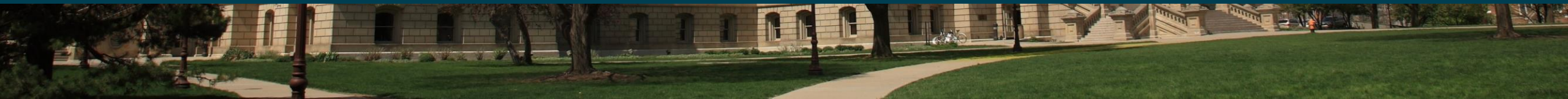




Cybersecurity Workforce Development: What's New & What's Next

Michigan Department of Labor & Economic Opportunity
Employment & Training



Michigan's Skills Gap

- As of 2020, 70% of Michigan jobs require postsecondary education.
- In 2017, 45% of Michigan workers had a certificate or degree.
- The demand is there – in fact, there are 47,000 projected job openings annually in the skilled trades through 2026.

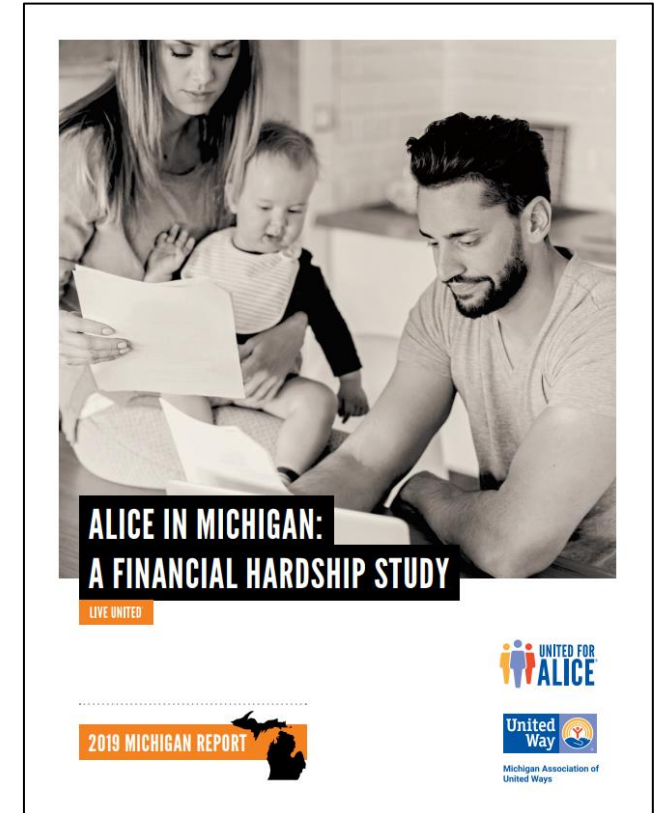


Changing Job Market

The Asset Limited, Income Constrained, Employed (ALICE) Report

Types of jobs in the next 20-30 years are unrecognizable.

50% of subject knowledge in the first year of a four-year technical degree in the U.S. will be outdated by the time students graduate.



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Governor Whitmer's Goal

The association between education and income is strong.

Governor Whitmer's Goal: 60% of Michiganders achieving postsecondary credentials by 2030 (compared with current 45% who go beyond high school).



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Cybersecurity Workforce Needs

2019 Burning Glass Report: Recruiting Watchers for Virtual Walls

- Cybersecurity job postings have grown 94% since 2013, compared to only 30% for IT positions overall.
- Cybersecurity jobs account for 13% of all IT jobs but take 20% longer to fill than other IT jobs.
- Demand for automation skills in cybersecurity roles has risen 255% since 2013 and demand for risk management rose 133%.
- More than half of jobs demanding cybersecurity skills are in fact other IT roles, where security is only one part of a broader job description.

[Recruiting Watchers for Virtual Walls](#)

Cybersecurity Workforce Needs

2019 Michigan IT Cluster Report

- The IT industry cluster has seen a 25% increase in employment since 2009 and is projected to see double-digit growth through 2026.
- Software Developers make up the largest share of workers in this group; however, Computer Network Support Specialists (Associate Degree) and Computer Programmers (Bachelor Degree) are projected to have a shortage – or talent gap.
- The median hourly wage of IT workers (\$41.54) is close to two and a half times the statewide median hourly wage.
- More than 36% of IT occupations require a bachelor's degree or higher.

[2019 Michigan Information Technology: 2019 Industry Cluster Workforce Analysis](#)



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Cybersecurity Workforce Needs

Occupation Title	New Job Ads*	Median Salary**	Annual Openings***	Typical Education
Information Security Analysts	219	\$88,290	150	Bachelor's Degree
Computer Programmers	90	\$72,800	220	Bachelor's Degree
Software Developers and Software Quality Assurance Analysts and Testers	1,158	\$89,460	3,360	Bachelor's Degree
Web Developers and Digital Interface Designers	127	\$62,240	280	Associate's Degree
Database Administrators and Architects	208	\$83,290	210	Bachelor's Degree
Network and Computer Systems Administrators	138	\$76,400	510	Bachelor's Degree
Computer Network Architects	72	\$104,520	210	Bachelor's Degree

* For the month of July 2020, Conference Board Help Wanted Online

** 2019 Occupation Employment Statistics

*** 2018-2028 Statewide Long-Term Projections

[2019 Michigan Information Technology: 2019 Industry Cluster Workforce Analysis](#)

Cybersecurity Workforce Needs

Cybersecurity Emerging Technology Skills Gap Analysis – 2020

When filtered for cybersecurity and data privacy-related skills and certifications, there are 138,000 postings in Southeast Michigan with the top occupations as follows:

- Software Developers: 12,190
- Computer Occupations, Other: 2,464
- Insurance Sales Agents: 2,368
- Information Security Analysts: 2,210
- Secretarial/Admin: 1,594
- Supervisors of Office/Admin: 1,569
- Accountants and Auditors: 1,555
- Web Developers: 1,530
- Mechanical Engineers: 1,490
- Computer Programmers: 1,340
- Exec. Admin. Assistants: 1,233

[Cybersecurity Emerging Technology Skills Gap Analysis – 2020](#)



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Closing the Cybersecurity Talent Gap/Solutions

Cybersecurity Degrees in Michigan

- **Associate's Degrees in cybersecurity** can be earned through programs at six Michigan schools.
- **Bachelor's Degrees in cybersecurity** are offered by a total of 10 schools in the state. Six of these are "National Centers of Academic Excellence in Cyber Security" (CAEs) by the NSA.
- **Master's Degrees in cybersecurity** are available through five schools in Michigan, of which three are designated as CAEs.
- **Certificates and Doctoral Degrees in cybersecurity** are offered by three institutes.

[Cyber Security Degrees in Michigan.](#)



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Closing the Cybersecurity Talent Gap/Solutions

National Cybersecurity/IT Education Resources

- Cyber Seek
- Cisco Networking Academy
- Coursera
- CompTIA
- National Initiative for Cybersecurity Education (NICE)
- *Code.org*
- IBM Skills Academy
- Project Lead the Way
- Google



Closing the Cybersecurity Talent Gap/Solutions

Michigan Cybersecurity/IT Initiatives

- K-12 Initiatives: EduPath, CyberHubs, CyberPatriot, etc.
- MiSTEM Network
- Michigan Council of Women in Technology Foundation (MCWT)
- Michigan Initiative for Cybersecurity Education (MICE)
- Michigan Cyber Range
- Michigan Cyber Civilian Corps
- Michigan Mobility Institute
- Masters of Mobility: Cybersecurity on the Road
- Michigan Mobility Institute
- Girls Go CyberStart



Closing the Cybersecurity Talent Gap/Solutions

Regional Cybersecurity/IT Collaboratives

- UM Defense Cybersecurity Workforce Focus Group
- 20 Fathoms (Traverse City): tccyber
- Institute for Excellence in Education (Mt. Pleasant)
- Great Lakes Bay Michigan Works! IT Group
- Capital Area Michigan Works IT Council
- Detroit Mercy Center for Cyber Security & Intel Studies
- West Michigan Center for Arts and Technology (WMCAT)
- WIN Apprenti – Cybersecurity Analyst
- West Michigan Tech Talent
- Tech Elevator
- Grand Circus
- U.P. Cybersecurity Institute

Closing the Cybersecurity Talent Gap/Solutions

Employer-led Michigan IT Council

Building on the IT Asset Mapping, LEO-WD is launching a statewide IT Employer-led Collaborative.

Three outcomes:

1. IT Education
2. IT Workforce & Training
3. IT Entrepreneurs & Emerging Technologies



Closing the Cybersecurity Talent Gap/Solutions

New Opportunities Supporting Sixty by 30

Governor Whitmer's Goal: 60% of Michiganders achieving postsecondary credentials by 2030 (compared with current 45% who go beyond high school).

- **Future for Frontliners:** Provide a tuition-free pathway to college or a technical certificate to essential workers who do not have a college degree
- **Registered Apprenticeship Programs \$14.3 Million**
 - Youth Apprenticeship Readiness Grant Program
 - Building State Capacity to Expand Apprenticeship through Innovation
- **“Skills to Work” Digital Hub and Return-to-Work Playbook**

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Michigan Department of Labor and
Economic Opportunity
Workforce Development



Defense Cybersecurity Assurance Program (DCAP)

Helping keep the DoD supply chain strong by supporting companies
in cybersecurity resiliency





Cybersecurity in the Defense Sector

Office of the Under Secretary of Defense for Acquisition and Sustainment [OUSD(A&S)] recognizes security is foundational to acquisition and should not be traded along with cost, schedule and performance moving forward.

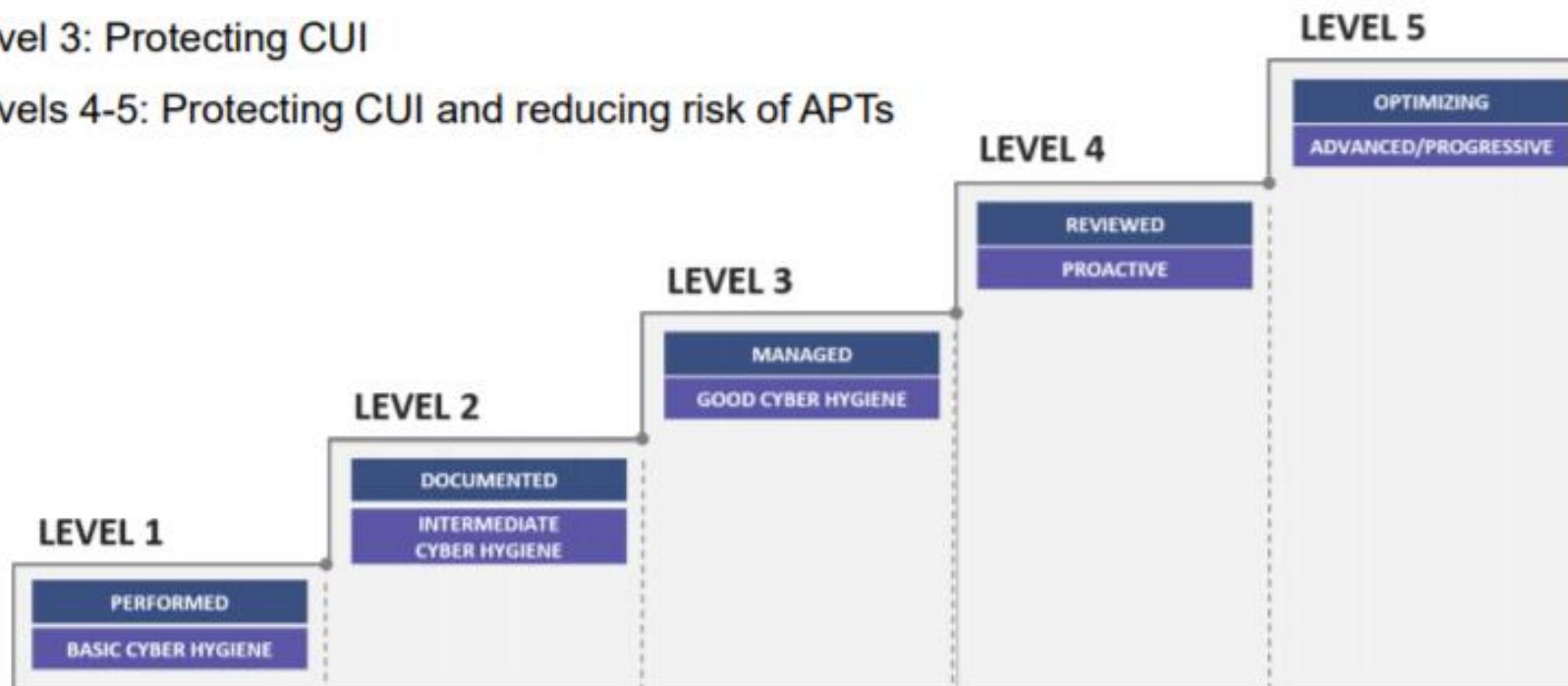
The Department is committed to working with the Defense Industrial Base (DIB) sector to enhance the protection of controlled unclassified information (CUI) within the supply chain.





Cybersecurity Maturity Model Certification

- CMMC establishes cybersecurity as a foundation for future DoD acquisitions
- CMMC levels align with the following focus:
 - Level 1: Basic safeguarding of FCI
 - Level 2: Transition step to protect CUI
 - Level 3: Protecting CUI
 - Levels 4-5: Protecting CUI and reducing risk of APTs





ECONOMIC GROWTH INSTITUTE
UNIVERSITY OF MICHIGAN

Cybersecurity in the Defense Sector

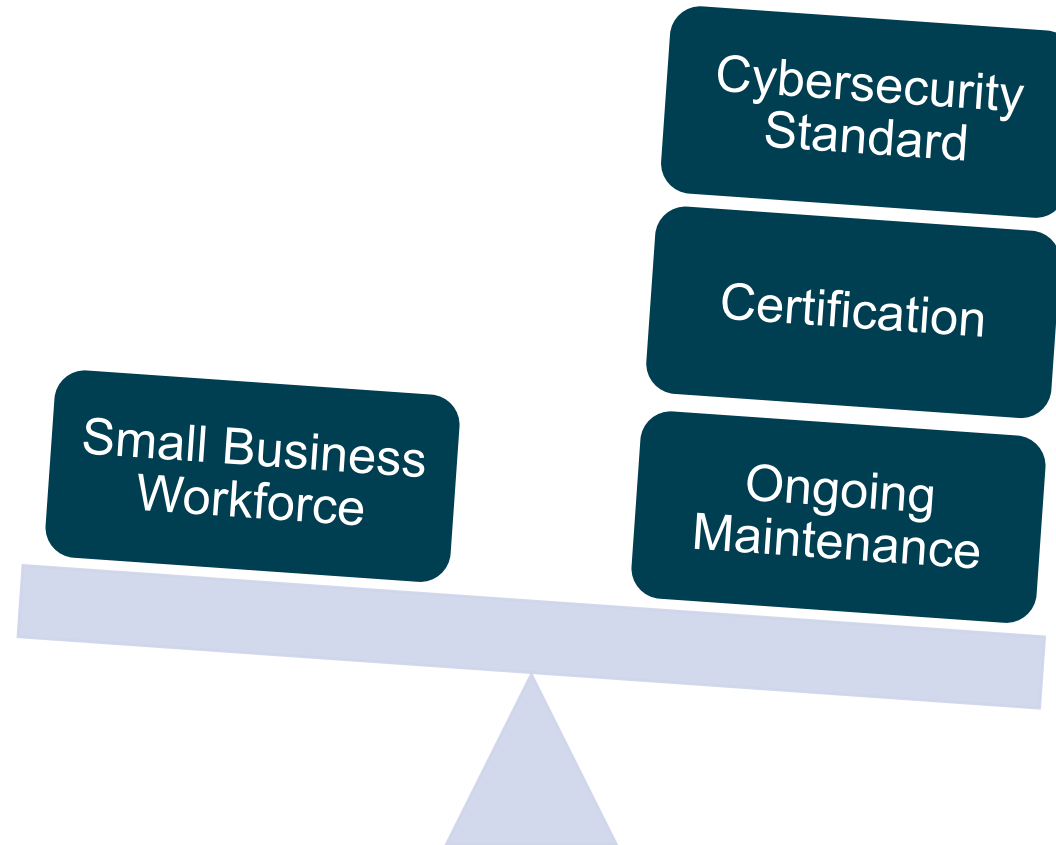


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Cybersecurity in the Defense Sector



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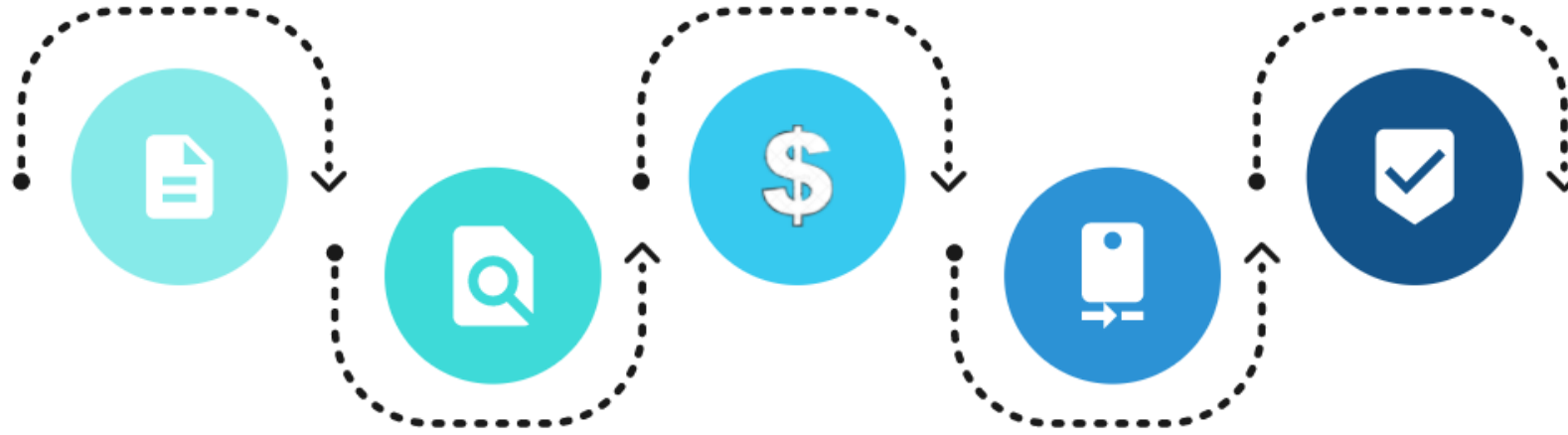
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University of Michigan
Economic Growth Institute

Defense Cybersecurity Assurance Program



Cybersecurity – Workforce Drivers



1 - Lack of
Cybersecurity
Expertise

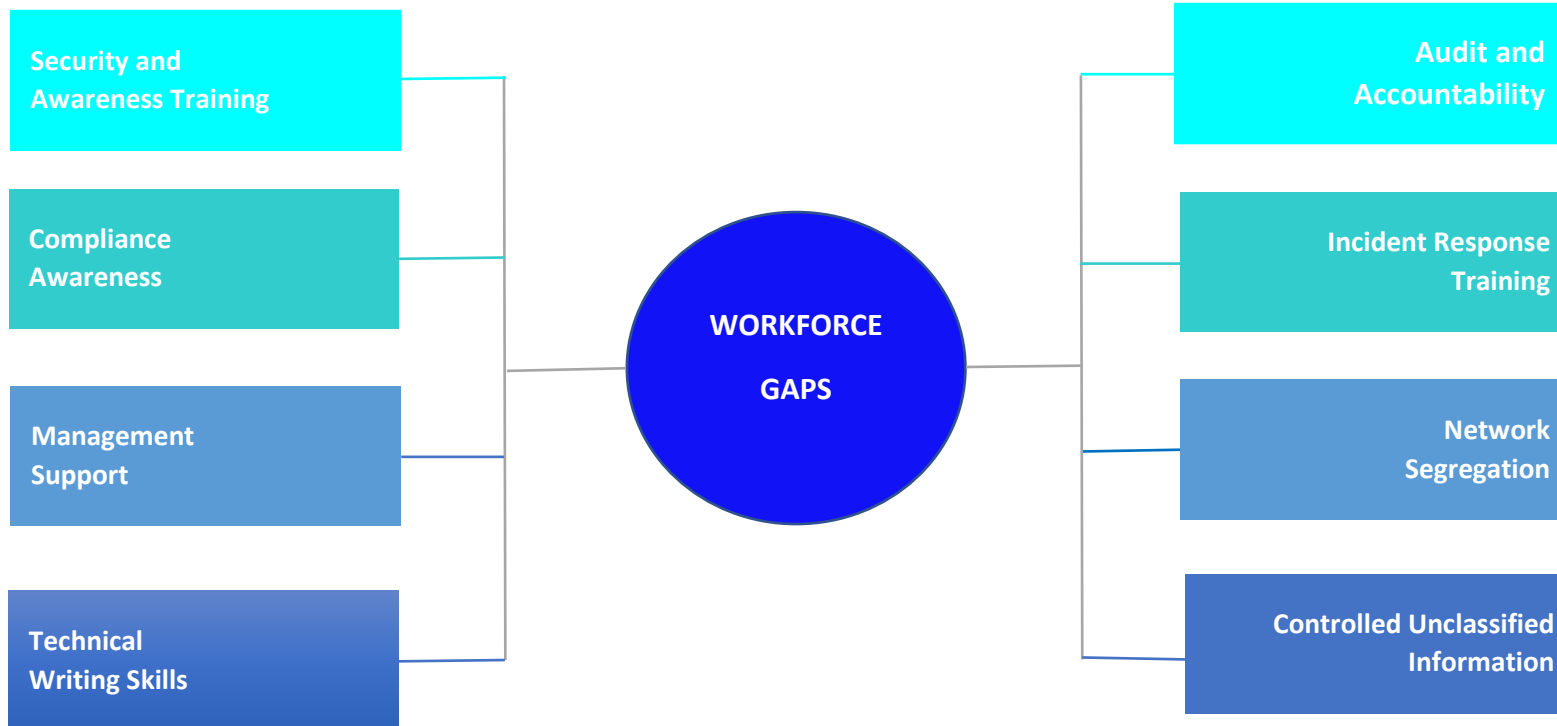
2 - Changing
Technology

3 - Cost

4 - Flow Down

5 - Compliance
Requirements

What Needs Were Identified?



Potential Solutions



- Develop general security guidelines
- Work with universities
- Provide basic technical writing classes
- Training for how to organize and handle company's sensitive data
- Provide cyber policy and procedure templates
- Host cybersecurity management classes
- Additional funding



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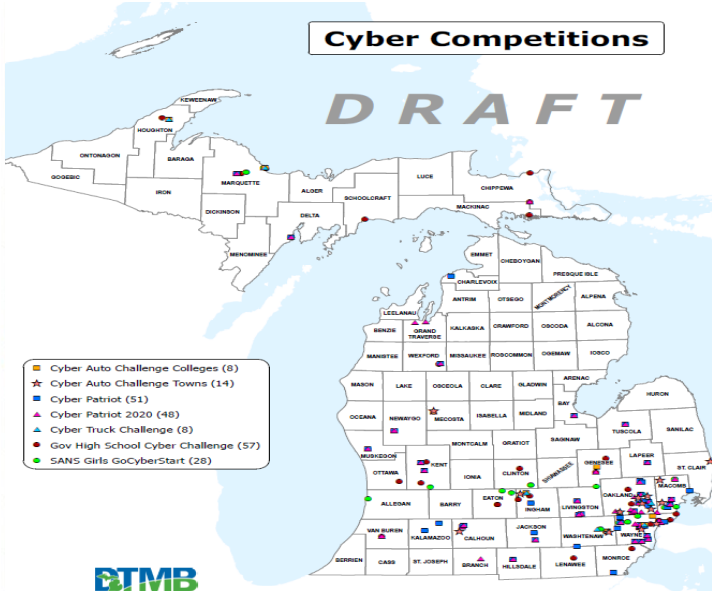
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MICHIGAN

Department of Education

K-12 Cybersecurity Initiatives



Students

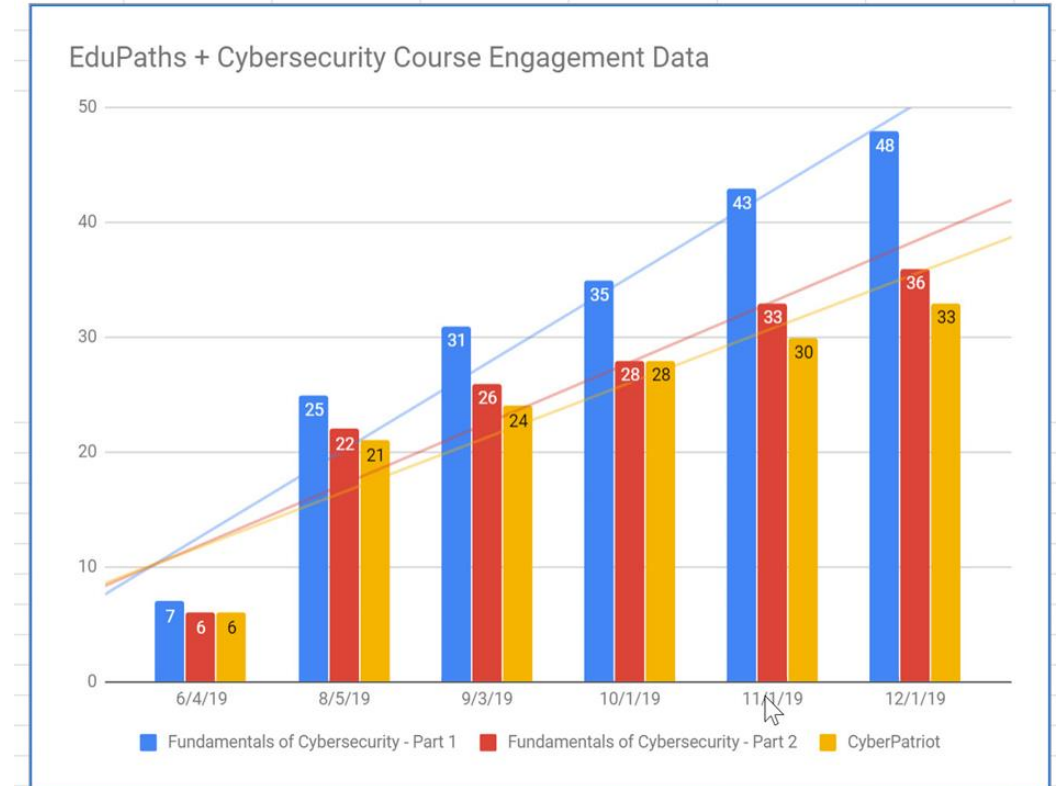
- [Michigan Integrated Technology Competencies for Students \(MITECS\)](#)
- [Michigan's K-12 Computer Science Standards](#)
- Cybersecurity Programs
 - [CyberPatriot](#)
 - [Cyber Range](#)
 - [Cyber Auto](#)
- Digital Badges



K-12 Cybersecurity Initiatives

Educators

- [EDUPATHS](#)
 - Fundamentals of Cybersecurity – Part 1 & 2
 - CyberPatriot
 - iKeep Safe
- Podcasts: MI CyberPatriot Competition Podcast, Detroit Mercy Center for Cyber Security & Intelligence Studies Podcast on awareness
- Cybersecurity Month of October, events around the state: SecureWorld Detroit, TRENDS, CISCO Next Gen, Michigan Association for Computers Users in Learning: CompSci conference, North American Industry Classification System



Cybersecurity Initiatives: Systemic Thinking



Essential Cybersecurity Practices for K-12



Michigan
Education
Technology
Leaders



misen
Michigan Statewide Educational Network

merit



MAISA



SecureMI Schools – Overview



Concept

The State of Michigan can drive economic growth by developing a cybersecurity education pipeline and attracting industry investment to the state.

Proposal

Provide grants to select schools to improve cybersecurity education in Michigan.

SecureMI Schools - Goals

Develop a plan under the SecureMI banner to encourage cybersecurity education and digital security at schools. This plan should do the following:



Foster the development of cybersecurity education at Michigan high schools.



Encourage schools to become more secure.



Empower students to assume responsibility for defending their schools from digital threats.



Develop a professional pipeline for students interested in the cybersecurity field.

SecureMI Schools – Three Pillars

To participate in the program, schools must engage in three categories of activities, with higher levels requiring more work and coordination.



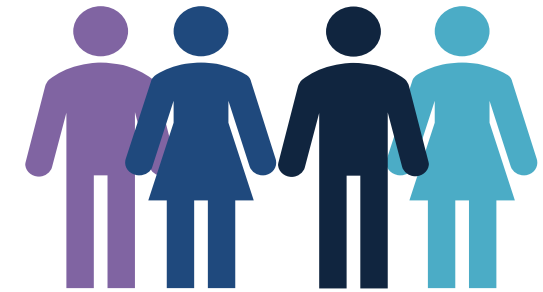
Securing the School

Applying cybersecurity principles to better secure the school's systems and information



Establishing Cybersecurity Curriculum

Integrating cybersecurity into the curriculum



Building Future Cybersecurity Leaders

Establishing a culture of cybersecurity awareness and exposing students to the field

SecureMI Schools – Level of Maturity

Schools may qualify for three levels of maturity:



Level 1 – Partner

Partners have committed to participating and supporting Michigan's cybersecurity community and building the cyber workforce of tomorrow.



Level 2 – Leader

Leaders have taken steps to improve their own security and develop cybersecurity programs.



Level 3 – Visionary

Visionaries have fully implemented security programs and a cyber curriculum providing a path to a career or further education.

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Michigan Department of Education

Questions?

Thank you!

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