Agenda Item 2

USM Cyber Security Landscape and Contributions to the State

BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION
<mark>INFORMATION</mark> OR DISCUSSION

TOPIC: USM Cyber Security Landscape and Contributions to the State (information item)

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: January 30, 2014

SUMMARY: With its vast resources of federal facilities, academic institutions, industry strengths, and intellectual capital, Maryland is quickly emerging as the epicenter for cyber security. The Committee will be briefed on the USM's cyber security assets and contributions to the State in the areas of workforce development, corporate/government relations, economic development, and research.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: This item is for information purposes.

CHANCELLOR'S RECOMMENDATION: This item is for information purposes.

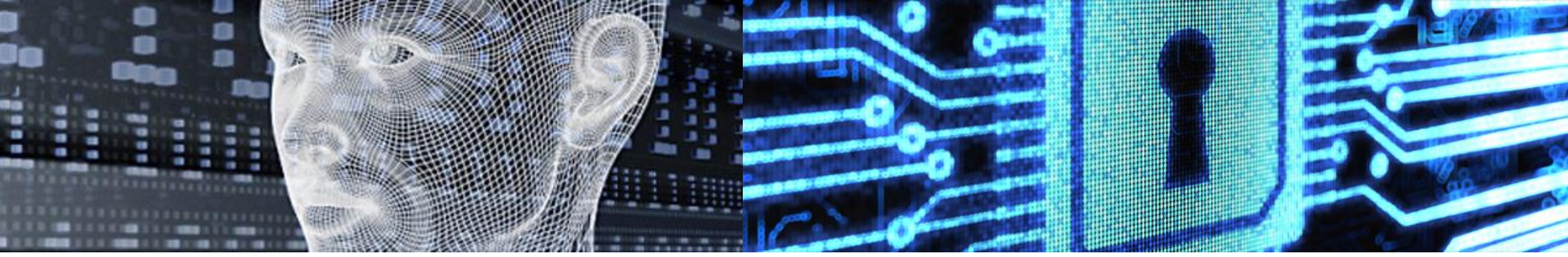COMMITTEE RECOMMENDATION: DATE:

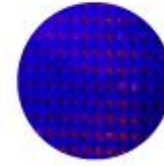BOARD ACTION: DATE:

SUBMITTED BY: Joseph F. Vivona (301) 445-2783

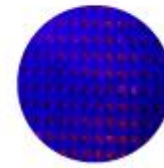# USM Cybersecurity Landscape and Contributions to the State of Maryland

Prof. Jonathan Katz
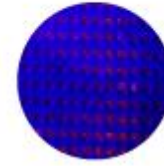**Director, Maryland Cybersecurity Center**

Overview

- Workforce development
- Corporate/government relations
- Economic development
- Research

- I have attempted to give a broad picture, with no attempt to be comprehensive

WORKFORCE DEVELOPMENT

Backdrop

- MD is a hotbed of activity in cybersecurity

Job postings by region

20000

"There are not enough people in the pipeline
to protect companies, critical infrastructures, and
governments in the future"

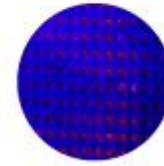Mark Weatherford, deputy under-secretary for cybersecurity, DHS (2013)

Cyber Security Jobs Report, 2013
The Abell Foundation & CyberPoint International, LLC

- 56% of companies nationwide report a workforce shortage

2013 (ISC)[2] Global Information Security Workforce Study

3

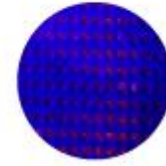UNIVERSITY OF MARYLAND

The pipeline must begin early

Middle/High-School Outreach

Twin goals:
- Education general public on good cybersecurity practice
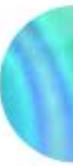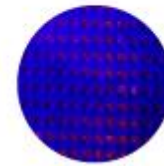- Grow workforce of dedicated security professionals

Doctoral Programs

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# Middle/High-School Outreach

- UMCP: Saturday cybersecurity awareness workshops, summer camps
    - "Cool careers for girls", girls in grades 6-8
    - CyberSTEM camp, girls in grades 7-8
    - Cyber defense training camp, grades 11-12
- UB: $150,000 education grant from DHS for high-school *Integrated Cybersecurity Education Communities* program
- UMBC:
    - Bit-n-bytes program for high-school girls
    - co-founder of MD Cyber Challenge
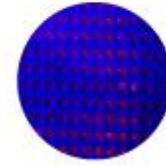
Undergraduate education

- USM institutions offer a broad range of degrees in cybersecurity-related fields
  - Roughly 2000 security-related degrees/year
- UMCP: Advanced Cybersecurity Experience for Students (ACES): Nation's first honors program in cybersecurity
- UMBC: Cyberscholars program
- Four USM institutions are NSA Centers of Academic Excellence in IA Education
- NSF REUs in security; cybersecurity clubs
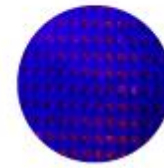
Professional Masters
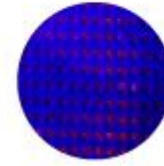
- UMCP: M.Eng. in Cybersecurity
- UMBC: Masters in Prof. Studies program in cybersecurity, expanding to Shady Grove
- UMBC Center for Cybersecurity Training
- Bowie State: Masters in MIS with cybersecurity concentration
- UMUC: MS programs in cybersecurity, cybersecurity policy, and digital forensics
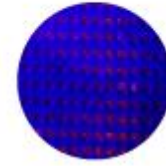- Towson: 3+2 program joint with Estonian Universities

Doctoral programs

- Strong doctoral programs in cybersecurity-related fields at several USM institutions
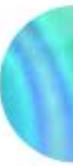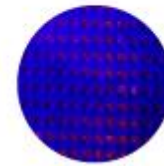- UMBC: $2.5M grant (NSF) for Scholarships for Service cybersecurity scholars at undergraduate and PhD levels

# CORPORATE & GOVERNMENT RELATIONS

Corporate relations

- USM institutions have strong ties to several companies in the area
- Some highlights
  - UMCP: $1.1M from Northrop Grumman for ACES
  - UMBC: $1M from Northrop Grumman for CyberScholars program
  - Bowie State: $1M equipment donation from Cisco for cybersecurity lab
- Corporate partnership programs…

MC2 partners (Fall'13)

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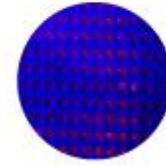
Corporate outreach and engagement
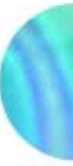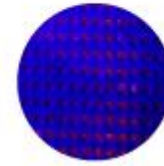
- Workshops/events with industry speakers/attendees
  - MC2 symposium & Google seminar series
  - UMCP: Annual workshop on security economics
- Outreach and interactions
  - Business Higher Educ. Forum (BHEF)
    - Led to ACES
    - Sloan grant to work with UMCP/UMBC on creating regional excellence in cybersec. Educ.
  - Faculty on boards of Northeast MD University Research Park; CyberMaryland
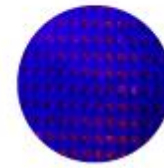
Government outreach
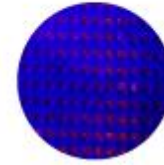
- UMCP: long-standing relationship with Laboratory for Telecom. Sciences (LTS)
  - $1.5M/year in research funding
- Centers at UMCP:
  - Center for Advanced Study of Language
  - Nat'l Consortium for Study of Terrorism…
  - Center for Public Policy and Private Enterprise
- Congressional testimony

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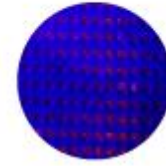
Government outreach

- Bowie State: work with Nat'l Nuclear Safety Administration on cybersecurity training
- UMBC Center for Health and Homeland Security provides policy guidance to public institutions; director serves as chairman of Governor's Emergency Mgm't Advisory Council
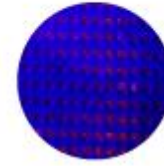
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ECONOMIC DEVELOPMENT

Commercialization

- bwtech@UMBC
  - Cyber Incubator: business/technical support to early-stage companies in cybersecurity field
  - CYNC: partnership with Northrop Grumman, offers "scholarship program" to companies
  - Also facilitate interactions with students/faculty
  - 50 companies, $200M in annual sales
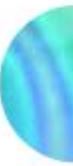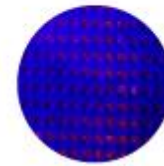
Faculty-led startups

- ## RioRey (Mehdi Khandani)
  - Founded in 2006
  - Ultra high-speed DDoS detection and filtering
  - 25 employees, $3.5M annual sales

- ## SecondWrite LLC (Rajeev Barua)
  - Founded in 2013, based on 6 years of research
  - Malware detection and analysis
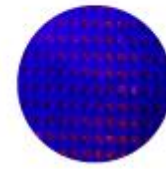
RESEARCH

Cybersecurity research

- Research is a core part of our mission
  - Keep pace with emerging threats, develop the next-generation of solutions
  - Integral part of workforce development at the undergraduate, Masters, and PhD levels
  - Provide support for industry/government
  - Generate new ideas for commercialization
- Representative level of activity:
  - USM: $75M currently funded projects
  - UMCP: 2010-2013: 60 research awards, $33M