Academic and Industry Collaborations to Bridge Cybersecurity Diverse Workforce Talent
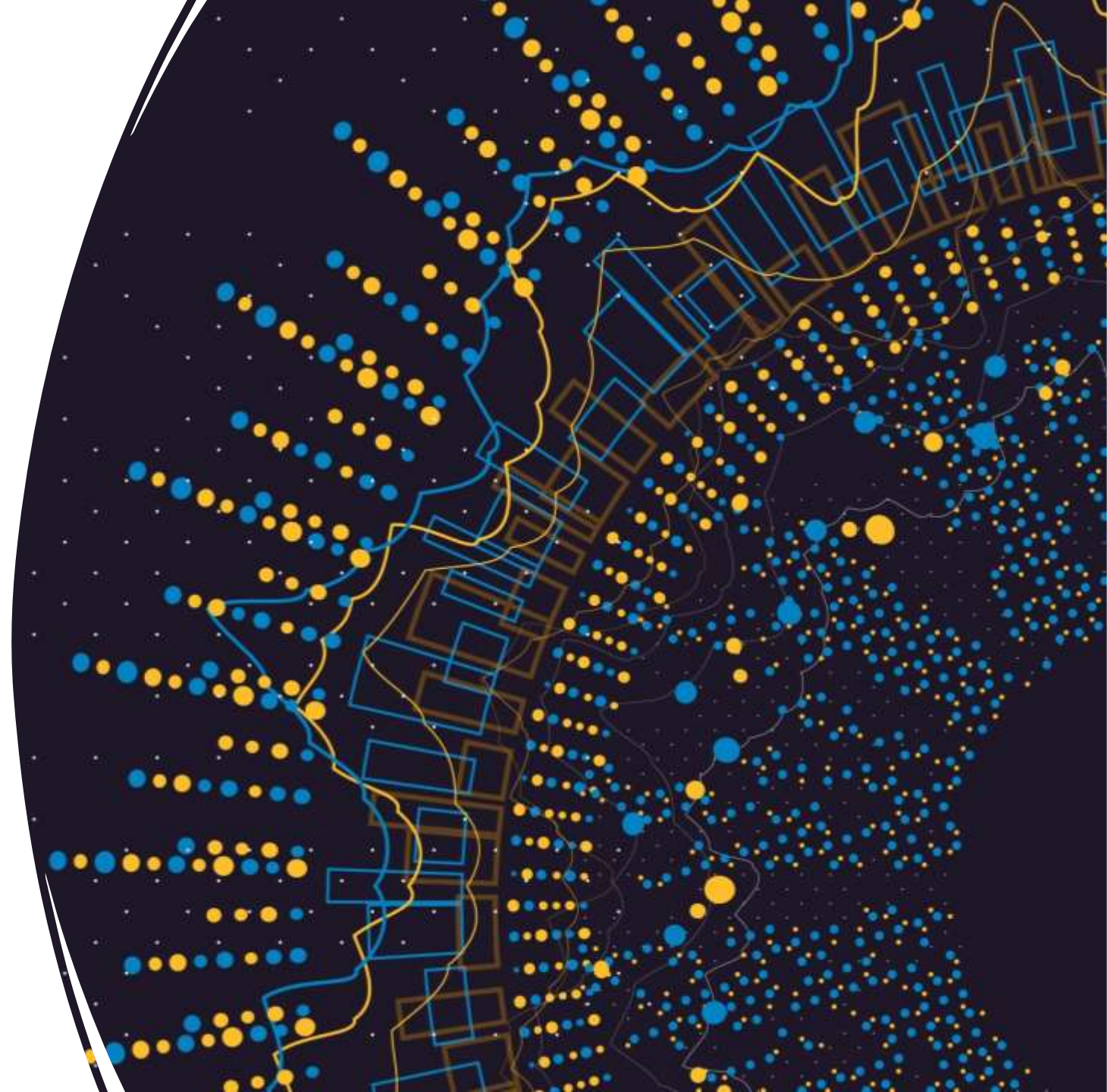
NICE Conference & Expo

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Department of Technology & Security

Agenda

- Goals

- Background - Bridging the STEM diversity Gap

- Importance of Addressing the STEM GAP

- Collaboration Partners' contributions

- Intern Responsibilities

- Bridging the Gap Between Education and Industry

- Best Practices & Success Stories

Goals of the Workshop

Minority-serving institutions (MSIs) play a vital role in diversifying the cybersecurity workforce. There are challenges attracting students and ensuring they graduate with the necessary hard and soft skills. This workshop will address the following solutions:

- Strategies for attracting students to the Cybersecurity careers.

- Curriculum development for fostering in-demand technical skills.

- Techniques for integrating essential soft skills development.

Background

Bridging the STEM Diversity Gap

The STEM field thrives on a diversity of perspectives. Yet, many talented individuals are missing from the equation. Underrepresentationof Women, African-American, Hispanic, and Native American groups are currently underrepresented in STEM careers.

Challenges:

- Limited access to quality STEM education and resources in disadvantaged communities can hinder student potential.

- Higher dropout rates can lead to fewer students pursuing STEM degrees.

- Lack of engaging STEM exposure and support in K-12 education can turn students away from these fields.

- The missing pieces are role models, mentorship program and Inclusive

Importance of Addressing the Gap

- Fostering a diverse workforce unlocks innovation, enhances problem-solving, and strengthens the talent pool, leading to economic growth and a competitive edge.

- Ensuring equal opportunities in education and careers empowers all individuals and inspires future generations to reach

Collaboration Partners

- The Maryland Digital Transformation Center
- Priwils
- Department of Technology & Security - Bowie State University
- Cognosante *Part of Accenture Federal Services*
- The Department of Veterans Affairs – Office of Information Technology.

Forging a Workforce Talent Pipeline:

• To address industry needs, the Maryland Digital Transformation Center, Priwils, Inc., Bowie State University's Department of Technology & Security, Cognosante (part of Accenture Federal Services), and the Department of Veterans Affairs have joined forces.

• This collaborative effort creates a unique learning environment where students and faculty work alongside industry experts on real-world cybersecurity projects, gaining practical experience while contributing to vital initiatives.

• Our innovative approach is already yielding positive results. Guided by day-to-day faculty mentorship and a

Bowie State University

• Bowie State University (BSU) is a member institution of the University System of Maryland. Founded in 1865, Bowie State is the oldest Historically Black College/University (HBCU) in Maryland and one of the ten oldest in the country.

• BSU is a diverse university whose students, along with faculty and staff, represent many ethnic and cultural backgrounds faculty, and staff.

• Bowie State University offers 29 undergraduate majors, 20 master's degree programs, 16 specialty certificates, and two doctoral programs.

Department of Technology & Security Computer Technology Program

Undergraduate Program

Computer Technology undergraduate program is ABET accredited under both *the CAC General* and *Cybersecurity* Program Criteria.

Enrollment and degrees Awarded

- Spring 2023 – Undergraduate enrollment of 333 students.
- 2022 – 81 degrees conferred to students in B. S. Computer Technology.

Graduate Program

- Master of Science Degree in Internet of Things & Internet Technologies – online, one-year program (Started Spring 2023)
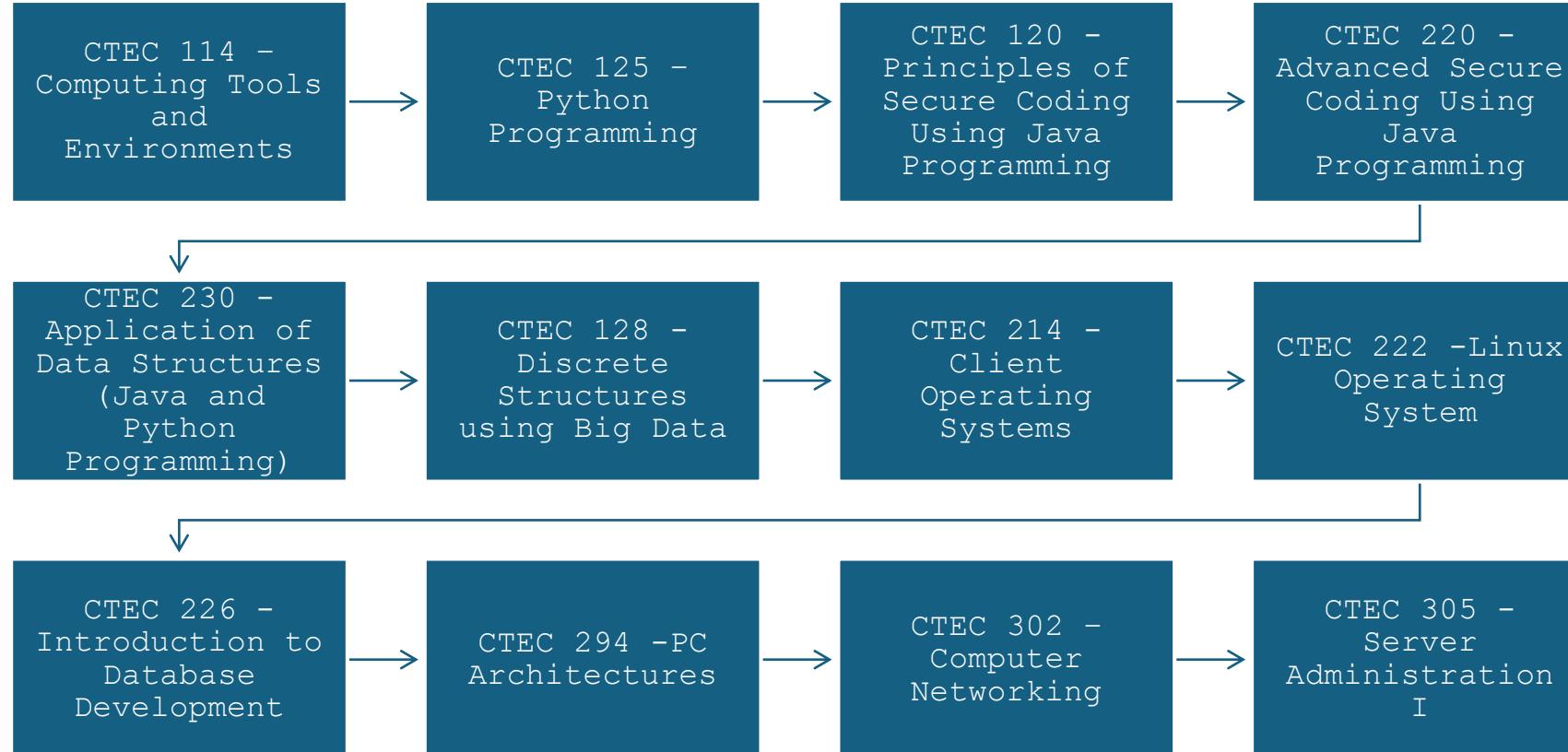
Computer Technology Pr

All courses are taught over 7 –weeks. Students can finish in 3 and 4 years.

❖*CTEC graduates receive a Center of Academic Excellence in Cyber Defense certificate from the National Security Agency (NSA) and the Department of Homeland Security (DHS).*

CTEC 114 – Computing Tools and Environments	CTEC 125 – Python Programming	CTEC 120 – Principles of Secure Coding Using Java Programming	CTEC 220 – Advanced Secure Coding Using Java Programming
CTEC 230 – Application of Data Structures (Java and Python Programming)	CTEC 128 – Discrete Structures using Big Data	CTEC 214 – Client Operating Systems	CTEC 222 –Linux Operating System
CTEC 226 – Introduction to Database Development	CTEC 294 –PC Architectures	CTEC 302 – Computer Networking	CTEC 305 – Server Administration I

Computer Technology Program

Core Knowledge to Develop Cybersecurity Competencies

CTEC 345 -Foundations of Computer and Network Security

CTEC 350 -Principles and Methods of Intrusion Detection and Prevention

CTEC 402 -Software and Operating System Security

CTEC 445 -Fundamentals of Cryptography and Applications

CTEC 450 -Case Studies in Computer Security

Computer Technology Majors choose one of the four tracks

- Network Enterprise Infrastructure
- Internet Technologies
- Data Science & Data Administration
- Heal
  Cybe...

The Maryland Digital Transformation Center

- The Maryland Technology Development Center (MDTC) is affiliated with the Maryland Center at Bowie State University (The Center). Established in 2000, The Center is a Maryland-chartered, non-profit organization with 501(c)(3) status.

- A cornerstone of the University System of Maryland (USM), The Center collaborates extensively with all 12 USM institutions and 3 regional higher education centers. This collaboration fosters a powerful synergy, leveraging the collective expertise and resources of the entire USM network.

- The Maryland Technology Development Center (MDTC) empowers organizations to serve customers, warfighters, citizens, and students more effectively. MDTC achieves this by fostering rapid, iterative advancements in digital capabilities. This approach fosters a genuine three-way partnership between industry, government, and academia.

- Leveraging cloud computing, software-as-a-service (SaaS), platform-as-a-service (PaaS), and other cutting-edge technologies, MDTC collaborates with
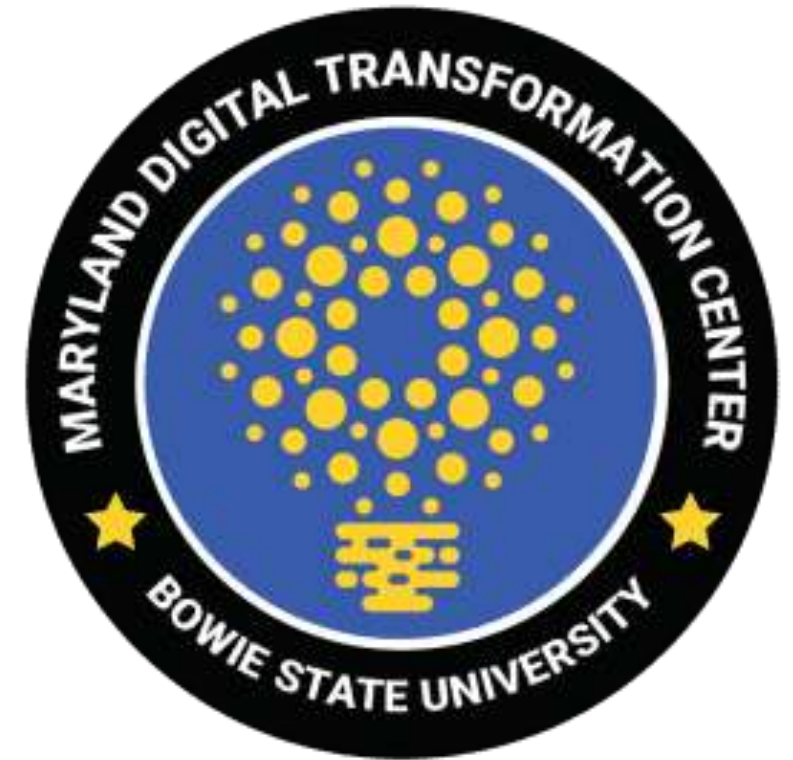
Priwils, Inc.

- Bowie, Maryland-based Priwils, Inc. is a Management and Information Technology (IT) Consulting Firm.

- Priwils, Inc., a Management and Information Technology (IT) Consulting Firm, offers its expertise to clients in Bowie, MD.

- Priwils, Inc. (Bowie, MD) provides Management and Information Technology (IT) Consulting services.

- Priwils, Inc. serves as a liaison in this partnership, facilitating communication and collaboration between the Maryland Center, Bowie State University, Cognosante, and the

Cognosante **Part of Accenture Federal Services**

- Cognosante, a mission-driven technology company, delivers innovative solutions that transform government services. Their mission guides their market focus, business strategy, investments, and culture.

- Cognosante empowers government agencies to:
  - Modernize operations and service delivery through cutting-edge technology solutions.
  - Manage, integrate, and analyze data effectively to gain valuable insights and improve decision-making.
  - Track progress, identify areas for improvement, and ensure efficient use of resources.
  - Access expert support and management for IT infrastructure and applications.
  - Protect sensitive data and safeguard government systems and information.

The Department of Veterans Affairs

The Veterans Affairs (VA) healthcare system is the largest integrated healthcare network in the United States, serving millions of veterans annually across over 1,200 care sites. It consistently ranks among the nation's top healthcare providers. The VA provides a comprehensive range of healthcare services for veterans, including:

• Dental Care

• Vision care

• Mental health Services and Coverage

Bridge Partnership

The Maryland Digital Transformation Center

- Industry-driven projects
- Cognosante **Part of Accenture Federal Services**

Department of Technology & Security

- Capstone courses
- Enterprise Systems, Data Science, Cybersecurity, Machine Learning, AI, Edge to Edge Technology

Bridge Partnership

The Maryland Digital Transformation Center

- DTS
  Faculty Subject Matter Experts
- Undergraduate student interns

Cognosante Part of Accenture Federal Services

- The Department of Veterans Affairs
- Office of Information Technology
  Workplace assignments

Undergraduate Interns

- Intern Responsibilities:
  - Work alongside a dedicated Cognosante team, gaining valuable industry experience.
  - Receive guidance and support from a designated Cognosante manager.
  - Participate in regular Cognosante "sprint" meetings, staying up-to-date on project progress and contributing your insights.
  - Join a daily morning meeting on Zoom with all Bowie State University faculty team members, fostering communication and collaboration.
  - Work collaboratively with BSU faculty team members as needed, benefiting from their academic expertise and project guidance.
  - Commit to 20 hours per week during the semester and

Undergraduate Interns

- Year 1
  - 5 CTEC interns
    - 2 seniors
    - 3 sophomore
    - 1 full-time hire
    - 2 removed from the program
- Year 2
  - 6 interns
    - Software developer
    - Technical writer
    - Enterprise System Engineer
    - Database / Data Analyst
    - Cybersecurity research

Bridging the Gap Between Education and Industry

- Develop strategies to attract and retain qualified students for internship programs.

- Foster a seamless connection between classroom learning and real-world application.

- Weave relevant emerging topics like zero-trust security into the curriculum, enriching the learning experience.

- Equip students with essential communication, teamwork, and problem-solving skills through dedicated training and practical application opportunities.

- Provide consistent mentorship to

Best Practices and Success Stories

- Morning meetings prepare interns for professional work environments.

- Daily tasks bridge the gap between theory and real-world experience.

- Interns hone their communication skills by delivering presentations in practical scenarios "Real World".

- Interns benefit from experienced mentors who provide both support and constructive feedback ("Real (and) Tough Love").

- Two interns secured positions at Cognosante, while another two landed jobs in the cybersecurity field – a testament to the program's effectiveness.

- The program's ongoing success is evident in the project's extension for a second year, with a potential expansion to a third year.