Oregon Cybersecurity Center of Excellence

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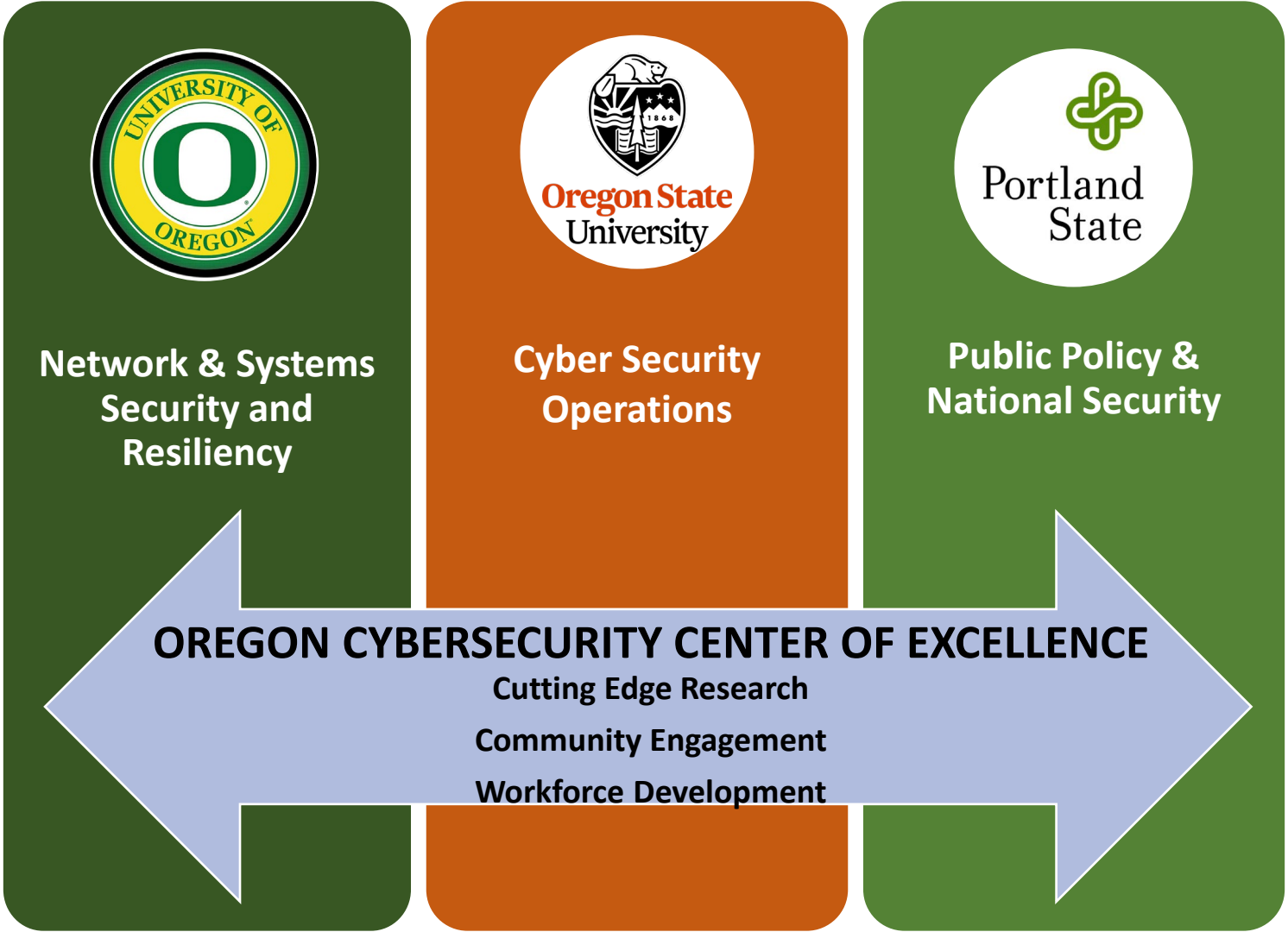

UNIVERSITY OF OREGON
Oregon State University
Portland State
Network & Systems Security and Resiliency
Cyber Security Operations
Public Policy & National Security
OREGON CYBERSECURITY CENTER OF EXCELLENCE
Cutting Edge Research
Community Engagement
Workforce Development

Oregon State University Cybersecurity Capabilities & Support for CCoE

Tom Weller, Professor and Head
School of Electrical Engineering and Computer Science
January 11th, 2022

College of Engineering and School of EECS – At A Glance

Oregon State University
College of Engineering

- College of Engineering
  - 274 faculty members
  - 9,999 students
  - 30% students of color; 22% women
- School of Electrical Engineering & Computer Science
  - 97 faculty members
  - 4,704 undergraduate and 530 graduate students
  - Overall: 33% students of color; 21% women
  - Online: 39% students of color; 27% women
- Ranked #3 among all public R1 institutions for the percentage of faculty who are women
- Ranked #1 among U.S. engineering colleges in number of computer science degrees awarded

DHS Critical Infrastructure Sectors for National Security

Oregon State University
College of Engineering

Oregon's Key Industries

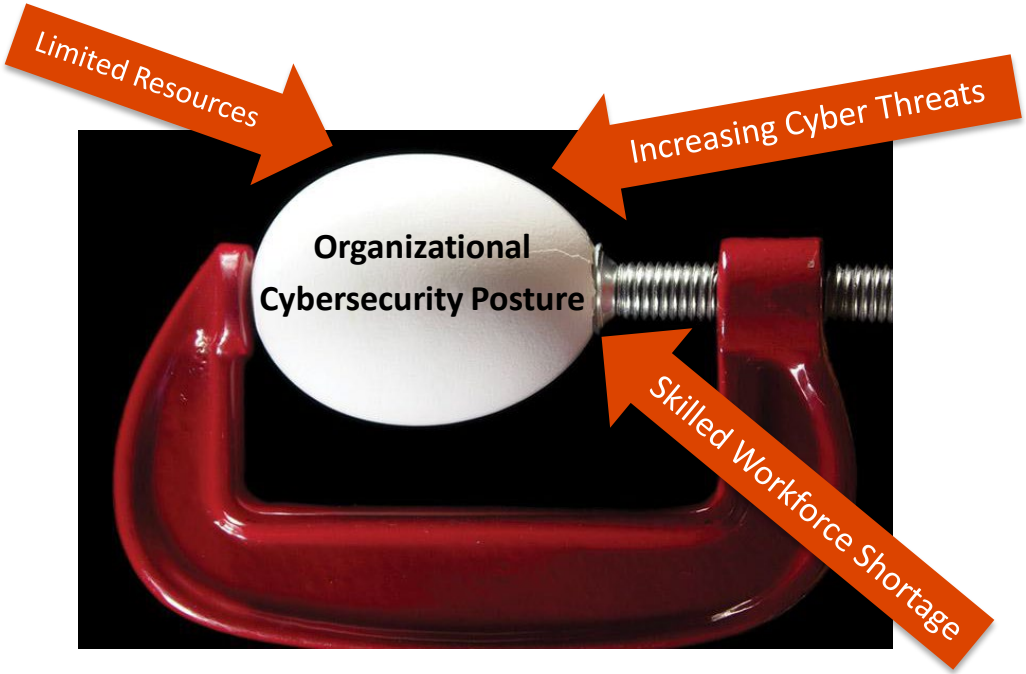
- (Smart) Agriculture and Food Processing
- Advanced Manufacturing
- Semiconductors and Electronics
- Software and Technology
- Clean Energy

CYBER Security and Resiliency are Essential!

Cybersecurity @ OSU

Oregon State University
College of Engineering

- Continued investment in cybersecurity research and education capacity since 2013
- Largest cybersecurity research & education program in Oregon
  - 12 core tenured/tenure-track faculty, 6+ affiliated faculty
  - Areas of Expertise:
    - Cryptography
    - Artificial Intelligence (AI) and Machine Learning (ML) Security & Privacy
    - Cyber-physical Systems (e.g., Smart Grids, Robots, Autonomous Vehicles, Drones/UAVs) Security & Privacy
    - Automation Safety and Security
    - Security Operations & Incident Response
    - Hardware Security
    - Human Factors & Usable Security and Privacy
- Multiple degree and certificate options
  - ~**50** undergraduates/year with cybersecurity concentration



- Acute shortage of skilled cybersecurity workers
  - Nearly **0.6 Million** unfilled cybersecurity positions nationally
  - **20,000+** unfilled positions in PNW
  - **5,000+** unfilled positions in Oregon alone

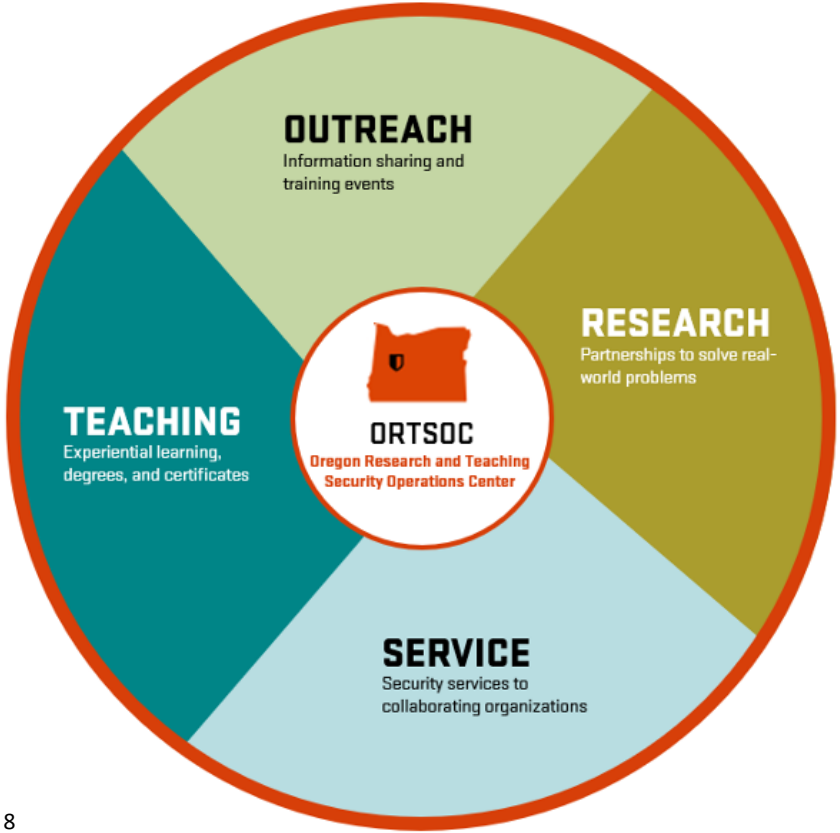
- Cyber attacks and cyber crime continue to increase
  - FBI: $4.2B lost to cybercrime in 2020
  - # of breaches through 9/30/21 already exceeded 2020 totals @1291 (vs. 1108)
    - 131 vs. 110 reported in Oregon
  - Avg. cost/breach rose to $4.24M (17-year high)

- 2,935 publicly reported breaches and 36 billion records exposed in 2020 alone

- Cybercrime estimated to cost $10.5 trillion annually worldwide

Oregon Research and Training Security Operations Center

Oregon State University
College of Engineering



- "**Teaching Hospital**" to develop skilled workforce
  - National model for hands-on training
- Top-quality **Security Operations Center** to serve "underserved" and "resource constrained" organizations
- Research and Innovation to solve real-world problems
- Keystone of a World-Class Cybersecurity program
- Outreach for positive community impact

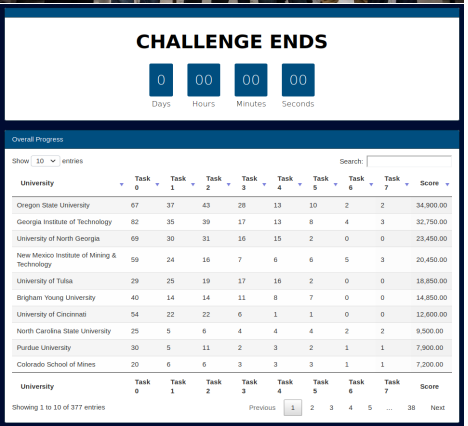
ORTSOC Academic Curriculum

Oregon State University
College of Engineering

- **Experiential-learning embedded** in the curriculum

- ORTSOC-based undergraduate Computer Science Applied Track in **Security Operations** launching in **Fall 2022**
- New Computer Science Master's in **Security Operations** launching in **AY 2022-23**
  - Final Year in Residence (teaching hospital model) at ORTSOC for real world, hands-on experience in a working SOC
  - Rotations in different operational areas
  - Mentorship from working professionals
  - Exposure to Management/Leadership
- New "**Cybersecurity**" options in undergraduate (BIS) and graduate (MSB) business degrees

- **Expected to increase cybersecurity-focused degrees awarded by 4x**



Oregon State University
College of Engineering

OSU Security Club

- 350-member Security Club
- Nationally & Internationally Competitive:
- NSA CODEBREAKER challenge
  - **1st place** in 2018
  - **Top 3** since 2019
    - **3rd** out of **600+** universities in 2021
- DOE CyberForce Competitions
  - **3-time PNW Regional Champions**
  - 3rd and 4th place (Nationally) in 2018, 2019 resp.
- DEF CON CTF 2020 Final (Olympics for hackers)
  - 11th in the US, 72nd in the world

www.OSUSEC.org

Supporting Programs

Oregon State University
College of Engineering

- NW Cyber Camps
  - Summarized by Charlie Kawasaki in a previous testimony
  - Currently a collaboration between OSU STEM Academy, Mt. Hood Community College, EnergySec, and Center for Advanced Learning (CAL) Charter School
- OSU Extension Service
  - A physical presence in every county
  - A good launching pad for cybersecurity awareness and outreach to Oregon citizenry

NW Cyber Camp - Overview

Oregon State University
College of Engineering

- Web site: www.nwcyber.camp
- Founded and operating continuously since 2016
- Served hundreds of K-12 students
- Operating virtually since COVID
- Managed since 2019 by OSU and EnergySec
- Driven by volunteers, with a modest amount of industry financial support for direct expenses

Oregon State University

MT. HOOD COMMUNITY COLLEGE

CENTER FOR ADVANCED LEARNING

ENERGYSEC
THE NATIONAL ENERGY SECTOR CYBER SECURITY ORGANIZATION

Summary

Oregon State University
College of Engineering

- Programs and capabilities that address:
  - Growth and diversification of the cybersecurity workforce
  - Growth and diversification of the K-12 STEM pipeline
  - Support for local, regional and state cybersecurity needs
  - Discovery and development of advanced cyber technology