GLOBAL ICT CAPACITY BUILDING SYMPOSIUM

ITU CBS

SANTO DOMINGO 2018

Digital Security Capacity Building: Role of the University

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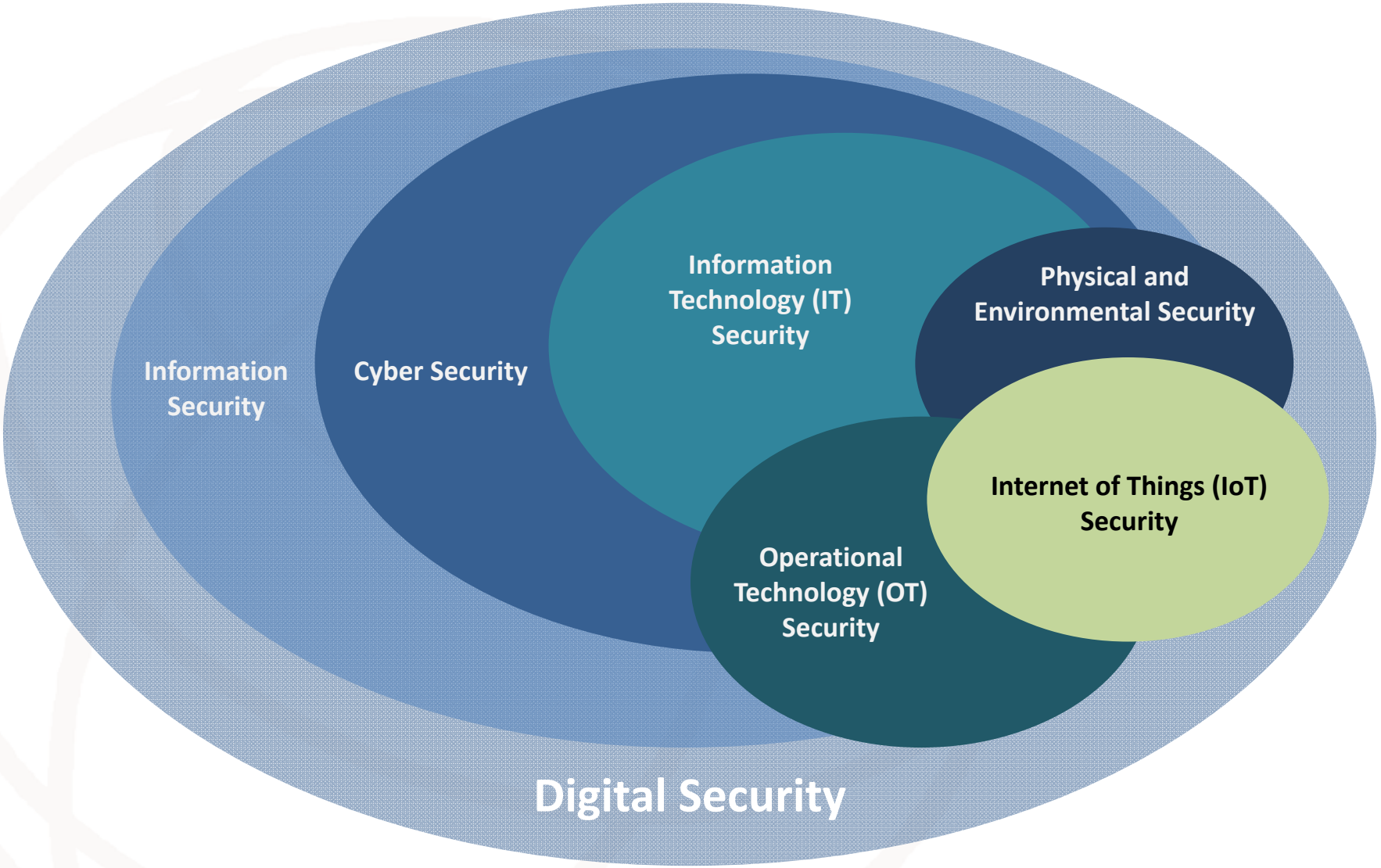
Dr. Nizar Ben Neji
Faculty of Sciences of Bizerte (FSB)
University of Carthage
nizar.benneji@fsb.rnu.tn

Outline

- Evolution of security
- Digital security domains
- Digital security needed competencies and certifications
- Digital workforce shortage
- Role of the university
- Cybersecurity career pathway

Evolution of Security

Digital Security



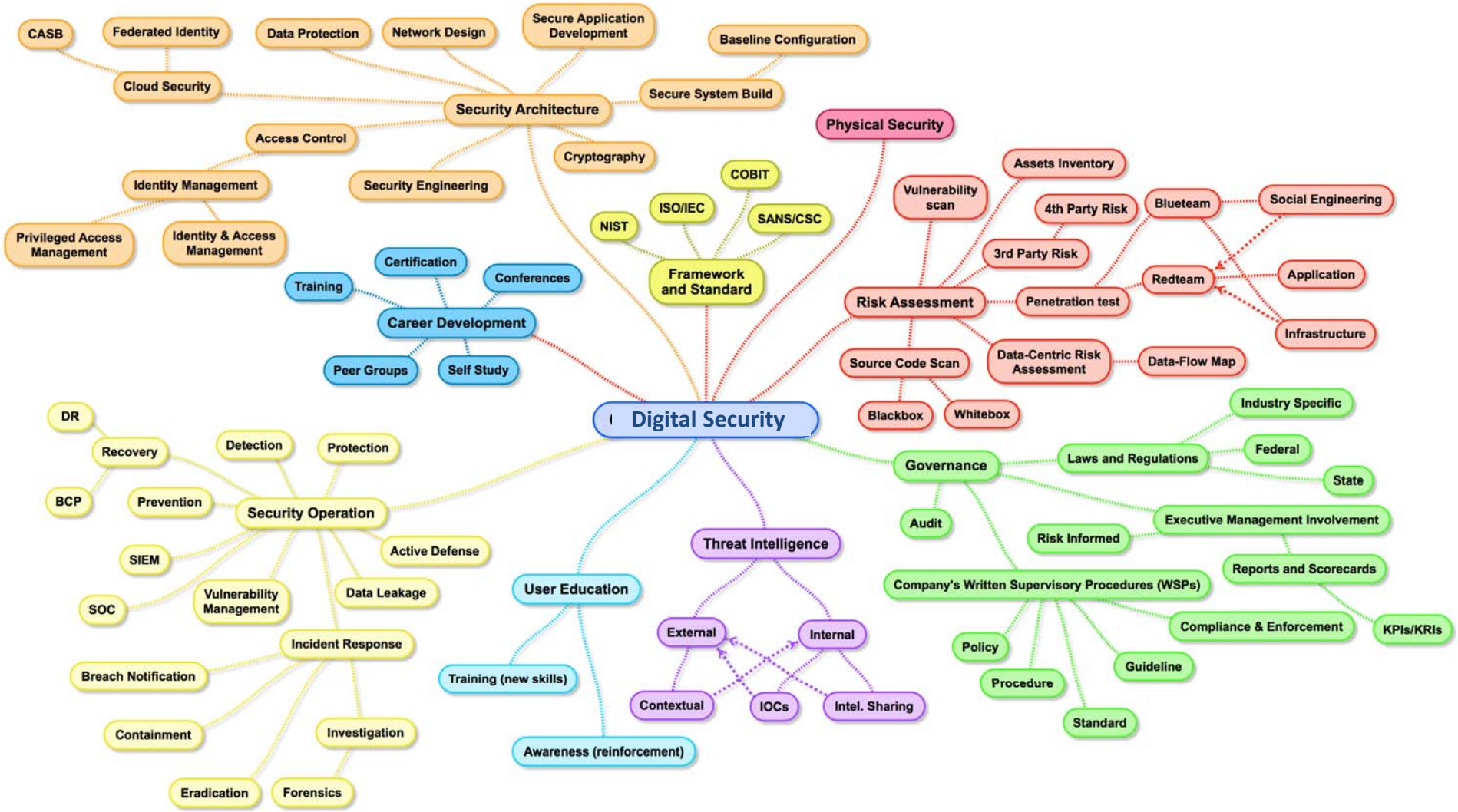
Digital Security

Cornerstone of the Digital Economy

- Experts are predicting that digital crime will cost businesses **6 trillion dollars** annually by 2021
- **556 Million** victims per year, **1.5 Million** victims per day and **1.8 victims** per second
- Digital crime is going mobile: **2/3** of Internet users are using mobile devices and **31%** of victims are mobile users
- Digital crime is going social: **40%** of social network users have fallen victim
- In 2020, 20.8 billion Internet connected things: **Human will be more exposed to digital criminality**
- Digital economy and digital business environment are built on trust: **Digital ethics** and **Digital security:**
  - **Legal framework (Laws, decrees and regulation texts)**
  - **Institutional framework (National Digital Security Agencies, Government Certification Authorities, ..)**
  - **Technical framework (Last emerging technologies)**
- Organisations that are able to **attract and retain digital security talent** will be much **more successful** in profiting from the digital opportunity and managing the digital security risk

Digital Security Domains

Nine main domains



Digital Security Expertise

Top Skills and Certifications

TOP SKILLS

- Information Security
- System & Network Security
- System & Network Administration
- Linux / UNIX
- Audit Planning
- Audit Reporting
- Risk Assessment
- Computer Forensics
- Malware Analysis
- Project Management

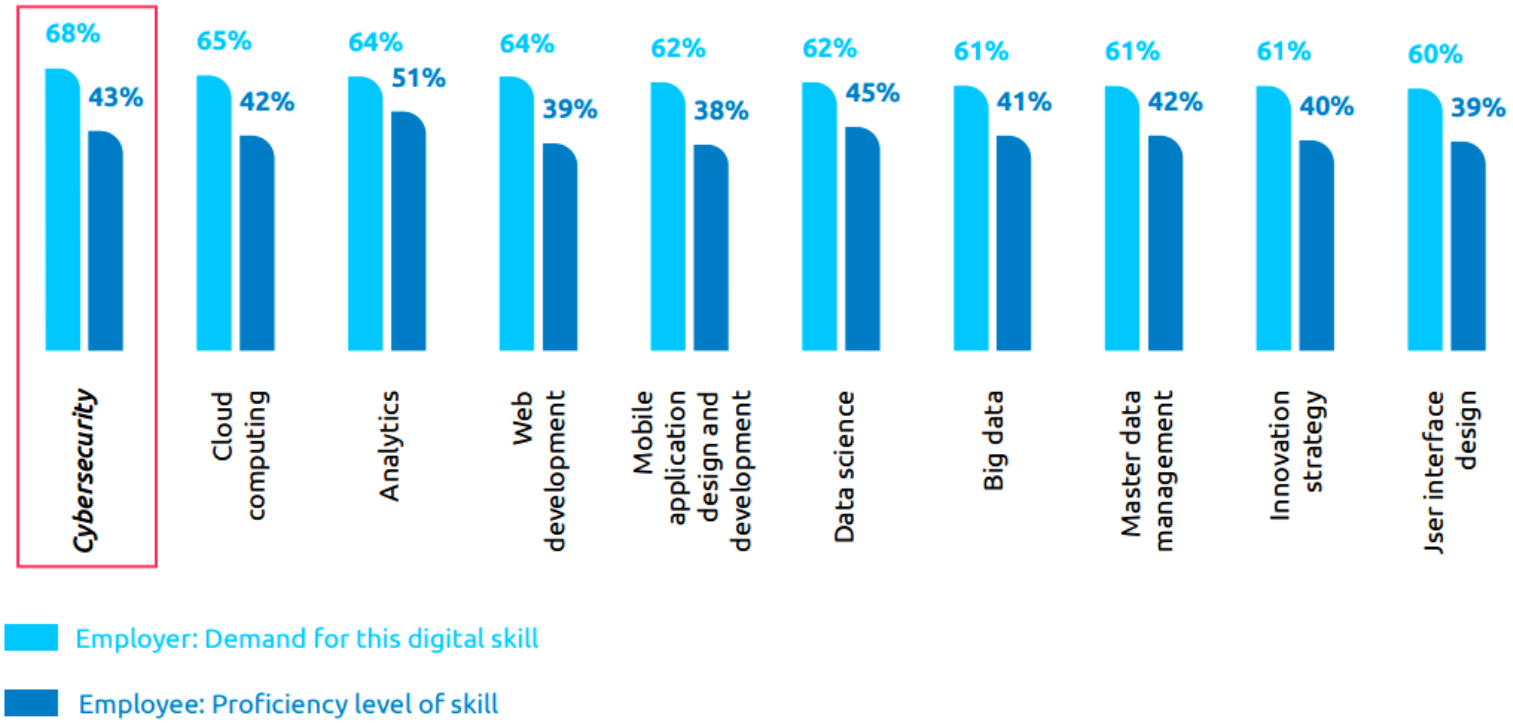
TOP CERTIFICATIONS

- CISA (Certified Information Systems Auditor)
- CISM (Certified Information Security Manager)
- GIAC (Global Information Assurance Certification)
- CompTIA Security+ Certification
- CCNA (Cisco Certified Network Associate)
- CEH (Certified Ethical Hacker)
- CHFI (Computer Hacking Forensic Investigator)
- CISSP (Certified Information Systems Security Professional)
- ISO 2700X
- CIA (Certified Internal Auditor)
- CRISC (Certified in Risk and Information Systems Control)

Digital Workforce Shortage

High Demand

- Digital security skills ranked first in both **demand** and **talent gap**
- Digital security workforce gap will reach **1.8 million in 2022** according to the 2017 Global Information Security Workforce Study of the International Information System Security Certification Consortium (ISC^2)



Capgemini Digital Transformation Institute Survey (June-July 2017)

Top Reasons for Shortage

Global Information Security Workforce Study (2017)

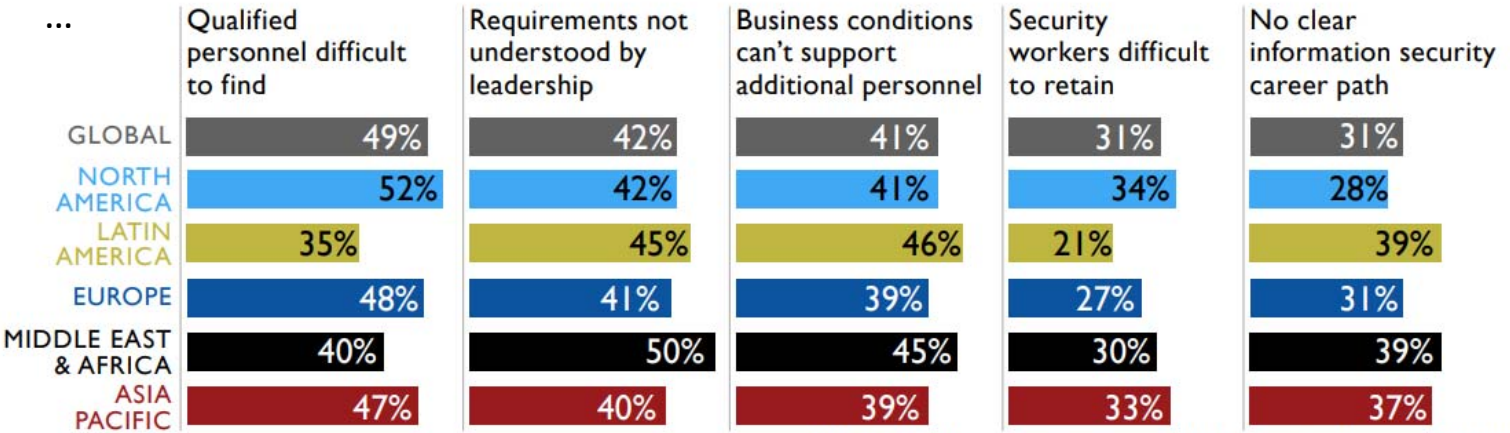
- Reasons for shortage are various and vary mainly by region:

UNIVERISTY

- Problem in finding qualified persons with knowledge, skills and abilities
- Hybrid job combining different skill sets that are not traditionally taught together
- Certifications become prominent for the employers and candidates are filtered out of the hiring process on the basis of certifications
- Women not well involved and encouraged to practice this profession: Only make up 11% of the cyber workforce

COMPANY

- Leadership not understanding the requirements for digital security skills
- Focus on senior professionals with years of experience and overlook recent grads
- Distribution of the digital security resources (private/public, country/abroad, …)
- Not well defined career path
- Inability to retain cyber security employees
- …



Source: 2017 Global Information Security Workforce Study, (n = 12,709)

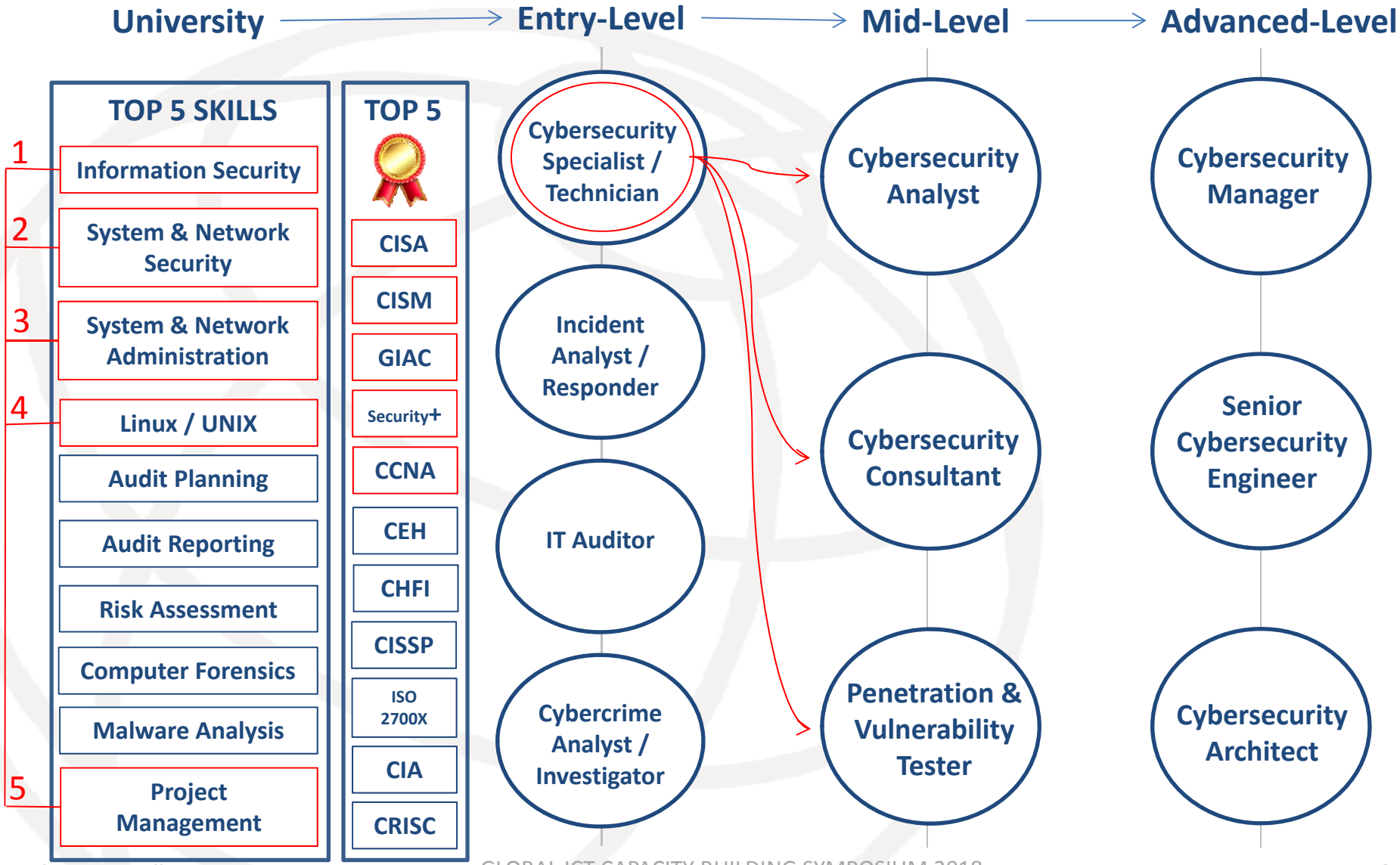
Role of the University

Apply possible solutions as early as possible better than recycling

- Universities have a big role to play in the solution to
  - Adapt the **university programs** to the digital security job market to have a better aligned education and training pipelines
  - Provide students with the **needed skills**
  - Prepare for entry-level **certifications** since IT digital security positions request at least one of certifications (CISA, CEH, CISSP, …) and industry certification increase salaries
  - Frequently update the content of the **course materials** to keep pace with this fast evolving demand
  - **Career centres** at universities should provide students with guidance and advices regarding the job market needs to avoid unemployment and underemployment
  - Universities could support the growth of technology-based new ventures especially in digital security (create job opportunities for recent grads)
  - Encourage female students to study and pursue degrees and careers in cyber-security
  - …

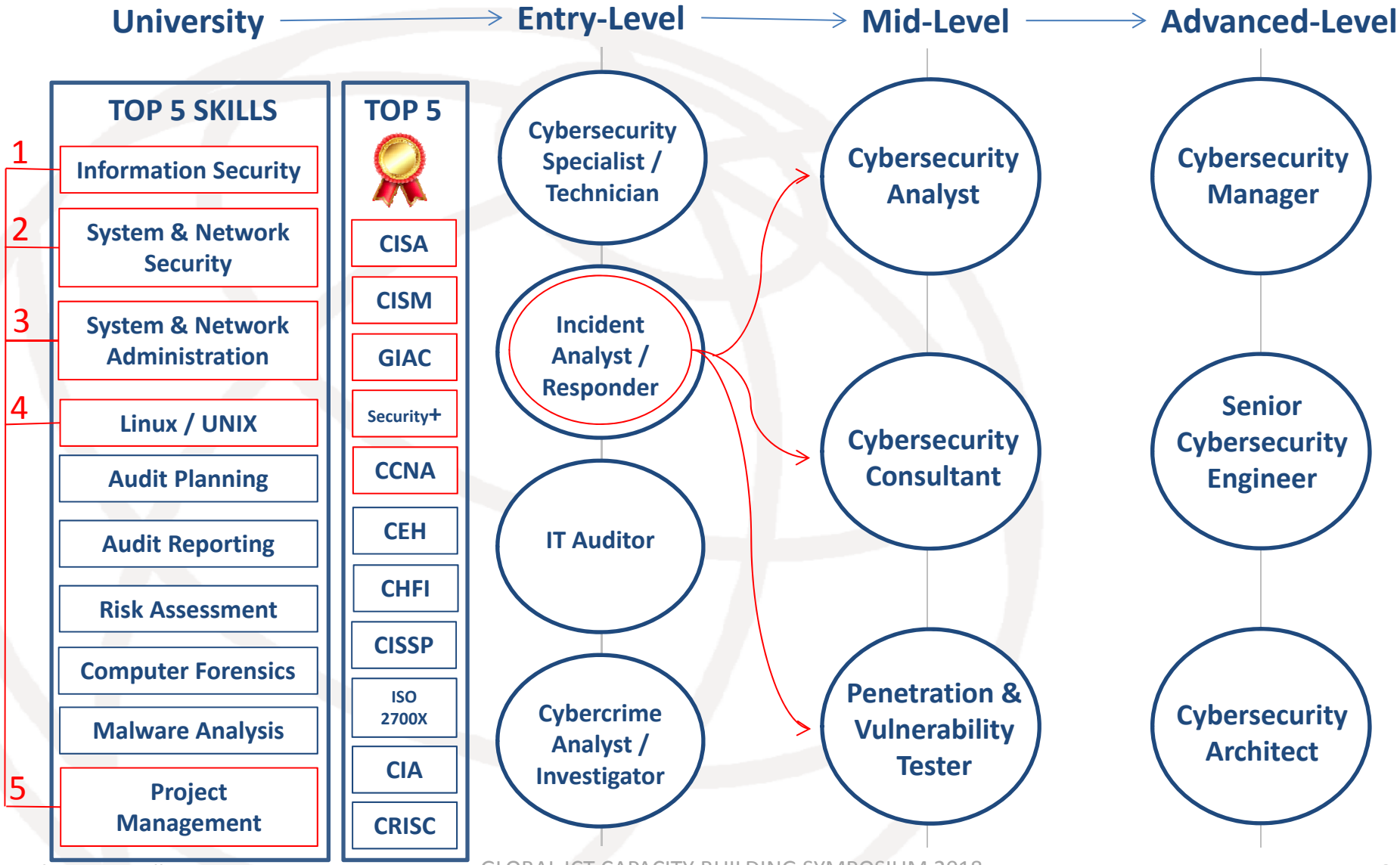
Cybersecurity Career Pathway

Cybersecurity Specialist / Technician



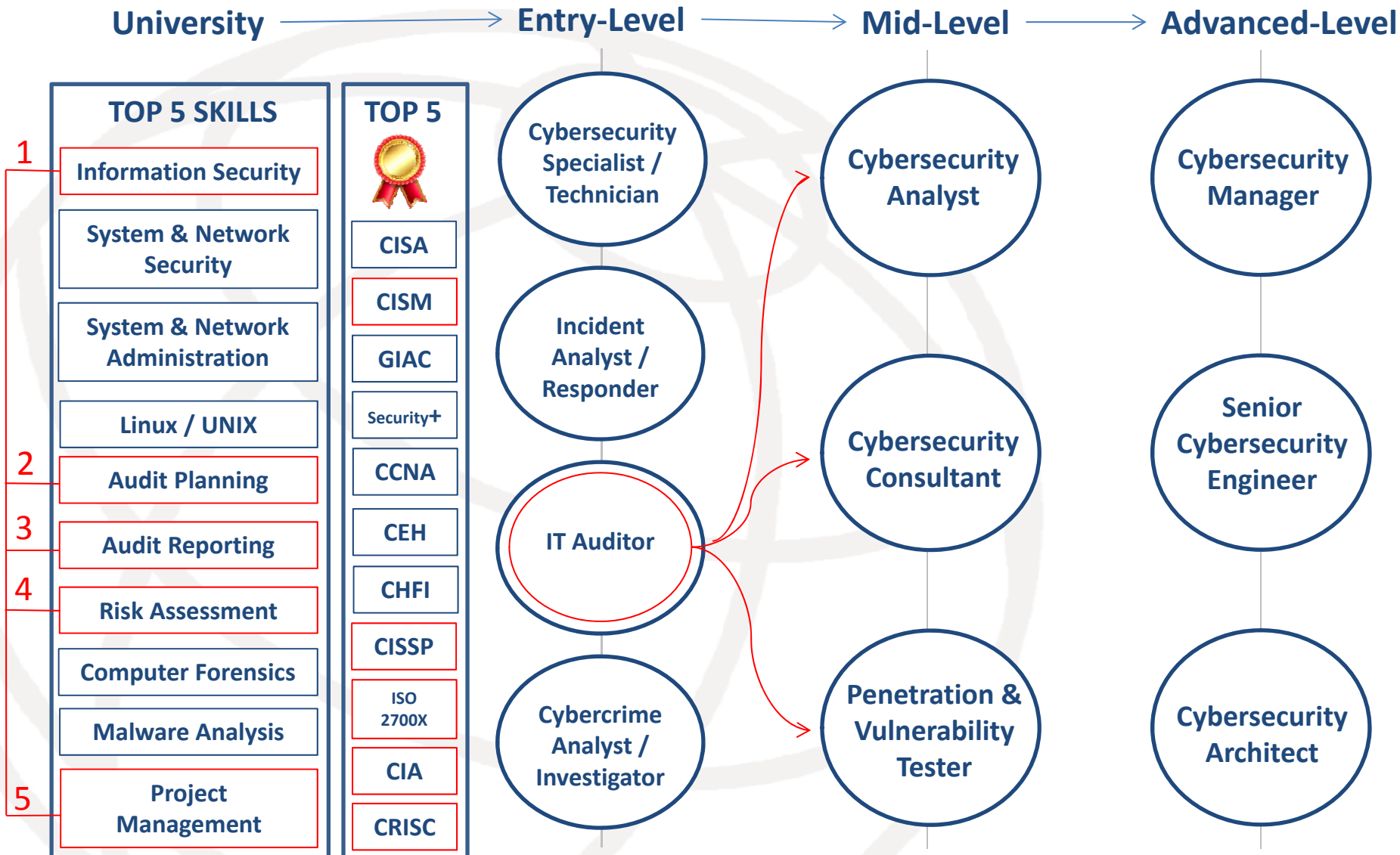
Cybersecurity Career Pathway

Incident Analyst / Responder



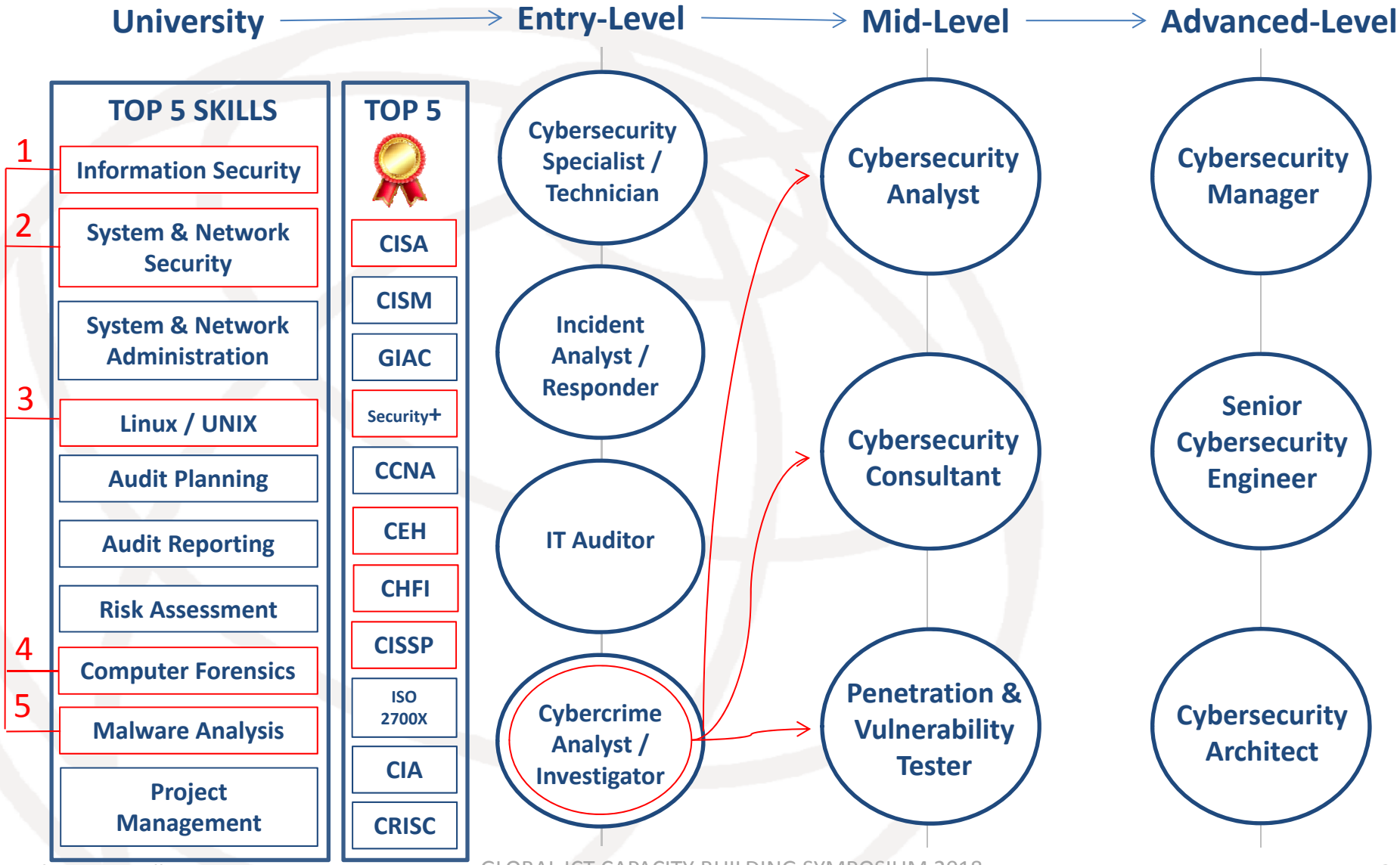
Cybersecurity Career Pathway

IT Auditor



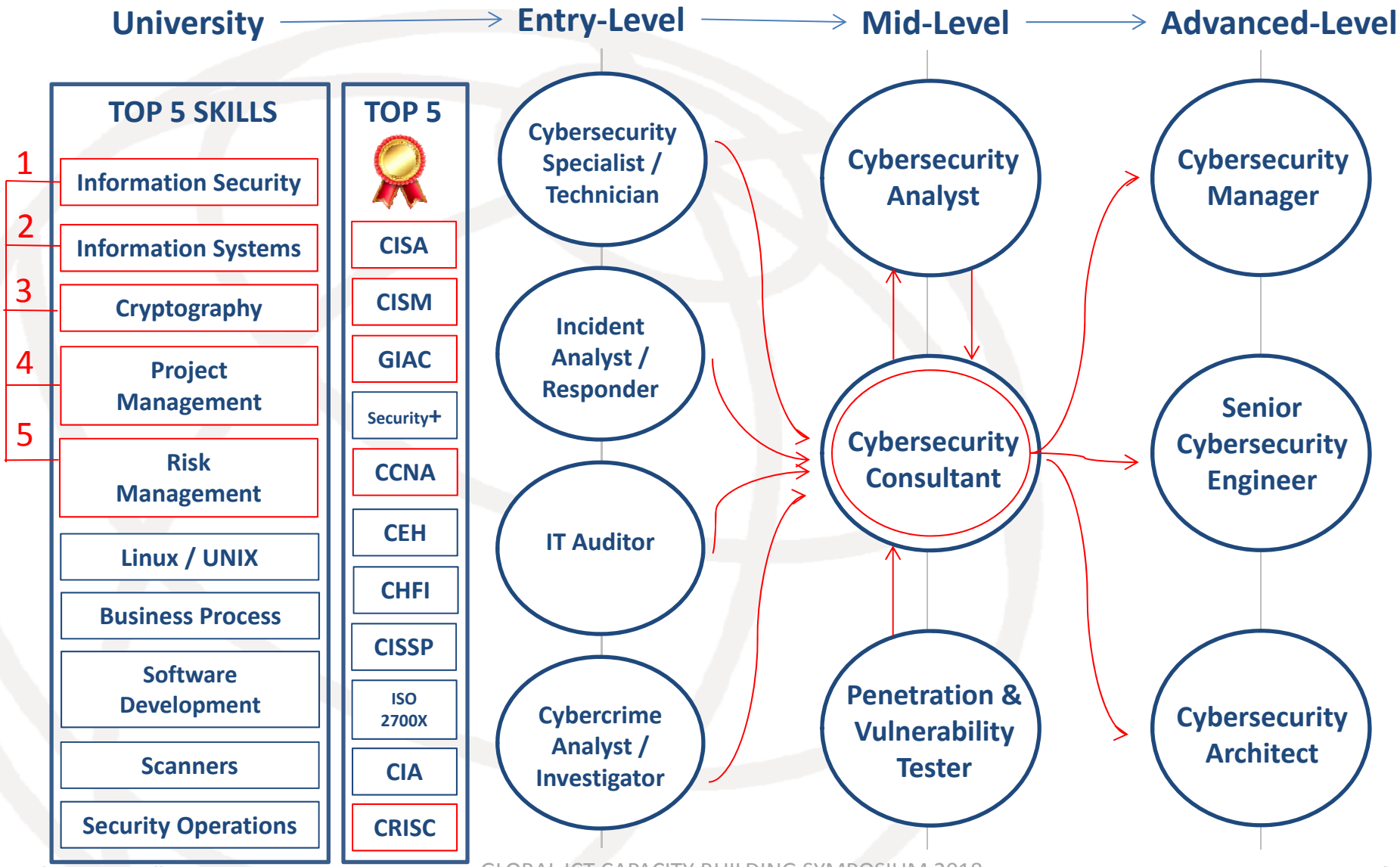
Cybersecurity Career Pathway

Cybercrime Analyst / Investigator



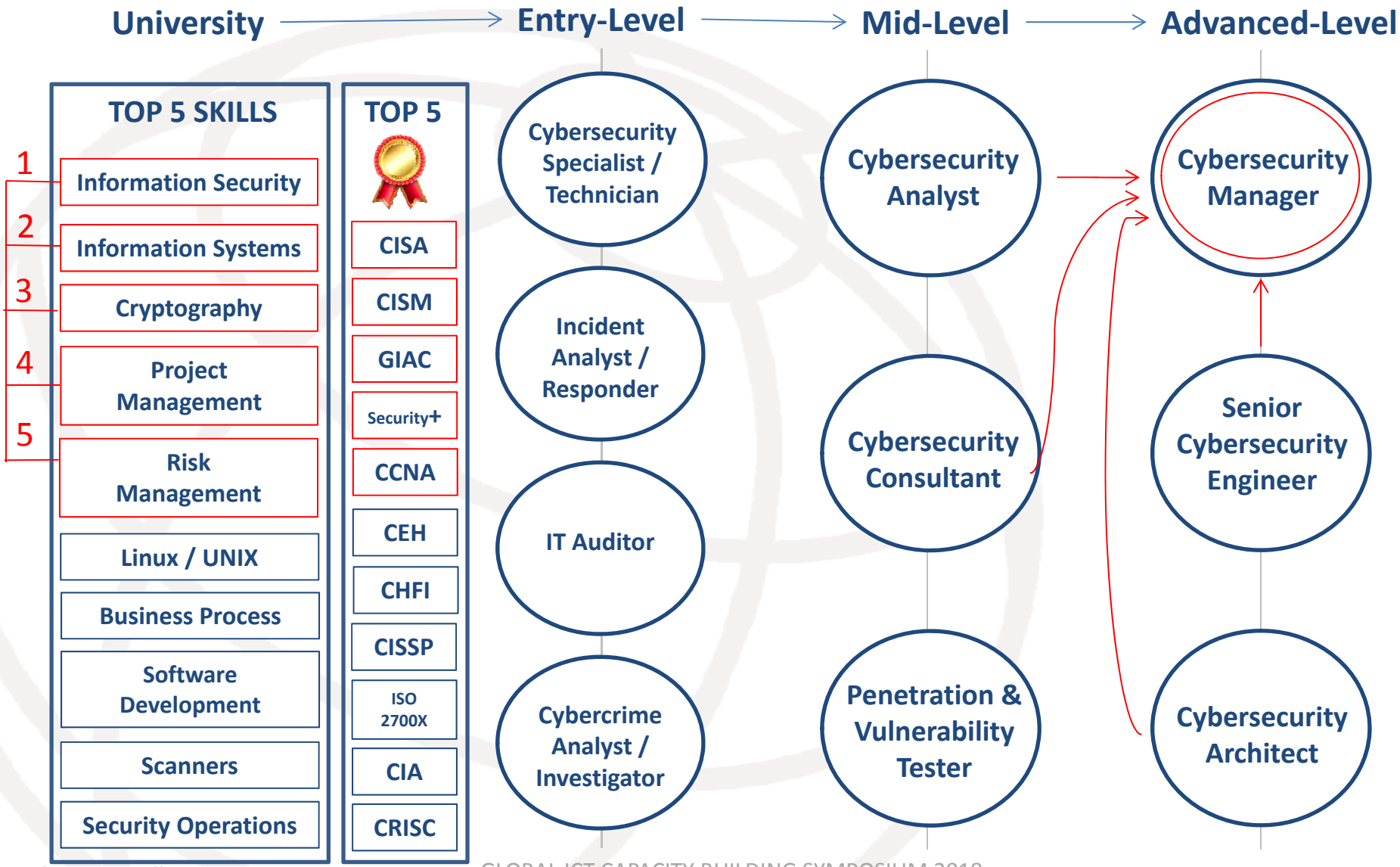
Cybersecurity Career Pathway

Cybersecurity Consultant



Cybersecurity Career Pathway

Cybersecurity Manager



Conclusion

Digital Security Capacity Building

- Digital security is the cornerstone of the digital economy
- Evolution of security: new needs, constraints, trends and challenges
- Digital security domains, required skills and certifications
- Digital security workforce shortage and universities simply aren't in a position to fill the void
- Career pathway starts at the university
- Universities have a big role to play in the solution (update programs, include certifications, university career centres, partnerships with firms, research activities, entrepreneurship, …)
- Make clear and concise cyber security path ways to save the cyber security professions

THANK YOU FOR YOUR ATTENTION

Dr. Eng. Nizar Ben Neji
IT Security Trainer, Consultant and Researcher
PhD in Information and Communication Technologies
nizar.benneji@fsb.rnu.tn /(+216) 99 207 377