CyberTruck Challenge

www.cybertruckchallenge.org

What is the CyberTruck Challenge?

- A practicum based training event

- Teaches the basics of "hacking" skills to university students

- Forms "learning groups" composed of students, industry experts, hackers, and government engineers

- Real trucks

- Real hackers

- A real challenge

Mission & Purpose

- Help **develop the next generation workforce** by bringing awareness, excitement, professional involvement, and practicum based training to the heavy vehicle cyber domain.

- Help **establish community of interest for heavy vehicle cyber** that transcends individual companies or departments and reaches across disciplines and organizations to make a more universal and experienced base of engineers and managers.

What we do at the CyberTruck Challenge

- We teach college students (> 50% graduate students) to hack modern commercial vehicles

- We form teams including:
  - 6-8 students
  - 3-4 manufacturers
  - 2-3 suppliers
  - 2-3 academics
  - 1-2 hackers

- We provide excellent training from industry recognized cyber experts

- The teams conduct targeted and open-ended assessments of a modern commercial vehicle

Protections and Confidentiality

- The CyberTruck Challenge is pro-Industry

- All participants sign a Non-disclosure agreement
  - Protect Brands

- Sponsors can withhold their logo.

- Industry sponsors can redact photos and content. In 2019 we will not allow media on premise

- All notes and work product are destroyed on the last day.

- Computers are reformatted.

- No social media during the event.

- No phone or photos (other than the designated event camera – high quality camera with tripod – you can take any pictures with this camera and we will post acceptable photos).

US Army TARDEC & Commercial Truck Cybersecurity Challenge Sponsored by Michigan Defense Center's Protect and Grow Initiative (hereafter "CyberTruck Challenge) Terms of Participation/NDA

Version: 2017_1&h

As a participant in the CyberTruck Challenge, Participant understands that he/she may be privy to information of a confidential and/or sensitive nature throughout the duration of the event. Participant further understands that the unauthorized disclosure of such information could cause irreparable harm to the company and/or companies to which such information is lawfully titled. With these considerations in mind, Participant hereby agrees to the following:

1. Participant understands that he/she shall not use information of a confidential or sensitive nature to further his/her personal interest, nor shall he/she violate the privacy and confidentiality of information entrusted to him/her or to which he/she may gain access, unless disclosure is otherwise required by legal authority.

2. Participant will diligently protect all confidential and sensitive information from unauthorized disclosure, including, but not limited to face-to-face discussions with outside parties and social media engagement (i.e., Facebook, Tweeting, blogging). Participant shall, at all times, abide by PROTOCOLS as separately set forth and distributed to all Participants in association with CyberTruck Challenge.

3. Participant will seek guidance from the Michigan Defense Center or an event staff member (designated as "release coach") when unsure of the correct decision regarding appropriate use, confidentiality, or access of information, and will do so BEFORE sharing any information.

4. Participant will immediately report any incidents of personal noncompliance or noncompliance of colleagues with the terms of this agreement to his/her supervisor or an appropriate event staff member.

5. The obligations with respect to disclosing and using Confidential Information, as set forth herein, are not applicable if the same is:

    (a) shown by Participant to be in the public domain at the time of receipt or that it came into the public domain thereafter through no act of Participant in breach of this Agreement or of any other party in breach of any other obligation of confidentiality owing to Discloser, or

    (b) contained in written records in Participant's files prior to the date of its receipt from Discloser, or

    (c) disclosed or used with the prior written approval of Discloser, or

    (d) demonstrated in written records by Participant to have been developed independently of disclosures made hereunder, or

    (e) lawfully disclosed on an unrestricted basis to Participant by a third party under conditions permitting such disclosure, or

Schedule & Curriculum

CyberTruck Challenge 2021 Schedule

	Sunday, 15Aug	Monday, 16 August		Tuesday, 17 August		Wednesday, 18 Aug	Thursday, 19 Aug	Friday, 20 Aug
		Group A	Group B	Group A	Group B			
Before 0700	Site Closed	Site Closed		Site Closed		Site Closed	Site Closed	Site Closed
0700-0800		Breakfast		Breakfast		Breakfast	Breakfast	Breakfast
0800-0900		Welcome, NDA, and Capture the Flag		Crypto	Wireless	Assessment	Assessment	Student Team Briefs
0900-1000		Networks	Truck Systems					
1000-1100				Wireless	Crypto			
1100-1200								
1200-1300		Lunch		Lunch		Lunch	Lunch	
1300-1400		Truck Systems	Networks	Android	Hardware RE	Assessment	Assessment	Awards & Lunch
1400-1500								
1500-1600								Detroit Day
1600-1700		Hardware RE	Software RE	Software RE	Android			
1700-1800								
1800-1900	Informal Welcome Reception (offsite)							
1900-2000		Dinner		Dinner		Dinner	Dinner	Free
2000-2100		Forensics		Trucking Industry		Assessment	Free	
2100-2200	Site Closed	Site Closed		Site Closed				
After 2200						Site Closed	Site Closed	

What's it like?

What's it like?

What's it like?

Student Participation & Growth

Number of Participating Colleges

CTC 2017   CTC 2018   CTC 2019
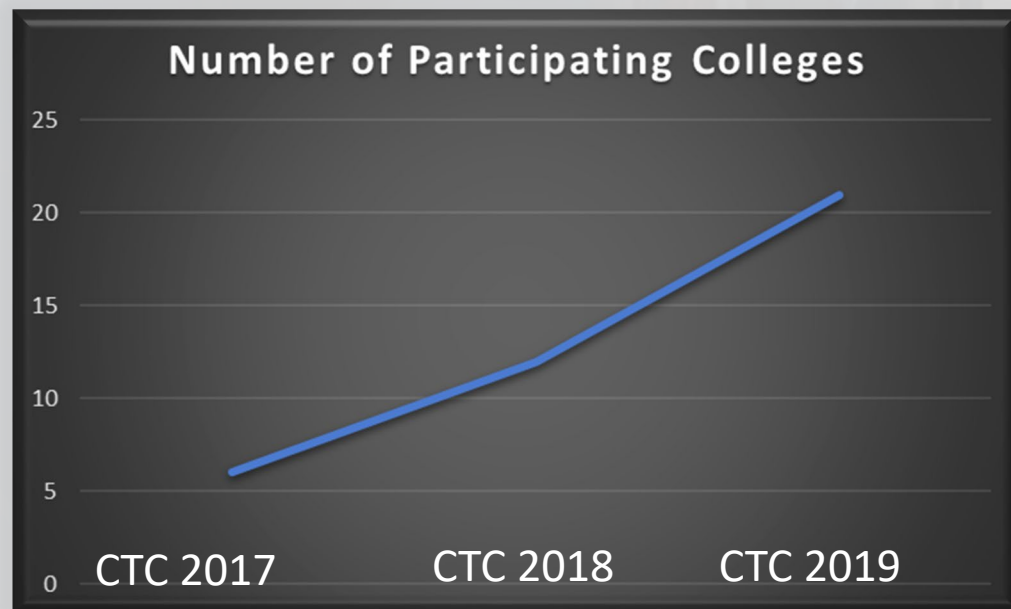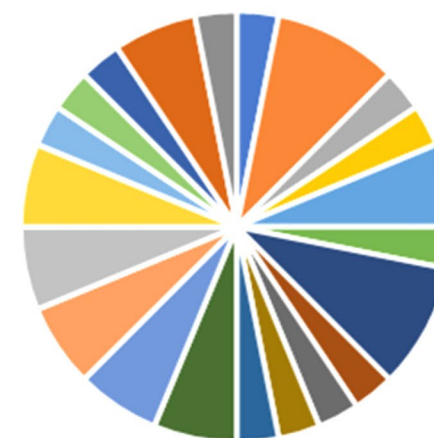
- Universities increasing by ~6/year
- Several developing vehicle cyber programs
- Others lack programs, but individual students show interest
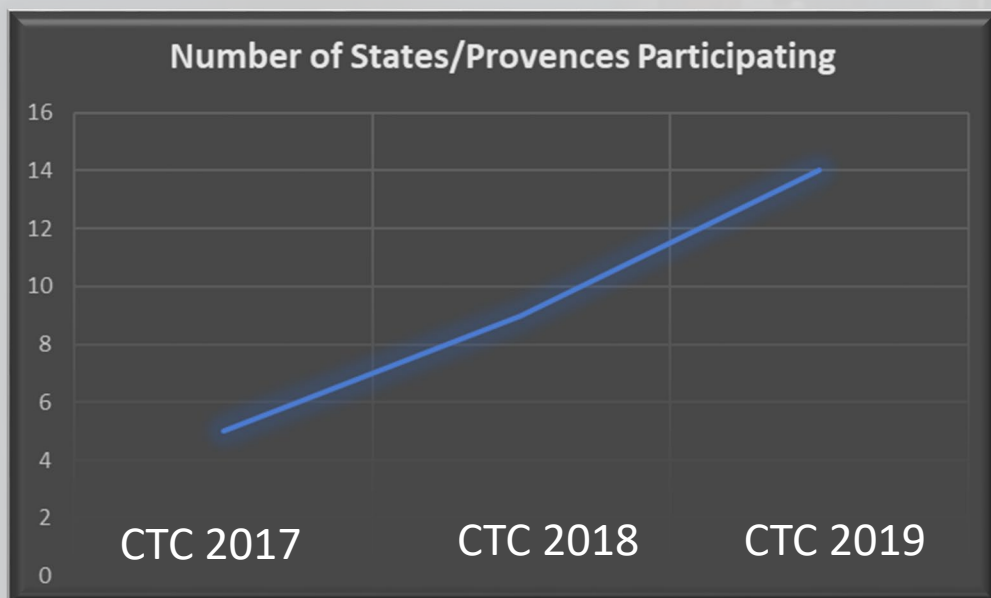- Few schools drop out after introduction

Universities Represented

- Cal State Northbridge
- Colorado State
- U-Maryland
- Draper Labs - MIT
- Eastern Michigan U
- Michigan State
- Michigan Tech
- Northern Michigan
- Oakland U
- Walsh College
- Penn State
- Howard University
- Queen's University
- Ohio State
- U Tulsa
- SUNY
- RIT
- West Point
- U Washington
- Virginia Tech
- George Mason

More States / Regions Represented

Number of States/Provences Participating

CTC 2017   CTC 2018   CTC 2019

States / Regions Represented

- California
- Michigan
- Colorado
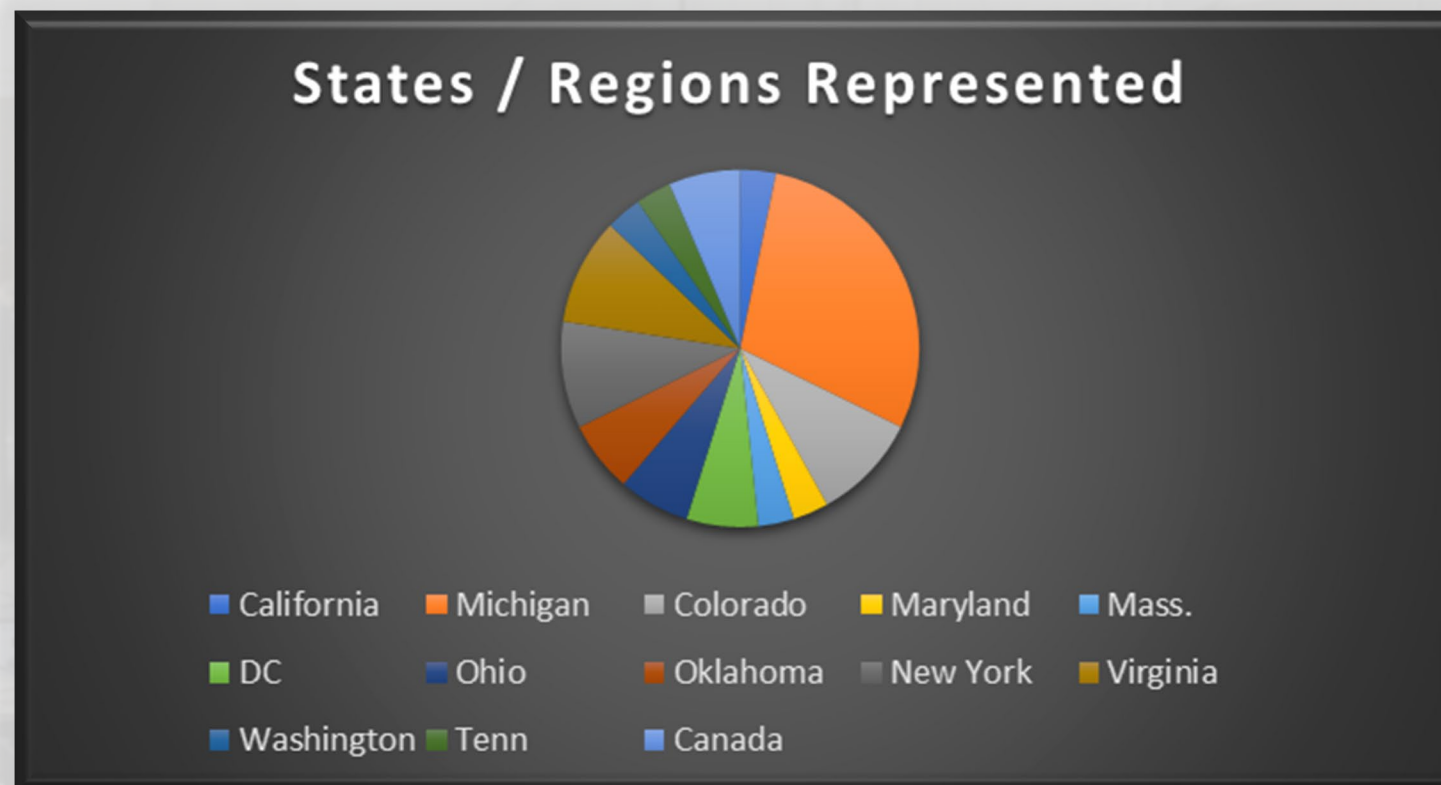- Maryland
- Mass.
- DC
- Ohio
- Oklahoma
- New York
- Virginia
- Washington
- Tenn
- Canada

- Expanding regional representation
- Few Regions drop out after introduction
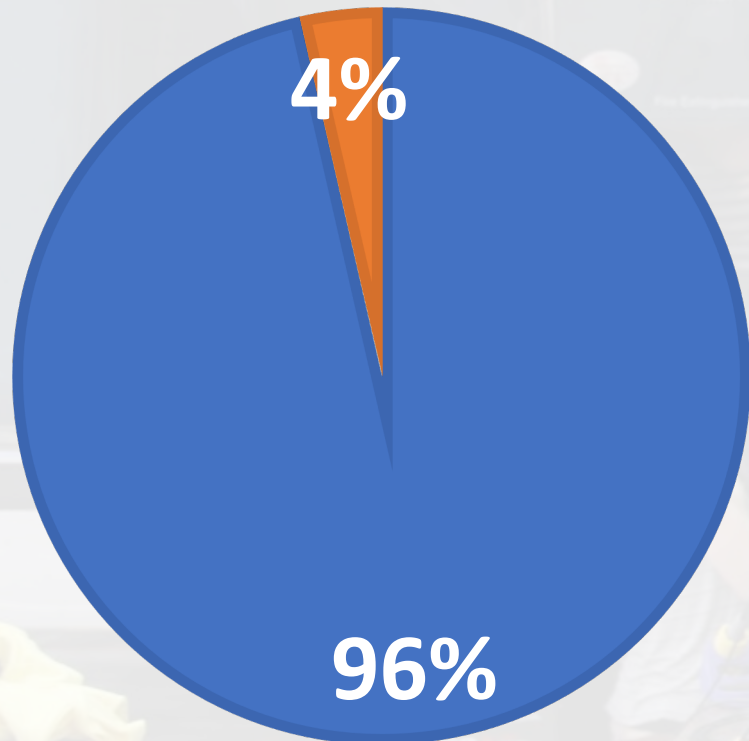- Seek help finding more international participation

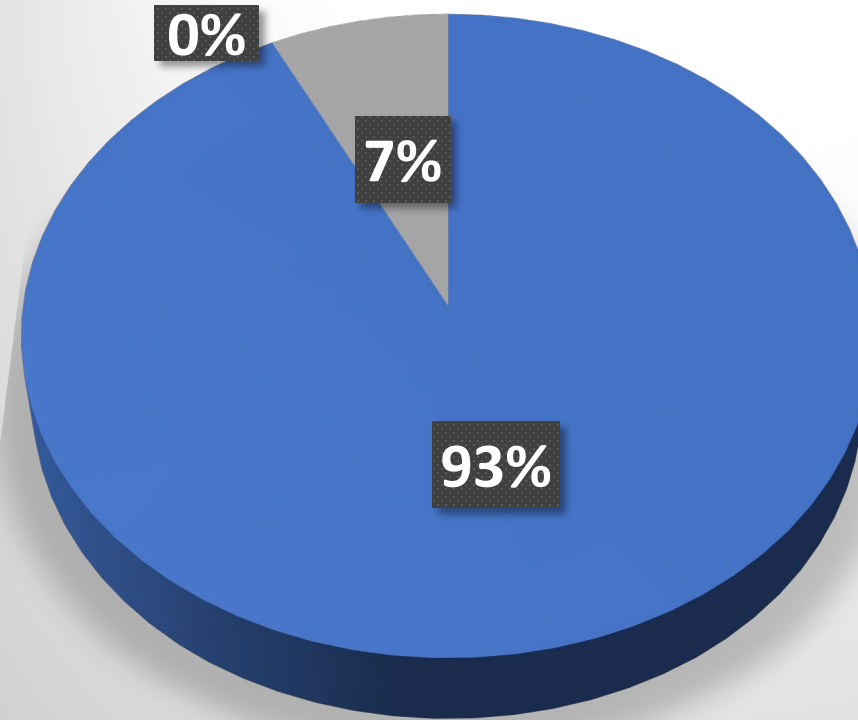# Outcomes – Student Intent & Connections

HAVE YOU FOUND A MENTOR?

- [student] mentor yes
- [student] mentor no

4%

96%

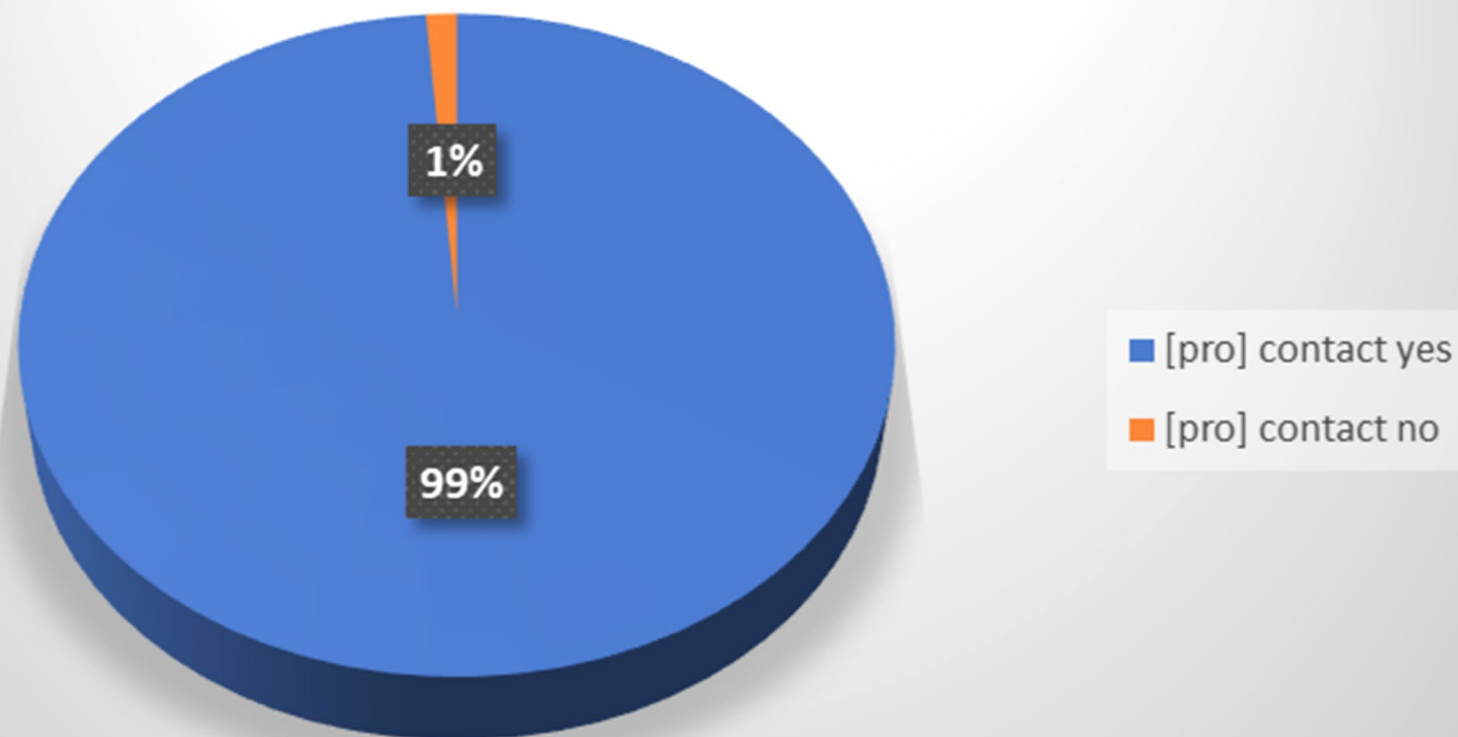**Has attending this event made you more likely to select this career?**

0%

7%

93%

- [student] career more likely
- [student] career less likely
- [student] career no change

Outcomes – Professional Connections

Have you found good peer contacts?

1%

99%

- [pro] contact yes
- [pro] contact no

Outcomes – Student Comments

"This experience is amazing. I would never get an opportunity to work with an actual vehicle if it wasn't for the CyberTruck Challenge."
-- Subhojeet Mukherjee, Ph.D. Candidate (CS)

"The biggest benefit for me was probably talking with all the professionals in industry. Talking to them about what they did just affirmed that I want to work in the same field."
-- John Maag, Class of 2019 (EE)

"In one short week I came together with a range of professionals, students, and hobbyists. We spent two days getting a broad crash course in reverse engineering. Then with teams and a mentor, we chose a project or two from a range of levels that make up the various truck systems. It was intense; I was totally engaged; it was one of the most fantastic weeks of my life."
-- Zach Aubin, Graduate Student in Computer Science, Class of 2022.

2019 Sponsors

CYBERTRUCK CHALLENGE

NMFTA
National Motor Freight Traffic Association, Inc.

OLD DOMINION FREIGHT LINE

VOLVO
VOLVO GROUP

Cummins

MICHIGAN DEFENSE CENTER
MICHIGAN ECONOMIC DEVELOPMENT CORPORATION

GEOTAB
management by measurement

DAIMLER

PACCAR

THE OHIO STATE UNIVERSITY
CENTER FOR AUTOMOTIVE RESEARCH

Bendix®

THE UNIVERSITY of TULSA

omnitracs

Plans over next 1-5 years

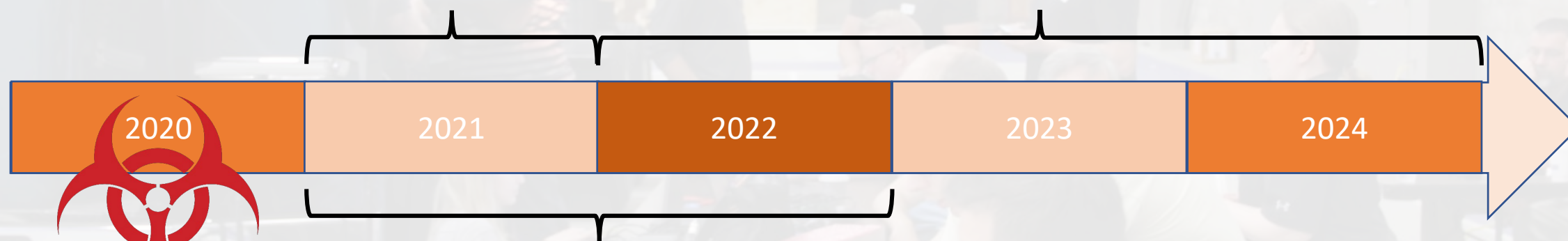1.) ~~Pre-work and selection~~
2.) College program tie-in
3.) Capture-the-Flag
4.) DoD and DoE Outreach

1.) EV-EVSE attack vectors (electrical vehicle infrastructure)
2.) "Smart City" attack vectors
3.) Crypto update pending advances in quantum cryptography

2020	2021	2022	2023	2024

1.) Metrics Framework
2.) Tools and techniques
3.) Security product targets

SAVE THE DATE – CTC2021

- When: August 16-20, 2021

- Where: Macomb CC Sports & Expo Center

- Optional "Detroit Day" during which participants can get some of the "Detroit Experience" – and MEDC outreach activity

- Question? Sponsorship? Email or call:
  - jeremy.daily@colostate.edu
  - karl.heimer@outlook.com

Go to www.cybertruckchallenge.org to signup.

Thank you

www.cybertruckchallenge.org

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