



Homeland Security Council – New York State Business Council

Tuesday, March 28, 2006

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Good afternoon and thank you for that warm welcome. On behalf of Governor George E. Pataki and NYSTAR's Executive Director, Dr. Russell W. Bessette, it is a privilege to talk with you today.

Terrorists ply their destruction to create fear and we know that Americans do not quaver when confronted with loss and adversity. Before getting into the specific research the New York State Office of Science, Technology and Academic Research, more commonly known as NYSTAR, has sponsored, I would like to give a brief overview of NYSTAR to help you understand how NYSTAR works and the results of these programs.

The New York State Office of Science, Technology and Academic Research, better known as NYSTAR, just completed its sixth year of operation. Since its founding, NYSTAR has worked to fulfill its obligations under the Jobs 2000 Act to harness New York's intellectual strengths to create and retain high-technology related jobs and generate economic development.

It is important to realize that we at NYSTAR do not simply fund science. We fund innovation.

NYSTAR's mission continues to be making New York a national leader in high-tech economic development using our academic research and non-profit facilities as the engines for harnessing this growth.

While many talk about the similarities among the National Science Foundation (NSF), the National Institutes of Health (NIH) and NYSTAR, there is one significant distinction -- NYSTAR grants are expected to lead to economic opportunities and job creation.

Since its inception, the New York State Office of Science, Technology and Academic Research (NYSTAR) has awarded over \$316 million in funds to academic research institutions and not-for-profit organizations across the state. These investments have generated a credited impact of more than \$4.1 billion.

One of the greatest strengths of NYSTAR's model envisioned by the Governor and Legislature was creating programs that span the continuum from concept to commercialization – in turn, helping to create a more seamless system. The results of these efforts is the creation and commercialization of new and improved technologies, new companies, and jobs in fields such as bioelectronics, chip design, new materials, microelectronics, nanotechnology, and biotechnology.

The Agency's Frontier Research and Development Programs invest funds that set the stage for longer-term economic impact. Shorter-term impacts that result from these programs include attracting research funds to the State and longer term impacts include establishing new companies and creating new jobs.

Dr. Bessette, as a member of the Federal Homeland Security Science and Technology Committee, has been called upon to serve as a source of independent scientific and technical planning advice to the Under Secretary for Science and Technology as mandated by the Homeland Security Act of 2002. He is able to provide a valuable link to sharing what is being done in New York to enhance homeland security and learning about other new developments.

Biometrics, the science of identifying individuals based on their physical, chemical or behavioral characteristics, is a key piece in homeland security strategies, but no single biometric - such as face, signature or fingerprint - fits all applications.

Many of the systems on the market have a high false-positive rate, which could be misleading or even dangerous.

We are trying to work around and through this problem.

As a result of the enhanced interest in the various specific science and technology issues of terrorism, NYSTAR's mission has become even more important and our role as science advisor has been significantly enhanced.

In response to the September 11th terrorist attacks, NYSTAR began an unprecedented antiterrorism R&D program that has already fostered industry/university cooperative research in creating new security and defense related technologies, such as identification of individuals through finger imaging and other biometric technologies; concealed weapon detection tools; sensor technology capable of identifying and containing hazardous chemical and biological agents in buildings as part of a "smart building" program; and wireless broadband technologies that can effectively transmit data between field officers, security headquarters and related security organizations.

In addition, NYSTAR has taken an active role in coordinating with local governments on scientific and technical issues related to anti-terrorism efforts. NYSTAR serves as the science advisor to the Director of the newly created New York State Office of Public Security, which is responsible for coordinating and bolstering anti-terrorism efforts throughout the State.

The Office of Public Security works with State agencies, law enforcement, public health officials, transportation officials, emergency response and health responders,

and others to enhance the state's terrorist threat prevention, identification, and response system. Science plays a critical role in this effort. Under the guidance of the Office of Public Security, NYSTAR interacts with all of these groups to identify ways that science can address security-related needs and create opportunities for the development of new technologies that can contribute to the state's security mission.

Governor Pataki created START - Security Through Advanced Research and Technology - to help colleges and universities secure federal and other high-tech research funding for the emerging national homeland security industry.

START includes a commitment of \$5 million in State funds to be used to leverage Federal funds for the development, testing and evaluation of emerging security related technologies. It will also energize university-industry partnerships to promote advances in technology.

As part of its security initiative, NYSTAR brings together experts in specific scientific disciplines from academia and industry to create research teams that address a specific security-related problem.

I would like to offer up a short list of a few of the homeland security projects we have been working on.

- At Columbia University we are investigating the use of terahertz beams to detect hidden objects and diagnose biological organisms.
- At Polytechnic University we are working on ways to reconstruct documents and images that have been destroyed or deleted by computer manipulation, which has the interest of the CIA and FBI.
- At Rensselaer Polytechnic Institute we are developing miniature cameras for crowd surveillance in airports and other gathering places, creating micro devices and systems that could be used in homeland security, and developing new algorithms which are used to gather information from a mobile sensor network.
- At Rochester Institute of Technology we are creating spectral signatures for automatic target recognition and compact photonic devices that could sense biological and chemical contamination.
- At the University of Rochester we are creating software to be used in surveillance cameras that aid in identifying contraband items in crowded areas such as guns or other weapons.
- At the University of Buffalo we are testing the use and efficacy of ultrasound imaging equipment in documenting fingerprints for personal identification and creating a real time ultra-low X-ray spectrometer with potential use in the search of luggage and validating an air purification

device to protect against bioterrorism. The test data of the ultrasound fingerprinting equipment has been impressive. From a pilot project with Canadian Pacific Railroad, the installation will be expanded throughout Canada and the testing of the system at the Port Authority is on-going.

- Collaborations among Polytechnic University, Columbia University, Brooklyn Enterprise for Science and Technology (BEST) and Griffiss Institute will develop additional methods to prevent and detect cybercrime.
- At the City University of New York we are investigating fluorescence properties of bio-agents and identification signatures for use with optical detection technology to detect bio-terrorism earlier and easier.
- At Binghamton University we are developing a system for dynamic modeling, recognizing and analyzing faces in three-dimensions to make the current computer based face identity assurance as good as human recognition.
- A collaborative effort among Binghamton's CAT, Cornell University, the Army Research Laboratory and others are working to develop new flexible electronics.
- At Geneseo College we are finalizing prototypes for devices that absorb blast impacts. This product is adaptable for various uses – enhancing military vehicle safety, protecting police with impromptu shields from

bullets and other armor, and precluding the damage done when bombs are placed in trash cans.

- A collaborative effort between the CATs at Clarkson and Rensselaer Polytechnic Institute (RPI), will endeavor to lower the energy consumption of various devices and processes.
- A \$692,000 Technology Transfer Incentive Program award to Union College will expand the Watervliet Innovation Center at the Watervliet Arsenal, one of only a handful of incubators dedicated to homeland security technologies in the country and the first in New York State. This incubator is a significant component of the Arsenal's efforts to privatize and transform the facility back into a thriving technological corridor.

Earlier this month, I met with the United Kingdom's House of Commons Science and Technology Committee members who came to New York to learn more about our homeland security developments since 9/11. The delegation came to New York to learn more about our developments in biometrics since they must select a system to implement a nationwide identification system. NYSTAR played a key role in helping the British Consulate schedule meetings with New York experts and industries. This latest interaction underscores the strong partnership between Britain and the United States as we continue to fight terrorism.

On March 9, 2006 it was announced by the Long Island's State Senate delegation and business and technology leaders that the New York State Center for Innovation and Excellence in Homeland Security would be built -- a \$21.1-million public-private facility in Bethpage to design and manufacture products for homeland security. This will be the first of its kind in the state, if not the country.

During the past few years, NYSTAR has committed tens of millions of dollars to foster homeland security research. It is that level of commitment which shows how importance of this research.

However, these homeland security applications could not be realized without partnerships among businesses, universities and NYSTAR. Our partnership with business is essential for harnessing the technology advances that are being discovered every day. Scientific discoveries that can enhance security would not be in the marketplace without businesses.

Businesses can assist with advancing security enhancements and developments by taking advantage of the vast resources the State has created at our universities. Under Governor Pataki, the Centers of Excellence have been established and other industry-university programs such as the Centers for Advanced Technology, Centers for Applied Research and Technology, the Technology Incentive Program continued – all of these programs require industry as partners to harness the power

of the marketplace. Tapping into the investments the State has made to have discoveries drive progress, maximizes our resources to improve the State's economic condition and enhance integration of these discoveries into our everyday lives.

NYSTAR's "uNYvation" Web site is also worthy of mention (<http://www.nystar.state.ny.us/uNYvation/index.htm>). This site lists more than a thousand tech transfer opportunities at institutions across the state as well as links to tech transfer offices, and incentives for creating and commercialization new innovations.

Of particular interest is the fact the site includes a searchable component that lists equipment purchased with NYSTAR, National Science Foundation, and National Institutes of Health funds. Since it is searchable by keyword and technology focus, it's straightforward for companies or other institutions to identify needed equipment and find contact information to access these facilities.

If you are not sure how to access these resources, please contact me and every effort will be made to help you locate the resources you need – from people to equipment – to help ensure that our citizenry has the best protection possible.

Together, the advances we make to enhance homeland security will protect our citizens.

Thank you.