A Call to Action on New England's Innovation Economy

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WILL BUSINESS AND HIGHER EDUCATION ANSWER THIS TIME?

Like the region itself, the relationship between business and higher education in New England has historically been proper and polite, with each holding the other in high regard. But despite personal, financial and other ties, different cultures and priorities often leave these important players operating on separate planes when it comes to regional economic development.

With serious long-term economic and fiscal challenges across the region, New England's business and higher education sectors now have little choice but to work together much more closely. They need each other, and the region, with its "innovation economy," needs them to interact effectively.

Business requires the talent produced on New England's college and university campuses as well as the innovation spawned by the more than $2 billion in annual research and development spending by the region's research universities. This research has fueled growth of biotech, life science and technology firms, and the good jobs they provide.

For *universities*, the advantages of closer collaboration with the private sector are obvious. Such strategic ties can help them gain access to the best corporate researchers, better understand the potential applications of basic science research and be surer that they are educating students in appropriate skills.

State government, for its part, must be much more active in shaping and assisting strategic alliances between local universities, both public and private, and science and technology firms. This should be part of an economic development strategy that places higher education and science and technology research at its core.

Mass Insight Corp., a public policy and communications firm that organizes public-private initiatives to support economic growth in Massachusetts, recently issued a new report, titled *An Economy at Risk*, making the case for a Massachusetts economic development strategy organized around higher education and science and technology.

One of the people interviewed for the report was Michael Best, director of the Center for Industrial Competitiveness at the University of Massachusetts Lowell. "It's incumbent upon Massachusetts government, universities and industry to do a much better job of technology auditing and forecasting," Best observed. "We need to collaborate more effectively and develop a technology road map that looks five or 10 years down the line. Otherwise, we're likely to turn into Cambridge, England—we'll have the very best university research but none of it will be linked to local industry. We'll create all the new ideas, but everyone else will get the benefit."

Contrary to popular belief, Massachusetts remains home to substantial numbers of manufacturing jobs. In fact, outside Route 495, 75 percent of the private employment base is in manufacturing, according to an earlier Mass Insight report. What's changed is that those manufacturing companies that have survived—like American Saw and Manufacturing in Springfield, Quaker Fabrics in southeastern Massachusetts and Nypro in Clinton—have moved up the technology food chain. And in fact, the high skill workforce makes Massachusetts and other states in New England attractive locations for advanced technology production. However, unless we improve the connections between universities and business, we risk losing the advantages we have.

Massachusetts, with its extraordinary mix of world-class universities and technology industries, has long proved the benefits of industry-university connections. But its lack of a coordinated science and technology strategy, including targeted investment to expand the alliances among the University of Massachusetts, the

state's private universities and industry, proves the danger of lost opportunities.

As one high-technology executive told Mass Insight, "Massachusetts thinks it has so much going for it that [its academic cluster] alone will sustain it. It won't. Other states are seeking to eat our lunch. The new paradigm lies in university collaborations with industry and with government."

Current economic and fiscal woes make it hard for the New England states to fund new major science and technology initiatives, however meritorious. In fact, because of the traditional role of private higher education in New England, there has been little history of targeted public investments in science or the kind of match programs that states such as California and New York have in place.

Executives and university officials argue that we cannot afford *not* to invest in education and research, especially in the face of action by key competitor states. California, for example, has *increased* spending on higher education to $13.3 billion for the current fiscal year, up by 28 percent since 1998, despite a fiscal situation even more dire than New England's. California lawmakers also spared from the latest round of state budget cuts a successful program in which Sacramento will invest $400 million over four years in four university-based Institutes for Science and Innovation, to be matched on a two-to-one basis by private and federal funds.

"Massachusetts has been slow on the trigger when it comes to state support for university research," said Analog Devices Chairman Ray Stata. "Our goal should be to make the University of Massachusetts look more like California's public universities in terms of state support. If the Legislature stepped up more broadly to create centers of excellence in Lowell and Amherst, and committed to making Amherst as prominent in engineering as UC Berkeley, it would have an enormous long-term impact on the Massachusetts economy."

California isn't the only state competing for the Bay State's science and technology advantage:

• New York, with its own concentration of major private universities, continues to build up the State University of New York (SUNY) as a research powerhouse. The state also provides incentive funds for SUNY, private colleges and businesses such as IBM to collaborate on world-class research initiatives. In 2002, IBM agreed to commit $100 million to SUNY Albany, matched by $50 million in state funds, to build up the nation's premier microchip research and development center.

• Pennsylvania, another state with a wealth of private institutions, launched the Ben Franklin Partnership two decades ago to create university-based research centers of excellence and provide seed-stage investments in the technology companies that emerge from those centers or collaborate with them. Since 1989, the partnership's participants have created nearly 50,000 high-tech jobs and boosted the state's economy by $2.9 billion—all for an investment of about $4,000 per job.

• Texas is investing more than $300 million in a network of science and research facilities at Texas colleges and universities, with $45 million dedicated to product development and business incubators.

By contrast, Massachusetts lacks a coherent economic development strategy organized around higher education and framed by science and technology research. And rather than boosting support for public higher education, Massachusetts has been cutting it. Massachusetts retains a leading position according to many "new economy" indicators, such as patent and Small Business Innovation Research awards and federally funded R&D. But its continued leadership in key technology areas is far from guaranteed.

Indeed, high-tech executives and academic deans have told Mass Insight that compared to California or New York, Massachusetts can be a difficult place to establish collaborations or to gain the level of government coordination and support they need to build required new labs or find trained technicians. Some of this is a result of the fragmented marketplace in higher education. Without a dominating public university as a major point of access to higher education resources, Massachusetts and the other New England states that are home to significant private higher education institutions need state government to play a role in helping coordinate public and private resources.

Critical comments from industry also reflect Massachusetts' relatively weak financial support for its public university system and a lack of leadership in fostering industry-university ties. "At UMass, we have developed strengths in new fields such as nanotechnology," noted UMass Vice President Thomas Chmura. "But, in competing for federal grants, we're operating at a disadvantage. Competing institutions such as UC or SUNY have received recent infusions of capital funds for new nanotechnology research facilities and have access to state seed funds and matching science and technology grant programs that simply don't exist here."

Such frustrations are not new. In 2001, Mass Insight's *Call to Action* report called for state government and higher education to forge much stronger and more strategic ties. Among other things, the report called for government, industry and university leaders to assess technology-sector needs and establish a state role in brokering long-term relationships between industry and the state's public and private campuses. The report also recommended a re-examination of how public higher education is structured in Massachusetts, with an eye toward giving UMass the authority and resources to coordinate public university-private industry relations.

But that call to action went largely unanswered. State government has remained a bystander, assuming that Massachusetts' largely private higher education

system and technology marketplace alone will ensure a secure economic future. Public higher education has begun some promising new science and technology initiatives, but has also had to deal with the immediate effects of budget cuts. Until now, business groups have failed to seriously lobby for higher education, despite its importance as a competitive asset.

At the least, the current downturn should be used to lay the foundation for a science and technology strategy involving both public and private universities. As Teradyne CEO and chairman of the Massachusetts High Technology Council George Chamillard told the *Boston Globe*, "The state's broke right now, but what's required in this period is to start building up the profile of the (public) universities and putting in place the kinds of capabilities they have in other states." Last fall, Chamillard co-signed a letter organized by Mass Insight, calling upon Massachusetts gubernatorial candidates to, among other things:

- Increase collaborations among public universities, private universities and Massachusetts businesses;
- Accelerate the development of the UMass system as a leading-edge technology university; and
- Support initiatives that coordinate science and technology collaborations between private campuses and the public higher education system.

Newly elected Massachusetts Gov. Mitt Romney has the opportunity to start by assembling academic and private-sector leaders to assess shared needs and strategic opportunities. Rather than a one-shot summit, such coordination should be built into the state's ongoing economic development operations.

The first step private-sector leaders have proposed is to produce a sort of technology "road map," including an inventory of major research operations, a survey of what regional industry clusters need and the potential for new collaborations between universities themselves and between higher education and business.

Current fiscal problems will dominate government for at least the next year or two. But economies act and respond in far longer cycles. Massachusetts must be able to look beyond its current red ink to consider prudent, long-term capital and operating investments in closer strategic alliances among state government, business and higher education. That's not just good policy—it's an economic imperative.

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