

The Role of Centers of Academic Excellence in Democratizing Cyber Security



National Security Agency Centers of Academic Excellence

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- What the...???

For better or worse, we and our allies are democracies under the rule of law.

Those attacking are less and less so...

- Q. 1 – Does our status as democracies change how we respond to cyber threats?
- Q. 2 – If not, is our current response sufficient?
- Q. 3 -- If so, how do we respond to be sufficient?

Consider the threat space for computing in democratic societies

- Heterogenous
- Distributed
- Disparate Implementations
- *How can we possibly address these vulnerabilities against vectors of attack?*

Your challenge:

For the course of this talk, and after, consider if, and how, we can possibly address these vulnerabilities against vectors of attack.

- If we don't, it won't go well for us.

So...

- Traditional public safety relies on distributed efforts
 - Citizens- *We The People*
 - Police
 - Courts and Corrections
- But Cyber Security tends towards limited points of security via IT technical systems and guardians
- We must expand public and citizen engagement in cyber security

We must “Democratize” Cyber Security

- Empower small organizations, from small businesses to NGOs
 - Empower local law enforcement to engage
 - Empower the citizens themselves
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- See, e.g., Routine Activity Theory: reduce available victims, deter offenders and expand suitable guardians for cyber public safety

Why?

- Well, back home...
- The Vermont National Guard was deployed to help a Vermont hospital recover from cyberattack.
 - Vermont Gov. Phil Scott [called members of the state's National Guard](#) to aid the University of Vermont Medical Center in recovering systems and data disrupted in a hacking incident the week of Oct. 25, 2020.
- Countless examples exist.
- It is getting worse...

And with tomorrow's IOT, Smart City, Ubiquitous networking, Big Data...

(slightly exaggerated...)



- What does the future hold?
 - Greater vulnerabilities?
 - Greater disruption?
 - Can there be effective technical protections?
- For this project:
 - Is this scalable by size of nations?
 - Is this portable to varied nations?
 - How will we know if it is effective?
- For US?

- The democratization of technology and the democratization of knowledge can address this as both become more available to more and more people in society.
- This ranges from the open source movement to ease of use of proprietary devices.
- It supports inclusion, opportunity and accountability.

- Law enforcement and public safety under the democratic accountability implicit in Western constitutions are vital to the liberties and protections of citizens
- Community policing is one example of a close engagement between law enforcement and the people they are to protect
- Together they may assure better community protection and engagement under the rule of law. Each alone is insufficient

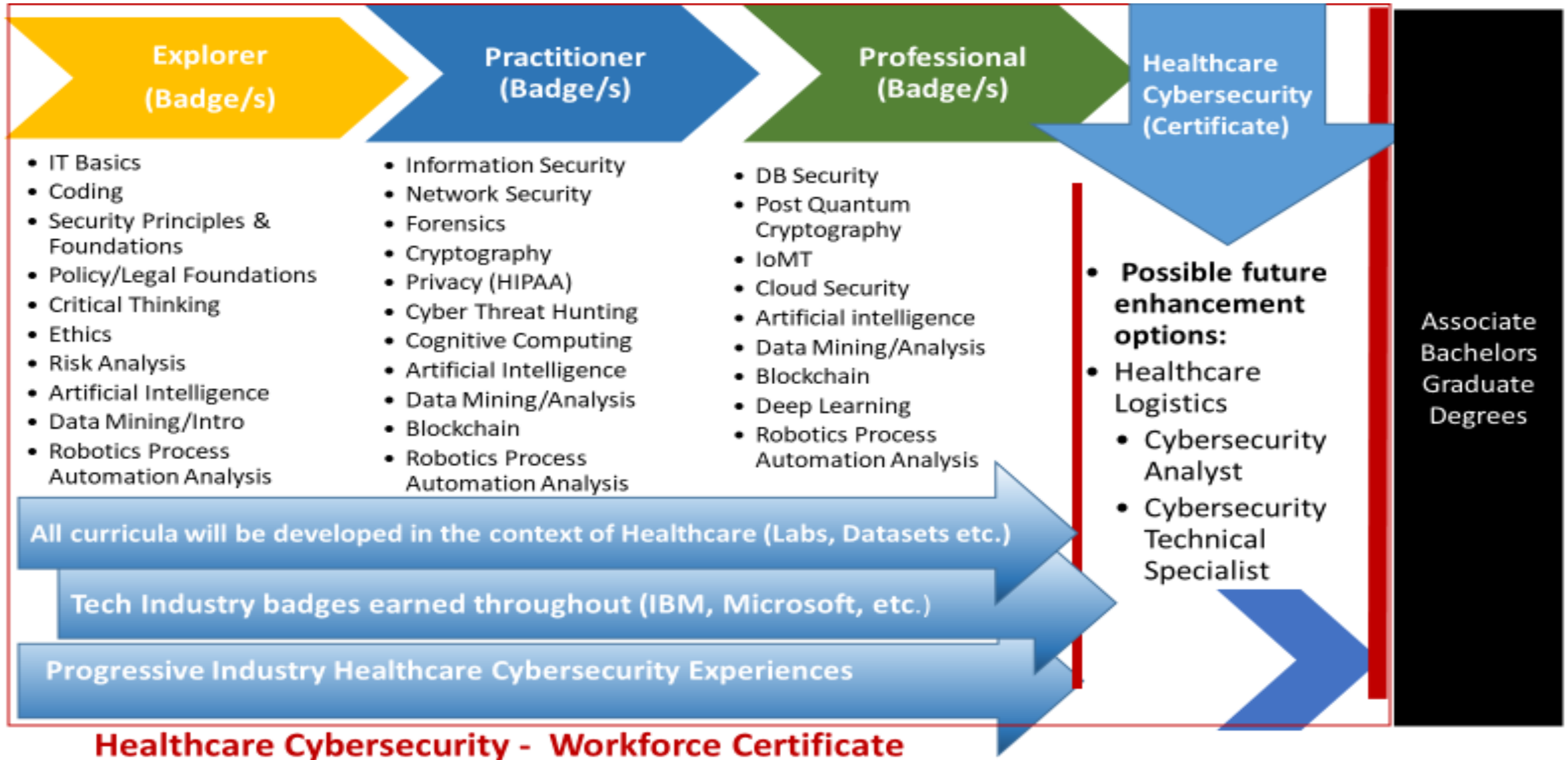
- Cyber security is primarily about protecting people from malicious use of cyber technologies.
- It falls within the values of a democratic society and can benefit from the democratization ideal. It is time for the democratization of cyber security.
- A key component of that will be expanding cyber security engagement through the community.

- *There are alternatives...*
- Several suggest that we resort to the provisions under the Constitution (US) to issue letters of marque and reprisal to entities for cyber attacks., Thomas Ayres, “A Maritime Solution for Cyber Piracy,” Wall Street Journal, 13 May 2021, <https://www.wsj.com/articles/a-maritime-solution-for-cyber-piracy-11620922458>
- Security engineering alone cannot assure cyber security, just as law enforcement cannot alone assure public safety. Engagement of the academy, state and local law enforcement, private security and regulatory agencies and communities themselves can better extend public safety in the cyber realm.
- This matches the need to design for the usability and psychology of the end users of ICT systems as primary considerations in the engineering for information security; this is just as public security requires “user” engagement if cyber safety is to improve in the face of growing threats.
- we must plan for what the future may hold...

And So Some Transformative Projects: Cyber Security Projects and Outreach

- National Security Agency Cyber Workforce Development Funding - 2017
- US Department of Defense C4 Training Funding
- NSA CAE Cyber Security for Healthcare Industry
- US Department of Homeland Security Cyber Security Training for Law Enforcement Funding

Dr. Sharon Kerrick NSA CAE Cyber Security Pilot for the Healthcare Industry – **PATHWAYS** to Credentials



2017 NSA Cyber Workforce Education

2020 DHS Cyber Security for Law Enforcement

*Focus on State and Local Law Enforcement
Cyber Education*



Bringing Public Safety Personnel into Cybersecurity Careers

- Increase the pool of cyber security professionals in multiple domains
 - by identifying, recruiting and training practitioners and students in law enforcement and public safety disciplines
- Integrate criminal justice systems and practices into cyber security
- Local law enforcement is at ground zero for cyber criminality and its victims
 - Can respond
 - Can advise
 - Can arrest

Boot Camp: September 2017 until June 2018

Table 1 - Initial Data on Participation in Introductory Courses

Topic	Enrollment	Completion
Cyber Crimes: Law and Practice	111	completed
Infrastructure Technology	67	completed
Introduction To Network Security	59	completed
Introduction To Information Security	47	completed
Computer Forensics	32	completed

Core Element - Community Engagement by Law Enforcement in Cyber Security

- Schools
- Small businesses & government agencies
- Citizens

2021 DHS Needs Assessment

- Follow up on design
- Data collection in process

Closing thoughts

- So, can this work?
- If so, how do we make it work?
- *This will need all of us!*

- Thank you
- For comments of any type, please email michael.losavio@louisville.edu – *just keep it clean!*