



Annual Report 2015

The Illinois Science & Technology Coalition (ISTC) is a member-driven, nonprofit entity that harnesses the power of research and innovation to expand and enrich the state's economy. Created more than 25 years ago, ISTC serves as a convener, catalyst, and champion for Illinois' innovation community, driving impactful public-private partnerships between industry, research universities, federal labs, the entrepreneurial community, and government.

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Greetings from ISTC leadership

Today it is more important than ever to focus on the elements of the economy that will lead to long-term growth and competitiveness. Throughout the past year, the Illinois Science & Technology Coalition has immersed itself in advancing the state's innovation economy, building upon and connecting the vibrant activity of our research institutions, industry, civic groups, and the entrepreneurial community.

ISTC and our affiliate Institute continue to demonstrate impact as effective intermediary organizations. Our network has grown to more than 80 member and partner organizations that help to drive innovative new partnerships, enhance awareness through data, promote sound policies and federal investments, and foster talent development.

Key highlights from 2015 included:

- Celebrating the continued growth of the **Illinois Corporate-Startup Challenge**, a national award-winning program that links emerging companies with large corporations through a highly curated matchmaking process. In 2015, 72 early-stage companies pitched at 7 corporate demo days, bringing our program total to 15 such events.
- Releasing new data through the **Illinois Innovation Index** that highlighted Illinois' growth in science, technology, engineering, and math (STEM) degree production; research and development (R&D) investments; and entrepreneurial activity coming out of our universities.
- Extending the impact of the **R&D STEM Learning Exchange**, through the efforts of the Illinois Science & Technology Institute (ISTI). Throughout 2015, the program reached 39 high schools and 2,000 students, providing critical support to enrich the state's STEM talent pipeline.

We look forward to building on our efforts to cultivate economic growth in the year ahead, and we thank all of our member and partner organizations for their continued collaboration.

Sincerely,



Timothy L. Killeen
Board Chairman



Mark Harris
President and CEO

Board of Directors

Chairman

Timothy L. Killeen
President
University of Illinois

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International, Inc.

Warren Ribley

President & CEO
Illinois Biotechnology
Industry Organization (iBIO)
and iBIO Institute

Sundeep Vani

Technology Director
Archer Daniels
Midland Company

ISTC members and partners

ISTC members represent leaders in the state's innovation ecosystem and include major Illinois research universities, federal labs, corporations, and nonprofit/civic organizations.

Members

Universities and federal labs



Corporations



Nonprofits and civic groups



Partners

Broadband Illinois
 Catalyze Chicago
 Chicago Council on Science & Technology
 Chicago Innovation Mentors
 Chicagoland Entrepreneurial Center/1871
 Chicago Metro Metal Consortium
 Chicago Metropolitan Agency for Planning
 Choose DuPage
 Citizens Utility Board
 Clean Energy Trust
 Coalition: Energy
 Cook County
 EIGERlab
 Energy Foundry
 Greater Peoria Economic Development Council

iBIO Institute
 Illinois Biotechnology Industry Organization
 Illinois Business Innovation Services
 Illinois Department of Commerce and Economic Opportunity
 Illinois Manufacturers' Association
 Illinois Manufacturing Excellence Center
 Illinois Science & Energy Innovation Foundation
 Illinois Technology Association
 Illinois Venture Capital Association
 IllinoisVENTURES
 Leadership Council Southwestern Illinois
 MATTER
 PeoriaNEXT
 Peoria Specialized Manufacturing Strategy Group

Quad Cities Chamber of Commerce
 Quad City Manufacturing Laboratory
 Rev3 Innovation Center
 Rockford Area Aerospace Network
 Rockford Area Economic Development Council
 Smart Chicago Collaborative
 Smart Grid Cluster
 SSTI
 St. Louis Regional Chamber of Commerce
 TechAmerica
 World Business Chicago

In memoriam: **Jerry Roper**

ISTC lost a tremendous leader and champion in 2015 with the passing of Gerald Roper, who served as a member of the Coalition's board of directors. Jerry was one of Chicago's finest and most passionate civic leaders, epitomizing its spirit of collaboration, tenacity, and resilience.

He also played an instrumental role in the rebirth and growth of the Illinois Science & Technology Coalition, helping to house and incubate ISTC from 2008 to 2012 in the offices of the Chicagoland Chamber of Commerce—an organization he ran for more than two decades. ISTC would not be where it is today without Jerry. He will be greatly missed.





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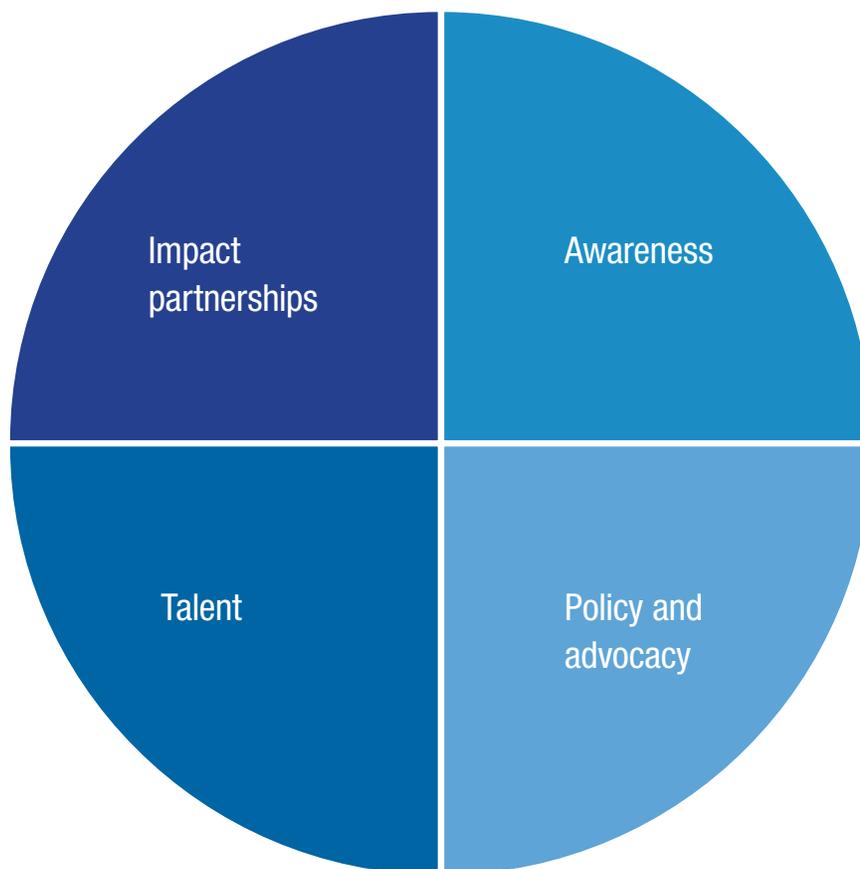
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Year of impact—ISTC’s role and accomplishments

With the strength of our more than 80 members and partners, ISTC enhances the Illinois innovation economy by cultivating innovative ideas and impactful partnerships, raising awareness through regular publications and events, advocating for sound policies and federal research investment opportunities, and developing top talent.

ISTC strengthens innovation through four outcome areas



Cultivating impact partnerships

ISTC is uniquely positioned to identify gaps and opportunities in the broader technology and innovation landscape. We use our network to catalyze and implement projects, drive outcomes, and support partnerships across technology sectors



The Illinois Corporate-Startup Challenge

Created in 2013, the Corporate-Startup Challenge is a national award-winning program that connects global corporations with startups and emerging technology firms through a highly curated matchmaking process. By better connecting corporations to the entrepreneurial community, the program offers startups access to partnership opportunities, while helping corporations innovate and stay competitive.

Project overview

The Corporate-Startup Challenge assembles a class of Fortune 1000 companies on a semiannual basis, with 14 corporations that have participated to date. Participating corporations start by identifying their unique innovation needs and pain points, from data analytics and sensor technologies to energy/power management solutions and e-commerce needs. Then, ISTC, in partnership with program consultant Freshwater Advisors, curates and vets potential partners through a statewide network of more than 50 referral partners, including universities, tech parks, incubators/accelerators, and the angel/venture capital community. The most promising companies and innovations are put into a digital portfolio from which the corporation selects 8–12 startups to present to a group of executives at a private demo day showcase, which often reveals promising opportunities to collaborate.

These carefully selected collaborations between startups and corporations can create meaningful outcomes. Participating early-stage companies receive potential partnership opportunities ranging from mentorship to investments to business contracts. Meanwhile, corporate partners accelerate their own new products, services, and competitiveness by gaining insight into the entrepreneurial community's brightest innovations.

2015 program participants

The program held seven demo days in 2015, hosted by Allstate Corporation (which participated in the program for a second time); Caterpillar, Inc.; Danfoss (a Danish manufacturer with a facility in Loves Park); Grainger; Microsoft (who included the Chicago Public Library in their demo day event); State Farm; and UL.



Impact

To date, 118 startups have presented at 14 corporate demo days (Archer Daniels Midland Company, Allstate, Danfoss, Deere & Company, Exelon, Hyatt Corporation, Microsoft, Molex, Motorola Mobility Foundation, State Farm, UL, and Walgreens). Of these, 76 have forged connections with 1 or more of the corporate partners, with at least 58 currently exploring mentorship, joint development agreements/pilot engagements, strategic partnerships, contracts, or investment opportunities.



By the numbers:

Corporate-Startup Challenge, 2013–15

685 | startups and emerging technology companies referred by more than 30 community partners

285 | companies interviewed

211 | companies referred to portfolios (20–39 startups per corporate portfolio)

118 | companies selected to present at private demo days

76 | companies selected for post-demo day diligence

58 | companies actively discussing or have secured mentorship, contract, or investment opportunities

Michael Young, general manager of Caterpillar Ventures, kicks off demo day on November 4. The event included pitches from 10 startups to a group of more than 100 Caterpillar employees.

Success stories

The experiences of several participants exemplify the diverse range of potential partnerships possible through the Corporate-Startup Challenge.

Archer Daniels Midland Company

Archer Daniels Midland Company (ADM) participated in the second class of the Corporate-Startup Challenge. Hosted in fall of 2014, ADM's demo day included pitches from 11 startups to senior leadership from the food and agriculture company's IT and research divisions.



One of the companies selected for further diligence was Veriflow Systems, an advanced cybersecurity startup incubated at the University of Illinois at Urbana-Champaign's EnterpriseWorks Research Park. The company has developed a novel approach to monitoring and verifying the security of computer networks. After being selected for post-demo day engagement, Veriflow secured a pilot agreement with ADM in 2015 to deploy their platform at an ADM corn processing facility.

Outside of the official demo day, the Corporate-Startup Challenge also connected ADM to several research groups at Northwestern University. These connections have resulted in promising discussions on collaborative research opportunities.

Hyatt Corporation

Hyatt Corporation also participated in the second class of the Corporate-Startup Challenge, hosting its demo day in fall of 2014. The hospitality giant invited ten startups to pitch to a cross-functional team of leaders, from their engineering team to their digital strategy group.



Sprout Social, an emerging Chicago-based social media management software firm, was one of the early-stage companies that pitched at Hyatt's demo day event. This interaction led to an agreement through which Sprout deployed their software platform in 175 Hyatt hotels worldwide to manage the properties' social engagement.

“Cat, Grainger sign up for speed dating with startups”

Crain's Chicago Business, 8/11/2015

“UL, the Illinois Corporate-Startup Challenge and the power of vetting”

Chicago Tribune/Blue Sky, 4/7/2015

“The Illinois Corporate-Startup Challenge: Accelerating corporate innovation”

Microsoft Blog, 4/15/2015

“At Caterpillar, we work hard to think inside and outside the machine. Participating in events like the Corporate-Startup Challenge enables us to do just that, as well as to take a more intensive look at Illinois’ technology and entrepreneurial strengths right in our own backyard.”

Greg Folley, vice president of analytics and innovation, Caterpillar, Inc.

“With today’s relentless pace of change, it’s important for State Farm to connect early with entrepreneurs who have promising ideas and technologies. The involvement of State Farm with the Illinois Corporate-Startup Challenge and the resulting demo day allowed a cross-section of State Farm leaders a phenomenal early look at some of the most exciting and relevant Illinois- and Midwest-based startups.”

Jack Weekes, operations vice president, State Farm Innovation Team

“Chicago Public Library gives an ear to 6 companies on ISTC demo day”

Chicago Tribune/Blue Sky, 4/23/2015

“Startup companies make their pitch to Caterpillar”

Peoria Journal Star, 11/4/2015

Energy innovation

In the Illinois energy sector, ISTC has played a leadership role in nurturing partnerships that foster innovation and in supporting demonstration projects. ISTC helped found and currently partners with Energy Foundry to provide funding and technical support to emerging energy and smart-grid startups. ISTC's affiliate, the Illinois Science & Technology Institute (ISTI), also serves as a key partner to the Illinois Science and Energy Innovation Foundation (ISEIF), which helps consumers better access and utilize the smart grid in Illinois. Through its partnerships with these organizations, and with groups such as the Accelerate Group, Citizens Utility Board, Clean Energy Trust, and UI LABS, ISTC has helped to advance the clean energy innovation sector in Illinois and to develop new projects that offer both a civic benefit and economic development opportunities.

Smart Grid Cluster



ISTC is a founding member of the Illinois Smart Grid Regional Innovation Cluster (ISGRIC), now called the Smart Grid Cluster, an initiative financed by the US Small Business Administration (SBA). SBA has repeatedly highlighted the Smart Grid Cluster as a national model for cluster development. Its grant was recently renewed through 2016. Since its formation, the Smart Grid Cluster and Energy Foundry have helped to stimulate more than \$83 million in investment into startups focused on clean-energy and smart-grid technologies.

Energy Foundry and Illinois Science and Energy Innovation Foundation



ISTC has been a catalyst in positioning Illinois as a national leader in developing next-generation energy solutions. In 2013, ISTC worked with the state and its utilities to launch Energy Foundry and ISEIF—integral components of the Illinois Energy Infrastructure Modernization Act of 2011. In 2015, Energy Foundry made investments in 4 more emerging energy technologies, bringing its total portfolio to 10 companies. ISTC assists Energy Foundry in this process by providing advisory and administrative support and providing legal services in support of their investments.



ISTI continues to support ISEIF's 10-year, \$50 million initiative to find new ways to help consumers better understand the benefits of smart-grid technology and to empower them to access the smart grid in Illinois. ISTI provides legal and administrative support for ISEIF's consumer education programs.

Energy Foundation



In 2015, ISTI received a grant from the Energy Foundation to conduct economic research to inform policy makers about the jobs impact of various scenarios for changing the State's renewable portfolio standard, as well as the subsidies that the state provides for energy efficiency and renewable generation. ISTI partnered with Strategic Economic Research, LLC (SER), to perform economic research. As an impartial source of information on economic impact, ISTI's executive summary to SER's report was influential in informing the debate among competing proposals.

Raising awareness through regular publications and events

ISTC continues to develop publications, newsletters, and events to champion the state's science and technology community; generate visibility; showcase successes; and share educational tools, resources, data, and analyses. By raising awareness and providing data-driven findings, we help Illinois to identify unique strengths and opportunities and to sustain a vibrant, collaborative innovation community.

Illinois Innovation Index

The *Illinois Innovation Index* is an online publication that provides analysis and insight into Illinois' economic performance in targeted technology-related areas. The following are highlights from the past year that demonstrate just a few of Illinois' notable advances in innovation and entrepreneurship.

“Let’s talk about Chicago’s tech talent”

Chicago Inno, 12/1/2015

“Illinois Innovation Index points to strong activity from universities”

Chicago Tribune, 1/26/2015

“New analysis sheds light on STEM talent supply, demand in Illinois”

Chicago Tribune/Blue Sky, 10/12/2015

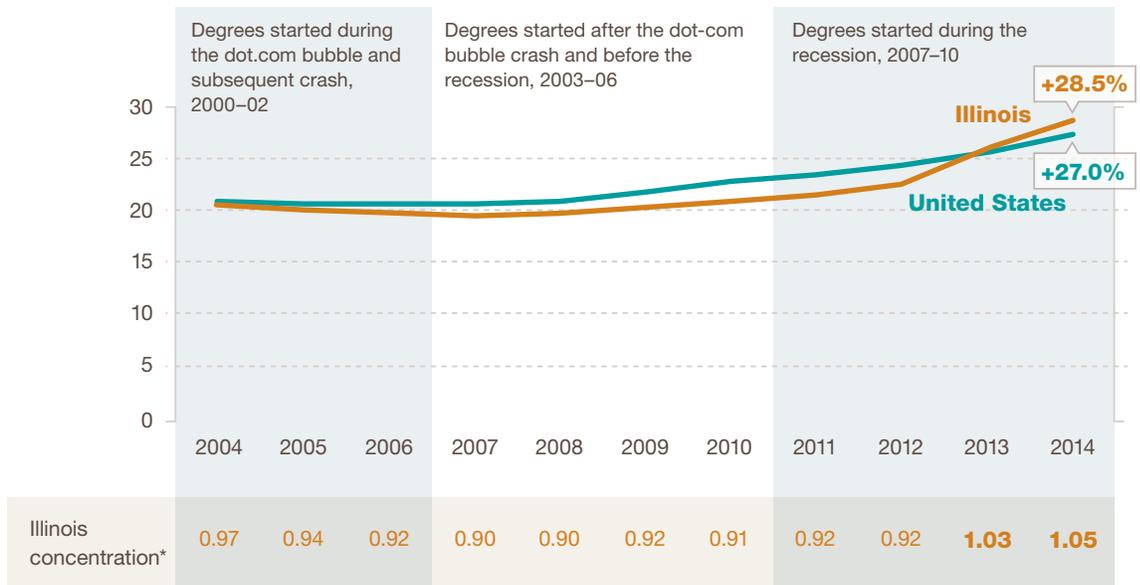
“Illinois tops national average in STEM grads”

Crain's Chicago Business, 10/12/2015

STEM talent growth

Illinois' growth in STEM graduate production as a percentage of all degrees outpaced the nation in 2014 for the first time in more than a decade—meaning that the supply of STEM talent in Illinois is deepening at a faster rate than the nation writ large.

Growth in STEM degrees as a percentage of all degrees, United States and Illinois, 2004–14



*1.00 indicates the proportion of STEM degrees as a percentage of all degrees granted in Illinois is equivalent to the national proportion. Above or below 1.00 indicates a higher or lower concentration.

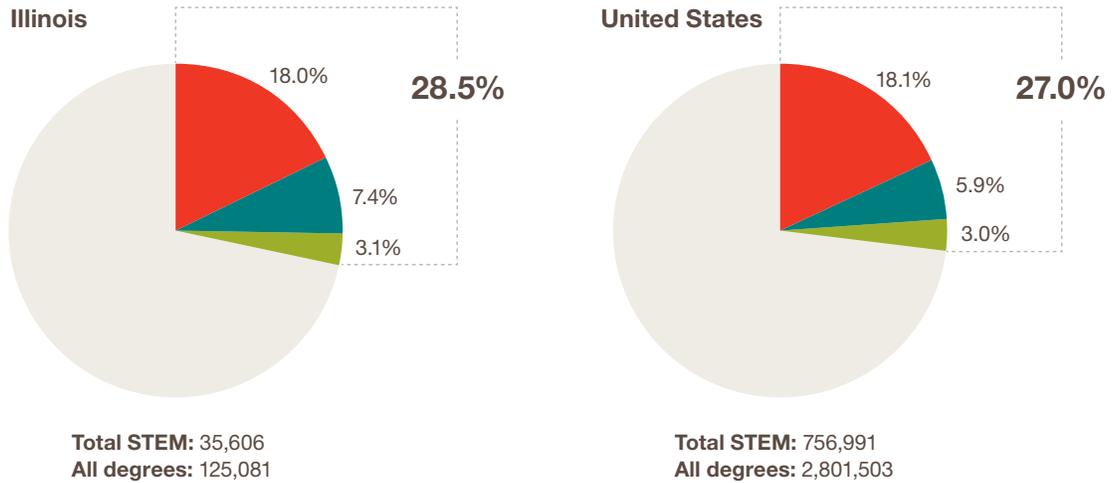
Source: US Department of Education, Institute of Education Sciences, National Center for Education Statistics—data accessed via IPEDS and WebCASPAR; ISTC analysis

Advanced-degree STEM talent

Illinois' STEM talent pool is more heavily weighted toward graduate-level study (as opposed to undergraduate study) and boasts one of the nation's deepest concentrations of postdoctoral researchers. This finding suggests a higher level of STEM expertise available locally—which is good news for high-tech companies as well as companies throughout industries that employ individuals in high-tech occupations.

STEM degrees as a percentage of all degrees, by education level, Illinois and the United States, 2014

■ Bachelor's ■ Master's ■ Doctorate

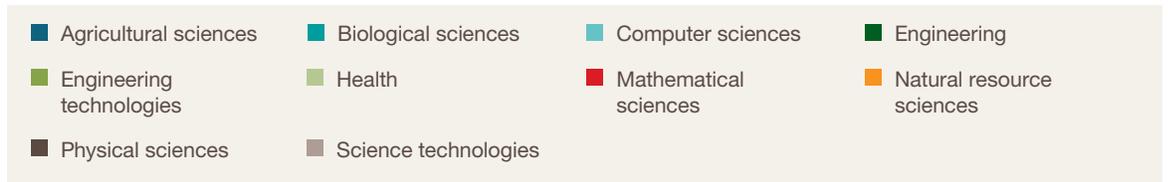


Source: US Department of Education, Institute of Education Sciences, National Center for Education Statistics—data accessed via IPEDS and WebCASPAR; ISTC analysis

STEM talent concentration

Dissecting STEM degree attainment at all levels in Illinois by discipline reveals several areas of strength. Relative to the nation, Illinois' STEM concentrations remain strong in computer sciences, health, mathematical sciences, and engineering technologies.

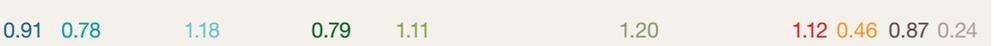
STEM degrees by subject area, Illinois and the United States, 2014



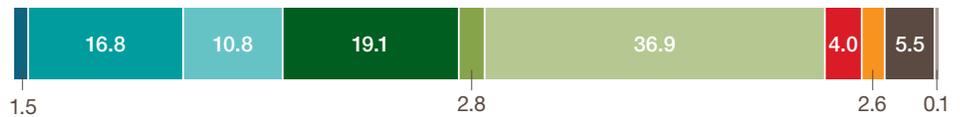
Illinois, %



Illinois concentration*



United States, %



*1.00 indicates the proportion of all STEM degrees in a given subject area is equivalent to the national proportion. Above or below 1.00 indicates a higher or lower concentration in a given subject area.

Source: US Department of Education, Institute of Education Sciences, National Center for Education Statistics—data accessed via IPEDS and WebCASPAR; ISTC analysis

STEM job growth

Since 2011, the top five high-tech industries in Illinois by job growth were in the computer, engineering, and biotechnology fields. In fact, biotechnology R&D grew 47.3 percent in Illinois, reversing a trend of decline over the past several years. All five of the top STEM occupations by growth in Illinois were dominated by computer occupations.

Top five computer occupations by percent growth in Illinois, 2011–15

Occupation	Employed in 2011	2015	New jobs created	Percent change	Growth rate compared with the United States*
Software developers, applications	26,049	→ 29,932	 +3,883	14.9%	1.03
Computer systems analysts	19,060	→ 21,183	 +2,123	11.1%	0.87
Software developers, systems software	13,783	→ 15,271	 +1,488	10.8%	0.96
Web developers	4,221	→ 4,654	 +433	10.3%	0.68
Information security analysts	2,165	→ 2,479	 +314	14.5%	0.87

*1.00 indicates Illinois' growth rate is equivalent to that of the nation. Above or below 1.00 indicates a higher or lower growth rate.

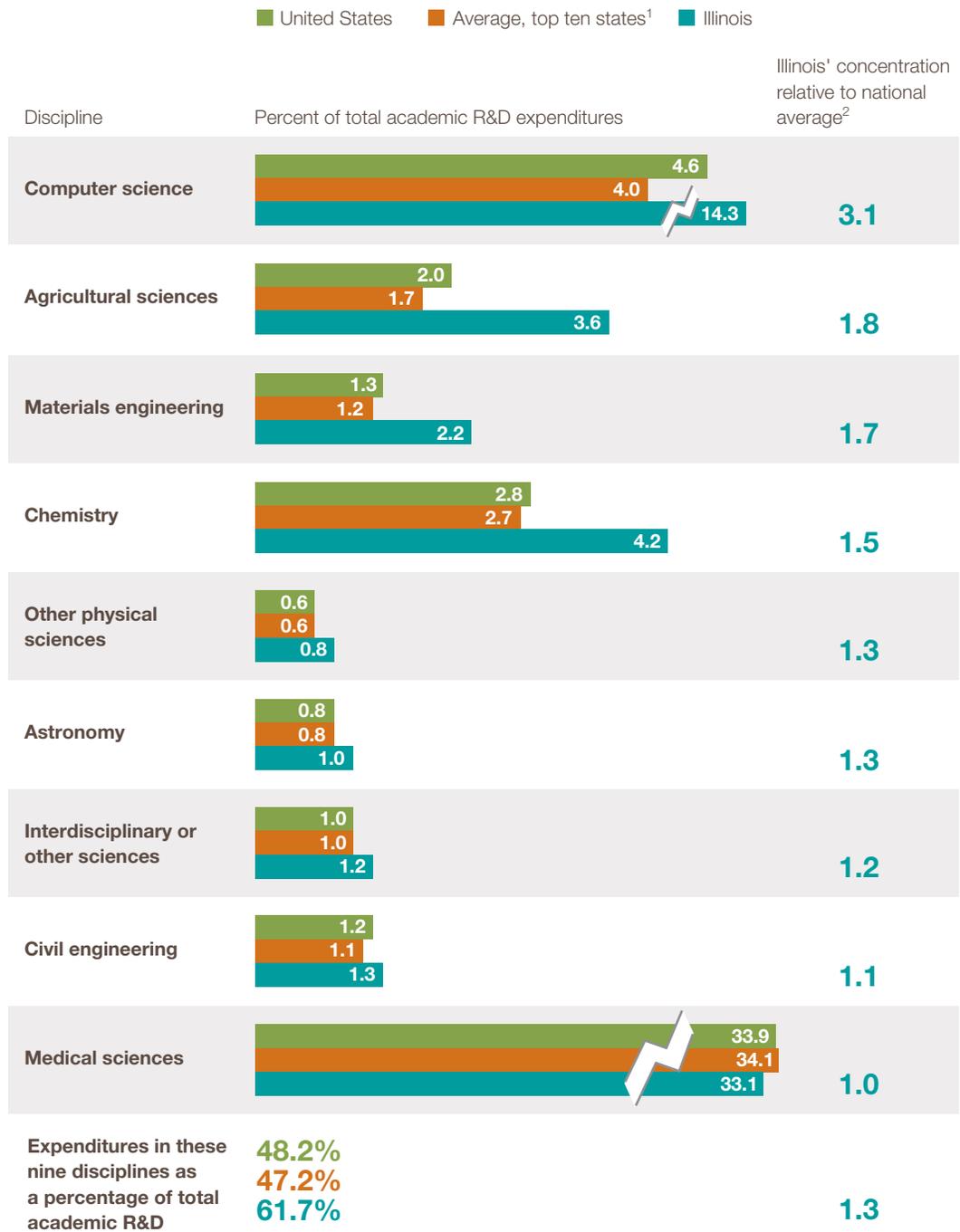
Source: Economic Modelling Specialists International (EMSI); ISTC analysis

Academic R&D

With expenditures of \$2.4 billion, Illinois remains the eighth-ranked state by amount spent on university R&D (from federal and non-federal sources). When adjusted for inflation, Illinois' overall expenditures grew 4.5 percent from 2012 to 2013—more than ten times faster than the nationwide increase of 0.4 percent and almost double that of the top ten states by research expenditures (not including Illinois).

Key concentrations of this funding relative to the national average are led by computer science, agricultural sciences, materials engineering, and chemistry.

Illinois' top academic R&D disciplines by percent of total expenditures, 2013



¹ By total funding, not including Illinois.

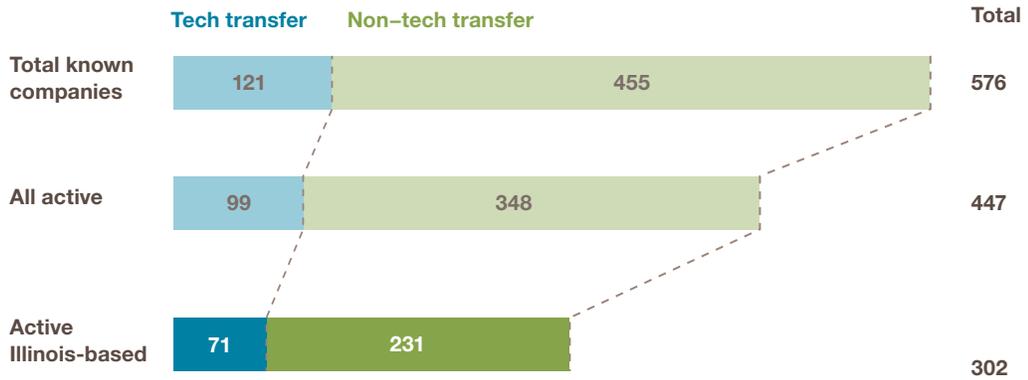
² Concentration is similar to a location quotient, which can identify local specializations across fields or industries by comparing local concentration with that in the United States overall. A concentration above 1.0 denotes greater specialization than average.

Source: National Science Foundation, Higher Education Research and Development (HERD) Survey; data accessed via NSF WebCASPARE

University entrepreneurship and technology transfer

University innovation and entrepreneurship continue to excel across the state, as licensing by Illinois universities grew at a compound annual growth rate (CAGR) of 12.5 percent per year over the past five years—double the national rate. The *Index* found that Illinois universities have played an instrumental role in the creation of almost 450 known active startups since 2009, two-thirds of which have stayed to grow in Illinois. And of the 121 tech transfer startups founded in Illinois since 2009, almost three-quarters are working to commercialize technologies in biomedicine or information technology and software.

All university startups, Illinois, founded 2009–14



Source: ISTC Tech Transfer and University Entrepreneurship surveys, December 2014

ISTC *Catalyst*

ISTC's *Catalyst* newsletter features original articles, guest columns, infographics, and videos on key areas of the Illinois innovation economy, providing additional context on the state's research and technology community beyond the data presented by the *Index*.

***Catalyst* issue topics in 2015**

January

Proof-of-concept program brings industry feedback to early-stage university commercialization

Nancy Sullivan, CEO and Managing Director, IllinoisVENTURES and Azmi Nabulsi, Head of R&D Strategic and Professional Affairs, Takeda Pharmaceuticals International, Inc.

February

Federal R&D support drives Illinois tech

Illinois Reps. Dan Lipinski (D-3) and Randy Hultgren (R-14)

March

Computing, medicine, and biotechnology:

A new partnership to achieve breakthroughs

Professor Ravishankar Iyer, Professor of Engineering, University of Illinois at Urbana-Champaign; Dr. Liewei Wang, Professor of Molecular Pharmacology and Experimental Therapeutics, Mayo Clinic Rochester; and Professor Kevin White, Director of the Institute of Genomics and Systems Biology, University of Chicago.

April

Illinois Innovation Day: Partnerships driving regional prosperity through innovation

Amy Francetic, CEO, Clean Energy Trust; Greg Baise, President and CEO, Illinois Manufacturers Association; Mark Harris, President and CEO, Illinois Science and Technology Coalition; and Fred Hoch, CEO, Illinois Technology Association

May

Illinois R&D driving industry: Illinois laboratories and industry partner to advance accelerator-based technologies

Robert Kephart, Director, Illinois Accelerator Research Center (IARC), Fermilab and Cheri J. Schmidt, Manager, Office of Partnerships and Technology Transfer, Fermilab

June

Making the future: How incubators are driving a new era of hardware innovation and manufacturing in Illinois

Jeffrey Margolis, Managing Director, Illinois Science and Technology Coalition and Haven Allen, Manufacturing Strategy Manager, World Business Chicago

July

Impact investing: Realizing economic growth and social progress through entrepreneurship

Jessica Droste Yagan, Chief Executive Officer, Impact Engine

August

Promoting innovation in financial technology through cross-sector initiatives

Rumi Morales, Executive Director, CME

September

E-mentoring: A new model for STEM education

Allie Barwise, Managing Director and Emily Cooper, Director of Programs, Illinois Science and Technology Institute

October

Harnessing postdoc STEM talent to strengthen Illinois' innovation ecosystem

Kristene Henne, Postdoctoral Program Lead, Leadership Institute, Argonne National Laboratory

November

Winning the race: Why the Midwest can be the epicenter of IoT

Fred Hoch, CEO, Illinois Technology Association (ITA)

December

Corporate culture and innovation: Changing the game inside and out

George Taylor, Chief Marketing Officer and Vice President of Marketing and Digital Caterpillar, Inc.

ISTC was present at a variety of events throughout 2015



South by Southwest
(March)



Clinton Global Initiative
(June)



**US News & World Report
STEM Summit** (July)



Social Media Week
(November)



**Economist Innovation
Forum** (March)



**Tech Transfer Summit
North America** (July)



SSTi Annual Conference
(October)



**Chicago Innovation
Awards** (multiple events)

Illinois: World Leader in Accelerator Technology



Accelerator technology

More than **30,000 accelerators** are in operation around the world for the environment, energy, industry, medicine and national security.



Markets for accelerators

Sales of accelerators total more than **\$2 billion** per year. Accelerators touch more than **\$500 billion** per year in products

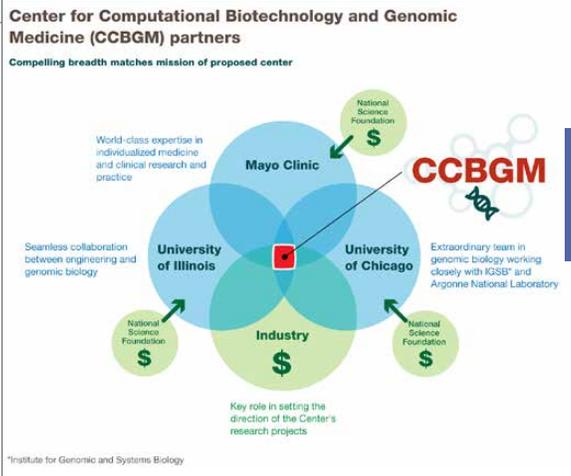
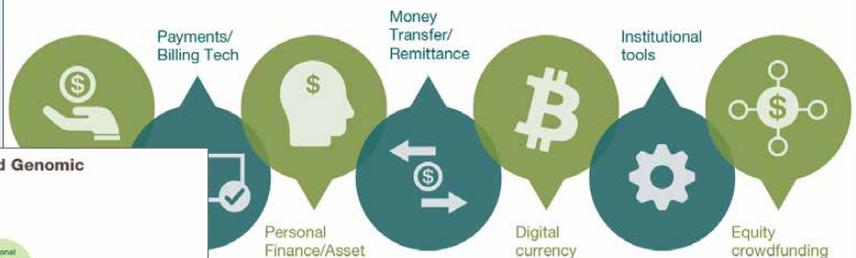


Accelerators for Illinois

Host to Argonne, Fermilab and several major universities, **northern Illinois** has the **highest concentration of accelerator experts** in the world. In 2010, the labs helped create **\$1.6 billion** in economic output in Illinois.



Fintech technology and services segments



Select infographics from ISTC Catalyst. To see full listing, visit www.istcoalition.org/blog/.

Advocating for sound policies and research investment opportunities

ISTC advocates for sound policies and programs at the state and federal levels. We actively support legislation and initiatives that have a positive impact on research, innovation, and technology commercialization. We also collaborate with elected officials, policy makers, regional economic development organizations, universities, industry, and state agencies to attract federal research and technology commercialization dollars to Illinois.

Federal advocacy

Science and Technology Leadership Forums

Through the Science and Technology Leadership Forum series in Washington, DC, ISTC draws attention to emerging opportunities in Illinois R&D as well as to innovation initiatives that connect our universities, federal laboratories, companies, and regional and sector-specific economic development organizations. These events increase awareness of Illinois' technology strengths and the economic benefits they create, build support for key innovation legislation, and help secure backing for large-scale R&D projects and infrastructure.

February 2015

Illinois Innovation Drives Key Industries

with AbbVie, Archer Daniels Midland Company, Northern Illinois University, SiNode Systems, and University of Illinois Research Park

July 2015

Advanced Materials Drive Industry Innovation and Competitiveness

with Argonne National Laboratory, Center for Hierarchical Materials Design (CHiMaD) at Northwestern University, Deere & Company, Quad City Manufacturing Innovation Hub, QuesTek Innovations, and Xerion Advanced Battery Corp.



Representative Hultgren delivers opening remarks at the February event.

In 2015, the Science and Technology Leadership Forums emphasized the role of research and innovation in driving competitiveness for Illinois companies and regions. Federal support for basic and applied research, coupled with programs that foster commercialization, is vital to enhancing the state's economic development.

This year's events included a forum on the state's collective R&D strengths that support key Illinois industries identified in last year's *Illinois Science and Technology Roadmap*. The roadmap provided an unprecedented understanding of where Illinois' collective research strengths lie, where there is untapped commercial potential, and what technology clusters are primed for expansion. The event brought together a panel of academic, industry, and entrepreneurial leaders to discuss the intersection

of the state's R&D potential and industry strengths. ISTC's July forum focused on the research and development of advanced materials that enable the creation of innovative new products that spark growth in US industries that drive the economy.

Regional innovation program advocacy

The US Economic Development Administration's Office of Innovation and Entrepreneurship (OIE) leads the Regional Innovation Strategies Program competition to spur innovation capacity-building activities in regions across the nation. It is the funding source for technology commercialization and regional competitiveness grants such as the i6 Challenge and Seed Fund support. The program is authorized through the America COMPETES reauthorization Act of 2010, and it received a dedicated appropriation for the first time in the 2014 fiscal year.

Throughout 2015, ISTC again partnered with SSTI, a national advocacy organization for technology-based economic development, to help ensure that the program was included in the reauthorization process. As a result of our efforts, Congress approved \$15 million for the Regional Innovation Program—a \$5 million (or 50 percent) increase over 2015 funding.

Immigration reform

Throughout 2015, ISTC continued to play an active role in the push for immigration reform and awareness to ensure that Illinois and the United States maintain a position of leadership and competitiveness in the global economy. ISTC President and CEO Mark Harris, a naturalized US citizen, continued to serve as a steering committee member on the Illinois Business Immigration Coalition and utilized data from the *Illinois Innovation Index* to highlight the significant representation of foreign national students in the state's supply of STEM graduates.

Our talent research has revealed that Illinois is significantly more dependent on immigrant students—the majority of whom are graduate-level students—for non-health STEM talent than the nation generally. In 2014, immigrants across degree levels constituted one in five of Illinois' non-health STEM graduates in Illinois, reaching a peak of almost 4,500 graduates.

Senator Durbin Champion of Science Award

In March, Illinois' senior US senator, Dick Durbin, was honored with The Science Coalition's Champion of Science Award at a ceremony at 1871. The Champion of Science Award recognizes members of Congress whose actions and votes consistently reflect their belief that a strong federally supported basic research enterprise drives innovation that fuels the US economy.



(Left to right) University of Illinois President-elect Timothy Killeen, University of Illinois President Robert Easter, Senator Dick Durbin, Northwestern University President Morton Schapiro, Southern Illinois University System President Randy Dunn, Northern Illinois University Vice President for Research and Innovation Partnerships Lesley Rigg, and University of Chicago Provost Eric Isaacs.

At the ceremony, Senator Durbin announced the American Innovation Act, intended to boost funding for federal research. The legislation would increase funding for five scientific research agencies or programs: the National Science Foundation (NSF), the Department of Energy (DOE) Office of Science, the Department of Defense (DOD) science and technology programs, the National Institute of Standards and Technology (NIST) scientific and technical research, and the National Aeronautics and Space Administration (NASA) Science Directorate.

State advocacy

Innovation Day

Held in Springfield in April, the 2015 Innovation Day was cohosted by the Clean Energy Trust (CET), the Department of Commerce and Economic Opportunity (DCEO), the Illinois Manufacturers' Association (IMA), the Illinois Technology Association (ITA), and ISTC. This year's event was launched with Governor Rauner's proclamation announcing Innovation Day across Illinois.

The event brought together leaders from the technology community across the state and highlighted the role of research, innovation, and entrepreneurship in advancing the state's economy. The theme of this year's event was "Regional Prosperity through Innovation," emphasizing ways innovative technologies catalyze new products, companies, and jobs around Illinois. The speaking program included remarks by Rena Cotsones (Northern Illinois University and the Rockford Area Economic Development Council), Laura Frerichs (University of Illinois Research Park and Innovate Illinois Advisory Council), Caralynn Nowinski (UI LABS), and Paul Rumler (Quad Cities Chamber of Commerce).

Innovation Day highlighted the technology strengths that are positioned to drive business competitiveness in multiple Illinois industries. This year featured the addition of innovation policy roundtables that centered on four issues integral to translating new technologies and high-skilled talent into new products, companies, and jobs across the state:

- **Technology incubation**, with moderators Steven Collens (MATTER) and Nancy Sullivan (IllinoisVENTURES)
- **Industry partnerships**, with moderators Mark Harris (ISTC) and Fred Hoch (Illinois Technology Association)
- **Cluster development**, with moderators Ian Adams (Clean Energy Trust) and David Baker (Illinois Institute of Technology)
- **STEM talent development and retention**, with moderators Lazaro Lopez (Township High School District 214 and Illinois Community College Board) and Jim Nelson (Illinois Manufacturers' Association)

Moderated by academics, industry leaders, and entrepreneurs, the roundtables helped to provide insight into innovation in the state and gave several organizations a forum to share best practices.



Illinois Innovation Day at the Governor's Mansion in Springfield.

Developing top talent

A foundational element of a vibrant innovation ecosystem is a deep pool of well-educated workers with strong, industry-relevant skills. Through the efforts of ISTI and its R&D STEM Learning Exchange, we are committed to cultivating STEM initiatives, which give students the resources they need to build knowledge and gain access to real-world learning opportunities to become the state's future innovators.



About ISTI: The Illinois Science & Technology Institute (ISTI) is a tax-exempt 501(c) (3) public charity and an affiliated complementary effort to the Illinois Science & Technology Coalition. ISTI was established to enhance opportunities for philanthropic public-private partnerships, engage in grant-making, and develop and deliver educational programming.



R&D STEM Learning Exchange

The R&D STEM Learning Exchange (RDLE) is a bridge to better connect industry and schools to increase interest in science, technology, engineering, and math (STEM) careers and post-secondary opportunities. RDLE serves as an intermediary to catalyze collaboration between these groups by facilitating project-based mentoring and offering students the opportunity to solve real-world problems.



Students from Williamsfield High School visit Illinois State University's Center for Renewable Energy.

2014–15 and 2015–16 RDLE partners

RDLE represents a coalition of more than 60 cross-sector partners dedicated to educating, recruiting, and retaining the next generation of STEM talent for Illinois industry R&D.

High schools	Amboy High School	Holy Trinity High School	Mundelein High School	Rich East High School
	Chicago Vocational Career Academy	Illinois Mathematics & Science Academy	Naperville North High School	Schurz High School
	DePaul College Prep	Instituto Health Sciences Career Academy	New Trier Township High School	South Shore High School
	Downers Grove North High School	ITW David Speer Academy	Niles North High School	Stevenson High School
	Downers Grove South High School	Julian High School	North Chicago Community High School	Taft High School
	Evanston Township High School	Lake View High School	North Lawndale College Prep	Urbana High School
	Glenbrook South High School	Lindblom Math & Science Academy	Oak Park and River Forest High School	Von Steuben Metropolitan Science Center
	Gwendolyn Brooks College Preparatory Academy	Maine South High School	Palatine High School	Washington Community High School
	Harlan Community Academy	Minooka High School	Prairie Central High School	Waukegan High School
		Muchin College Prep	Prospect High School	Wheeling High School
				Williamsfield High School
	Post-secondary institutions	Illinois Institute of Technology	Oakton Community College	
Illinois State University		Southern Illinois University		
Loyola University Chicago		University of Chicago		
Northern Illinois University		University of Illinois at Urbana-Champaign		
Northwestern University				
Industry partners	AbbVie Foundation	Northrop Grumman Corporation		
	Baxter International Inc.	Takeda Pharmaceuticals International, Inc.		
	ComEd	TGG Group		
	Microsoft			
	Motorola Mobility Foundation			
	Motorola Solutions Foundation			
Nonprofit and government organizations	Argonne National Laboratory	iBIO Institute EDUCATE Center	Illinois Science & Technology Coalition	
	Brookfield Zoo	Illinois Business Roundtable	Northwest Educational Council for Student NSERVE	
	Chicago Council on Science & Technology	Illinois Junior Academy of Science	Shedd Aquarium	
	Fermi National Laboratory			

STEM Challenges

STEM Challenges offer high school students the opportunity to investigate and solve problems relevant to Illinois industry. RDLE works with industry partners to customize each project to reflect a current and authentic research problem and spark student interest in R&D careers. R&D STEM Challenge projects are designed to teach the critical skills inherent in problem solving and STEM concepts by exposing students to R&D applications beyond the classroom. They also enable students and teachers to build relationships with Illinois industry and STEM professionals.

Projects during the second year of the STEM Challenges addressed topics as varied as water management, community health awareness, aerospace and defense, information technology, environmental sustainability, and behavioral economics. Teachers representing more than 30 disciplines guided these projects with the support of STEM professionals from the sponsoring industry partner who served as mentors.

At the project culmination, students presented their solutions to their industry partners at a one-on-one presentation with their Challenge host. Ultimately one group of students from each school was selected to present their research and solutions to their industry partners and representatives from the Illinois STEM community at a half-day capstone event hosted by RDLE at the Motorola Mobility Foundation on May 20, 2015. Students from 16 high schools across Illinois presented to their peers as well as more than 200 industry partners and university representatives.

For the 2015–16 school year, RDLE is expanding to STEM Challenges with 10 partners who will be working with over 700 students from January to May 2016.



Students showcase their STEM Challenge solutions to an audience of more than 200 people on May 19, 2015.



STEM Challenge partners



STEM Challenges Student Showcase Highlights



WGN Feature: Students Team up to Tackle Problems Using STEM

“Students team up to tackle problems using science, technology, engineering and math”

WGN News (TV), 5/20/2015

“R&D STEM Learning Challenges ask high school students to solve industry problems”

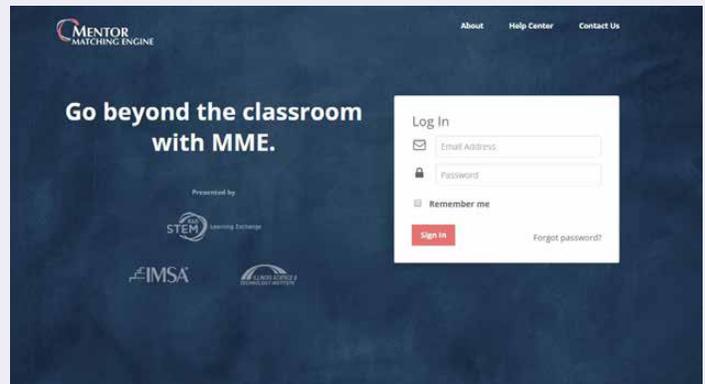
Chicago Inno, 5/20/2015

“High schoolers take on missiles, solar energy STEM Challenge”

Chicago Tribune/Pioneer Press, 5/22/2015

The Mentor Matching Engine

The Mentor Matching Engine (MME) is an invitation-based platform that connects Illinois high school students and their teachers to STEM professionals from industry and research institutions to support and enhance personalized, student-led research. Developed in partnership with the Illinois Mathematics and Science Academy (IMSA), the MME website allows STEM professionals to serve as mentors to guide students through student-led research around a project in an area of interest to the student. In 2015, ISTI and IMSA worked with developers to redesign and replatform MME with a new look and feel, which increased usability and allows for greater scale.



[Learn more about the Mentor Matching Engine.](#)

[Visit the Mentor Matching Engine and become a mentor!](#)

By the numbers: Mentor Matching Engine, 2014–15

23

number of teachers leading students in independent research

78

number of partner organizations contributing mentors

236

number of mentors recruited

242

number of students with independent research projects supported by mentors

The 2014–15 academic year was the second year of implementation for RDLE, and it saw significant growth for the Mentor Matching Engine.

Mentor Matching Engine 2014–15 growth

	2013–14	2014–15
Students matched	35	242
Projects on MME	60	318
Students on MME	158	582
Mentors on MME	114	350

Resource Repository

The [Resource Repository](#) is an open resource that offers teachers, students, and parents access to more than 100 high-quality STEM resources offered by more than 50 leading Illinois-based organizations, including RDLE partner companies and research institutions invested in developing Illinois' future innovators.

The Resource Repository hosts curriculum, summer programs, professional development opportunities, and local events aligned to Next Generation Science Standards (NGSS) practices by the owner of the resource. The Repository serves as central hub of STEM-focused programs and content as well as related resources in a digital library for students and teachers.

The Repository now hosts more than 130 resources and has had more than 6,500 visitors.

[“Students rise to the \(STEM\) Challenge”](#)

News-Gazette, 6/3/2015

[“Lake View High School students shine at STEM Learning Exchange Challenge”](#)

Microsoft blog post, 5/27/2015

[“Students step up with STEM solutions”](#)

STEMdaily national newsletter feature, 5/18/2015

Social Media

[#STEMChallenge trending on Twitter: more than 450 tweets related to the event](#)

“The STEM R&D Challenge was an amazing experience, and I would recommend it to any student that would be interested. One of my favorite parts of the project was the brainstorming session where we came up with more than 100 ideas. From there we began narrowing it down until we came up with our final idea. It was amazing to be able to present our final idea to more than 200 people. It gives students an idea of what becoming an engineer is going to be like, and it is amazing to be able to present and get feedback from professionals in the field.”

Gracie, senior at Palatine High School

“It was an amazing opportunity to work with these students. It was truly a great experience being involved with the Coalition, and the student showcase event was very rewarding. Thank you for a very humbling experience; many years from now hopefully I can look back on this and say I help shaped the future innovators and entrepreneurs of Chicago.”

Sandy Spiers, mentor, Motorola Mobility Foundation

“The R&D STEM Learning Exchange has provided the students at Washington Community High School with the opportunity to expand and improve our inquiry-based research projects. Through these programs offered by the R&D STEM Learning Exchange, the students of Washington are practicing and learning skills that will be required of them by future employers.”

Jennifer Miller, chemistry teacher, Washington Community High School

ISTC members

AbbVie	Loyola University Chicago
Allstate	Microsoft
Archer Daniels Midland Company	Molex
Argonne National Laboratory	Motorola Mobility Foundation
Baxter	Motorola Solutions Foundation
Caterpillar, Inc.	Northern Illinois University
Chicagoland Chamber of Commerce	Northrop Grumman
Chicago Innovation Awards	Northwestern University
Cleversafe	Ocean Tomo
Comcast	Pharmaceutical Research and Manufacturers of America
ComEd	Shedd Aquarium
Danfoss	Southern Illinois University
Deere & Company	State Farm
Elsevier	Takeda Pharmaceuticals International, Inc.
Exelon	University of Chicago
Fermi National Accelerator Laboratory	University of Illinois
Google	UI LABS
Grainger	UL
Horizon Pharma	Wellspring Worldwide
Hyatt Corporation	Willdan
Illinois Institute of Technology	
Illinois Mathematics and Science Academy	
Illinois Medical District Commission	

ISTC partners

Broadband Illinois	Illinois Science & Energy Innovation Foundation
Catalyze Chicago	Illinois Technology Association
Chicago Council on Science & Technology	Illinois Venture Capital Association
Chicago Innovation Mentors	IllinoisVENTURES
Chicago Metro Metal Consortium	Leadership Council Southwestern Illinois
Chicago Metropolitan Agency for Planning	MATTER
Chicagoland Entrepreneurial Center/1871	Peoria Specialized Manufacturing Strategy Group
Choose DuPage	PeoriaNEXT
Citizens Utility Board	Quad Cities Chamber of Commerce
Clean Energy Trust	Quad City Manufacturing Laboratory
Coalition: Energy	Rev3 Innovation Center
Cook County	Rockford Area Aerospace Network
EIGERlab	Rockford Area Economic Development Council
Energy Foundry	Smart Chicago Collaborative
Greater Peoria Economic Development Council	Smart Grid Cluster
iBIO Institute	SSTI
Illinois Biotechnology Industry Organization	St. Louis Regional Chamber of Commerce
Illinois Business Innovation Services	TechAmerica
Illinois Department of Commerce and Economic Opportunity	World Business Chicago
Illinois Manufacturers' Association	
Illinois Manufacturing Excellence Center	



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