



Joan Y. Reede, MD, MPH, MS, Dean for Diversity and Community Partnership, **Harvard Medical School**

“... if students do not receive a rigorous science education, if they don't have teachers who are prepared to teach those subjects, we won't have students in the talent pipeline to fill the future need.”

Changes in Attitude

Investing in a more rigorous science education and building diversity in the workforce

Dr. Joan Y. Reede, M.D., M.P.H., M.S., was honored at Mt. Holyoke College this month as one of America's women physicians who have changed the face of medicine. Her story is part of a traveling exhibition created by the National Library of Medicine in Washington, D.C.

Dr. Reede, a member of the John Adams Innovation Institute Governing Board, currently serves as Harvard Medical School's Dean for Diversity and Community Partnership. Her work focuses on promoting the careers of under-represented minorities at Harvard Medical School and its



Tufts Vice Provost Peggy Newell, Secretary of Economic Development Ranch Kimball and Dr. Phil Cheney listen to comments made by fellow Governing Board members at the Innovation Institute meeting.

Massachusetts seeks to win huge federal research awards

High-stakes R&D competitions could bring hundreds of millions of federal research dollars to Massachusetts

For Ranch Kimball, the Commonwealth's Secretary of Economic Development, it is the greatest economic development opportunity for Massachusetts he has ever witnessed: the potential \$125 million award by U.S. Department of Energy to establish a biofuels center in the Commonwealth. [More>>](#)

“There has been no issue in my term of service where a single award will more define the future economic development of Massachusetts.”

Ranch Kimball
Secretary of Economic Development

Boston's wireless plan detailed for state's ad hoc municipal broadband working group

WESTBOROUGH -- The recommendations for a Massachusetts “revolution” in ubiquitous wireless broadband service have not yet been televised (although they may soon be available for download on your iPod). Nor have they been reported on in depth by the news media.

“The Boston model is not a one-size-fits-all model for the Commonwealth, but its existence advances the discussion for all communities”

Bill Ennen, program manager
John Adams Innovation Institute



Border crossings, seaports and airports such as Logan, above, are slated to receive new detection systems based on a new technology application developed by a Massachusetts research center.

Thwarting the terrorist threat of nuclear materials smuggling

Research center plays key role in commercializing new technology to protect our nation from attack

BOSTON -- A new detection system to prevent the smuggling of nuclear materials by terrorists through U.S. airports, seaports and border crossings is now in production at Raytheon, which won a \$28 million contract in July from the U.S. Department of Homeland Security.



Dr. Michael Silevitch

.....
“Money and support from the Innovation Institute were absolutely critical to facilitating the industry partnerships.”

Dr. Michael Silevitch, Robert D. Black
Professor of Engineering at Northeastern University

.....
Homeland security officials, according to reports, said that they would like to deploy the new detection system at more than 600 ports of entry, a program estimated to be worth more than \$1 billion over the next five years.

The system, called an advanced spectroscopic portal, is the commercial

affiliate.

A graduate of Brown University and Mount Sinai School of Medicine, Dr. Reede was instrumental in developing the Biomedical Science Careers Program, a collaborative community-based organization involving academia; private industry partners such as Genzyme, Biogen, and Boston Scientific; medical centers; public education; and professional societies.

Dr. Reede spoke with **Convergence** recently, discussing collaborative approaches to workforce development to make Massachusetts more competitive in the Innovation Economy.

CONVERGENCE: *At the Innovation Institute governing board meeting in February discussing the emerging marine science and technology sector, you asked an insightful question about workforce development. The answers to your question seemed to indicate that there was a growing gap in the ability of the sector to find qualified workers.*

Dr. Reede: It is wonderful to think about the potential of our knowledge economy. I haven't heard adequate discussion as to how to recruit and retain the talent pool needed to support continued growth. If we don't have the knowledgeable workers, we won't be able to expand.

It is both an immediate and a long-term issue. In the immediate future, the question is how we can retain the students who are the most capable, and at the same time, bring the best and the brightest students to Massachusetts from other places.

[More >>](#)

This explains, in part, why there was a full house August 31 at the Massachusetts Technology Collaborative campus to hear Nicholas Vantzelfde, a consultant to the Boston Wireless Task Force. He provided a detailed analysis of the City of Boston's plans to achieve an open wireless broadband infrastructure through a not-for-profit corporation. (Link to [Boston plan.](#))

[More >>](#)

Innovation Institute Investments

High-speed direct digital printing

BOSTON – Working with the **Massachusetts Office of Technical Assistance**, MTC's John Adams Innovation Institute has invested **\$150,000** through its Regional Priority Grants Program to conduct analysis and test process development techniques to improve textile production in Massachusetts. [Read more >>](#)

Micro-machining and micro-fluidic prototypes

FALL RIVER – The **Advanced Technology and Manufacturing Center** at the University of Massachusetts Dartmouth has received an investment of **\$70,238** from the John Adams Innovation Institute through the Regional Priority Grant Fund to expand its efforts in commercialization activities, focusing on the medical device and micro-fluidics industry. [Read more >>](#)

Growing Life Sciences in the Pioneer Valley

SPRINGFIELD – Working in partnership with the **Regional Technology Corporation**, the John Adams Innovation Institute has awarded **\$14,347** to develop a strategic plan to develop a robust, export-oriented, regional Life Sciences sector that will be a source of high-quality jobs and economic opportunity for Pioneer Valley residents. [Read more >>](#)

WPI Bioengineering Institute

WORCESTER – The John Adams Innovation Institute invested **\$25,000** in a delegated award to the **Worcester Polytechnic Institute Bioengineering Institute** to spur the development of a healthcare technologies research and commercialization center which would serve as a catalyst for enhancing the regional economy of Central Massachusetts. [Read more >>](#)

Western Massachusetts Connect

PITTSFIELD – To forge a public-private solution for all the under-served communities of the region, the John Adams Innovation Institute has invested **\$300,000** in joint Regional Priority Grant award to **Berkshire Connect** and **Pioneer Valley Connect**. [Read more >>](#)

High-performance fibers, commercialization focus of new initiative

NATICK – An investment of **\$207,708** to the **Massachusetts Defense Technology Initiative** by the John Adams Innovation Institute will develop a nine-month technology exchange demonstration pilot at the Natick Soldier Systems Center, which has an estimated \$254 million annual economic impact on the state's economy. [Read more >>](#)

application of an emerging technology developed in partnership with Northeastern University's Center for Subsurface Sensing and Imaging Systems (CenSSIS).

[More >>](#)

East Meets West



Congressman Richard Neal (D-MA) and UMass President Jack Wilson in conversation with U.S. Senator Ted Kennedy (D-MA).

BOSTON -- U.S. Senator Edward M. Kennedy and Jack Wilson, President, University of Massachusetts, hosted an historic first: a gathering of economic development, industry and academic research leaders from Western Massachusetts with leaders of Boston's Life Sciences industry and academic research community, in order to forge a new framework for intrastate collaboration.

The June 26 meeting at the University of Massachusetts Club in Boston featured Ranch Kimball, the Secretary of Economic Development, Congressman Richard E. Neal; Dr. Paul Friedmann, Director, Pioneer Valley Life Sciences Institute (PVLSI); Allan Blair, President and CEO, Western Massachusetts Economic Development Council; Dennis Guberksi, President & CEO, Biomedical Research Models, Inc.; Dr. Larry Schwartz, Research Director, PVLSI; Al Griggs, Chairman of the Western Massachusetts Economic Development Council Board; and Patrick Larkin, Director of the John Adams Innovation Institute.

The presentations emphasized strategic partnership opportunities in research, manufacturing, and supplier networks in the city of Springfield and the Western Massachusetts region.

At the September 15 meeting of the Regional Competitiveness Council, it was reported that a number of companies are actively pursuing initiatives as a direct result of the East Meets West gathering.



Changes in Attitude

Investing in a more rigorous science education and building diversity in the workforce

(Continued from front page)

From a longer-term perspective, if students do not receive a rigorous science education, if they don't have teachers who are prepared to teach those subjects, we won't have students in the talent pipeline to fill the future need. We should be asking: In 10, 20, 30 years from now, will the education that students currently receive in our schools adequately prepare them for our workforce?

If not, we're left with a talent pool that's being depleted.

CONVERGENCE: *Is it a matter of more investment in school programs? Or does it also require a change in perception?*

Dr. Reede: Clearly, Massachusetts displays leadership in our country and internationally as a place of innovation. Our academic and industry research centers are in the forefront.

We are not necessarily prepared for a society that is changing dramatically. There are very few women in leadership positions. Yet there are more women going to college and earning degrees. As a society, we have increasing numbers of immigrants and people of color who are not reflected in our workforce, particularly our science workforce. It has been a challenge in the past; it will be more of a challenge in the future.

How do we help ensure science literacy across the community, including the best and the brightest across racial, ethnic and societal groups?

There are real issues of equity. We can't afford to ignore the potential of students in our rural and urban and poor schools. Recently many of the scholarship dollars have moved from need-based to merit-based. I think that it's a mistake to look only at merit-based investments without looking at issues of justice and disparate impact across communities.

CONVERGENCE: *Can you give an example of what you mean by "issues of justice and equity?"*

Dr. Reede: There is a huge gap between a suburban or private middle-school student with access to state-of-the-art technology and equipment -- in some cases even access to an electron microscope to work on a science project -- and an urban school student whose science teacher has only a package of markers to help her students prepare for a school science fair.

"As a society, we have increasing numbers of immigrants and people of color who are not reflected in our workforce, particularly our science workforce. It has been a challenge in the past; it will be more of a challenge in the future."

Joan Y. Reede, MD, MPH, MS, Dean for Diversity and Community Partnership, Harvard Medical School

Follow these links:



[Jump to Mt. Holyoke story honoring Dr. Reede](#)



[The National Library of Medicine exhibit "Changing the Face of Medicine"](#)

Our future workforce also resides in the urban classroom with limited access to modern approaches to science. Ultimately, our investments or lack of investments will have an impact on the capacity of industry to hire a competent workforce.

CONVERGENCE: *What kinds of programs have you helped to create at Harvard Medical School to level the playing field?*

Dr. Reede: At Harvard, we asked the question: How do we bring talent to Massachusetts that can not only survive but thrive? One of our programs invites fourth-year minority medical students from around the country to study at Harvard, because we're interested in having these students enter our residency programs.

An average of 11 to 25 percent of these students each year has been matched to Harvard-affiliated teaching hospitals, and 26 of the program alumni have held faculty positions at the Harvard Medical School. This program offers mentoring, guidance, and information. It provides students with the ability to reach their full potential—and to explore multiple careers paths and options.

We have also worked with students who are at other points in their education and training through the New England Science Symposium, a research symposium for minority students from across the country, that enables them to present their research at Harvard Medical School. The Symposium also serves as a place for the biomedical and pharmaceutical industry to recruit talent. We have worked with companies to create internship opportunities for these students.

Given housing costs and student debts, one of the biggest hurdles is getting people to want to come here, showing them that Massachusetts is a positive place to build a career, a place with many job opportunities.

CONVERGENCE: *You have also helped to develop a successful collaboration with industry, the Biomedical Science Careers Program.*

Dr. Reede: Yes, in the last 10 years, we have reached some 6,000 students from more than 25 states. Our partners have included Genzyme, Biogen, Boston Scientific, the Massachusetts Medical Society and academic medical centers, as well as law firms, in the effort to ensure that there is diversity in our workforce. Mentoring, scholarships, and resources are the keys to the program's success.

CONVERGENCE: *Congratulations on your being honored as one of the women physicians who have changed the face of medicine in America. You will be speaking in September at Mt. Holyoke College in South Hadley, Massachusetts, as part of a traveling exhibition.*

Dr. Reede: Yes, it is a great honor. It is an exhibit created by the National Library of Medicine in Washington, D.C., identifying women who have had an impact on medicine. There are so many amazing women who are part of the exhibit. As a pediatrician, much of my work has focused on youth and families.

At the exhibit opening, I was able to bring my mother and daughter with me. My daughter was able to meet some of the women who served as my mentors. For my mother, it was very much as if I was honoring her.

That was a very powerful moment in my life – my mother and my daughter there at the same time.



State seeks to win huge federal research awards

High-stakes R&D competitions could bring hundreds of millions of federal research dollars to Massachusetts

(Continued from front page)

“There has been no issue in my term of service,” Kimball said, his voice rising, as he addressed the September 11 meeting of the John Adams Innovation Institute Governing Board, “where a single award will more define the future economic development of the state.”

On the agenda of the Governing Board meeting was an assessment of recent Economic Stimulus legislation, an examination of pending large-scale federal R&D competitions, and discussion of the magnitude of state investment and policy support needed to compete successfully. Presenters included: Jack Wilson, President, University of Massachusetts; William Guenther, President, Mass Insight; Douglas Banks, Editor, *Mass High Tech News*; and Michael Cronin, President and CEO, Cognition Corporation; and Ranch Kimball, the Commonwealth’s Secretary of Economic Development.

Kimball’s presentation, however, pulled all the issues into sharp focus. By 2025, Kimball predicted, Massachusetts will become the world leader in biofuels, a net exporter of energy, if the state is successful in winning the award.

To win the competitive federal award, Kimball continued, the key will not be in growing the source crop, but rather in the way it is processed into fuel. This is the Massachusetts advantage, Kimball said: the strength of its world leadership in applied innovation, research and the biological sciences—in particular, bioprocessing, the capability to produce fuels in large quantities using enzymes to transform the biological material.

When asked what would be required in terms of state investment support to compete, Kimball offered a figure of \$25-30 million—in terms of magnitude, roughly the total amount of the Massachusetts Research Matching Fund since 2003. He noted the rapidly approaching December 5, 2006, deadline for preliminary applications.

In response, the Innovation Institute Governing Board agreed in a consensus action to create an advisory task force to develop a collaborative framework of public and private universities, industry, research centers and policymakers in order to compete successfully for the federal award. In addition, Mitch Adams, Executive Director of the Massachusetts Technology Collaborative, offered the support of the Massachusetts Renewable Energy Trust for this effort.

A Season of Opportunity

Governing Board and MTC Board members and guests at the September 11 Innovation Institute meeting held in Boston



Cognition Corporation President and CEO Mike Cronin, MTC Board Chairman Karl Weiss, and Harvard Professor Dr. Paul Martin



UMass President Jack Wilson, Mass High Tech Editor Doug Banks, and MTC’s Bob Kispert

To open the Governing Board meeting, Pat Larkin, Innovation Institute Director, provided a brief look at the history and the future potential of Economic Stimulus legislation enacted in 2003 and 2006.

"The recent passage of Economic Stimulus II legislation is a noteworthy achievement in science and technology policy," Larkin said. "It provides important new tools and strategies to enhance the competitiveness of Massachusetts in the global innovation economy."

Larkin praised the work of the Governing Board in drafting a series of recommendations to Massachusetts policymakers in June 2005, regarding the Life Sciences mega-cluster. Many of the policy recommendations offered—a sales force to attract and retain companies, a streamlined permitting process, the development of shared-use facilities, investments in workforce development and science education, and investments in bio-manufacturing facilities—were realized in the economic stimulus package, Larkin pointed out.

"The success of the John Adams Innovation Institute model for state investment in academic research centers also led to the \$10 million recapitalizing of the Massachusetts Research Center Fund," Larkin said. "In a conversation with Representative Bosley, he said, 'I told the Chairman that a fund with better than a 3-to-1 return on investment needs to keep current and be funded to its fullest extent.'"

"Yet, in the next few months, there are several major competitions for federal research funds offering enormous economic opportunity for the Commonwealth," Larkin said. "In order to compete successfully, it will require state investment of a size that is larger by orders of magnitude. In addition to the DOE biofuels award, these include the National Science Foundation ORION awards to establish ocean observation research centers, and a DOE wind turbine blade-testing center. In addition, MIT has been invited to compete in a BP-sponsored research initiative in the development of bioenergy."



Tufts Vice Provost Peggy Newell and Innovation Institute Chairman Don Dubendorf



UMass VP Tom Chmura, Innovation Institute Director Pat Larkin, and Advanced Technology Ventures General Partner Pieter Schiller



UMass President Jack Wilson and DBT Director Deb Shufrin

UMass VP Tom Chmura, Director of the Innovation Institute Pat Larkin, Chair of the Innovation Institute Governing Board Don Dubendorf, MTC Executive Director Mitch Adams, and Harvard Professor Dr. Paul Martin listen intently to the dialogue.

High-Level Dialogue

Mass Insight President William Guenther began the discussion with compliments for the Legislature. "The conversation has shifted to the right topics," he said. "Now, we need a commitment to think and act in a strategic, long-term fashion, and to encourage risk-taking and large-scale collaboration. The next generation of investments," he continued, "will be built around \$200 million R&D centers."

Guenther urged that investments be made in strengthening the talent pipeline. "We need to encourage the best and the brightest to locate here in Massachusetts," he said, "or lose out in the global competition for talent."

Doug Banks, the Editor of the *Mass High Tech News*, offered a series of observations from the perspective of a journalist covering the innovation landscape.

- We need to recognize that education is an economic driver that needs to be fed, and our investments in higher education are an example of what is being done right.
- Universities are doing more to protect and profit from intellectual property.
- State colleges and community colleges need to play a more specialized role in preparing students to meet the state's economic needs.
- Tech executives tell us that talented workers are leaving Massachusetts in greater numbers than they have in the past.
- We need to recognize that it's dangerous to focus on specific industries; there is a blurring of traditional sectors and clusters, and focus on interdisciplinary, collaborative is needed as part of a long-term strategy.
- The Research Center Fund is one of the top return-on-investment opportunities for the state, and we need recognize its value and provide more funding and make its availability more flexible.

Ranch Kimball, the Commonwealth's Secretary of Economic Development, in addition to detailing the gargantuan opportunity with the DOE biofuels competition, also spoke about the NSF ORION ocean observation competition. Its potential, he said, with Woods Hole Oceanographic Institution as a central part of a collaborative effort, will be to jump-start the marine science sector and reap billions of dollars in economic dividends for Massachusetts.

Michael Cronin, the President of Cognition Corporation, narrowed the focus of discussion to talk about some specifics of the Massachusetts bid for the biofuels center. "The proposal will be a richer proposal if we can work with engineers to determine what kinds of codes and standards will be necessary in the manufacturing and permitting process to reduce any barriers."

Jack Wilson, President of the University of Massachusetts, spoke about the inherent choices in making large-scale investments. "We can't afford not to," he said. "If you don't make the investments, you won't have any return on investments. Instead, other states will make the investments, and other states will reap the benefits."

Further, Wilson said, "We need to develop a persistent and consistent strategy,

we need to learn to work in new ways and to recognize that we are living in a global economy and see collaboration as an important tool for success.”

Wilson also emphasized the importance of collaboration among disciplines at the edge of sectors and research centers, citing the need for large-scale processing of data in the success of coastal observation and prediction efforts.

In the ensuing dialogue, Peggy Newell, the Vice Provost at Tufts University and a member of the Innovation Institute Governing Board, urged that the effort to win the federal biofuel competition will require more than simply supporting a proposal from a single university. “We need to pull together all the resources in the state in a collaborative effort, particularly the private and public universities.”

[Return to front page of *Convergence*.](#)

If you would like to be removed from this distribution, or have someone that you would like to have added to the list, please let us know: jaii@masstech.org

[Read more about
Convergence](#)

[Visit the Innovation Institute
website](#)

[Visit the MTC
website](#)

©2006 Massachusetts Technology Collaborative



The Boston model

Boston's wireless plan detailed for state's ad hoc municipal broadband working group

(Continued from front page)



Presentation at MTC explains the City of Boston's plans to achieve an open wireless broadband infrastructure

For more than seven hours, before two different groups, Vantzelfde discussed in mesmerizing detail recommendations adopted by Boston's Mayor Menino on July 31 to deliver wireless broadband services to Boston's entire city footprint. ([Link to presentation.](#))

The morning session, delivered to members of the Municipal Broadband Working Group organized under the leadership of Bethann Pepoli, Deputy CIO of the Commonwealth's Information Technology Division, included more than 40 representatives from municipalities and institutions across the Commonwealth. Also attending was Deb Shufrin, Director for the state's Department of Business and Technology, who under new legislation has been designated head of the new broadband office under the Secretary of Economic Development. ([Link to membership list of working group.](#))

The second group, mostly from Western Massachusetts, included representatives from throughout the region who are working to bring broadband to the under-served communities. Led by co-chairs of Pioneer Valley Connect, Linda Dunlavy and Rick Oliveri, and by Donald Dubendorf, the Chairman of the John Adams Innovation Institute Governing Board and Chairman of Berkshire Connect, the afternoon group examined the Boston plan for ideas about how to meet the needs of Western Massachusetts.

"We are not claiming that the Boston model is a one-size-fits-all model for the Commonwealth," said Bill Ennen, Program Manager at MTC's John Adams Innovation Institute, in his introduction to the morning session. "The purposes of today's sessions are to share information, engage in dialogue, and to ask and answer questions, in order that you can better shape decisions where you

"Our interests are best served by the voluntary adoption of technology and solutions which create access and choice."

Bill Ennen, Program Manager, MTC's John Adams Innovation Institute

'Unwired Village,' downtown wireless network in Orleans

ORLEANS – A new wireless network is up and running in this Cape Cod town, in an effort to create a pilot business model to provide free wireless Internet access to the entire downtown area.

The wireless project is a partnership between the local Chamber of Commerce and the Cape Cod Technology Council. The initial capital investment came from a regional priority grant award in 2005 by the John Adams Innovation Institute.

As part of the effort, the wireless project has been working on developing a "Village Kit," a cookbook describing the workings of its downtown wireless model.

The current infrastructure of the Unwired Village has eight access points downtown – and the project expects that the number of access points will increase and expand the network, as the numbers of users grow. Currently, more than 1,000 users have been online.

The Unwired Village does not replace local

live and work.”

And, stressing the nature of a voluntary approach being developed, Ennen said, “I believe everyone in this room agrees that the last thing we need is any type of mandatory approach. Our interests are best served by the voluntary adoption of technology and solutions which create access and choice.”

The Boston Model

When the Boston Wireless Task Force began its intense deliberations to develop a business model, Vantzelfde described the national environment as “the Wild West.”

What emerged, he said, “was a consensus decision to create a not-for-profit model, which would be carrier neutral, with room for everyone to play.” Vantzelfde said it was a way to maximize competition, as well as lower barriers to access and lower prices.

Vantzelfde said Boston’s business model offers “a platform for innovation.” He said that “the real value” of ubiquitous, wireless broadband services would be in the capability to access different applications through one source, creating a “personal ecosystem” of applications. Today, most applications are “embedded” in the network system.

In the morning session, many of the questions focused on the nature of the not-for-profit corporation. Presented below is a synopsis of some of the exchanges.

Would the new entity be controlled by the City of Boston?

Vantzelfde: No, it will have a completely independent board of directors.

Wouldn't it be unfair to the incumbent carriers, who have invested millions in wiring of customers? Won't it constrain the private markets?

Vantzelfde: Mayor Menino’s task force strongly believes that its recommended wireless infrastructure complements and does not compete with private-sector investments that are bringing fiber to home or office. Furthermore, the new not-for-profit entity will not be in the retail business. All ISPs, regardless of size, will have the non-exclusive opportunity to support end-users via the new infrastructure. The choice will be the end-user’s to make. It will be a model that serves as a platform for innovation and new ideas in the free market. Imagine if the railroads 50 years ago said: You can’t make investments in highways or airplanes, because it would constrain travel.

What kind of shared resources would be available for small communities from the Boston model?

Vantzelfde: Each community will have to evaluate its own assets and needs. Once the Boston model is up and running, it will provide an expertise, a working knowledge, having hopefully worked out the bugs. It will also have access to capital, which can be bonded. It may – or may not -- serve as a platform for other communities, but there is a strong commitment to enable that opportunity.

What was value of public safety in the Boston model?

Vantzelfde: The Boston Wireless Task Force did an exhaustive analysis of the desired attributes and economic drivers of the new model. Affordability, access, ubiquity and speed were the primary considerations. Public safety was a second-tier attribute. The task force believes that a robust, carrier-neutral wireless infrastructure offers a complementary backup solution for police and firefighters.

ISP connectivity in the community; it provides the “streetlights” while individual accounts through ISPs provide the “desk lights” for individuals and homes.

For more information, contact: <http://unwiredvillage.com>

Open Cape Initiative

BOURNE – Under the leadership of Dan Gallagher, the CIO of Cape Cod Community College, a group called the “Open Cape” initiative is exploring the possibilities of creating a wireless transport backbone that would run along Route 6 from Bourne to Provincetown, and along Route 28 from Bourne to Falmouth. The plans envision that the wireless infrastructure would also connect off-Cape in Plymouth and at the University of Massachusetts Dartmouth.

Under the proposed network now under discussion, existing water towers and communications towers on public property will provide the supporting infrastructure. The goal is for Open Cape to serve the day-to-day needs for bandwidth in education, research and government by connecting wide-area networks with the Open Cape backbone.

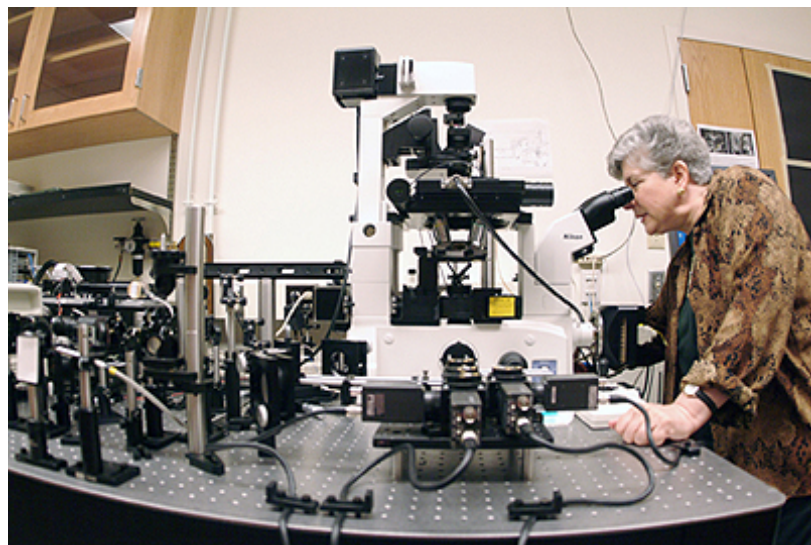
A demonstration capability project is planned between the Community College, Woods Hole Oceanographic Institution, and UMass Dartmouth to establish a wireless 100 mbps connection among them,

For more information, contact www.opencape.com

Thwarting the terrorist threat

Research center plays key role in commercializing new technology to protect our nation from attack

(Continued from front page)



Research at Northeastern University

CenSSIS was founded in 2000 as a National Science Foundation-funded interdisciplinary engineering research center, with a mission to revolutionize the existing technology for detecting and imaging biomedical, environmental or geophysical objects that lie underground or underwater, or are embedded in the human body.

Its academic partners include Northeastern University, Boston University, Rensselaer Polytechnic Institute, and the University of Puerto Rico at Mayaguez.

The center currently has an annual operating budget of about \$8 million, with more than 40 faculty members and 200 students engaged in research efforts. Its industry partners include Raytheon, Analogic, Textron, Lockheed-Martin, Cardiomag Imaging, Mercury, Transtech, GSSI, and Siemens.

Seed investments and support from MTC's John Adams Innovation Institute to further university/industry collaboration have played a critical role in the success of CenSSIS, according to the center's director, Dr. Michael Silevitch, Robert D. Black Professor of Engineering at Northeastern University

"Money and support from the Innovation Institute were absolutely critical to facilitating the industry partnerships," Silevitch told **Convergence** in a recent interview. Further, Silevitch said, the money enabled the center to lay the groundwork for a second homeland security project – the detection of suicide

Robert G. Kispert, Director of Federal and University Programs at the Innovation Institute, said that CenSSIS requested funding to support the follow-up to a turnkey R&D project involving homeland security. "We invested \$150,000 in an R&D collaborative development grant from the Massachusetts Research Center Matching Fund to prime the pump," he said. "The understanding was that if we put up the money, they would develop the business, and the business would become a self-sustaining proposition." Indeed, the development grant has helped to leverage two federal contracts worth with enormous economic potential for Massachusetts.

bombers at a distance. "We are currently in final negotiations for Phase I of a \$1.7 million contract with the U.S. Department of Homeland Security," he said. The industry partners in this project include Raytheon, Siemens, and Acentech, a firm based in Cambridge.

Silevitch said he had been turned down twice in his attempts to set up a research center at Northeastern University before succeeding in the difficult world of winning competitive federal research dollars. To succeed, Silevitch said he had to redefine the word "subsurface" as "something hidden from vision." He also had to invent a new concept, Solutionware, different from either software or hardware. "Solutionware is the integration of tools and technology that allow you to solve diverse problems with similar solutions," he explained.

Michael A. Sharp, Program Director, Advanced Spectroscopic Portal at Raytheon in Andover, Massachusetts, told *The Boston Globe* that the partnership with Bubble Technology, a 50-person commercial spinoff in working in partnership with CenSSIS, represented a new model that could help Raytheon grow its business. Sharp called it a strategy of forging alliances with smaller and more nimble technology companies.

Robert G. Kispert, Director of Federal and University Programs at the Innovation Institute, said that CenSSIS requested funding to support the follow-up to a turnkey R&D project involving homeland security. "We invested \$150,000 in an R&D collaborative development grant from the Massachusetts Research Center Matching Fund to prime the pump," he said. "The understanding was that if we put up the money, they would develop the business, and the business would become a self-sustaining proposition." Indeed, the development grant has helped to leverage two federal contracts worth with enormous economic potential for Massachusetts.

The best measure of the research center's success, however, may be the recent gift of \$20 million from The Gordon Foundation, the largest single donation ever received by Northeastern University, to support the work of CenSSIS, recognizing its success in creating a new model of collaboration between academia, industry and government.

The gift will enable CenSSIS to evolve from an academic research center into a R&D center focused on converting research into new products for commercial and governmental markets. The engineering research center will be renamed the Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems, in honor of Analogic founder and chairman Bernard Gordon, a 1986 National Medal of Technology recipient.

"The Bernard M. Gordon Center for Subsurface Sensing and Imaging Systems promises to become a national model for the fusion of academic research and private-sector collaboration," said Silevitch.. "It will lead to technology transfer and spur economic development in Massachusetts and beyond."

[Return to front page of *Convergence*.](#)

If you would like to be removed from this distribution, or have someone that you would like to have added to the list, please let us know: jaii@masstech.org

[Read more about
Convergence](#)

[Visit the Innovation Institute
website](#)

[Visit the MTC
website](#)



Investments

(Continued from front page)

High-speed direct digital printing

BOSTON – Working with the **Massachusetts Office of Technical Assistance**, MTC's John Adams Innovation Institute has invested **\$150,000** through its Regional Priority Grants Program to conduct analysis and test process development techniques to improve textile production in Massachusetts.

The focus will be to reduce barriers to the implementation of high-speed direct digital printing of textile materials with radiation curable inks. Development and implementation of this technology will offer cost savings in electricity, water and labor consumption, reduced toxic waste streams, and faster, more efficient production.

Currently, Massachusetts has 136 textile companies employing more than 11,000 people, with sales of about \$1.8 billion. In the highly competitive, global textile industry, the new printing process will provide the textile cluster with a competitive advantage, particularly for fibers, machinery, wool mills and specialty components most prominent in Southeastern Massachusetts.

About half of the 34 major textile facilities operating in Massachusetts will benefit from the new technology. Further, more than 100 other companies in the textile sector would benefit through the switch from screen-printing to digital-printing technology.

Dr. Augustus Obunbameru of the Massachusetts Office of Technical Assistance will serve as project manager and team leader. The Center of Green Chemistry at University of Massachusetts Lowell, led its director, Dr. John Warner, and Dr. Richard Himmelwright, co-founder of Cold Spring Technology, will be the two vendors for the project.

Jack Barre, the technical manager of Brittany Dyeing and Printing Corp. in New Bedford predicted that the change from solvent/oil-based pigments and dyes to radiation-curable pigments and dyes will make a significant impact on operations at his textile facility.

Micro-machining and micro-fluidic prototypes

FALL RIVER – The **Advanced Technology and Manufacturing Center (ATMC)** at the University of Massachusetts Dartmouth has received an investment of **\$70,238** from the John Adams Innovation Institute through the Regional Priority Grant Fund to expand its efforts in commercialization activities, focusing on the medical device and micro-fluidics industry.

In particular, the project will focus on micro-machining components for Morgan Ceramic implantable medical devices, small apertures for the Harvard-BioMEMS Resource Center,

"High-Speed Direct . . ."

"About half of the 34 major textile facilities operating in Massachusetts will benefit from the new technology. Further, more than 100 other companies in the textile sector would benefit through the switch from screen-printing to digital-printing technology."

"Micro-machining . . ."

"The promise of a 'lab-on-a-chip' has driven development in academia, and crated a number of spin-off start-up companies, such as Claros Diagnostics, who are attempting to commercialize new technologies for this market."

--- Professor Lamar Bullock at
ATMC

"Growing Life Sciences . . ."

"The project's goal is to create a successful strategy to develop a niche market opportunity within the Life Sciences cluster, with Springfield as the global center."

"High-performance fibers . . ."

"Based on the results of the pilot project, the initiative will also explore the opportunity to create one or more Centers of Excellence to enhance the technology research base at the Soldiers

and micro-fluidic prototype parts for Claros Diagnostics.

As part of this effort, AMTC will participate in the upcoming Micro-fluidics Tech Fair in October 2006, organized by the Center Massachusetts Technology Transfer. It will also enlist Moore & Isherwood Communications, Inc., to develop materials and a follow-up strategy.

A micro-fluidic device has one or more channels with at least one dimension less than 1 mm. The use of micro-fluidic devices to conduct biomedical research and create clinically useful technologies has significant advantages. In a manner similar to microelectronics, micro-fluidics technologies enable the fabrication of highly integrated devices for performing several different functions on the same substrate chip.

Professor Lamar Bullock at ATMC is the leader of the micro-fluidics project. "The promise of a 'lab-on-a-chip' has driven development in academia, and created a number of spin-off start-up companies, such as Claros Diagnostics, who are attempting to commercialize new technologies for this market."

If successful, the project will position ATMC as one of a handful of locations in the nation that has a proven capability in micro-fluidics. It will also support the marine science and medical device sectors in Massachusetts.

Growing Life Sciences in the Pioneer Valley

SPRINGFIELD – Working in partnership with the **Regional Technology Corporation**, the John Adams Innovation Institute has awarded **\$14,347** to develop a strategic plan for a robust, export-oriented, regional Life Sciences sector that will be a source of high-quality jobs and economic opportunity for Pioneer Valley residents.

The strategy will seek to leverage a number of competitive advantages in the region:

- A growing medical devices industry and a strong precision machining sector.
- The national leadership of the University of Massachusetts Amherst as a center of research and engineering activities; the school was awarded \$24 million in Life Sciences research grants in 2005.
- Baystate Health, a teaching hospital affiliated with Tufts University, is the largest health services provider in Western Massachusetts and has an active clinical trials program. Baystate is also home to an extensive tissue bank that contains more than 50 years of samples.
- Pioneer Valley Life Sciences Institute, a partnership between Baystate Health and UMass Amherst; the Springfield-based research institution has developed a strong focus on *apoptosis*, or programmed cell death.

The Regional Technology Corporation (originally the Regional Technology Alliance, formed in 2001, by UMass Amherst with a \$600,000 National Science Foundation grant), has strong working relationships with the Western Massachusetts Economic Development Council. It provides staff support to three business networks – the Materials & Manufacturing Technology Network, the Technology Enterprise Council, and the BioEconomic Technology Alliance.

In addition, the project will work with a consulting team lead by the Donahue Institute at the University of Massachusetts Amherst.

The project's goal is to create a successful strategy to develop a niche market opportunity within the Life Sciences cluster, with Springfield as the global center.

Western Massachusetts Connect

PITTSFIELD – To forge a public-private solution for all the under-served communities of the region, the John Adams Innovation Institute has invested **\$300,000** in a joint Regional Priority Grant award to **Berkshire Connect** and **Pioneer Valley Connect**.

The goal of the project, Western Massachusetts Connect, will be to achieve a broadband solution for at least one sub-region and based upon that model define the requirements for implementing a solution throughout Western Massachusetts.

Of the 101 communities in the region, one-third lack broadband services and another one-third have only very limited access. The inadequate broadband services are a major barrier to economic development to growing the region's economy, according to elected officials and regional government entities. In addition, a recent study of three small, under-served communities showed that there are significant engineering and business model challenges to achieve 100 percent penetration of broadband at speeds of at least 1 megabit.

The focus of the project will be to assess the technology needs and the business models necessary to improve broadband deployment and implement a strategy to achieve deployment.

Without a robust telecommunications infrastructure, according to the project's sponsors, entrepreneurs and firms in Western Massachusetts will not have the full capability to grow the businesses and create the high-wage jobs associated with the Commonwealth's Innovation Economy.

High-performance fibers, commercialization focus of new initiative

NATICK – An investment of **\$207,708** to the **Massachusetts Defense Technology Initiative** by the John Adams Innovation Institute will develop a nine-month technology exchange demonstration pilot at the Natick Soldier Systems Center (SSC), which has an estimated \$254 million annual economic impact on the state's economy.

The goals of the effort are to validate the opportunity to create a sustainable mechanism to commercialize the SSC-Natick intellectual property. In addition, the project will seek to leverage the Massachusetts technology development community to meet the current and future mission requirements of the Defense Department installation.

Based on the results of the pilot project, the initiative will also explore the opportunity to create one more Centers of Excellence to enhance the technology research base at the Soldiers Systems Center.

The focus on technology transfer and commercialization of new products has the potential to lead to new business formation and serve as a catalyst for moving technology that is "stuck" in the military pipeline into commercial opportunities.

By enhancing the mission at the Soldier Systems Center, it will also directly enhance the perceived value of the base by the U.S. Army.

[Return to front page of *Convergence*.](#)