Advance IT Minnesota

Enhancing career and business success

ADVANCE IT MINNESOTA
2014-2015

Engaging Employers, Educators, and Students to
Develop a Robust IT Workforce in Minnesota

ADVANCE IT MINNESOTA

Growing IT Employment for Sustained Regional Prosperity

Minnesota IT Employment	Minnesota IT Job Openings	2012 Minnesota IT Graduates	2014 MnSCU IT Students
89,000	**11,832**	**2,585**	**14,854**
Estimated IT employment in Minnesota including Greater MSP Region	*Minnesota IT job openings* posted by direct employers in May 2015	*Total IT degrees awarded* by Minnesota higher education in 2012	*Number of Students* pursuing an IT-related credential in MnSCU in 2014

The Opportunity

According to the Bureau of Labor Statistics, the Greater MSP region ranks:

- **Eleventh** in total employment of computer-related occupations
- **Sixth** in concentration of IT jobs
- **Tenth** in annual median wage

… making the state a strong contender for companies looking to expand IT operations, provided the level of needed talent is available.

Why are these rankings important?

The payoff for expanded IT employment is greater prosperity for the entire MSP region as well as Greater Minnesota. A 2012 Federal Reserve Bank of New York study found IT-related occupations as one of only three occupational groups with a statistically significant contribution to higher GDP within a regional economy. In today's data-rich world, employers know where they can find the talent they need; Advance IT Minnesota is working to help make Minnesota one of those places.

The Need

An early May 2015 query of the Wanted Analytics database reported:

- Nearly 12,000 current computer-related job openings in Minnesota.
- Fewer than 2,600 graduates with IT degrees in Minnesota (about 20 percent of current demand).

A rather modest output of recent graduates — combined with employer-desired experience levels for a majority of the current openings — results in a robust level of "churn" in the labor market and increased talent costs for employers. In addition, the state now exceeds the national average for difficulty in finding IT talent, according to Wanted Analytics.

FINDING IT TALENT

NATIONAL AVERAGE: 77

EASY ———————————————— DIFFICULT

MINNESOTA: 78

"Currently, a low supply of potential candidates for the number of employers looking for talent makes this position relatively hard to fill both nationally and in the Minnesota area." Source: Wanted Analytics.

The Approach

Minnesota State Colleges and Universities is in a strong position to help drive higher levels of prosperity by developing the talent needed to fuel IT employment and business growth with:

- Over 120 programs available across the system.
- Nearly 15,000 students currently pursuing some type of IT credential.

MnSCU is the dominant provider of the future workforce across the variety of IT occupations. Advance IT Minnesota works actively with 20+ academic partners and over 50 IT employers on three strategic objectives to create career opportunity for individuals and meet employer talent needs:

1. Increase the number of individuals preparing for IT careers with a focus on underrepresented populations.
2. Help students and alumni improve employability through opportunities to gain real-world experience and develop career success skills.
3. Convene educators and employers to identify and address emerging talent needs through collaborative approaches.

AMPLIFYING FACULTY LEADERSHIP

Enhancing Student Learning Through Collaboration

MnSCU Faculty Partners

95

MnSCU Faculty Members engaged in
Advance IT Minnesota programs

MnSCU Institution Partners

23

MnSCU Institution Partners participating
in Advance IT Minnesota programs

MnSCU Faculty-Led Projects

18

Number of 2014-15 faculty improvement projects
supported by Advance IT Minnesota

The Challenge

IT faculty face the difficult challenge of keeping pace with industry trends and employer expectations while pursuing their main objective of helping a growing number of students acquire more complex competencies needed for career success. Advance IT Minnesota helps faculty meet this challenge by facilitating collaboration, increasing employer involvement and securing resources to help fund innovation and continuous improvement.

> *The (CSi) Boot Camp is a great mechanism for us to recruit. It's a great way to give back to the security community, and to help the academic community develop what industry needs.*
>
> — *Randy Romes*
> *Principal, Information Security*
> *CliftonLarsonAllen LLP*
> *Minneapolis, Minnesota*

New Directions in IT Education

2015 Faculty/Industry Conference

Advance IT Minnesota convened industry professionals and MnSCU faculty members for two days to explore emerging employer needs, identify specific implications for student learning outcomes, identify comprehensive innovations to be developed collaboratively, and map out actions that individual faculty and departments can implement.

Attendees targeted four tracks based on employment projections and Center research:

- Application/Web Development
- Analytics
- Cybersecurity/Information Assurance
- Shared IT Infrastructure

NEW DIRECTIONS IN IT EDUCATION
Faculty & Industry Conference
May 21-22, 2015

2015 New Directions in IT Education / Faculty & Industry Conference

PROGRAM SPOTLIGHT: FUSION

The New Paradigm of Employer Engaged Education

Open Application/Web Developer Positions

2,465

Number of available jobs for application and web developers in May 2015 (Wanted Analytics)

Percentage Specifying Bachelor's Degree+

90%

Percentage of application and web developer positions specifying a bachelor's degree or higher

FUSION IT Residency

2,000

FUSION students gain up to 2,000 hours of paid development experience with employer partners

The Challenges

Minnesota is facing increased IT talent demand — Between 2010 and 2020, retirements and employment growth mean Minnesota will need more than 9,000 new application and web developers.

Experience Gap — IT students need real-world experience along with their degree to be "work-ready" from the employer perspective. The FUSION program helps bridge the experience gap for new college grads.

Education Challenge — It is difficult to keep pace with the rapidly changing IT industry. The FUSION program helps educators stay connected with MN employers.

FUSION: Bachelor's Level Education and Experiential Learning

FUSION: Employer-Guided Application & Web Development with IT Residencies

Employers working with educators to create a new generation of bachelor's level graduates educated in web and application development

This groundbreaking program — designed jointly by employers and academic leaders — improves the tech landscape in Minnesota for IT talent development and acquisition. The FUSION program includes:

- An occupationally-oriented curriculum
- An applied IT professional skills course
- 18-24 months of an IT residency work experience

Educator/Employer Collaboration

IT educators and employers collaborate to provide a dynamic career path for students with a passion for the fields of application and web development.

Designed for students who have earned two-year degrees in related IT programs or who have completed equivalent university-level course work, the FUSION program leads to a bachelor's degree and a pathway to full-time employment. It blends employer and educator perspectives to fuel innovation and entrepreneurship in application and web development. Students work at their IT Residency up to 20 hours per week during academic semesters and up to 40 hours per week during breaks and summer months.

Employer Benefits

- Students graduate with a practical blend of professional, technical and real-world experience.
- Early access to a continuous pipeline of talent.
- Ability to help shape student learning through varied opportunities for interaction.
- Channels to feedback to educators as technology and workplace demands change.

FUSION Educational Partners
- Minnesota State Colleges and Universities
- Metropolitan State University
- Advance IT Minnesota
- Minnesota State University, Mankato

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FUSION

EMPLOYER ENGAGED EDUCATION

ENCOURAGING EXPLORATION AND ENGAGEMENT

The Pipeline: Inspiring Youth to Shift from Technology Users to Technology Creators

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Tech IT Out! MN
67 Classroom Presentations
1,500+ Participants

IT Exploration Curriculum
50 Trained Teachers
34 Schools Statewide

Aspirations Awards
37 Honorees / **21** Schools Statewide
34 Sponsors / Partners

The Challenge

Misconceptions about what IT professionals look like, what they do, where IT happens, and why the work matters, undermines the ability to attract young talent to the field. Compounding the issue, Minnesota's secondary schools have limited capacity to increase IT and computing-related class offerings.

Tech IT Out! MN

Connecting students, technology skills development and career success

Young, passionate technology professionals inspire students in grades 6-12 to follow in their technology education and career footsteps. A diverse range of classroom presenters expose students to the wide variety of technology jobs, career paths and opportunities that match the student's passion and interests. The typical response from a high majority of engaged participants is that tech is fun, rewarding, dynamic, creative, challenging and very cool. Since 2014, 67 classroom presentations have been delivered to more than 1,500 students.

Aspirations for Women in Computing Award

This award, offered in partnership with the National Center for Women and Information Technology (NCWIT), honors young women at the high-school level for their computing-related achievements and interests. Award recipients are selected for their computing and IT aptitude, leadership ability, academic history, and plans for post-secondary education. Since 2013, 37 metro area and Greater MN students have been honored. In 2015, 34 sponsors/partners were engaged in the program.

SPARCS for Young Women in Computing

SPARCS … Sustaining Passion, Ambition and Resolve for Career Success

SPARCS, a technology-development program for female high school students in Minnesota, helps students increase awareness and understanding of information technology careers, explore technology tools and applications, and build technology skills. Women technology professionals provide mentoring support. Participants form relationships with other young women with similar and diverse technology interests, and gain exposure to higher education options. The collaborative program was launched in 2015; thus far serving 40 students.

IT Exploration

A middle/high-school curriculum introducing students to IT skills and in-demand tech careers

IT Exploration exposes middle/high-school students to the myriad of IT careers and broad range of computer-based skills and competencies that today's employers seek. Developed by Advance IT Minnesota and MnSCU faculty, the 60+ hours of FREE curriculum and teacher training covers IT productivity skills, software development, system administration, security, analytics, and more. Modules can integrate with existing classes or be offered as stand-alone courses. Awarding college credit with partner MnSCU campuses is underway. Since 2014, 50 teachers have been trained statewide in 34 schools.

IT Discovery Network

Inspiring the next Minnesota-grown technologists

Facilitated by Advance IT Minnesota, the 20 partners of the IT Discovery Network provide a blend of formal learning opportunities, competitions, award programs, community-based learning, and employer-led activities. Network members meet quarterly to coordinate, integrate and align offerings and efforts to minimize duplication of effort while maximizing resources for youth and families.

BUILDING REAL WORLD COMPETENCIES

Experiential Learning Opportunities in Cyber Security

Collegiate Cyber Defense Contestants	CSi Boot Camp Participants	Growth in MN Jobs Requiring Security Skills
550	**60**	**50%**

The Challenge

Top security students have few opportunities to engage with their future employers and learn from experienced practitioners teaching advanced skills across security disciplines. Our immersive, experiential learning opportunities help engage learners to fully realize their potential to grow in their chosen discipline.

Collegiate Cyber Defense Competitions (CCDC)

Every spring this innovative competition brings together the most passionate cybersecurity learners to defend against an industry "Red Team" of professional hackers who work to infiltrate simulated business networks managed by instructor-coached student teams. Advance IT Minnesota has funded and managed the CCDC annually since 2007.

Partners
- Minnesota Cyber Careers Consortium partner Minnesota Innovation Lab
- MnSCU colleges and universities
- Experienced volunteer "Red Teamers"
- Various Industry Sponsors

2014 Cybersecurity Boot Campers prepare for the camp-ending assessment

## Cybersecurity Skills Innovation (CSi) Boot Camps

2014 - 2015 ■ *Advance IT Minnesota has partnered with MNiLab to seek industry funding and deliver this unique training to 60 top students*

Advanced cybersecurity training and nontechnical skills development for top Minnesota security talent assembled from across Minnesota institutions. The learners taking part in each CSi Boot Camp are CCDC participants or are invited based on their past engagement in security events or courses, by faculty at partnering institutions. Hosted by the University of Minnesota, and sponsored by leading security firms.

Partners
- Minnesota Innovation Lab
- University of Minnesota
- Faculty and industry trainers
- Industry sponsors providing funding and hosting student field trips
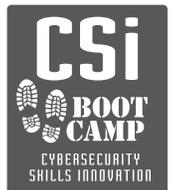
> *The CCDC was a great culmination event for me to take what I've learned in the classroom and apply it to a real-world business setting.*
>
> — *Collegiate Cyber Defense Competition Participant*

PROMOTING CAREER SUCCESS

Helping MnSCU IT Students and Graduates Stand Out

IT Student & Alumni Association

8 Events, 2014-2015 / **22** Colleges & Universities

Reaching **835** Students / New Graduates

60 Employer Partners

> *I was offered the position of .NET/C# Programmer Intern at MetaFarms! This is a three- to six-month contract with the possibility of full-time employment. I just started this week, and it feels like a great fit. Thanks again to you and Advance IT for making this wonderful opportunity possible.*
>
> — *Student Attendee*
> *October 2014 MnSCU IT Talent & Employer Meet Up*

The Challenge

Due to the technical nature of IT degree curriculum, IT students and alumni can lack some of the non-technical workplace and life-success skills needed for career success. Employers want IT workers at all levels to have well-developed business and professional skills.

IT Student and Alumni Association

The Advance IT Student & Alumni Association brings together IT students, alumni, professionals and business people for learning and networking opportunities. A Board of Advisors and MnSCU career services directors meet monthly to plan continuing education presentations, career networking events, personal effectiveness skills workshops, and IT-related programs.

Association Features

- Professionalism skills presentations and workshops
- IT expert panels and speakers
- IT talent/employer Meet-Ups
- Weekly IT Jobs eBulletin
- Monthly eNewsletter
- IT Job Search Strategies Blog

MnSCU IT Talent & Employer Meet Up, October 2014, Wilder Center, St. Paul

IT Work Skills 2-Credit ICS Course

Flipped-hybrid course instilling work, life, and career success skills coupled to an 18-month residency

This course, a requirement for students enrolled in the FUSION program, is coupled to an 18-month residency (internship) with a business partner. IT Work Skills curriculum immerses learners in interactive online and in-class activities so they acquire and retain the highest in-demand skills. The course is based on the IT competency model developed by the United States Department of Labor.

IT Work Skills: Course for Instructors

Currently, the IT Work Skills Residency Preparation course is offered only at Metropolitan State University — yet IT students across MnSCU need non-tech, job-success skills. In development is a "Teach the Teacher" program to share methodology, curriculum, and resources.

- Developed/conducted initial presentation to 42 university instructors.
- Developed an online forum to share ideas and best practices.

GET ENGAGED!

Help Minnesota Become the Tech Star of the North

www.AdvanceITmn.org

The Advance IT Minnesota staff and our many current partners invite you to join us on the quest to establish a vibrant technology talent community in Minnesota — one that provides outstanding career opportunity for individuals and world-class talent for employers and start-up companies. Get in touch to see what we might do together.

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2015 Aspirations for Women in Computing Awards Honorees

Industry Partners 2014-2015

- Adecco
- Anderson Windows
- Assurity River Group
- Avtex
- Bellmont Partners
- Best Buy
- BlueStem
- Boston Scientific
- Cargill
- CDW
- City of Minneapolis
- CliftonLarsonAllen
- Code 42
- College Recruiters
- Deluxe
- Doherty Staffing Solutions
- Emergentsx
- ESP IT

- Experis
- Express Scripts
- Fed Ex
- FICO
- Gander Mountain
- General Mills
- George Konik Associates
- HelpSystems
- Hennepin County
- Info Sys
- Integral Business Solutions
- Iredeto
- IT Risk Limited
- JAMF
- Land O'Lakes
- Marco
- Marconet
- Maverick Software

- Meta Farms
- Microsoft
- Midpoint
- Minnesota Headhunter
- MHTA
- MN.IT
- Native X
- netSPI
- New Cycle Solutions
- OATI
- Optum
- Pearson
- PeopleNet
- Power Objects Project Skyway
- Proto Labs
- Redpath
- Robert Half
- Samsung

- Securian
- SMC Pros
- Spok
- SPS Commerce
- Starkey
- State of Minnesota
- Symantec
- Target
- Tegral IT Solutions
- The MEL Group
- The Nerdery
- Thomson Reuters
- Unisys
- Upper Midwest Security Alliance
- ViaWest
- Virteva
- Virtuwell
- Warner Connect

MINNESOTA STATE COLLEGES AND UNIVERSITIES

Advance IT Minnesota
Enhancing career and business success

Metropolitan State University