intermediary organizations that are far better equipped than government to carry out those actions that break down the barriers among the sectors and promote collaboration.

Within the framework and recommended actions, there are important roles to be played by private firms, both large and small, and by intermediary organizations like the New York City Partnership, ITAC, the New York Academy of Sciences, and the technology trade associations. To assure that the

voice of these firms and organizations can be heard in a single, coordinated fashion, there must be a parallel entity outside government, a membership organization that we are calling the **New York City Technology Council**. It should be a place where large technology-using firms can meet entrepreneurial technology developers; where technology business can discuss issues of common interest with academia; where business service providers and intermediary organizations can become important networking resources to link entrepreneurs with sources of assistance; and where private commitments to the City strategy can be arranged and partnerships nourished.

Summary and Conclusions

The City is uniquely positioned as a place where a three-way linkage and symbiosis among large technology users, small technology entrepreneurs, and research-intensive institutions can occur; and yet the potential has remained far from fully realized. A clear lesson that emerged from this report is that the very global scale of so many of the key actors inhibits the local communication and interaction that must occur for success to be achieved. The City's strategy should therefore be framed principally to build on existing strength and to promote connectivity among these three principal sectors, whose participation is key to successful adaptation to the demands of the New Economy.

Recent successes in new media and software/IT suggest that the task is far from hopeless, but success will require affirmative efforts to break down the barriers that separate the communities that should be talking and co-venturing with each other. The City's growth pattern will not likely be the same as for the existing technology centers like Silicon Valley or even upstarts like Austin, Denver or Atlanta. But if pursued with vigor, a suitable strategy will define a place for the City that no other American community can match. Success will serve the interests of both large firms struggling to adapt to new technology and the entrepreneurs who create new wealth and opportunity.

Implementation Principles

- Not every action requires a new program — much can be accomplished by refocusing existing efforts and leveraging existing organizations
- The City government should not be the sole funder — there is ample room for support by the private sector (both for-profit and not-for-profit) and the State of New York
- Mechanisms to foster collaboration need to be developed — there is too much fragmentation at present among sectors and technologies
- Actions must benefit the entire City — the non-Manhattan boroughs and their citizenry have key roles to play in reshaping the City's economy
- There must be strong private "ownership" of the strategy.

Action Plan

<p>Actions for Mayor’s Office of Technology Enterprise (OTE)</p>	<ul style="list-style-type: none"> ■ Hire technology advocates within government ■ Evaluate regulations, taxes and incentives ■ Establish and implement a technology “brand” and implement ■ Promote housing options for technology workforce ■ Encourage purchase of local tech products by government and large firms ■ Focus on technology firms’ infrastructure needs ■ Promote retention and return of tech-trained graduates 	<p>~\$1 million (recurring)</p>
<p>Actions for non-profit intermediaries with funding through OTE</p>	<ul style="list-style-type: none"> ■ Support technology entrepreneurs with in-depth services ■ Collect data on small technology firms ■ Finance and coordinate university/industry interaction ■ Expand cooperative education/internship programs 	<p>~\$2 million (recurring)</p>
<p>Actions coordinated by OTE and implemented through City agencies</p>	<ul style="list-style-type: none"> ■ Offer pre-seed financing ■ Use technology districts to build on strengths of each borough ■ Enable City pension fund investment in local venture funds ■ Enhance CUNY tech transfer 	<p>~\$2.25 million mixture of one-time and recurring expenses</p>
<p>Actions that require private sector leadership</p>	<ul style="list-style-type: none"> ■ Form a private-sector-led Technology Council that brings together customers and suppliers ■ Organize pool of private “angel” capital across tech sectors 	

¹ See Ross C. DeVol, “America’s High-Tech Economy: Growth, Development and Risks for Metropolitan Areas,” Milken Institute: July 1999.

² However, the measure used by DeVol is a composite one: the product of a region’s share of the total U.S. technology output (in which the metro area ranks as high as No. 3 simply because it is so large) and the degree to which technology represents a regional specialty relative to the nation as whole (in which the metro area does not even make the top 50).

³ Source: Project-team calculations based on employment data (series ES-202) provided by the New York State Department of Labor for 57 Standard Industry Classification codes identified as “high technology” by the New York Academy of Sciences.

⁴ These figures are based on sector definitions different from those used by the New York Academy of Sciences and by the ITAC project team.

⁵ That is, a cluster of firms in communications, media, fashion/apparel, and culture.

Methodology

The overall methodology used by the project team to carry out this study involved the following key tasks:

1. Undertaking a systematic inventory of technology-related initiatives completed or under way in the City;
2. Collecting and synthesizing prior studies and analyzing certain primary economic series (ES-202 employment data);
3. Benchmarking best practices in other states and regions facing similar issues or otherwise worthy of note;
4. Interviewing selected leaders in industry, government, academic and non-profit sectors on key issues facing the City; and
5. Holding seven focus group sessions to obtain input from diverse industry sectors and other players.

Background Working Papers

The project team created three background working papers:

- Systems Inventory of resources in the City for technology-based economic development (reproduced as separately bound Technical Appendices)
- Benchmarking Report on programs in other communities aimed at technology-based economic development (reproduced as separately bound Technical Appendices)
- Marketplace Description.

The project team used these papers to build a common knowledge base and to provide the source material for an initial “Strengths, Weaknesses, Opportunities and Threats” (SWOT) analysis. This SWOT was distributed in draft form and used to stimulate discussion with persons interviewed and focus-group participants. The completed SWOT was further refined through this process and summarized in the Full Report.

Focus Groups and Interviews

When the working papers and the SWOT were completed, the project team met with various constituents of the City technology community to test out working hypotheses and to listen to the comments and concerns of those actually operating in the technology arena. The project team arranged a series of seven focus groups covering:

- Software and information technology (organized with the help of the New York Software Industry Association)
- New Media (organized with the help of the Worldwide Web Artists’ Consortium [WWWAC])
- Biotechnology (organized with the help of the New York Biotechnology Association)
- Innovation industries (organized directly by the project team with assistance from the Environmental Business Association)
- Finance (organized directly by the project team)
- Technology-based community development in Manhattan and the other boroughs (organized by the project team with assistance from the Offices of the Borough Presidents).

Many persons unable to attend focus groups were accommodated with individual or small-group interviews at their places of business.

About ITAC

ITAC (The Industrial & Technology Assistance Corporation) was established in 1987 as an independent, not-for-profit economic development organization. In 1997 ITAC was designated as New York City's Technology Development Organization (TDO) by New York State.

Over the last several years, the New York State TDOs have helped create and retain over 1,800 jobs. Companies helped by the TDOs have increased sales by \$65.9 million and reduced costs by \$15.7 million, according to the U.S. Census Bureau.

ITAC has assisted more than 1,000 New York City companies with technical, sales and marketing, and financial services that have improved their performance, and provided quality jobs for New Yorkers. ITAC's initial funding came from the New York State Science and Technology Foundation, with in-kind support from the City of New York. Today, ITAC receives support from the National Institute of Standards and Technology, a division of the U. S. Department of Commerce; New York State; and in-kind support from New York City.

About Battelle Memorial Institute

Battelle is recognized worldwide for technology development, management, and commercialization, as well as the development of industry/government/academic partnerships. Founded in 1929 by the family of Gordon Battelle, Battelle Memorial Institute has been a worldwide leader in the development, commercialization, and transfer of technology for industrial and governmental clients for more than two generations. Battelle's 7,000 scientists, technologists, and specialists conduct more than 4,500 projects each year. Clients include the Fortune 50 and federal, state, and local governments in the U.S. and overseas.

In 1991, Battelle created the Technology Partnership Practice (TPP) to focus Battelle's broad experience and capabilities to better serve entities such as local, state and regional organizations, universities, and non-profit technology organizations, in designing, implementing, and assessing technology programs and in helping firms access and use federal, university and industry-developed technology. The TPP includes leading analysts and practitioners in technology-based economic development and also includes regional economists, geographers, business planners, and technology specialists. When required, the TPP can draw on the entire pool of technical talent within Battelle's diverse R&D activities.

About This Report

TECH NEW YORK: A Framework for Public/Private Action provides a comprehensive and cohesive portrait of the challenges and opportunities that New York City faces in building a stronger, technology-driven economy based on the considerable but under-appreciated assets already in place. Funding for this project was appropriated by the New York City Council and administered by the New York City Economic Development Corporation.

In addition to the 14-page Executive Summary, the full 73-page *Tech New York* report is available from ITAC. For a copy of the Full Report or the Technical Appendices, please contact ITAC at (212) 240-6920 or tech@itac.org.

