FY 20 16

massachusetts technology collaborative

Annual Report

Dear Reader,

This Fiscal Year 2016 Annual Report, submitted pursuant to G.L. c. 40J, §8, highlights a dynamic year at the Massachusetts Technology Collaborative (MassTech), supporting innovation-based growth across all regions of the Commonwealth.

This report summarizes progress in programs designed to expand high-speed Internet access, accelerate digital health innovation, support a talented workforce for our best-in-the-nation innovation economy, and partner with industry leaders and researchers to keep our thriving tech sector growing. These activities are shaped by our Board of Directors, and are in alignment with economic development strategies championed by industry, the Baker-Polito Administration, and the state Legislature.

For example:
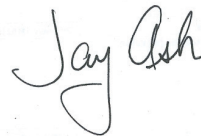
- The Massachusetts eHealth Institute at MassTech (MeHI) was designated by Governor Baker to develop and implement a new Massachusetts Digital Health Initiative in collaboration with private industry;

- The Innovation Institute's Collaborative Research and Development Matching Grant Program announced two major awards supporting growth of the nanomanufacturing cluster for smart sensors and materials through Northeastern University and cyber security and data science in Western Massachusetts through UMass Amherst;

- The Innovation Institute convened industry and academic leaders for strategic growth conversations promoting cluster development in various innovative sectors, with a new focus on cyber security and robotics in Massachusetts; and

- The Massachusetts Broadband Institute at MassTech (MBI) engaged meaningfully with unserved towns in Western Massachusetts in a Last Mile Readiness Process, positioning the communities well to make thoughtful decisions on how best to achieve broadband access.

We appreciate the support and valuable insight from our many partners throughout industry, government and academia the past fiscal year. To engage further, please visit us online at www.masstech.org.

Sincerely,

Timothy J. Connelly
Executive Director

Jay Ash
Chair, Board of Directors
Secretary, Executive Office of Housing and Economic Development

OUR MISSION IS TO STRENGTHEN THE INNOVATION ECONOMY IN MASSACHUSETTS, FOR THE PURPOSE OF GENERATING MORE HIGH-PAYING JOBS, HIGHER PRODUCTIVITY, GREATER ECONOMIC GROWTH, AND IMPROVED SOCIAL WELFARE.

The Massachusetts Technology Collaborative, or MassTech, is an innovative public economic development agency which works to support a vibrant, growing economy across Massachusetts.

Through our three major divisions - the **Innovation Institute**, the **Massachusetts eHealth Institute**, and the **Massachusetts Broadband Institute** - **MassTech** is fostering innovation and helping shape a vibrant economy.

We develop meaningful collaborations across industry, academia and government which serve as powerful catalysts, helping turn good ideas into economic opportunity.

We accomplish this in three key ways, by:

*   **FOSTERING** the growth of dynamic, innovative businesses and industry clusters in the Commonwealth, by accelerating the creation and expansion of firms in technology-growth sectors;

*   **ACCELERATING** the use and adoption of technology, by ensuring connectivity statewide and by promoting competitiveness; and

*   **HARNESSING** the value of effective insight by supporting and funding impactful research initiatives.

In December 2015, the MIT's Industrial Performance Center launched a MassTech-funded study on "Growing Innovative Companies to Scale: How Does Massachusetts Measure Up?" The event, held at MIT, featured a distinguished panel including (L-R) Liz Reynolds of MIT, one of the authors of the report and the panel moderator; Ash Ashutosh the CEO of Actifio; Diane Hessan the former CEO of CSpace (Communispace); Bob Mulroy, CEO of Merrimack Pharmaceuticals; and Colin Angle, CEO of iRobot.

MassTech is composed of three major divisions, each with a unique mission that drives innovation and supports a vibrant economy across the Commonwealth.

THE INNOVATION INSTITUTE

The Innovation Institute at MassTech was created in 2003 to improve conditions for growth in the innovation economy by:

- Enhancing industry competitiveness;
- Promoting conditions which enable growth; and
- Providing data and analysis to stakeholders in the Massachusetts innovation economy that promotes understanding and informs policy development.

The Institute manages programs which drive support for emerging sectors such as Big Data, Advanced Manufacturing, and Robotics, and takes on initiatives to support and develop a talented workforce for the Commonwealth, such as the Intern Partnership program, entrepreneur mentorship initiative; and the Global Entrepreneur in Residence (GEIR) Program.

THE MASSACHUSETTS BROADBAND INSTITUTE

The Massachusetts Broadband Institute at MassTech (MBI) is working to extend high-speed Internet access to homes, businesses, schools, libraries, medical facilities, government offices, and other public places across the Commonwealth.

MBI managed the construction and rollout of **MassBroadband 123**, a 1,200-mile fiber-optic network that has delivered high-speed Internet access directly to over 1,100 key facilities in more than 120 communities in Western and Central Massachusetts.

THE MASSACHUSETTS eHEALTH INSTITUTE

MeHI, or the Massachusetts eHealth Institute at MassTech, is the state's entity for health care innovation, technology, and competitiveness and is responsible for advancing the dissemination of health information technology throughout Massachusetts. This includes the deployment of electronic health records systems in all health care provider settings and connecting them through the statewide health information exchange, the Mass HIway.

MeHI oversees programs and makes investments which help accomplish these goals, and is the designated lead state agency for coordination of economic development programming to advance the Massachusetts Digital Health Initiative.

OUR YEAR

In FY16, the Innovation Institute built upon its demonstrated track record of more than 10 years of successful analysis and recommendation of opportunities for state intervention in the marketplace. Among our achievements one will find a refined and nuanced understanding of the needs for growing companies to scale; multiple engagements with industry cluster leaders on the needs and ambitions of key segments of the Innovation Economy; and a successful track record of projects at the Commonwealth's leading research institutions that have yielded a trained and experienced cadre of successful faculty and university administrators who can work directly with industry and government to drive innovation into the marketplace.

Since its inception, Innovation Institute interventions have attracted the participation of more than 9,000 stakeholders and leveraged the investment of more than a quarter of a billion dollars in private and federal dollars. These reside in nearly 150 projects located in all regions of the Commonwealth and were customized based on existing university, institutional, and industry assets. The common objective in this suite of economic development tools is the strengthening of the conditions for economic growth. They have been deployed to support the expansion of new and existing industry clusters, local and regional entrepreneurship, and other economic development pathways that can grow and create employment and investment opportunities across the Commonwealth.

Gov. Charlie Baker is greeted by Northeastern University President Joseph Aoun prior to the announcement of MassTech's $3 million R&D grant to establish the Advanced Nanomanufacturing Cluster for Smart Sensors, a consortium of private manufacturing companies and tier-one research universities, including Northeastern, Tufts University, and UMass-Boston. The announcement took place on April 19, 2016 at NU's campus in Burlington, Mass.

BY THE NUMBERS

$8 MILLION

$8 million in New R&D Grants: New matching grant awards were awarded to Northeastern University's Advanced Nanomanufacturing Cluster for Smart Sensors and Materials **($3 million)**, a university-industry partnership focused on developing smart sensors and nanomaterials to be used for a range of medical, defense, and energy applications; and, the UMass-Amherst/MassMutual Data Science and Cybersecurity Collaborative Research and Education Center **($5 million)**, a grant that will be used to bolster cybersecurity research and the computing technology used by the University of Massachusetts, infrastructure which will help prepare students for careers in data science and cybersecurity, in turn ensuring the continued growth of the field in Western Massachusetts.

269 PARTICIPATING COMPANIES

101 Students: The MassTech Intern Partnership supported **101** students in internships at **65** startups across the Commonwealth during the summer 2016 program (which ran through the early months of FY17). Since the program began in 2012, the MassTech Intern Partnership program has supported a total of **332** students in internships at **173** startups across Massachusetts.

269 Participating Companies: MassTech partnered with the New England Venture Capital Association on the TechGen program to drive startup and student interest in technology internships. This partnership facilitated tech companies' and startups' access to internship matching, helping connect these firms with a greater number of qualified college students. TechGen's new web platform received interest from **269** companies, representing **337** summer internship positions, as well as **1851** prospective interns. Overall, **3,868** students, employers, and individuals make up the TechGen community.

141 TECH TREK STUDENTS

22 TechHUB Caucus Speakers: The TechHUB Caucus hosted four separate sessions at the State House focused on Computer Science in Action, Tech Trends and Small Business, The Massachusetts App Economy, and University and Industry Partnerships in R&D and Tech Transfer, representing over **200** attendees, **18** organizations and **22** speakers.

141 TechTrek Students: The success of the Mass Big Data Tech Trek event series continued in late 2015, with two additional events designed to connect top university talent with founders, CEOs and technologists from the Commonwealth's leading data-driven companies. Two events, held in Boston and Amherst, engaged an extensive group of students and speakers, including **141** data science, entrepreneurship and mathematics students in Boston, **84** in Amherst, **15** universities represented, **11** speakers, and **9** companies. The TechTrek series is expected to continue in the fall of 2016 with visits in the MetroWest region.

550 ATTENDEES

550 Attendees: The May 2016 graduation of the Western Mass entrepreneurship accelerator Valley Venture Mentors, an Innovation Institute grantee, drew a huge cross-section of Western Mass business, political, and community leaders to the MassMutual Center in Springfield. VVM graduated its second cohort of **36** startups from its three year old pilot entrepreneurship accelerator. VVM received over **200** applications from **20** countries, a **65%** increase in applications from the year before, and successfully recruited one of the most diverse accelerator cohorts in the country, with more than **50%** of ventures led by women and **36%** led by people of color.

11 EMERGING ENTREPRENEURS

11 Emerging Entrepreneurs: The EforAll engagement in the South Coast, funded by a grant from the Innovation Institute, completed its first accelerator class in March 2016. **Forty-five (45)** applications were received, competing for class spots for **11** emerging entrepreneurs, who were able to engage and learn from a local, experienced team of **32** mentors.

$4.4 MILLION

$4.4 million in Capital Raised: In Lowell and Lawrence, EforAll's effect on the regional economy continued to grow: according to survey results, accelerator alumni are generating **$3.5 million** in revenue, employing **133** full or part time staff, and have raised **$4.4 million** in capital. The Spanish language accelerator "Negocios Exitosos" expanded to a second cohort of **15** local businesses and regularly hosts community events which drew **40** people from Lawrence and surrounding communities.

THE INNOVATION INDEX

The Index of the Massachusetts Innovation Economy - 2015/16 Edition

The 2015/16 edition of the Index was released on February 29, 2016. This year's 'Special Analysis' section focused on collaborative workspaces and was developed in-house. This analysis was prompted by a desire to highlight the variety of workspaces that can be found throughout the Commonwealth, provide some standard definitions to the major types of workspaces, and discuss both success stories and challenges faced by workspaces around the state. The 2015/16 Index was launched at an Innovation Institute Governing Board Meeting and featured a roundtable discussion with four leaders of collaborative workspaces from around the state.

THE INDEX OF THE MASSACHUSETTS INNOVATION ECONOMY 2015/16 EDITION

The INNOVATION INSTITUTE at the
MASSACHUSETTS TECHNOLOGY COLLABORATIVE

COLLABORATIVE RESEARCH AND DEVELOPMENT MATCHING GRANT PROGRAM

Massachusetts Open Cloud

This $3 million dollar award to Boston University supports the Massachusetts Open Cloud (MOC), a public, transparent cloud computing resource that will serve as a shared infrastructure in the Commonwealth for running computationally intensive and big data applications. In its second year, the MOC has developed a substantial infrastructure and made it available to an initial user community as a production service this summer. Significant industry donations have been received, consisting of physical infrastructure and services, totaling $5.5 million by the end of project year two. The academic partners are heavily engaged in the project, supporting it with both technical and support services. Additionally, the project has helped attract to the Commonwealth over $11 million in federal research funding, along with a pool of top industry partners that are committed to the long-term model and to helping the MOC create a sustainable business plan for the future.

INNOVATION INSTITUTE GOVERNING BOARD

Chairperson: Donald R. Dubendorf, Esq., Attorney-at-Law, Dubendorf Law; Board Vice-Chairperson, Massachusetts Technology Collaborative

Ex Officio Members:

The Honorable Jay Ash, Secretary, Executive Office of Housing & Economic Development, Commonwealth of Massachusetts; Board Chairperson, Massachusetts Technology Collaborative

Marty Jones, President and CEO, MassDevelopment

Governing Board Members:

Julie Chen, PhD, Vice Chancellor for Research & Innovation, University of Massachusetts-Lowell

C. Jeffrey Cook, Partner, Cohen Kinne Valicenti & Cook LLP

Thomas G. Davis, Former-Executive Director, The Greater New Bedford Industrial Foundation

Priscilla H. Douglas, PhD, Principal, P.H. Douglas & Associates

Patricia M. Flynn, PhD, Trustee, Professor of Economics & Management, Bentley University

Amy K. Glasmeier, PhD, Department Head of Urban Studies & Planning, Massachusetts Institute of Technology

Michael A. Greeley, General Partner, Flare Capital Partners

Emily Green, President and CEO, Smart Lunches

C. Jeffrey Grogan, Former-Partner, Monitor Group LP

Richard K. Lester, PhD, Head, Department of Nuclear Science and Engineering; Co-Chair, Industrial Performance Center, Massachusetts Institute of Technology

Teresa M. Lynch, Principal, Mass Economics

Daniel O'Connell, President & CEO, Massachusetts Competitive Partnership

Timothy Rowe, Founder & CEO, Cambridge Innovation Center

Pieter J. Schiller, Partner Emeritus, Advanced Technology Ventures

Stephen C. Smith, Executive Director, Southeastern Regional Planning & Economic Development District

Mitchell G. Tyson, Principal, Tyson Associates

Karl Weiss, PhD, Professor Emeritus, Northeastern University

Jack M. Wilson,PhD, President Emeritus, & University Distinguished Professor of Higher Education, Emerging Technologies, and Innovation, University of Massachusetts

Phyllis R. Yale, Advisory Partner, Bain & Company (July 2015-May2016)

DIRECTOR

Patrick Larkin, Interim Executive Director, Massachusetts Technology Collaborative (June 2016); Director, Innovation Institute at MassTech

UMass Lowell Printed Electronics Research Collaborative

The $4 million award to UMass Lowell supports the Printed Electronics Research Collaborative (PERC), a project jointly led with Raytheon. The PERC will be a permanent facility for research, development, and commercialization in flexible and printed electronics, specifically targeted at defense applications. UMass Lowell, Raytheon, and other center members will undertake activities at this new facility that will address "critical technical barriers such as novel inks, ink-polymer substrate interactions, electromagnetic responses under changing and conformal geometries, lightweight power, and efficient data collection, analytics, and transmission". MassTech funds have been used to purchase equipment for a printing lab, antenna characterization lab, and electrical characterization lab. PERC's initial successes include receiving an award from the America Makes NNMI (National Network for Manufacturing Innovation), and demonstrating and winning an award for a ferroelectric ink at the IDTechX Conference held in November 2015, work which PERC is now preparing a patent application for in addition to two invention disclosures for BST ink and a Printed RF Measurement Technique.

WHOI's Center for Marine Robotics

This $5 million dollar award to the Woods Hole Oceanographic Institution supports the advancement of the Center for Marine Robotics (CMR), a new, permanent facility for research, development, and commercialization in marine robotics, housed at WHOI's onshore and offshore facilities on Cape Cod. This project will create facilities that will accelerate the marine robotics product development process from prototyping through in-ocean testing. The work of the center will create conditions leading to accelerated development of new and existing marine robotic technologies, and facilitate the testing and deployment of new robotic systems. In FY 2016, WHOI held a successful Marine Robotics Entrepreneurship Forum, their second annual event, and began the planning and design phase for the capital facilities the award is funding, including:

- Issued an RFP for a Pressure Chamber and was negotiating with the most responsive bidder;
- Developing the configuration, contents, and business model for the Rapid Prototyping Center; and
- Deployed enhancements to Martha's Vineyard Coastal Observatory Core capabilities, including enhancements to the power system and installation of a hosting capability for different types of AUV docks that can be deployed and connected to the observatory.

Northeastern's Advanced Nanomanufacturing Cluster for Smart Sensors & Materials

This $3 million dollar award, approved and announced during FY2016, will support the Advanced Nanomanufacturing Cluster for Smart Sensors and Materials (ANSSeM) at Northeastern University's Burlington campus. ANSSeM will conduct applied research and product development for the manufacture of smart sensors and specialized materials with new, additive manufacturing methods. Part of this work will deploy a new manufacturing technology – the Nanoscale Offset Printing System (NanoOPS) – to realize new applications, enhanced performance of materials and products, and large reductions in manufacturing costs.

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"Our administration has prioritized the growth of the Commonwealth's nationally-leading innovation economy. Through collaborative projects like the Advanced Nanomanufacturing Cluster for Smart Sensors and Materials, we are unlocking private investment and job creation in revolutionary technologies, unleashing the unmatched ingenuity of our citizens, and connecting every region in the Commonwealth to the innovation economy."

- Massachusetts Governor Charlie Baker, announcement of the Innovation Institute's $3 million R&D grant to Northeastern University to establish the Advanced Nanomanufacturing Cluster for Smart Sensors and Materials ("ANSSeM") on April 19, 2016

UMass Amherst/MassMutual Data Science & Cybersecurity Collaborative Research & Education

This recently approved $5 million award to UMass Amherst will support the UMass Amherst/MassMutual Data Science & Cybersecurity Collaborative Research & Education (DSCC) at several locations around the Commonwealth. UMass will hire fifteen new faculty members during the next four years to develop and teach new courses and conduct directed and applied research with students. This will be funded by a $15,000,000 grant from MassMutual. These new faculty and their students will work with new, advanced graphics-processing computer equipment to be installed at the Massachusetts Green High Performance Computing Center (MGHPCC). This new, specialized computing equipment will be accessed by faculty and students via 120 computer terminal workstations distributed at four university locations (UMass Amherst, Mount Holyoke College in South Hadley and at two other satellite locations: the UMass Center in Springfield and the UMass Center at Beacon Hill in Boston).

INTERN PARTNERSHIP

New England Venture Capital Association (NEVCA)

The Innovation Institute continued its partnership with the NEVCA on the TechGen program, an effort to better excite and support the college students, startups, and established firms around tech internships. Now in its second year, the TechGen has continued to generate a growing interest among its target audience, having received direct interest from 269 startups, representing 337 summer internship positions, and 1851 prospective interns. Overall, 3,868 students, employers, and individuals are engaged in the TechGen universe.

MassTech Intern Partnership

Since launching in spring 2013, the MassTech Intern Partnership received interest from more than 1,600 college students looking for internships from more than 500 firms formally seeking internship support. In FY2016, the available resources allowed the Innovation Institute to make 101 student internship stipend awards to 65 participating Massachusetts tech startups and emerging tech companies. These summer internships were completed in July and August 2016, in early FY17.

"The Internship Partnership sends a powerful message to innovators and entrepreneurs in the Commonwealth and around the globe: when it comes to the innovation economy, Massachusetts is the place to be. I am very proud of the success of this program, which was created through a House economic development bill, and I thank MassTech for its passionate commitment to implementing the initiative, as well as the companies and students who have participated."

- House Speaker Robert A. DeLeo, Launch of the 2016 MassTech Intern Partnership Program, April 5, 2016

THE MASSACHUSETTS BIG DATA INITIATIVE

Mass Big Data Tech Treks
In fall 2015, MassTech continued the successful Mass Big Data 'Tech Treks', an event series launched to connect top university talent with founders, CEOs, and technologists at the area's leading data-driven companies. The Tech Treks, hosted in Boston and Amherst, engaged an extensive group of students and speakers, including 225 students from 15 universities, 11 speakers, and 9 companies. The Treks are designed to build community to affect an increase in graduates that choose to stay in the Commonwealth to start firms or take jobs in the big data sector upon graduation.

Mass Big Data Indicators 2015
On March 8th, 2016, the "Massachusetts Big Data Indicators 2015" report was announced and released. The report builds on the previous MassBigData report released in April 2014, highlighting the prospects for growth in the big data sector in areas such as talent and workforce, ecosystem expansion, and intellectual capital and innovation. The report also identified opportunities to promote and expand the Mass Big Data sector and enhance the Commonwealth's position as a global leader in data science. The report revisits initial baseline indicators established in the 2014 report, and provides new data and performance metrics in categories that can be useful in assessing the progress and impact of big data-related growth and performance in the Massachusetts innovation eco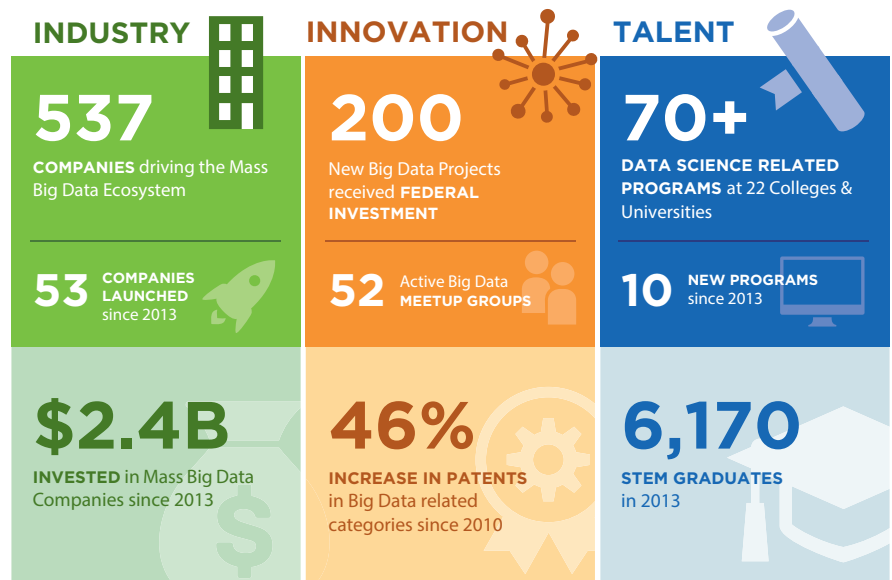nomy. The report was developed in-house and released digitally, resulting in 12 news articles and additional media coverage detailing the findings and significance to the Commonwealth.

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"Our research shows that Massachusetts companies are taking advantage of the business opportunities that exist in the data space, as seen by the across the board growth in new businesses, funding, and patents. The research also outlines that big data is truly a statewide phenomenon, from MassMutual's new data science center in Amherst, to new academic programs in Worcester, and the growing companies in the Greater Boston region."

- Pat Larkin, Director of the Innovation Institute at MassTech; Launch of "Massachusetts Big Data Indicators 2015," March 2016

The Mass Big Data ecosystem infographic, taken from the 2015 indicators report. massbigdata.org

INDUSTRY

537
COMPANIES driving the Mass Big Data Ecosystem

53 COMPANIES LAUNCHED since 2013

$2.4B
INVESTED in Mass Big Data Companies since 2013

INNOVATION

200
New Big Data Projects received FEDERAL INVESTMENT

52 Active Big Data MEETUP GROUPS

46%
INCREASE IN PATENTS in Big Data related categories since 2010

TALENT

70+
DATA SCIENCE RELATED PROGRAMS at 22 Colleges & Universities

10 NEW PROGRAMS since 2013

6,170
STEM GRADUATES in 2013

OUR YEAR

In Fiscal Year 2016, the MBI made meaningful progress in addressing broadband access challenges in the Commonwealth. The MBI led several key initiatives, including the Last Mile Program for unserved towns in Western Massachusetts, the Broadband Extensions Program for partially-served towns, and oversight of the *MassBroadband 123* Middle Mile Network.

The Baker-Polito Administration engaged with MBI in FY16 to conduct a thorough review of the Last Mile Program, leading to the development of a revised strategic approach that recognizes there is no "one size fits all" solution that will work for every unserved community. MBI established project baseline requirements for state funding and implemented a project readiness process, working closely with unserved towns to determine status and approval of proposed last mile projects. During FY16, the MBI took steps to initiate and award over $2.1M in state funding for the construction of last mile network build outs and pilot projects. This funding is expected to provide broadband services to approximately 4,385 previously unserved premises in six towns across the region. MBI also continued to take steps to extend coverage in nine towns in western and north central Massachusetts with significant gaps in broadband coverage through the Broadband Extensions Program. MBI solicited qualified partners for broadband expansion projects in these nine communities, which resulted in a successful agreement with Comcast to expand broadband access in early FY17.

The MBI continues to own and operate the *MassBroadband 123* Middle Mile network, which has shown success through increased subscriptions, new service offerings, and network extensions throughout the fiscal year.

A roadmap for success has been established in each program area over the course of FY16, and MBI looks forward to further assisting unserved areas across the Commonwealth in achieving broadband access.

In July 2015, the MBI and MassTech hosted a U.S. State Department delegation of foreign journalists. The delegation visited Leverett's Town Hall to hear from town leaders there about their municipal broadband project. Here, a historic mural of Leverett businesses is juxtaposed with a display of 21st century broadband delivery technology (bottom right).

MBI | MASSACHUSETTS BROADBAND INSTITUTE | at the MassTech Collaborative

BY THE NUMBERS

$2.1 MILLION

In FY16, MBI took steps to initiate and award over **$2.1 million** in funding for the construction of last mile network build outs and pilot projects in unserved towns. This funding will provide broadband access to approximately **4,385** previously unserved premises in six towns targeted under the Last Mile Program.

33 TOWNS ENGAGED

The Last Mile Readiness Process was initiated with **13** unserved towns in FY16, quickly increasing to **33 of 44** unserved towns during the early stages of FY17.

17 GRANTS

MBI awarded **17** planning grants to unserved municipalities to obtain professional services to perform preliminary marketing or feasibility studies, to obtain legal and financial services, or to obtain professional guidance in pursuit of last mile broadband solutions.

514 COMMUNITY ANCHOR INSTITUTIONS

514 Community Anchor Institutions: **46%** of the **1,108** community facilities connected to the *MassBroadband 123* middle-mile network have purchased services by the close of FY16, including notable adoption from **79%** of libraries, **58%** of schools, and **79%** of police departments.

LAST MILE PROGRAM FOR UNSERVED TOWNS – NEW STRATEGIC FRAMEWORK PROVIDED

In Fiscal Year 2016, the Baker-Polito Administration engaged with MBI in a thorough review of the Last Mile Program, leading to the development of a revised strategic approach. On May 10, 2016, Governor Baker and Lieutenant Governor Polito met with Senate President Rosenberg and other legislative leaders, MBI officials, and local representatives from unserved municipalities in western and central Massachusetts to discuss a strategic pathway forward for the Last Mile Program designed to accelerate progress. The Baker-Polito Administration also announced a new Last Mile project leadership team to guide the MBI's high-speed internet accessibility efforts and appropriately disburse state capital Last Mile funds to approved projects. MBI has begun building a flexible framework, which allows for a range of project models, including multi-town collaborations, locally-owned networks, and industry partnerships. Many technology and operational choices are supported through this framework, as long as they meet core speed, affordability, and sustainability standards.

LAST MILE PROGRAM FOR UNSERVED TOWNS – FUNDING FOR ACTIVE AND COMPLETED PROJECTS

The MBI partners with 45 towns in Western and North Central Massachusetts which lack residential broadband access. MBI took steps to initiate and award over $2.1M in funding for the construction of last mile networks and pilot projects in unserved towns in FY16. This funding will provide broadband access to approximately 4,385 previously unserved premises in six towns targeted under the Last Mile Program. Specific funding includes:

- $230,000 grant awarded to the Town of Mount Washington for the construction of a town-wide FTTH network providing broadband access to 140 households.
- $45,000 grant awarded to the Town of Royalston for a fixed wireless pilot project, bringing broadband services to a test group of approximately 45 households.
- An agreement in principle reached to provide up to $1.6M in funding to Charter to help supplement the cost to upgrade and extend broadband access in the unserved communities of Hinsdale, Lanesborough, and West Stockbridge. The project will deliver broadband access to all of the approximately 3,400 residential and commercial premises in these three towns. Funding for this award was approved by MBI in late FY16, and the contract will be executed between the two parties in early FY17.

MBI BOARD OF DIRECTORS

Jay Ash, Secretary, Executive Office of Housing and Economic Development, Board Chairperson, Massachusetts Technology Collaborative
Designee: Katie Stebbins, Assistant Secretary of Technology, Innovation, and Entrepreneurship, Executive Office of Housing and Economic Development, Board Chairperson, Massachusetts Broadband Institute (July 2015 – April 2016)
Designee: Peter Larkin, Special Advisor to the Secretary of Housing and Economic Development, Executive Office of Housing and Economic Development, Board Chairperson, Massachusetts Broadband Institute (May 2016-June 2016)
Brian Burke, Sr. Director, State Government Affairs, Microsoft Corporation (July 2016-March 2016)
David Clark, Sr. Research Scientist, Advanced Network Architecture, MIT CSAIL
Donald Dubendorf, General Counsel, Dubendorf Law Office
Linda Dunlavy, Executive Director, Franklin Regional Council of Governments (FRCOG)
Pamela W. Goldberg, Massachusetts Technology Collaborative CEO (July 2015-May 2016)
Frederick Keator, Partner, Keator Group, LLC (March 2016-June 2016)
Patrick Larkin, Interim Executive Director, Massachusetts Technology Collaborative (June 2016)
Kristen Lepore, Secretary, Executive Office of Administration and Finance
Rick Oliveri, Former Director of IT Services, Baystate Health Services (Retired)
Karen Charles Peterson, Commissioner, Massachusetts Department of Telecommunications and Cable

DIRECTOR

Eric Nakajima, Massachusetts Broadband Institute (July 2015-February 2016)

DEPUTY DIRECTOR

Ed Donnelly, Massachusetts Broadband Institute

LAST MILE PROGRAM FOR UNSERVED TOWNS - PROGRAM CRITERIA AND MODELS

Due to the diverse needs and capacities of the remaining 44 unserved towns, the Baker-Polito Administration and the MBI believe that there is no "one size fits all" solution for universal broadband service. As such, in FY16 the MBI established a clear outline of criteria necessary to receive financial support as well as sample project models for the towns to consider.

The criteria and models provide a foundation for towns to move forward with MBI in assessing viability for potential projects. MBI will continue to refine the operational parameters of the Last Mile Program for unserved towns as more is learned about the needs of the towns, the range of partners and financing vehicles that can be leveraged, and local technology preference and choices.
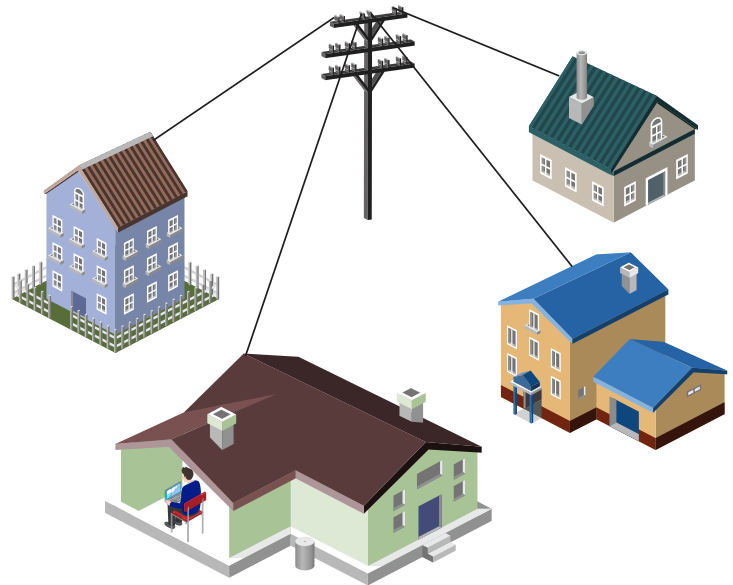
LAST MILE PROGRAM FOR UNSERVED TOWNS - READINESS ASSESSMENTS

In late FY16, the MBI team began working closely with town designees to determine the project readiness status of each eligible town. The readiness process is collaborative and is intended to result in successful, approved project proposals. Towns partner with the MBI on an intensive review, requiring best effort by all parties and resulting in a status report, which may produce a project approval recommendation. Achieving readiness involves a detailed process of collaboration, review, engagement, planning, and evaluation. Readiness elements include details around preferred project model, design, and construction options, funding and financing issues including approval from the Division of Local Services, and various technology and operations decisions.

The MBI is engaging in readiness review with towns on a rolling basis. The readiness process was initiated with 13 unserved towns in FY16, quickly increasing to 33 of 44 unserved towns during the early stages of FY17.

LAST MILE PROGRAM FOR UNSERVED TOWNS - PLANNING GRANTS

The MBI offers $5,000 planning grants to municipalities to support their project evaluation and planning. In FY16, the MBI awarded 17 grants to unserved municipalities to obtain professional services to perform preliminary marketing or feasibility studies, to obtain legal and financial services, or to obtain professional guidance in pursuit of last mile solutions.

LAST MILE PROGRAM FOR UNSERVED TOWNS – POTENTIAL FUNDING AND FINANCING OPTIONS

USDA Community Facilities Fund

In FY16 MBI began to monitor the development of the USDA Community Facilities ("CF") Loan Program, which may adjust its rules to allow towns to finance broadband networks. This program traditionally has been used for schools, firetrucks, waste facilities, libraries, etc., but given the demand for broadband in rural communities, federal officials are considering expanding the range of eligible projects. The program could allow eligible towns to borrow up to $3 Million at a competitive interest rate (currently 3.125%). The MBI met several times with key officials of USDA over the course of the fiscal year to discuss the possibility of these loans becoming available.

Connect America Fund II (CAF II)

The Federal Communications Commission (FCC) is creating a process to fund residential broadband projects to unserved locations, known as the FCC CAF II Program. The CAF II Program could provide approximately $4 million per year for 10 years to 17,000 unserved Western Massachusetts locations. The FCC will distribute funds through a reverse auction where the lowest rated scores will win the auction. In FY16, MBI began engaging with the FCC, federal policymakers, and broadband providers to explore the viability of this funding opportunity. The MBI has conducted preliminary data analysis on current coverage, reviewed credentials of providers who may be eligible to lead or partner with the state, and has begun to coordinate efforts to determine the viability of CAF II. MBI will continue to evaluate the best positioning of Massachusetts to potentially benefit from CAF II funding.

LAST MILE PROGRAM FOR UNSERVED TOWNS – NETWORK DESIGN AND ENGINEERING

The MBI expects to manage network design, planning, and construction for eligible towns that have expressed an interest in coordinating with MBI to manage projects, have completed the readiness assessment, and have approved broadband expansion projects. In FY16, MBI developed and released a "mini-bid" request for proposal (RFP) targeting qualified firms to conduct pole survey work in unserved towns. Pole survey work is the first step in the process of retaining a license to install fiber on the utility poles. It involves data collection for utility poles, drafting utility license applications, and ride outs with utility companies to initiate make ready cost estimates. These services will specifically inform the design and engineering of last mile networks. MBI anticipates selecting a firm to conduct pole survey work for a subset of towns in the early stages of FY17. MBI also began drafting a Design and Engineering RFP in FY16. This procurement is still in draft form, but is expected to solicit responses from qualified firms to design and engineer various

options in building a multi-town or single town-wide fiber-to-the-premise (FTTP) and/or wireless network(s). The selected contractor will be expected to provide design, project management, project support, and consulting services to MBI upon contract execution. Both of these procurements are critical steps in the preparation for constructing last mile networks.

LAST MILE BASELINE PROGRAM REQUIREMENTS

Minimum Project Requirements
• **Project's technology must provide access to broadband speeds as defined by the FCC (25/3)** • **Project must be capable of demonstrating long-term operating sustainability without ongoing state subsidy** • **Project must be affordable** • **Project should seek minimum goal of 96% residential coverage in its service area** • **Endorsed by MBI professional staff** • **Financing endorsed by DLS (as needed)** • **Approved by MBI Board of Directors**

Technology and Operations
• **Preference for network operations to be managed by experienced professional partners when possible** • **Many technology choices: fiber, wireless, cable, and/or hybrid solutions** • **Preference for utilization of *MassBroadband 123* network when appropriate**

BROADBAND EXTENSIONS PROGRAM

During FY16, MBI led a program to extend residential broadband infrastructure in nine Western Massachusetts towns that have gaps in broadband coverage – Buckland, Conway, Chester, Huntington, Northfield, Pelham, Shelburne, Hardwick, and Montague. Many of these towns have significant gaps in broadband access and each town falls below the regional average of 96% of residences having access to broadband services. Through the Broadband Extensions Program, MBI solicited qualified partners for broadband expansion projects in these nine communities, which has resulted in a successful agreement with Comcast to expand broadband access in early FY17.

MASSBROADBAND 123 NETWORK

The **MassBroadband 123** network has now been fully operational for two years. By the close of FY16, 514 community anchor institutions, (46%) of the 1,108 originally connected, had purchased services, including notable adoption from 79% of libraries, 58% of schools, and 79% of police departments. The **MassBroadband 123** network footprint has grown through the addition of alternative access points (AAP) and network extensions, and MBI is working extensively with Axia on several major sales initiatives (e.g. Fiber to the Tower, NG911, and other dark fiber projects).

"

"Our economic development and competitiveness as a region is directly tied to our ability to harness the power of the internet. Today's announcement will allow more small businesses to tap into the global economy and expand opportunities in Western Massachusetts for businesses to grow while closing the digital divide."

- Senate President Stan Rosenberg (D-Amherst).

OUR YEAR

In FY16, the Massachusetts eHealth Institute at MassTech (MeHI) worked to build connectivity across healthcare providers, digital health entrepreneurs, payers, and public and private sector leaders, helping to organize a shared statewide agenda for accelerating digital health innovation.   These efforts are designed to support positive economic outcomes, help communities harness the benefits of digital health innovation, and improve our care coordination systems and healthcare costs.

MeHI worked to support the Baker-Polito Administration and other private and public partners to launch the Massachusetts Digital Health Initiative on January 7, 2016. Governor Baker designated MeHI as the lead state organization in this Initiative, which seeks to build a stronger and more connected digital health ecosystem across Massachusetts. In addition to this major project, MeHI continued to achieve major milestones in its other Initiatives. In the Connected Communities Initiative, we launched the Communities Implementation Grants and issued awards to 8 grantees and 98 total organizations to conduct innovative demonstration projects that support exchange of health information across organizations. In the eHealth eQuality Initiative, we contracted with 39 behavioral health and long-term/post-acute care organizations to support their adoption of electronic health records through a milestone-based incentive program. Both sets of grants have approximately a two year period of performance, so management will continue through FY17 and in some cases into FY18. In the eHealth Services Initiative, we completed the federal Regional Extension Center grant.

Governor Charlie Baker speaks at the launch of the Massachusetts Digital Health Initiative on January 7, 2016, at Children's Hospital Boston. The announcement of this public/private partnership brought numerous leaders from the Commonwealth's business, health care, and technology communities, including (on left) Jeff Leiden, President, CEO & Chairman of Vertex, who spoke on behalf of the Mass. Competitive Partnership, a founding member of the Initiative; (on right) Sandra Fenwick, President & CEO, Boston Children's Hospital; and Secretary Marylou Sudders of the Commonwealth's Executive Office of Health and Human Services.

BY THE NUMBERS

$1.17 MILLION

Managing **39** eQuality Incentive Program grantees representing over **200** clinical sites.

Awarded an additional **$1.17 million** in FY16 to **20** grantees, bringing the total award under the eQIP program to **$2.178** million across **39** grantees.

138 STAKEHOLDER MEETINGS

Awarded **8** Connected Communities Implementation Grants totaling **$3 million** to organizations across the state. The grants include **98** organizations representing the full spectrum of the care continuum across **12** of the state's **15** medical communities.

Held **138** meetings with **43** healthcare organizations across the state through the Connected Communities program.

$250,000 AWARDED

Awarded **$250,000** in digital health economic development grants.

Continued updates and additions to the directory of digital health cluster participants, which now contains **250+** Massachusetts-headquartered digital health companies and **400+** total participants.

$27.45 MILLION

6,567 Medicaid EHR Incentive pre-audits conducted and **2,129** Medicaid EHR Incentive applications approved for payment.

$27,454,744 in Medicaid Meaningful Use Incentives distributed to Eligible Professionals and Eligible Hospitals.

291 PROVIDERS

Assisted **291** providers in submitting reports to the PQRS Registry through the eHealth Services Program.

5,200 Newsletter Subscribers: Monthly engagement with **5,200+** subscribers through the MeHI newsletter.

37 EVENTS

Held **37** in person or virtual events:
- **8** MeHI in person events with **588** attendees
- **21** Educational webinars with **383** attendees
- **7** conference speaking engagements
- **1** Tweet Chat

Digital Health Cluster Development

In FY16, the MeHI team interviewed over sixty digital health ecosystem stakeholders to develop a firsthand understanding of the Massachusetts digital health ecosystem and its participants, gaps in the ecosystem, and market inefficiencies. This process informed the early framework of MeHI's digital health cluster development initiative. These efforts came together with the Massachusetts Competitive Partnership (MACP) to form a public-private digital health partnership. The combined effort culminated in Governor Baker's announcement of the creation of the Massachusetts Digital Health Initiative on January 7, 2016. In this announcement, Governor Baker designated MeHI as the state's lead agency working with the private sector to build and support a strong, connected digital health cluster across Massachusetts. Since the launch of Mass Digital Health in January, MeHI continued supporting the Initiative and building consensus around the key activities. These activities included:

- Provision of $250,000 in grants to launch the PULSE@ MassChallenge digital health accelerator and to support community building and regional economic development efforts with TechSpring at Baystate Health in Springfield;
- Ongoing maintenance and enhancement of massdigitalhealth. org and the directory of digital health cluster participants. This directory now includes more than 250 Massachusetts-headquartered digital health companies and more than 400 total participants in the cluster;
- Ongoing roundtables and development of an action plan to support the broader digital health marketplace; and
- Coordination with the Baker-Polito Administration and private sector stakeholders around the strategic direction of the Initiative.

eHealth Equality

In FY16, MeHI contracted with 39 behavioral health and long-term/post-acute care provider organizations, representing over 200 clinical sites across the Commonwealth, to participate in MeHI's eQuality Incentive Program (eQIP). The program is designed to support the organizations' adoption and effective use of interoperable health information technology. During the year, 38 of the 39 eQIP grantee organizations completed at least one of the four progressive program milestones and 9 completed two milestones. MeHI also funded a resource within the state's Executive Office of Health and Human Services to accelerate the development and implementation of an interface to allow eQIP grantees and other behavioral health organizations to upload mandated Child and Adolescent Needs and Strengths (CANS) data from their health IT systems directly into the state's Children's Behavioral Health Initiative (CBHI) database. On December 9, 2015, MeHI held a day-long forum for eQIP grantees with 57 attendees from our 39 grantee organizations. Forum sessions were designed to

MeHI Advisory Group

Rupa Cornell, Senior Director, Legal Counsel, Global Commercial Strategy & Canada, Biogen Idec Inc.
Alexandra Drane, Co-Founder, Chair of The Board, and Chief Visionary Officer, Eliza Corporation
Len Fishman, Director of the Gerontology Institute in the McCormack Graduate School of Policy and Global Studies, UMass Boston
Steve Fox, Vice President, Zaffre Investments at Blue Cross Blue Shield of Massachusetts
Michael Greeley, General Partner, Flare Capital Partners
Alain Hanover, Co-founder, CommonAngels; Active Mentor, MIT Venture Mentoring Service
Katie Stebbins, Assistant Secretary of Innovation, Technology, and Entrepreneurship for the Executive Office of Housing and Economic Development

Director

Laurance Stuntz, Massachusetts eHealth Institute

Mass Digital Health Initiative display at Bio2016, June 2016.

be informative and interactive and to review certain competencies necessary to advance health IT integration and interoperability in the behavioral health and LTPAC sectors. The Forum included four main sessions: (1) connecting and transacting on the Mass HIway; (2) the connected patient: patient portals and PHRs; (3) patient consent and the electronic exchange of information; and (4) MeHI's Connected Communities Initiative. In January 2016, 24 individuals from 17 stakeholder organizations, including state agencies, behavioral health associations, and providers, participated in a MeHI-organized Behavioral Health Roundtable. The goal was to assemble a targeted group of key stakeholders to help prioritize areas where technology can make the biggest near term impact on the integration of behavioral and physical health care. Participating organizations included state advocacy groups, provider organizations, health plans, and state officials and policymakers. Participants discussed best practices in the use of technology to foster integration of behavioral health and other settings of care and brainstormed top priorities, potential solutions, and key barriers to such integration. Priority areas that emerged from the discussion included: advancement of care coordination and process improvement; data sharing standards/interoperability; and patient consent/privacy issues with the electronic exchange of information. MeHI will use this information in its planning toward advancing eHealth technology solutions to solve some of the most important issues in behavioral health.

"

"Increased use of health IT means improved provider communication, which should lead to better integration between providers and, ultimately, enhanced patient care. Not only will these investments help protect patient safety, they will also allow LTPAC organizations to participate in accountable care organizations and other strategic partnerships that will help streamline care, reduce unnecessary costs, and revolutionize health care delivery across Massachusetts."

- Laurance Stuntz, Director of MeHI

Connected Communities

In FY16, MeHI awarded 8 Connected Communities Implementation Grants totaling over $3 million to organizations statewide. These grants include 98 organizations representing the full spectrum of the care continuum, including hospitals, skilled nursing facilities, home care, primary care, and behavioral health. The Connected Communities grants include a geographically diverse group of healthcare providers with 12 of the state's 15 medical communities included. Each Connected Communities Implementation grantee is supported by a Community Manager who provides guidance, best practices, and other resources to ensure the grant projects are successful. These resources are also posted on the designated Connected Communities Implementation Grantee page on the MeHI website and shared broadly with grantees and the collaborating organizations involved in their grant projects. Community Managers are currently working with the grantees to develop meaningful transformation plans that detail the technology and workflow implementations that will need to be put into place in order to successfully support their care coordination-focused use cases and the expected clinical and financial outcomes for the projects.

MeHI Connected Communities Implementation Grantees & Collaborators
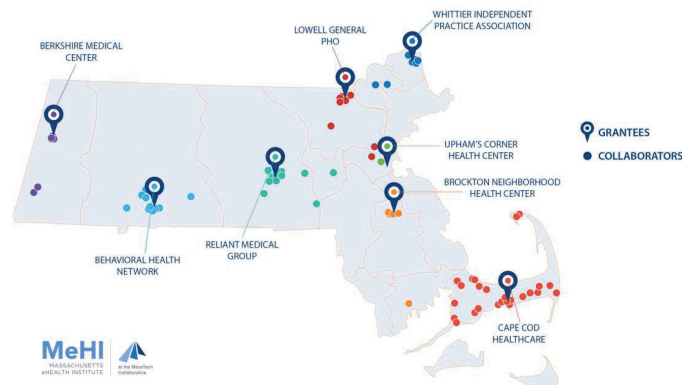
Medicaid EHR Incentive Program

As of June 30, 2016, 65 Eligible Hospitals, or 97% of all Eligible Hospitals, and 6,428 Eligible Professionals have participated in the Medicaid EHR Incentive Program, receiving payments for AIU and Meaningful Use attestation for one or more years.

In FY2016, the Medicaid EHR Incentive Program focused on four main objectives:

1. Complete pre-audits for all program year 2014 applications to verify compliance with the program rules;
2. Authorize the corresponding EHR incentive payments to Eligible Hospitals and Eligible Professionals;
3. Improve the education and pre-audit processes to accelerate validations while maintaining accuracy; and
4. Educate healthcare providers in the Meaningful Use Stage 2 and Modified Stage 2 requirements.

From July 1, 2015, through June 30, 2016, the Medicaid EHR Incentive Program team conducted 6,567 pre-audits, reflecting 2,696 unique applications pre-audited one or more times. The team approved 2,109 Eligible Professionals and 20 Eligible Hospitals for EHR incentives for a total of $27.5 million in payments. In addition, the program responded to 5,051 Meaningful Use telephone calls and email inquiries and sent 5,941 emails.

In its fifth year of operation, the program's focus shifted to supporting providers in attesting to Modified Stage 2 for Medicaid program year 2015 and beyond.
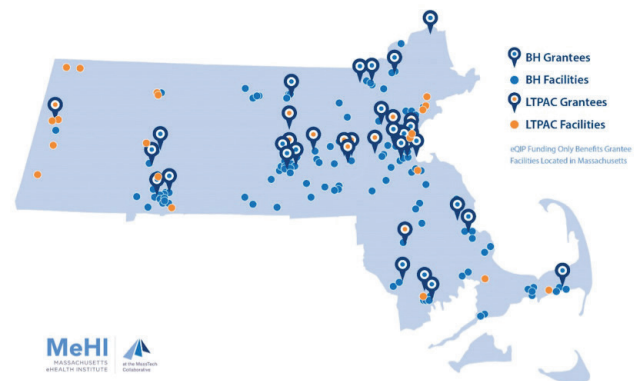
MeHI Regional Extension Center (REC) Program

Through the no-cost extension awarded in February of 2015, the Regional Extension Center (REC) program continued to offer technical assistance, guidance, and information to support Massachusetts providers in becoming meaningful users of certified electronic health records. The program officially ended in February of 2016. Since the start of the program in 2010, the REC enrolled 11 Critical Access Hospitals (CAHs) and 3,097 Primary Care Providers (PCPs). These enrollees received consulting services through the federal Direct Assistance grant funds in their effort to achieve Meaningful Use of EHR systems. By the end of the program, 11 CAHs and 2,352 PCPs had successfully completed all 3 milestones and achieved Stage 1 Meaningful Use, which is 97% of the program goal that was set for Massachusetts.

eHealth Services and Medicaid Technical Assistance

The MeHI eHealth Services team continued to assist Massachusetts' healthcare providers with Meaningful Use and PQRS guidance and services. MeHI updated its Member Portal with new features for Meaningful Use guidance, 2015 PQRS Registry reporting, security risk analysis, and patient engagement. The eHealth Services team provided in-person training, demonstrations, educational workshops, webinars, and regional Meaningful Use meetings. This effort was funded through the REC extension and supplemented with membership fees. The program continued until the end of the third quarter of FY2016.

After the REC extension ended, MeHI reevaluated the evolving market needs and decided to retire the Member Portal and reformat its eHealth services program. The portal was replaced with improved EHR, HIE, and Meaningful Use resources freely available on the MeHI website. MeHI also worked with EOHHS to amend the Medicaid program's scope of services and restructured the eHealth Services team into the Medicaid Technical Assistance team. Going forward, the Technical Assistance team will support providers participating in the Medicaid EHR Incentive program and with EHR adoption and Meaningful Use implementation. This new model enables MeHI to provide services free of charge and will focus on enhancing providers' experience in the Medicaid program so they can more expediently earn their EHR incentives.

MeHI eQuality Incentive Program for Behavioral Health and Long-Term and Post-Acute Care

- BH Grantees
- BH Facilities
- LTPAC Grantees
- LTPAC Facilities

eQIP Funding Only Benefits Grantee Facilities Located in Massachusetts

Outreach & Operations

MeHI's Outreach team provides integrated services for MeHI's program teams covering marketing, outreach, communication, engagement, and education for health IT adoption. The team collaborated with the eHealth Services and eQIP teams to develop and host Meaningful Use workshops and a Grantee Forum. The Outreach team also developed and launched the Digital Health Cluster website and further built out the main MeHI website with instructional videos and new presentations. The team improved the HIE toolkit and completely revamped the original Meaningful Use toolkit to replace the Member Portal. The new Meaningful Use toolkit strongly supports the Medicaid program and is now our second most visited page, only out-visited by the Home page, which underscores the need for incentive program support. MeHI also implemented a Mass HIway directory with visual maps, which runs on both the MeHI and Mass HIway websites.

The Operations team supports MeHI's program initiatives through process and systems development. In FY2016, we continued enhancing our Salesforce application to add functionality for EHR and HIE adoption landscaping and grant progress tracking. For the Medicaid EHR Incentive Program, the team implemented new functionality to allow for the processing of Modified Stage 2 and Program Year 2015 applications. MeHI also incorporated advanced discrepancy tracking functionality which accelerates the validation process, enables our analysts to provide comprehensive feedback to the program participants, and facilitates the identification of common application discrepancies.

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"THE STERLING VILLAGE TEAM IS HONORED TO HAVE BEEN CHOSEN AS A RECIPIENT OF THE EQUALITY INCENTIVE PROGRAM GRANT, AND WE ARE VERY EXCITED TO MOVE FORWARD WITH THE ADOPTION AND USE OF INTEROPERABLE ELECTRONIC HEALTH RECORDS. THIS ADVANCEMENT WILL ALLOW US TO SIGNIFICANTLY ENHANCE CARE COORDINATION BOTH WITHIN THE FRAMEWORK OF OUR...SKILLED NURSING FACILITY, AS WELL AS WITH OUR CARE PARTNERS ACROSS THE CONTINUUM."

- CHRISTINE PIGNATIELLO, MHA, RN, BSN, NHA, EXECUTIVE DIRECTOR, STERLING VILLAGE, LLC

"

"WITH THE SUPPORT OF MEHI, CHELSEA JEWISH FOUNDATION WILL BE ABLE TO LEVERAGE THE LATEST TECHNOLOGICAL INNOVATIONS TO PROVIDE THE HIGHEST QUALITY, EVIDENCE-BASED CARE TO OUR RESIDENTS AND PATIENTS."

- ADAM BERMAN, PRESIDENT, CHELSEA JEWISH FOUNDATION

INTERNATIONAL ENTERPRISE INITIATIVE

The International Enterprise Initiative at MassTech bolsters Massachusetts' innovation economy and develops international partnerships and collaborations across industry, academia and economic development agencies.

Building strong connections with public and private sector partners and developing mutually beneficial relationships allows the International Enterprise Initiative to market Massachusetts as a global innovative hub. The program increases international awareness of the Commonwealth's innovative technology centers and thriving entrepreneurial culture. It also connects Massachusetts companies seeking global markets with appropriate international resources, both here and abroad.

During Fiscal Year 2016, the International Enterprise Initiative collaborated with federal, state, and local government colleagues, as well as private and nonprofit partners and diplomatic and commercial representatives of other nations to host dozens of international delegations, promote the Massachusetts innovation ecosystem worldwide, encourage foreign direct investment, and build productive global partnerships:

- AIM International Business Council
- City of Boston
- Consulate Corps
- Massachusetts Clean Energy Center
- Massachusetts Office of International Trade & Investment
- Massachusetts Export Center
- Massachusetts Life Sciences Center
- MassChallenge
- MassEcon
- Science & Technology Diplomatic Circle Boston (S&TDC)
- U.S. Commercial Service
- WorldBoston

MASSACHUSETTS: A GLOBAL INNOVATION HUB

"

"Massachusetts: the most innovative state in the nation."

- Bloomberg U.S. Innovation Index, January 2016

"Boston: #1 Start Up Hub in the United States."

- U.S. Chamber of Commerce Foundation, May 2016

"Massachusetts: 1'st in the nation for innovation potential."

- WalletHub, June 2016

"Massachusetts: an Innovation Champion."

- Consumer Technology Association, 2016 Scorecard

🐦 **#MassInt**

On June 21, 2016 the International Enterprise Initiative at MassTech hosted a delegation of 21 academic and industry leaders from Denmark, representing the Confederation of Danish Industry and Rectors of Danish Universities. They traveled to Massachusetts to learn about the state's flourishing innovation economy.

These efforts resulted in direct engagement between the International Enterprise Initiative and government officials, industry and academic leaders and entrepreneurs representing 18 countries throughout FY16:

1. Australia
2. Catalonia, Spain
3. Bavaria, Germany
4. China
5. Denmark
6. Estonia
7. France
8. India
9. Ireland
10. Israel
11. Japan
12. United Kingdom
13. Mexico
14. Kingdom of the Netherlands
15. Poland
16. Portugal
17. Switzerland
18. Turkey

In FY16 the International Enterprise Initiative increased public awareness of its efforts by using a new hashtag #MassInt, resulting in a new global audience for MassTech's Twitter feed. The #MassInt hashtag is now commonly used by the program's public and private partners to increase visibility of their social media content.

"

"we want to be at the center of an ecosystem that shares our aspirations."

- CEO Jeffrey R. Immelt at the formal announcement of General Electric moving their global headquarters to Boston in January 2016. At the event, GE highlighted the importance of the region's elite universities, culture of innovation, and roster of innovative tech start-ups as a few of the key reasons for GE's decision.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Increase the Growth of MA Industry Clusters in order to Promote New Business Formation and Job Growth	• Strategic Support: Organize and support industry led Working Groups focused on economic growth strategies for industry clusters • Industry Partnership: Facilitate direct industry partnerships in a wide range of economic development projects focused on cluster growth (e.g. industry partnerships in Open Cloud computing; flexible electronics; underwater robotics, etc.) • Cluster Support: Organize MA Robotics Industry Cluster in partnership with industry, academia and the technology council's • Events: Support events focused on industry cluster growth • Roundtables: Support Policy Roundtables that address opportunities for industry cluster growth	• Engage thought leaders in 12 projects focused on Industry Cluster Development in Massachusetts • Support strategic growth dialogues through 35 steering committee or working group sessions with key industry representatives • Promote 125 key industry partnerships in cluster-based economic development projects • Formation of a designated cluster development organization for robotics in the state • New strategic initiatives derived from 2 Policy Roundtables in Massachusetts • Implementation of 20 cluster development events across the portfolio of Innovation Institute projects in Marine Robotics, Open Cloud, and Flexible electronics.

UPDATE

- Twenty-two (22) industry cluster development projects convened, including:
  - Two (2) MassBigData 'Tech Treks' at UMass-Amherst and WPI (on the Internet of Things), events which engaged fifteen university and nine industry partners;
  - Twelve (12) business or technology development events sponsored by research centers including two (2) Mass Open Cloud project meetings; seven (7) Printed Electronics Research Collaborative @ UMass-Lowell project meetings; two (2) WHOI Center for Marine Robotics industry sessions; and one (1) Northeastern University Advanced Nanomanufacturing Cluster for Smart Sensors and Materials (ANSSeM) meeting.
  - Manufacturing industry leaders were engaged through: three (3) industry-focused M2I2 projects in Flexible Hybrid Electronics, Photonics, and Revolutionary Fibers and Textiles;
  - Two (2) regional advanced manufacturing workforce partnerships in the Southeastern Massachusetts Advanced Manufacturing Collaborative (SMAMC) and Northeastern Advanced Manufacturing Consortium (NAMC); and
  - One (1) statewide workforce and industry engagement Community of Practice for advanced manufacturing;

UPDATE

- One (1) Massachusetts Robotics Study Advisory Board which brought together eighteen members from industry and academia were engaged to advise and evaluate the Massachusetts Robotics Cluster Report; and
- One (1) meeting of the Seaport Economic Council (SEC) was convened to validate and approve the Innovation Institute oversight for SEC innovation grants.
- Convened thirty three (33) Strategic Growth Dialogues including:
  - Six (6) TechHUB Caucus sessions on computer science, R&D, apps, and small business with industry leaders from Raytheon, Kyruus, Verizon, and Microsoft, among others.
  - The TechHUB Collaborative hosted five (5) in-person sessions and over the phone in FY16. Strategy issues discussed included: talent, policy, growing companies to scale, and entrepreneurship.
  - One (1) community of practice meeting for the Global Entrepreneur in Residence (GEIR) program was convened with 16 university and industry participants.
  - Eight (8) Mass Big Data and Cybersecurity leadership consortium meetings held via in-person and conference call sessions.
  - Over the fiscal year, MassTech hosted six (6) community of practice meetings with manufacturing industry leaders.
  - Between the SMAMC and NAMC, industry leaders, WIB partners, and market managers held six (6) planning and steering committee sessions to drive implementation of workforce training.
  - One (1) Mass Scale event in October 2015 brought together 22 CEOs of growing tech firms at Wayfair in Boston for an October 2015 roundtable focused on managing board relations at scale and the current financing landscape.
- Key industry partnerships in cluster-based economic development projects (173):
  - Hosted six TechHUB Caucus hosted sessions in FY16 with twenty (20) industry partners. Overall, the TechHUB membership has added 10 new members from industry and academia.
  - Through the outreach and support of the NAMC Market Managers, twenty eight (28) new companies agreed to hire training graduates or take part in the industry partnership driving regional advanced manufacturing activity.
  - The Advanced Manufacturing Community of Practice hosted sixty-one (61) manufacturing experts from academia, workforce investment boards, and private industry.
  - Provided UMass-Amherst Center for Data Science with twenty-five (25) industry connections for career events, announcements and general promotion.
  - The Mass Big Data Initiative engaged fifteen (15) university and fourteen (14) industry partners in regional events.
  - Twenty-five (25) entrepreneurs and startups participating in the Global Entrepreneur in Residence (GEIR) program.
- Established and convened the nineteen (19) member Massachusetts Robotics Study Advisory Board to assist in the development of the Massachusetts Robotics Cluster Study (to be released in fall 2016).
- Two (2) new strategic initiatives derived from policy roundtables in Massachusetts:
  - The TechHUB Collaborative held a special session in September 2015 with the Executive Office of Housing and Economic Development to inform the framework of the Innovation & Entrepreneurship section in the Baker Administration's proposed Economic Development Plan (1); and
  - A May 2016 "Experts Gathering" of representatives from organizations who have successfully implemented one or more rounds of entrepreneur mentoring programs led directly to the new RFP to support an entrepreneur mentoring Knowledge Sharing Network (1);
- Hosted or convened 23 cluster development events across the portfolio of Innovation Institute projects, including:
  - One (1) Mass Robotics report kickoff event with advisory board and key stakeholders on Jan. 28, 2016;
  - Six (6) Mass Open Cloud Workshops and quarterly virtual meetings;
  - One (1) UMass Data Science Research Symposium;
  - One (1) GEIR speaking panel at Deshpande Symposium at UMass Lowell;
  - One (1) event of the Massachusetts Robotics Study Advisory Board (outlined above) in January 2016;

UPDATE *continued from previous page*

- Twelve (12) business or technology development events sponsored by research centers including two (2) Mass Open Cloud project meetings; seven (7) Printed Electronics Research Collaborative @ UMass-Lowell project meetings; two (2) WHOI Center for Marine Robotics industry sessions; and one (1) Northeastern University Advanced Nanomanufacturing Cluster for Smart Sensors and Materials (ANSSeM) meeting.
- One (1) roundtable on Autonomous Vehicles in April 2016, featuring MassDOT and EOHED secretaries, academic thought leaders, and industry representatives.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Improve Ecosystem Conditions for Growth in the Commonwealth	• Strategic Support: Organize and support industry led Working Groups focused upon improving ecosystem conditions in Massachusetts • Growing Companies to Scale: Support CEO peer roundtables that examine opportunities for growing companies • Education: Work with industry groups (i.e. MassCAN) to improve computer science education in MA by promoting new standards, teacher certification program and undertaking teacher development • Events: Support communities of innovation through conference gatherings, networking receptions; award ceremonies, summit activities, general hackathon events, etc. • Talent: Support professional development programs or other curriculum-based learning for new or incumbent workers	• Engage thought leaders in 25 projects with a focus to Improve Ecosystem Conditions in Massachusetts • Successful launch of the MassCAN Business plan, subject to final legislative approval • Train 50 educators through MassCAN to teach computer science education • Through MassCAN, 500 students take an exploring computer science course • Execution on 5 sub-projects of the Holyoke Innovation District • Successful implementation of the Haverhill Economic Development Partnership • Through the big data industry consortium, pilot innovative training support for 40 technology sector workers • Execution (through grantees) of 30 networking and community-building events in the tech sector • Convene and provide network support for Growing Companies to Scale Working Group – 3 sessions

UPDATE

- Engaged thought leaders in 16 projects focused on improving Ecosystem Conditions in Massachusetts:
  - Engaged the NEVCA board and TechGen stakeholders in a discussion (1) about tech internships and talent retention.
  - Mass Scale held three (3) events in FY16, a roundtable with CEOs of growing companies, a report release event focused on the issues of growing companies to scale in Massachusetts, and a briefing of the TechHub featuring MassScale leaders and MIT's Liz Reynolds.
  - Three (3) programs focused on regional capacity building efforts, and projects that directly resulted from those programs, created ecosystem improvements across the state:
  - The Holyoke Innovation District, led by the regional stakeholder Kitchen Cabinet, created the conditions for Holyoke's successful application to the Boston Fed's Working Cities Program for the entrepreneurship support effort SPARK; as well as a coding program managed by Girls Inc. of Holyoke.
  - Also, the partnership between the Greater Haverhill Foundation, the City of Haverhill, and the Innovation Institute to develop greater economic development capacity in Haverhill has strengthened the local MassDevelopment TDI (Transformative Development Initiative) effort.
- Nine (9) unique programs focused on entrepreneurship have engaged thought leaders, mentors, and successful entrepreneurs in regions across the Commonwealth: Three (3) EforAll programs in Lowell-Lawrence, South Coast (Fall River to New Bedford), and a Spanish language effort in Lawrence, Mass.; two (2) Valley Venture Mentors (VVM) efforts, including the Accelerator program in Springfield, and the mentorship program in Springfield and Greenfield; the expansion of the Interise StreetWise MBA program to the South Coast (1); the development of a Veteran tech entrepreneurship support effort through MetroWest TechSandBox (1); and two community programming efforts based at the Roxbury Innovation Center in Dudley Square, Boston, one through SkyLab Boston and another managed by Innovation Community Gathering Nights by Venture Café Foundation.
- As noted above, Mass Scale held three (3) events in FY16:
  - A roundtable and report release event focused on the issues of growing companies to scale in Massachusetts.
  - A meeting of 22 CEOs of growing tech firms at Wayfair in Boston in October 2015 for a roundtable focused on managing board relations at scale and the current financing landscape; and
  - The December 2015 launch of the Innovation Institute supported report, "Growing Innovative Companies to Scale," authored by MIT's Industrial Performance Center, which brought together academic and industry thought leaders. MIT's Liz Reynolds and MassScale leads also briefed the TechHUB.
- A twenty-four month engagement plan developed with agreement from Greater Haverhill Foundation and City of Haverhill.
- MassCAN Business Plan was submitted and approved for the Education Development Center, leading to an additional $1.5M in funding from the FY17 state budget.
- By the end of FY2016, the three year total of teachers provided K-12 Computer Science (CS) teacher professional development programs was over 700, with teachers coming from 145 school districts or 40% of all the school districts in the state.
- In their Annual Report, MassCAN has only calculated figures for teachers engaged in their programs, not students. More will be done to track student participation going forward.
- As noted in the Holyoke Innovation District's 2015 Annual Report, the District has made progress in eight sectors spanning infrastructure, entrepreneurship, and economic development. HID continued to focus on development and implementation of programs in six (6) core areas: Entrepreneurship, Creative Economy, Manufacturing, Clean Energy, Digital Economy, and Workforce Training, hosting more than 50,000 visitors in 2015.
- In the area of innovative training support for the big data industry consortium, MassTech engaged two (2) leading big data training and education providers in Massachusetts (General Assembly, MIT Executive Education Program), as well as data mining company, Burning Glass, which was engaged to conduct a big data skills assessment in and to identify big data companies with the biggest need in the market. Information gleaned from this outreach has led to the Innovation Institute to study the feasibility of pursuing a Technical Assistance Grant through the Commonwealth Corporation to conduct a skills assessment study for the Massachusetts big data sector.

UPDATE *continued from previous page*

- Execution (through grantees) of 41 networking and community-building events in the tech sector events spread across several programs and geographies:
- The TechGen held twelve (12) community building events in FY16, including the first annual TechGen Spring Fling at the Microsoft NERD Center, an event that brought together 65 students from across the region for a one-day (Saturday) series of workshops and networking with local tech companies.
- Venture Café Foundation hosted seven (7) Innovation Community Gathering Nights to connect local Roxbury entrepreneurs, community members, and students to resources and build business skills and connections.
- Valley Venture Mentors hosted twelve (12) monthly mentorship meetings for Western Mass. entrepreneurs;
- EforAll hosted ten (10) pitch contests total between the Spanish language program "Negocios Exitosos," the Merrimack Valley, and South Coast programs.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Increase Opportunities for Entrepreneurs and Key Skills of Employees through Mentorship, Internship and Business Accelerator Programs	• Mentorship Program: Provide investment and program support for new and existing mentorship efforts and accelerator programs • Entrepreneurship Support: Improve entrepreneurial skills of individuals leading to new business development and job growth • Internship Support: Make Intern Stipend Awards to college students through the MassTech Intern Partnership • Student Retention: Engage with MA-based students through Tech Trek's, Office Hours with Executives, intern parties/gatherings; meetups, hackathons, guest lectures and workshops • Coordinate big data training programs for big data firm	• Launch Mentorship RFP and make 2-4 awards, subject to final Legislative approval/appropriation • Through grantees, increase number of entrepreneurs and employees with key skills by 200 • Through grantees, increase the number of business startups or expansions by 100 • Award 100 stipend awards for student interns from area colleges, pending final Legislative approval/appropriation • Connect 500 top students in computer science, mathematics and statistics with 80 executives in data-driven companies through Tech Treks • Support for 8 successful accelerator programs across the state

UPDATE

- Mentorship RFP drafted with the help of content experts, subject to final approval and appropriation.
- Several programs addressed the need to increase critical skills within entrepreneurs/workers, including, eclipsing the established metric:
  - The TechGen program provided 1,176 students with skill-building workshops and networking events in FY16;
  - Venture Café Foundation's Roxbury Innovation Center Innovation Community nights brought sixty to ninety (60-90) participants each month to participate in business development events targeted to specific sectors. New entrepreneurs and experienced business- owner mentors gained experience and business development skills through our grantees, including through Interise, which engaged eleven (11) mentors with twenty-one (21) small businesses in the South Coast (Fall River/New Bedford) region;
  - Advanced manufacturing grants and community support led to direct impacts in workforce development: during the Fiscal Year, the Northeast Advanced Manufacturing Consortium recruited, trained and placed twenty-six (26) new employees in advanced manufacturing fields.
- The MassTech Intern Partnership supported one hundred (100) students through internships at sixty-five (65) companies in FY16;
- EforAll fomented the foundation of 101 new ventures in all program locations, engaging in the process forty-three (43) mentors in the new South Coast program, twelve (12) bilingual/bicultural mentors in the Spanish language program, and an additional twenty-five (25) new mentors in Lowell-Lawrence; and VVM graduated an additional two classes, representing sixty-four (64) new companies founded in the Pioneer Valley, usually with more than one founder.
- During FY 2016, hosted three Mass Big Data-sponsored events that engaged 275 students total. While lower than the target, the connections were made statewide, including 141 students in Boston and 84 in Amherst for Big Data 'Tech Treks', and an additional 50 attendees at the Worcester Chamber co-sponsored TechTrek on the 'Internet of Things'.
- Support for 8 successful accelerator programs across the state, including Valley Venture Mentors, three (3) E for All programs (Lowell, Lawrence, and South Coast), Roxbury Innovation Center, Roxbury SkyLab, Haverhill Hardware Horizons, and MetroWest TechSandBox.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT

Support Growth in the Commonwealth's Big Data Industry Cluster	• Awareness: raise awareness and better connectedness within the sector through MassBigData.org and other tools for convening, communicating to, and engaging the virtually ecosystem, including the Mass Big Data Newsletter and social media
	• Data Lab: Pilot a new data lab platform for capture of public data sets, storage, organization, integration and computation
	• Enhance opportunities for big data experimentation and innovation
	• Engage Students in career opportunities in big data
		• 14,000 unique visitors on massbigdata.org, engaging the virtual big data ecosystem
		• Regular distribution of Big Data Newsletter
		• Execution on 3 "use case" demonstrations in Big Data
		  • 10 new big data-related companies
		  • 50 hackathons/challenges in MA
		  • 100 state government datasets opened
		• 25% of graduates from MA colleges and universities with data science-related degrees

UPDATE

- MassBigData.org received 14,067 unique visitors during FY2016 and received 345,600 Twitter impressions in FY16;
  - Released two (2) Big Data newsletters in January and April 2016 which provided updates on the sector landscape, highlighted the release of the "Mass Big Data Indicators 2015" report, and recapped 2015's accomplishments.
- Three "use case" demonstrations of the success of Big Data in Massachusetts:
  - In FY2014, MassBigData found 537 big data-related companies in Mass.; the updated 2015 Mass Big Data Indicators report (released in FY2016) found 53 companies launched since FY '14.
  - According to the 2015 Indicators, Massachusetts is home to 52 Big Data meet up groups, which have hosted numerous hackathons.
  - The goal of one hundred (100) state government datasets opened was based on a collaboration with MassIT, which changed its focus on open data during FY2016.
- The 2015 Indicators report found that 6,170 STEM grads matriculated from Mass. colleges and universities in data analytics-related fields.
- Held two Mass Big Data Tech Treks in Boston and Amherst to engage data science, entrepreneurship, and mathematics students in the sector. Engaged 141 students in Boston and 84 in Amherst. Held initial planning discussions for a potential Tech Trek at Babson College in November 2016.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Support Large-Scale, Long-Term Collaborative Research Projects to Strengthen Industry Competitiveness in Massachusetts	• R & D Match Fund: Promote project pipeline, make awards and manage projects • Promote economic development activities from a legacy portfolio of 7 research center awards • Support industry engagement with research centers through Center Industry Advisory Committees or individual Technology or Sponsored Research Partnerships • Events: promote conferences, workshops or other events to promote idea generation and strategic partnerships around research agendas	• Make two new large-scale Collaborative Research Matching Grant Program awards from the state's R&D Bond Fund • Center Directors from the Innovation Institute's 7 key research centers engage in strategic partnerships with representatives from 50 key small, medium to large sized firms in the state • Center Directors from the Innovation Institute's 7 key research centers execute 20 agreements in technology projects. These 7 key research centers sponsor 12 business or technology development events

UPDATE

- Made two (2) R&D Collaborative Match Grant awards totaling $8M to Northeastern University's Advanced Nanomanufacturing Cluster for Smart Sensors and Materials ($3M) and UMass-Amherst/MassMutual Data Science and Cybersecurity Collaborative Research and Education ($5M);
- Continued evaluation of two (2) R&D Matching Grant proposals that have not been awarded: MassRobotics and WPI's Health & Safety Robotics Institute;
- Current evaluation of project proposals from two (2) Massachusetts NNMI nodes: AIM Photonics and NextFlex.
- Directors from the Innovation Institute's 7 key research centers engaged in 61 strategic partnerships with representatives of key businesses in Massachusetts – MassOpenCloud (10), Printed Electronics Collaborative (34), Center for Marine Robotics @ WHOI (4) ANSSeM (6), UMass Data Science & Cybersecurity (7).
- Center Directors from the Innovation Institute's key research centers executed twenty-one (21) Sponsored Research Projects, including at the MassOpenCloud (4) and at the UMass-Lowell's PERC (17).
- These centers also hosted twelve (12) business or technology development events sponsored by these research centers, including MassOpenCloud (2), UMass-Lowell's PERC (7), Center for Marine Robotics @ WHOI (2), and Northeastern University's ANSSeM project (1).

THE INNOVATION INSTITUTE
at the MassTech Collaborative

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Improve Understandings of the Dynamics Taking Place within the Commonwealth's Innovation Economy	• Benchmark and compare Massachusetts innovation economy with the economies of other Leader Technology States through the analysis of performance on 25 key innovation indicators • Evaluate the unmet needs and growth opportunities in the Massachusetts Robotics Industry Sector • Analyze trends associated with growing companies to scale in Massachusetts • Update the cluster analysis of the Big Data sector in Massachusetts	• Release the 2015 edition of the Index of the Massachusetts Innovation Economy and increase web traffic by 25% • Release industry analysis in big data and robotics • Release analysis on trends with growing companies to scale in Massachusetts

UPDATE

- 2015 Index released at the beginning of March 2016:
  - Index's Special Analysis, covering collaborative workspaces, developed in-house by Innovation Institute staff;
  - 2015 Index Launch Event brought four collaborative workspace leaders together for roundtable discussion at JAII Governing Board Meeting.
  - On March 8th, 2016, the "Massachusetts Big Data Indicators 2015" report was announced and released. The report highlights the prospects for growth in the big data sector in areas such as talent and workforce, ecosystem expansion, and intellectual capital.
- Established and convened the nineteen member Massachusetts Robotics Study Advisory Board to assist in the development of the Massachusetts Robotics Cluster Study (to be released in fall 2016).
- In December 2015, MIT's Industrial Performance Center launched the Innovation Institute-supported report "Growing Innovative Companies to Scale," an event which brought together academic and industry thought leaders to MIT.
- Participation in ongoing MATTERS Sector Profile Project in newly assigned role of managing and assisting sector curators define their sectors.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Strengthen Relationship with *MassBroadband 123* **Network Operator and Enhance Management**	• Review Axia business strategy and provide support, as required • Hold regularly scheduled meetings to track contract deliverables and network operations • Ensure timely delivery of plans and reports from network operator • Ensure compliance with Operator Agreement • Hold more frequent Integrated Planning Team (IPT) meetings (e.g. quarterly) rather than annually as stipulated in the agreement	• Network operated and maintained according to the Service Level Agreement (SLA) between MBI and Axia, which specifies quality and performance characteristics for the network • Reports from Axia provided and IPT meetings (joint meetings of MBI, Axia and EOPPS/MassIT) • Required payments made by Axia as stipulated in the agreement

UPDATE
- MBI regularly tracks Axia's performance to ensure that they follow the metrics agreed upon under the SLA.
- Receive all required monthly and quarterly reports; MBI hosts bi-weekly operations meetings with Axia to review these reports, required payments, and check in on other issues that come up.
- MBI tracks, and ensures that Axia makes, all payments stipulated in the agreement.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Increase *MassBroadband 123* Network Sustainability	• Monitor and analyze sales performance • Track network extensions and customer lead generation • Identify opportunities to support expanded adoption	• 60% of the 1,108 CAI's have purchased services • Release new Alternative Access Point (AAP) product offering, which simplifies and reduces costs for some new subscribers. Monitor new AAP product offering

UPDATE

- 46% of the 1,108 CAI's had purchased services by the close of FY16; including notable adoption from 79% of libraries, 58% of schools, and 79% of police departments.
- The Alternative Access Point (AAP) product offering was released; MBI continues to monitor the product offering; 16 AAP services were sold by Axia in FY16.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Support Increased Adoption of *MassBroadband123* **Services**	• Assist in outreach to potential subscribers (including CAIs) in conjunction with commercial service providers and Axia • Survey subscribing and non-subscribing Community Anchor Institutions (CAIs) to gather relevant data about usage	• Utilize data to target growth opportunities and tailor outreach and support

UPDATE

- MBI regularly analyzes subscription data to identify potential segments for growth in CAI subscription.
- MBI frequently assists CAIs interested in taking service by providing appropriate contact information for service providers that are licensed to resell services on *MassBroadband 123*.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Expand Access to 'Last Mile' Broadband Service in 45 Unserved Western Massachusetts Towns	• Manage expenditure of state and local funds to design and build high-speed broadband capacity in towns • Work with towns considering various network technology options • Assist in identifying an operator(s) and service provider	• Issue RFP and execute agreement with Owner's Project Manager for regional network design • Implement and manage Last Mile Grant Application process • Complete/begin pole surveys and make ready process • Execute agreements with municipalities • Launch last mile design and make-ready work in 6 or more unserved towns

UPDATE

- Draft of Design and Engineering RFP created in FY16; Procurement has not yet been released.
- Project baseline requirements for state funding established; project readiness process implemented, in which MBI works closely with eligible towns to determine status for last mile projects, ultimately resulting in successful, approved project proposals. The readiness process was initiated with 13 unserved towns in FY16, quickly increasing to 33 of 44 unserved towns during the early stages of FY17.
- In FY16, MBI took steps to initiate and award over $2.1M in funding for the construction of Last Mile full network build outs and pilot projects in unserved towns. This funding will provide broadband services to approximately 4,385 previously unserved premises in six towns. Specific funding includes:
  - $230,000 grant awarded to the Town of Mount Washington for the construction of a town-wide FTTH network providing broadband access to 140 households.
  - $45,000 grant awarded to the Town of Royalston for a fixed wireless pilot project, bringing broadband services to a test group of approximately 45 households.
  - An agreement in principle reached to provide up to $1.6M in funding to Charter to help supplement the cost to upgrade and extend broadband access in the unserved communities of Hinsdale, Lanesborough, and West Stockbridge. The project will deliver broadband access to all of the approximately 3,400 residential and commercial premises in these three towns. Funding for this award was approved by MBI in late FY16, and the contract was subsequently executed between the two parties in early FY17.
- Pole Survey Mini-Bid released in FY16 targeting qualified firms to conduct pole survey work in unserved towns.
- Developed a Memorandum of Agreement (MOA) to be executed between Mass Tech and towns for Pole Survey work.

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at the MassTech
Collaborative

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Expand Access to 'Last Mile' Broadband Service in Western Massachusetts Communities Partially Served by Existing Cable Franchises	• Working in concert with towns and cable companies, develop plan for expanding access to broadband services in cable expansion	• Program to expand access to broadband service in cable expansion towns developed and implemented • Launch broadband extensions in 3 or more cable towns

UPDATE

- In late FY16, the MBI and MassTech Boards approved up to $4M in funding to extend broadband access in nine municipalities in western and north central Massachusetts. The project, which will be executed in FY17, will deliver broadband connectivity to an estimated 1,089 new residences and businesses, and bring the overall coverage level in each town to 96% or above.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT

Grow Adoption of Interoperable EHRs	• Build community-based approaches to health information technology adoption
	• Support lagging healthcare communities in adopting technology
	• Support providers in getting to Meaningful Use and continuing to progress
		• Award up to 8 grants in the Connected Communities Grants program
		• Engage community stakeholders through 200 meetings
		• Support 10 provider organizations in their use of MeHI's EHR Toolkit
		• Get 75% of the eQIP grantees through Milestone 2
		• Convene a workgroup to identify and begin to address the specific challenges sharing behavioral health (BH) data between organizations
		• Develop specialty-based provider support webpages including EHR vendor directories
		• Provide project oversight support to Implementation and Optimization Organizations (IOOs) in assisting 140 providers in meeting Meaningful Use (MU) Stage 1
		• Enroll and support 240 providers in achieving MU Stage 1
		• Continue to administer key components of the Medicaid Program
		   • Pre-audit an expected 3,500-4,000 incentive applications
		   • Process an expected 350-500 special enrollment and access requests
		   • Handle an expected minimum of 3,000 MU calls
		   • Handle an expected minimum of 2,500 MU email inquiries
		• Sign up 950 providers for eHealth Services Offerings
		
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UPDATE *continued from previous page*

- Awarded 8 Connected Communities grants representing 98 organizations.
- Held 142 meetings through the Connected Communities and eHealth eQuality Programs.
- Publicized Toolkit as a resource to eQIP grantees; page was visited 568 times in FY16.
- 100% of grantees submitted for M1 (97% approved); 23% completed 2 Milestones.
- BH Workgroup meeting held in January 2016.
- BH & LTPAC sector pages and vendor directories live on website.
- Signed up 195 REC providers and guided them to MU Stage 1.
- 34 providers signed up for MU Stage 1 and 2 eHealth Services Support.
- Continued to administer the Medicaid program:
  - Conducted 6,567 pre-audits, reflecting 2,696 unique applications.
  - Approved 2,109 EPs and 20 EHs for payment.
  - Processed 170 special enrollment requests for PY 2015.
  - Answered 3,351 incoming calls.
  - Handled 1,700 inbound and 5,941 outbound emails.
- Signed up 394 providers: 22 MU1; 12 MU2; 150 PQRS; 15 P&S; 195 REC.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Support Massachusetts Health Reform Efforts	• Identify and support promising innovations in the application of technology in healthcare • Share Knowledge / Best Practices on Health IT Adoption • Develop a consensus roadmap for technology to support health reform	• Establish and publish criteria for applying for funding from the eHealth Innovation Opportunity Fund • Convene all MeHI grantees in the fall at the eHealth Grantee Forum • Build out interoperability and practice transformation information on the MeHI website • Develop an HIE workshop program and assist 25 BH and LTPAC providers to connect to the Mass HIway through the program • Select up to 15 Fellows for the eHealth Fellowship Program • Publish the Statewide eHealth Plan • Publish the MA Health IT Index • Add the eHealth landscape research functionality to Salesforce

UPDATE

- Leveraged budget for the eHealth Innovation Opportunity Fund to support awards for digital health economic development to MassChallenge and TechSpring.
- Convened all 39 eQIP grantees at a grantee forum in December.
- Created pages for practice transformation and interoperability.
- Did not receive the ONC grant targeted to fund this program so did not execute this objective.
- Worked with EOHHS and other stakeholders to draft the Statewide eHealth Plan, which is still in final review at EOHHS.
- Created and posted HIT and MU metrics on the website.
- Added EHR and HISP functionality to Salesforce to track HIT landscape.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Engage Consumers using eHealth	• Launch Patient Engagement Program	• Establish the Patient Health Data Advisory Council • Select up to 8 Patient Engagement Prize winners • Develop the Provider Patient Toolkit

UPDATE
- Conducted initial survey activity in partnership with MassINC.
- Convened a Consumer Survey Advisory Group and started work on a broader caregiver engagement survey.

FY 16 GOAL	FY 16 ACTION	MEASUREMENT
Grow and Promote Innovation and the eHealth Cluster	• Convene and engage the eHealth Cluster • Help eHealth companies find customers and markets in Massachusetts • Improve health data transparency and availability in the Commonwealth	• Hold 4-5 events to connect eHealth Cluster stakeholders with resources and to facilitate dialogue • Sponsor an education series for eHealth talent • Launch the MA eHealth Industry Network website and drive engagement • Develop an eHealth Cluster report • Engage with in-state and out-of-state delegations to promote the MA eHealth Cluster • Develop a Market Access Program that delivers 4-5 products or solutions to pilots in provider settings • Conduct 2 Datapaloozas or Hackathons on Healthcare Big Data

UPDATE

- Organized 1 event and participated in several others.
- Partnered with MACP, MassChallenge, and TechSpring to launch the Digital Health Hub to convene stakeholders and offer educational programming.
- Launched massdigitalhealth.org and drove over 250 companies and 350 stakeholders to sign up.
- Engaged with dozens of in-state and out-of-state stakeholders.
- Built support for the MAP, rebranded as the Digital Health Marketplace, from a wide cross-section of stakeholders.
- Partnered with HHS and MassIT to explore releasing healthcare datasets. Began working with MITRE and MIT Hacking Medicine to bring healthcare datasets to researchers and entrepreneurs.

MASSACHUSETTS TECHNOLOGY COLLABORATIVE

DIVISION	ORGANIZATION	GRANT NAME	AWARD AMOUNT	# OF AWARDEES
Innovation Institute	Valley Venture Mentors	Support for creation of a start-up accelerator program	$100,000	1
Innovation Institute	Pioneer Valley Planning Commission	Support for the Holyoke Innovation District	$95,275	1
Innovation Institute	Education Development Center, Inc.	Expansion of the MassCAN computer science education program	$1,450,000	1
Innovation Institute	UMass - Boston	Support for the Global Entrepreneur in Residence (Global EIR) pilot program	$75,000	1
Innovation Institute	New England Venture Capital Associations (NEVCA)	Intern Enrollment Services	$100,000	1
Innovation Institute	Dudley Vision Skylab, Inc.	Support for a entrepreneur development program to be operated in the Roxbury Innovation Center	$75,000	1
Innovation Institute	TechSandBox, Inc	Support of Military Veteran Entrepreneurs in Technology program pilot	$53,101	1
Innovation Institute	Greater Haverhill Chamber of Commerce	Sponsorship of the Scale-Up Challenge	$5,000	1
Innovation Institute	MassINC	Sponsorship of the EduData Challenge 2.0	$25,000	1
Innovation Institute	MASSMEP	Support for the Southeastern Massachusetts Advanced Manufacturing Consortium	$200,000	1
Innovation Institute	Venture Cafe' Foundation	Support for the innovation ecosystem in Dudley Square	$50,000	1

DIVISION	ORGANIZATION	GRANT NAME	AWARD AMOUNT	# OF AWARDEES
Innovation Institute	Worcester Polytechnic Institute	Sponsorship of the EduData Data Science Graduate Capstone project	$10,000	1
Innovation Institute	UMass - Donahue Institute	Sponsorship of the 2015 STEM Summit	$2,500	1
Innovation Institute	Northeastern University	Support for the Advanced Nanomanufacturing Cluster for Smart Sensors and Materials	$3,000,000	1
Innovation Institute	UMass Amherst	Support for the Data Science/ Cyber Security Collaborative Research and Education Project	$5,000,000	1
Innovation Institute	Analog Photonics, LLC	Support for the Process Design Kit Component Library	$1,072,885	1
Innovation Institute	Massachusetts Institute of Technology	Support for the AIM Photonics Massachusetts Educational Factory	$1,000,000	1
Innovation Institute	QCC Foundation	Support for the AIM Photonics Community College Network	$3,461,200	1
Innovation Institute	Multiple Awardees	Grants to technology start-up companies participating in the MassTech Intern Partnership Program*	$52,800	11
Massachusetts Broadband Institute	Multiple Awardees	Broadband Planning Assistance Grants	$160,000	17
Massachusetts Broadband Institute	Royalston, Town of	Pilot Hybrid Project in the South Royalston Village	$45,000	1
Massachusetts Broadband Institute	Middlefield, Town of	Town of Middlefield Wireless Pilot	$129,082	1

*A total of 101 interns were funded by this program during summer 2016. Due to a processing delay, financial awards supporting 90 interns were actually paid in early FY17.

DIVISION	ORGANIZATION	GRANT NAME	AWARD AMOUNT	# OF AWARDEES
Massachusetts Broadband Institute	Comcast of Massachusetts/ Virginia, Inc ("Comcast")	Comcast Cable Systems Extensions Agreement	$4,000,000	1
Massachusetts Broadband Institute	Charter Communications	Charter Last Mile Agreement	$1,600,000	1
Massachusetts Broadband Institute	Mount Washington, Town of	Town of Mount Washington Last Mile Grant Agreement	$230,000	1
Massachusetts eHealth Institute	Multiple Awardees	Connected Communities Implementation Grant Program	$3,060,123	8
Massachusetts eHealth Institute	MassChallenge Inc.	Support for the Digital Health Hub	$170,000	1
Massachusetts eHealth Institute	TechSpring	Support for the Digital Health Hub	$80,000	1
Massachusetts eHealth Institute	Multiple Awardees	Grants to Behavioral Health and Long-Term and Post-Acute Care providers through the eHealth eQuality Incentive Program	$1,171,500	20

MASSTECH FISCAL 2016 LEADERSHIP TEAM

Pamela Goldberg, Chief Executive Officer, Massachusetts Technology Collaborative (July 2015-May 2016)

Patrick Larkin, Interim Executive Director, Massachusetts Technology Collaborative (June 2016); Director, Innovation Institute at MassTech

Jay Ash, Secretary, Executive Office of Housing and Economic Development; Chair, Massachusetts Technology Collaborative Board of Directors

Philip F. Holahan, Deputy Executive Director and General Counsel, Massachusetts Technology Collaborative

Christopher Andrews, Chief Financial and Administrative Officer, Massachusetts Technology Collaborative

Maeghan Welford, Chief of Staff, Massachusetts Technology Collaborative

Eric Nakajima, Director, the Massachusetts Broadband Institute at the Massachusetts Technology Collaborative (July 2015-February 2016)

Laurance Stuntz, Director, the Massachusetts eHealth Institute at the Massachusetts Technology Collaborative

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MASSTECH: masstech.org

MBI: broadband.masstech.org

MeHI: mehi.masstech.org

MassBigData: massbigdata.org

Tech Hub Collaborative: masstechhub.org

MassVetsAdvisor: massvetsadvisor.org

social media

youtube.com/masstech

slideshare.net/masstechcollaborative

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economy across massachusetts