

The Innovative University

Higher Education Innovation, and Entrepreneurship In Focus

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University of Massachusetts

Amherst • Boston • Dartmouth • Lowell • Worcester • UMassOnline

The Paradox

- At the same time that Universities are facing extraordinary financial pressures due to a collapse of state revenue and endowments
- Everyone is looking to Universities to lead us out of the economic decline
- Creating futures for students and communities
- And solving social challenges like
 - Improving college readiness
 - Reducing disparities (racial, economic, gender, etc)
 - Increasing graduation rates
 - Attracting students into STEM fields
 - Better matching workforce needs

President Obama's Goal

- To be first the world by 2020 in the proportion of college graduates.
 - ▣ -Address to Congress on Feb. 24, 2009.
- The US was tied for 6th place at 30% according to 2006 data.



The Catalyst for the Future

- What do Boston, Bombay, Beijing, Bangalore have in common with
- San Francisco, Austin, Raleigh, Cambridge, and other world economic leaders?
- They are vibrant economic regions nucleated by world class universities.

The Secret Sauce?

- Universities pouring out highly educated graduates with skills and intellectual property.
- World class research that is creating new jobs, companies, and even entirely new industries –not to mention curing illnesses and
- And doing this at very large scale.

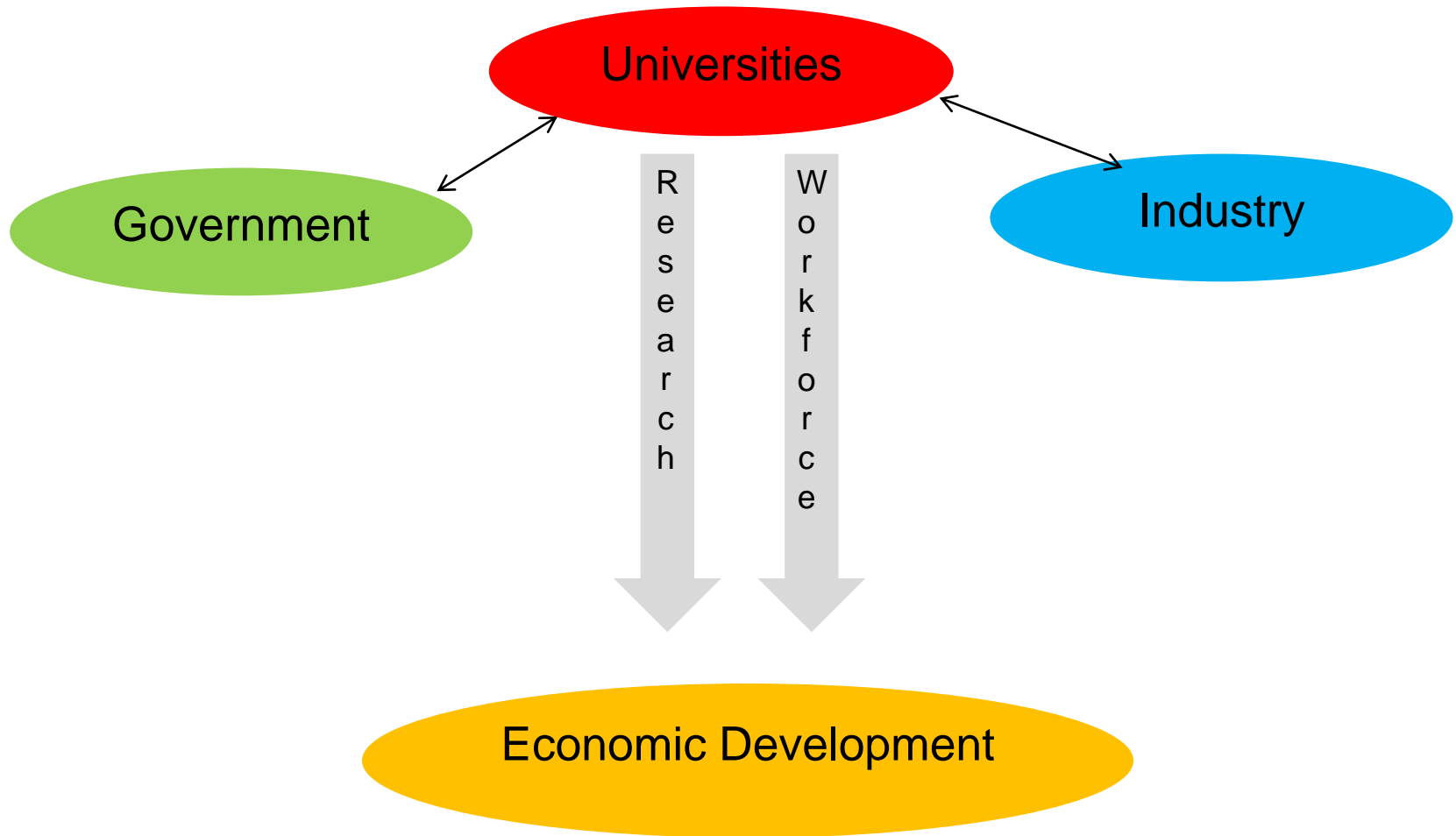
The Path

- I love to say:
- “The path to economic and social development in Massachusetts goes through the University.”
- It is fair to say that the path to economic and social development in the world goes through our world class universities, and through the continuum of world class education from K-Retirement.

Change

- But it is not your father's (or mother's) university any more.
- The Ivory Tower has cross-pollinated with the Silicon Village through the information superhighway to create:
- A more engaged university – in many ways fulfilling the 21'st century vision of the original land grant mission.
- The most successful regions world wide have found a way for government, industry, and research universities to work together –each doing what they do best- to create an entrepreneurial culture that is changing the world.
- They are the Difference Makers

The Partnership



APLU Commission on Innovation, Competitiveness and Economic Prosperity (CICEP)

□ Chairs:

- Michael Crow, ASU, 2007-2009
- Jack Wilson, UMass, 2009-2011
- J.B. Milliken, Nebraska 2011-

□ A more expansive focus:

- Recognition of enhanced expectations regarding university role in local and regional economic prosperity
- Focusing terms of engagement primarily on technology commercialization leaves significant institutional assets untapped
- Better understanding of innovation ecologies and more robust tools for planning , performance assessment and communication needed
- Broad consensus that we need **new metrics** that go beyond patents, licenses and royalties - but they are difficult to identify

ASSOCIATION OF
PUBLIC AND
LAND-GRANT
UNIVERSITIES



APLU->NACIE ->Making a Commitment

- In these, we worked closely with the Commerce Department, Bureau of Economic Analysis (BEA), NSF, and other federal agencies to help them create better policies in support of research universities.
- We also banded together with other organizations, (Association of American Universities (AAU) and American Council on Education (ACE) in particular) that represent the major research universities in Washington, to address some very contentious national policy issues on research commercialization.
- With that group, we worked with the President's [National Advisory Council on Innovative and Entrepreneurship](#) (NACIE) which was chaired by the APLU member Presidents: Mary Sue Coleman, Michigan, Michael Crow, Arizona State, Bud Peterson, Georgia Tech, and Holden Thorpe, North Carolina. This report to the President was signed by over 100 University Presidents.
- I signed from UMass and on behalf of CICEP.
 - It was easy since UMass and the Commonwealth had made this commitment together years before!

Government led –industry & academic partners

- ❑ Governor Deval Patrick led -→
- ❑ Mass Life Science Center
 - (\$ 1 Billion)
- ❑ Mass Clean Energy Center
- ❑ John Adams Innovation Institute
- ❑ Mass Technology Collaborative
- ❑ Information Technology Collaborative
 - Mass Green High Performance Computing Center
- ❑ Mass Life Science Collaborative
 - Industry-Academic group to advise in MLSCcreation/operation
 - Co-Chairs: Presidents Susan Hockfield (MIT), Jack Wilson (UMass), Drew Faust (Harvard), Henri Termeer (Genzyme)
- ❑ Mass Defense Technology Initiative
 - Chair: Jack Wilson –Public&Private Univ. Hanscom, Natick, industry partners



UMass Role

- Research Growth
- Commercial Ventures - Intellectual Property
- President's S&T fund established 2004
 - to build research enterprise, promote collaboration and enhance the state economy -- \$8 M investment has leveraged \$200 M in new R&D awards
- Creative Economy Fund
- Crossing the chasm –CVIP Tech. Dev. funds
- UMass Medical School Life Sciences Moment Fund
- Incubators
- Great graduates carrying IP into workforce

S&T Initiatives Fund

History: Investments to date totaled **\$7.5M**, and have generated additional funding of \$207M in federal, industry and private foundation funding. Examples include:

- ❑ **Center for Hierarchical Manufacturing** (UMass Amherst) - Research & education center received a five-year NSF grant to serve as the agency's Nanoscale Science and Engineering Center (NSEC).
- ❑ **Massachusetts BioManufacturing Center(s)** (Dartmouth and Lowell) – S&T investments helped both campuses position themselves for large state investments in new research facilities.
- ❑ **Massachusetts Medical Device Development Center (M2D2)** (Lowell and Worcester) – Has provided medical device prototyping services and research collaborations to more than 100 startups across the state.
- ❑ **UMass Center for Clinical and Translational Science** (system-wide project led by UMass Worcester) - Funds assisted in the creation of a UMass Medical School-led, system-wide clinical and translational research center funded by the National Institute of Health.
- ❑ **Center for Personalized Cancer Therapy** (Boston, in partnership with Dana-Farber / Harvard Cancer Center) – Joint project to address racial, ethnic & socioeconomic disparities in cancer incidence, morbidity and mortality.

Creative Economy Initiatives Fund

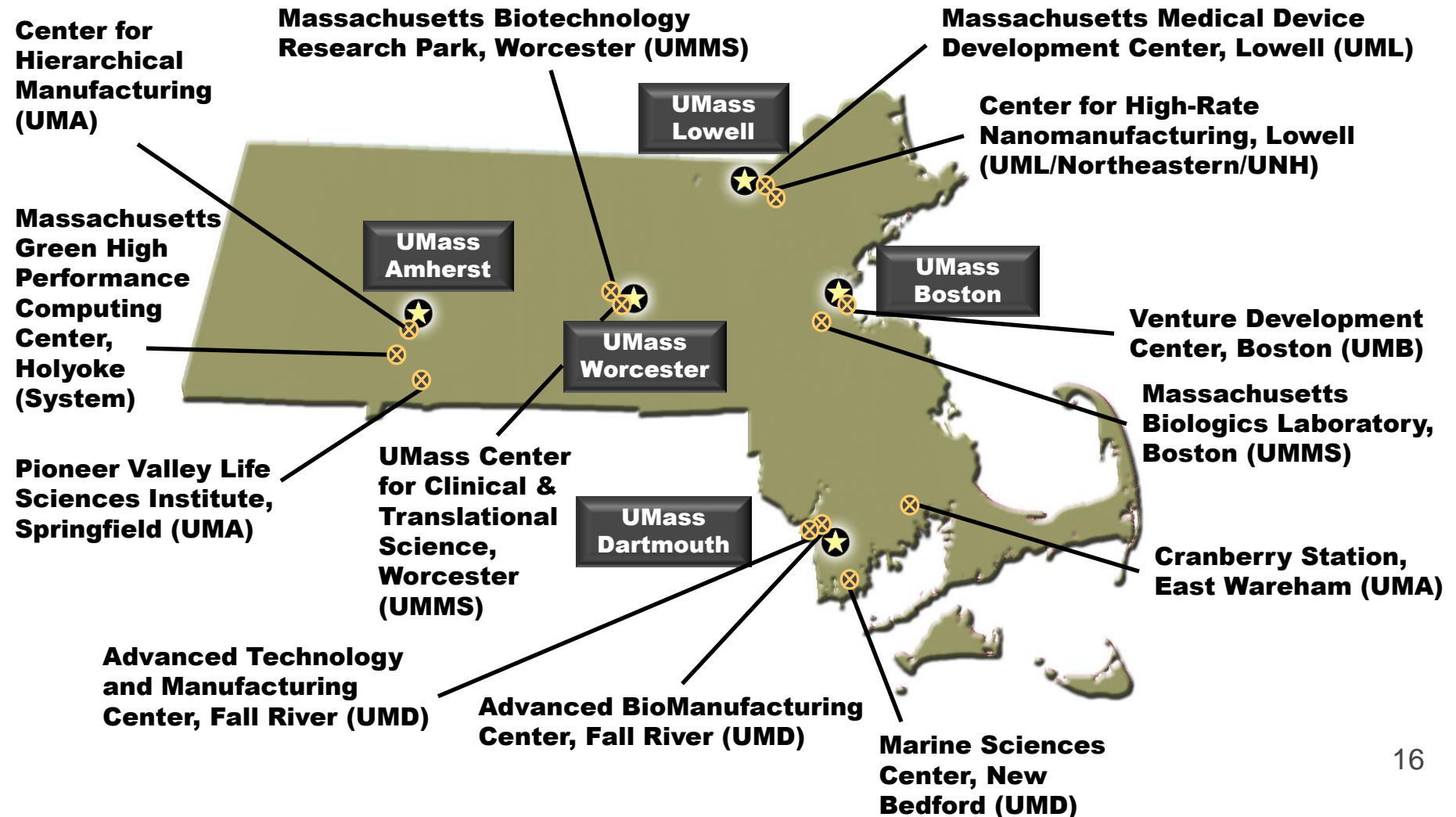
- Created in 2007 to support faculty initiatives in the arts, humanities and social sciences to benefit the State's economy and improve its quality of life.
- How many awards has it made?
 - So far, a total of 49 awards, in amounts that vary between \$15,000 - \$30,000.
- The Fund has:
 - Supported the preservation of the W.E.B Du Bois boyhood home in Great Barrington,
 - Introduced inner-city public school students to the study of architecture;
 - Helped establish the Lowell Youth Orchestra and a permanent Jack Kerouac education and tourism site in Lowell
 - Generated State studies of the film and electronic gaming industries
 - Sponsored community dance and theatre performances
 - Supported the creation of women artisans' cooperative in New Bedford.

UMass Life Sciences Moment Fund



- Created in 2008 to spur inter-campus collaboration and strengthen the University's clinical & translational research.
- Individual awards up to \$100,000 for 1 year; up to \$150,000 for two years
- Goals: New devices, therapies, vaccines; high-risk, high-reward studies.

A State-wide Institution with State-wide Impact



Mass Green High Performance Computing Center

- 5 leading research universities, EMC, Cisco and state committed -501(c3) formed
- \$95 M from universities, state, industry, tax credits. (plus ~\$80M equipment)
- Site selected/acquired, tech. requirements identified, planning/design completed
- John Goodhue (former VP at Cisco), appointed as Executive Director
- Several joint proposals submitted –some granted
- Construction is well underway and will be completed by fall.



Promoting a Culture of Entrepreneurship

- UMass Boston Venture Development Ctr (VDC)
 - ▣ Opened May 2009
 - ▣ In past 5 quarters, startups at VDC have raised \$33.7M
 - ▣ Surpassed all other Boston accelerators in VC dollars raised



Promoting a Culture of Entrepreneurship



- UMass Dartmouth Advanced Technology and Manufacturing Center (ATMC)
 - Opened 2001
 - 60K sq. ft. R&D center; requires faculty/student involvement

Promoting a Culture of Entrepreneurship

□ UMass Lowell Medical Device Development Center

- \$4M 16K-sq-ft incubator
- Goal is to bridge gap between invention...production.
- Industry-funded 'New Venture' competition for region's device startups
- Full at opening
- Joint Lowell, Medical School



Merrimack Valley Sandbox Initiative

December 2010 launched at UMass Lowell to expand and strengthen the local ecosystem that supports innovative leaders and entrepreneurs in Lowell and Lawrence – “accelerating economic activity and enhancing the quality of life.”



SANDBOX
IdeaLaunch

MERRIMACK VALLEY
SANDBOX



Merrimack Valley Sandbox Initiative

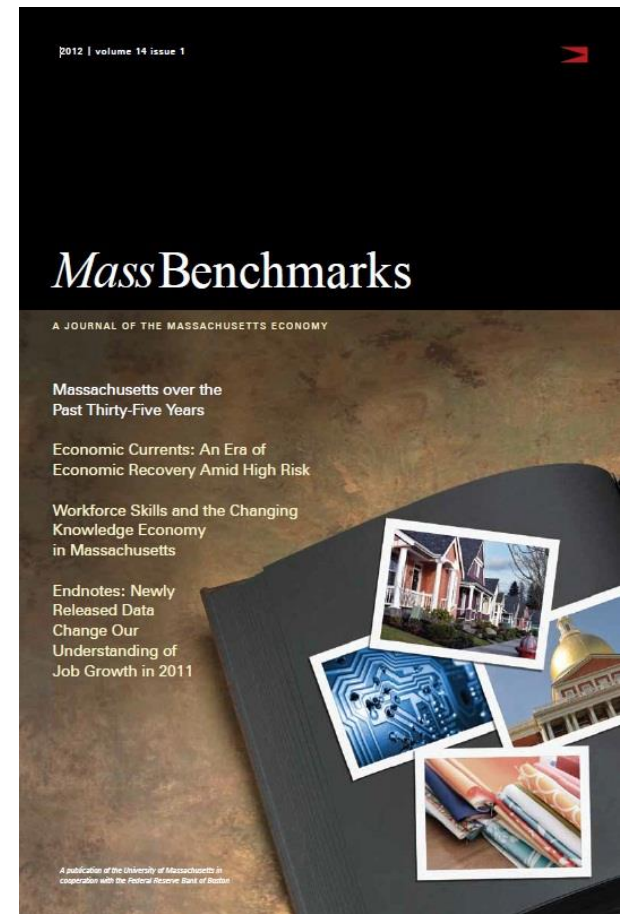
The Sandbox focuses on:

- Connecting & Convening
- Spreading the Entrepreneurial Mindset
- Developing Socially Responsible Leadership
- Facilitating Business Creation



Economic and Public Policy Research

- Position the UMass Donahue Institute as a system-wide resource and the state's "think tank" for economic data, research, analysis
- Publish (with Federal Reserve Bank of Boston) quarterly economic journal – *MassBenchmarks*
- Develop/conduct targeted economic studies (e.g., economic impact analyses for UMass system and Hanscom AFB, industry studies in defense, bio-pharma and IT sectors)
- Support strategic state economic planning efforts – for Governors Weld, Swift, Romney, Patrick
- Operate the State Data Center (thru agreement with U.S. Census Bureau) and undertook successful challenges on state's behalf to federal estimates of Massachusetts population



Workforce and Talent Development

- Promote UMass as a strategic resource for meeting the Commonwealth's education and workforce development needs
- Assisted in initial planning and development of UMassOnline and analysis of Satellite Campuses
- Undertake workforce needs (e.g., clean energy, life sciences) and education assessments (e.g., STEM)
- Support development of system-wide initiatives (e.g., Life Sciences Talent Initiative, Professional Science Masters Degrees, Commonwealth Information Technology Initiative, STEM Summit)
- Develop/manage satellite operations (e.g., Brockton Career Center, Southbridge Training Center)
- Develop/manage special initiatives (e.g., Academy for New Legislators)



The End?



- No, there is never an end.
- The commitments that we made are certainly a never-ending-story.