

Meeting the Million Person Cyber Deficit

Breakout Session 4A

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Most organizations do not have the people or systems to monitor their networks consistently and to determine how they are being infiltrated.

Security Magazine
Why the Security Talent Gap is the Next Big Crisis
May 2014

Organizations Believe Security is Inadequate

- 30% believe network security skills of infosec staff are inadequate
- 44% believe number of network security staff with strong knowledge in security and networking is inadequate
- 38% believe ability of security staff to keep up with network security changes is inadequate
- 37% believe ability of security staff to keep up with the threat landscape is inadequate
- 47% believe the number of employees dedicated to network security is inadequate

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Global Cybersecurity Skills Shortage

- Demand for cyber professionals will grow by 53% through 2018 (US Bureau of Labor Statistics)
- Currently 1,000 top cyber experts globally. There is a current need for 10,000 – 30,000 experts (Rand Corporation)
- Information security analyst is #8 on 100 Best Jobs. Position will grow at a rate of 36.5% through 2022 (US News and World Report)
- Market for cyber professionals may be growing 12 X faster than US job market as a whole
- India Department of Electronics and Information Technology estimates a need for 500,000 cyber professionals. There are 75,00 to fill this need.
- Australian Information Security Association – there are pockets of cyber leadership but insufficient for the nation's need


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Cybersecurity Market Growth

- The cyber market is expected to grow to \$170B by 2020 at a CAGR of 9.8% from 2015 - 2020
- The hot areas of employment growth are security analytics/SIEM (10%), threat intelligence (10%+), mobile security (18%), and cloud (50%). The cloud market is expected to be worth \$8.7 B by 2019 - IDC.
- US Information security budgets have grown at almost double the rate of IT budgets over the last 2 years (PWC 2015)
- Million dollar plus cyber deals are on the rise. FBR&Co, an investment banking firm indicated that the number of 7 figure cybersecurity deals have increased by 40% year over year.

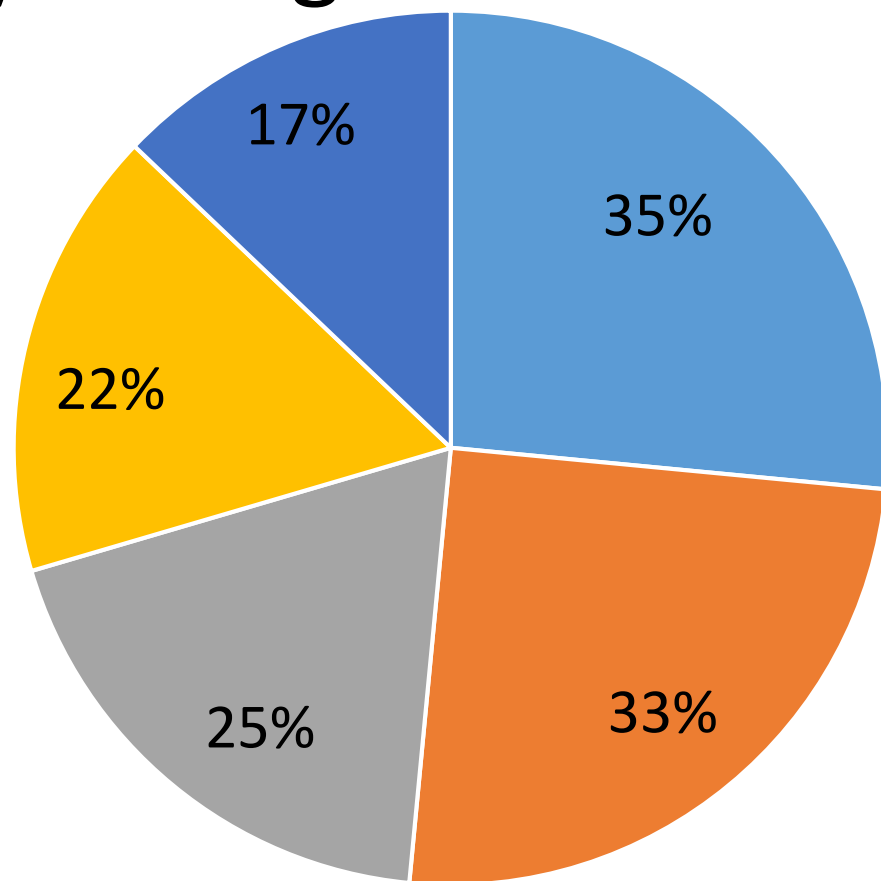
Scarcity Drives Compensation Differences

Median cyber salary reported in countries is at least 2.7 times average wage according to OECD


Jobs in the US pay an average of \$6,500 more than other IT professions which is a 9% premium


In the US the highest paying security job is a lead software engineer at \$233,333 a year which is \$8,000 more annually than the average salary for a CISO


Has a shortage of cybersecurity skills had a negative effect on your organization?








- We have a reduced ability to create new IP for products and services
- We can't maintain adequate staff
- We are a target for hackers who know our lack of cyber strength
- We have suffered reputational damage
- We have lost proprietary data through cyber attacks


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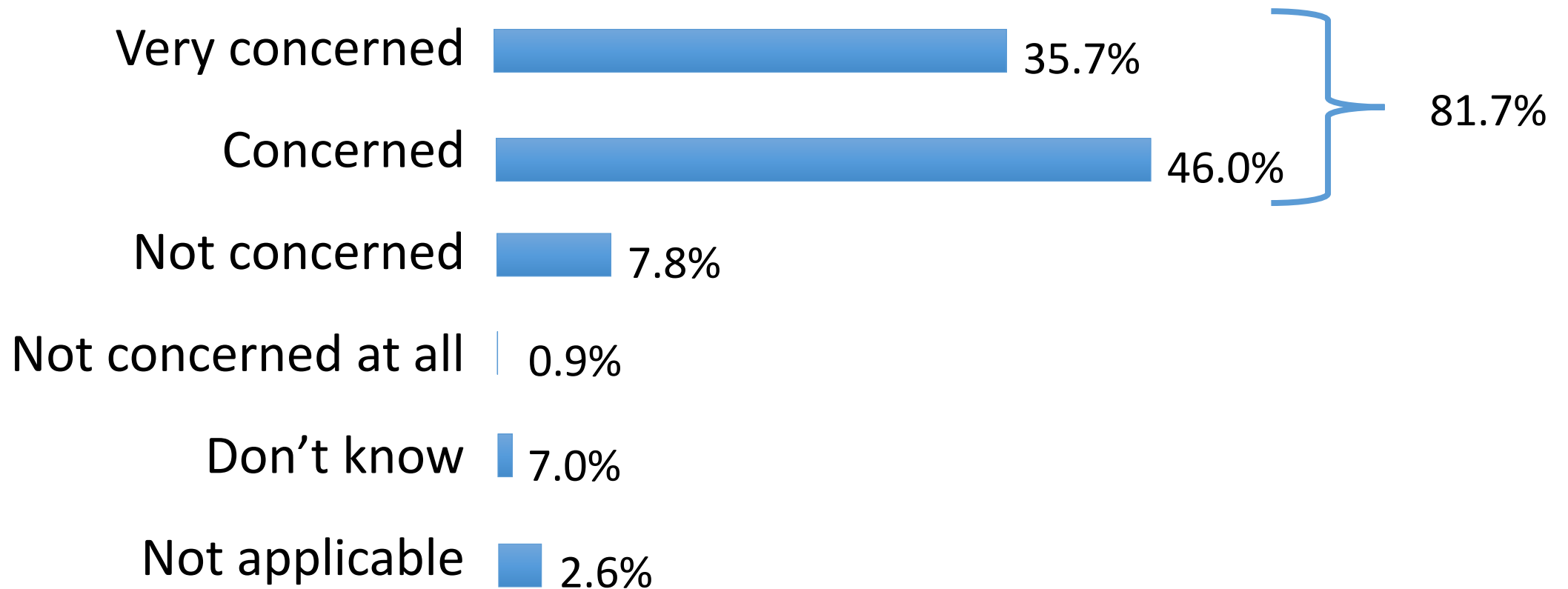

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Level of Board Concern








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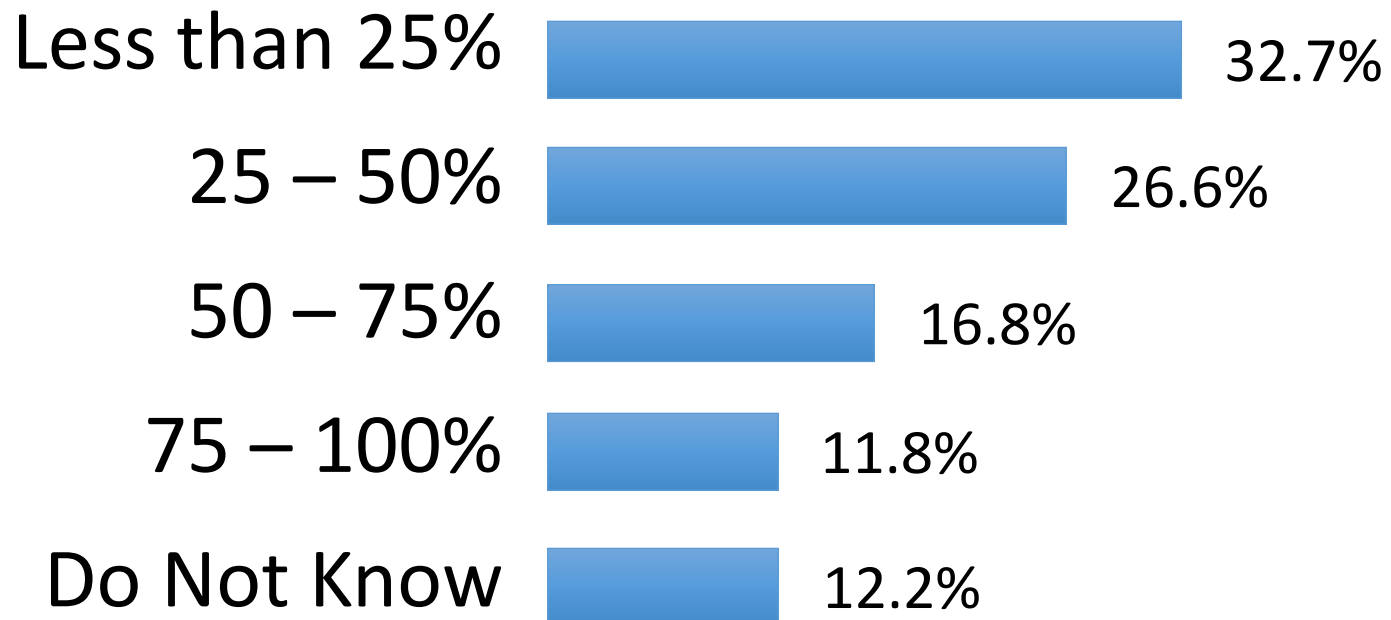
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Applicants Qualified on Hire








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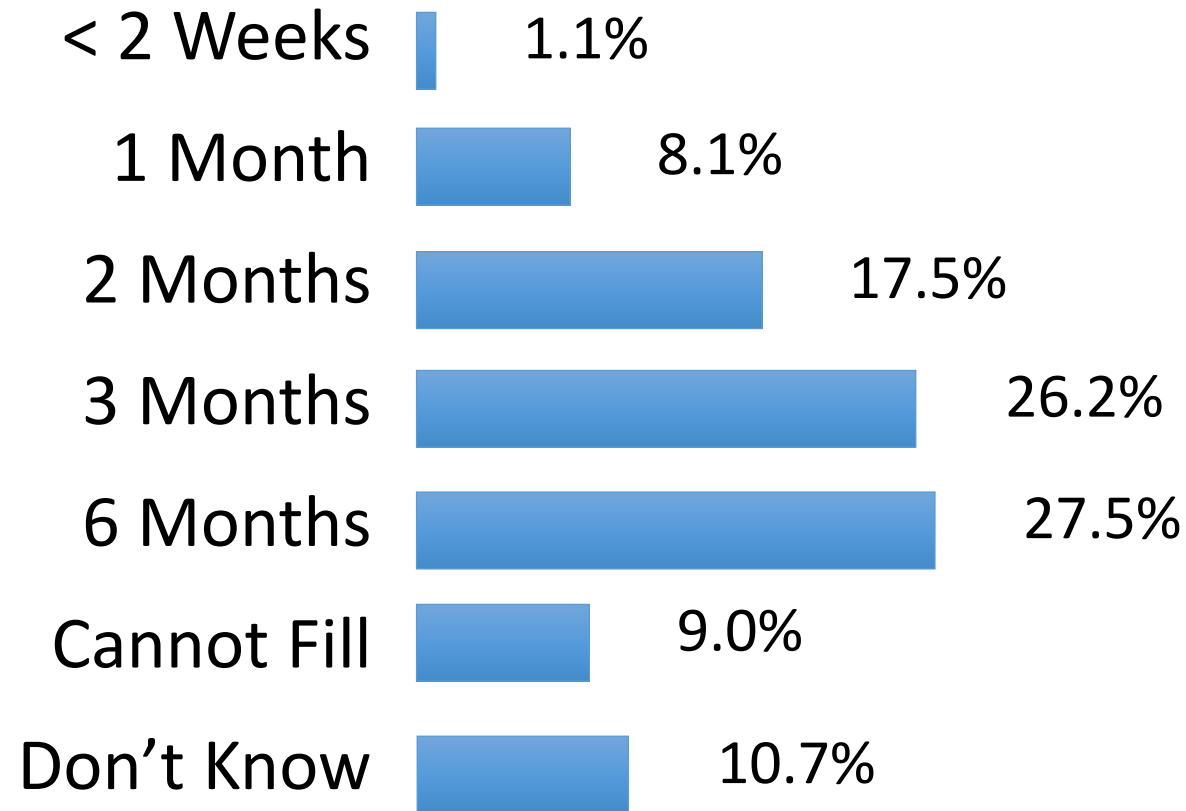
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Time to Fill Open Cyber Positions



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Most Significant Skill Gap









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How Skills Are Developed






On the job training	85.8%	#1
Skilled based training / Performance based testing	38.1%	
Vendor specific tool training	51.9%	#4
Other training & certifications	63.2%	#2
Formal education	16.0%	
Technical training center or 3 rd party trainers	26.7%	
Cyber competitions	5.3%	
Online training / webinars	47.9%	
Self-instruction	58.0%	#3
Not developing skills	7.0%	
Does not need to develop skills	0.9%	
Other	4.8%	


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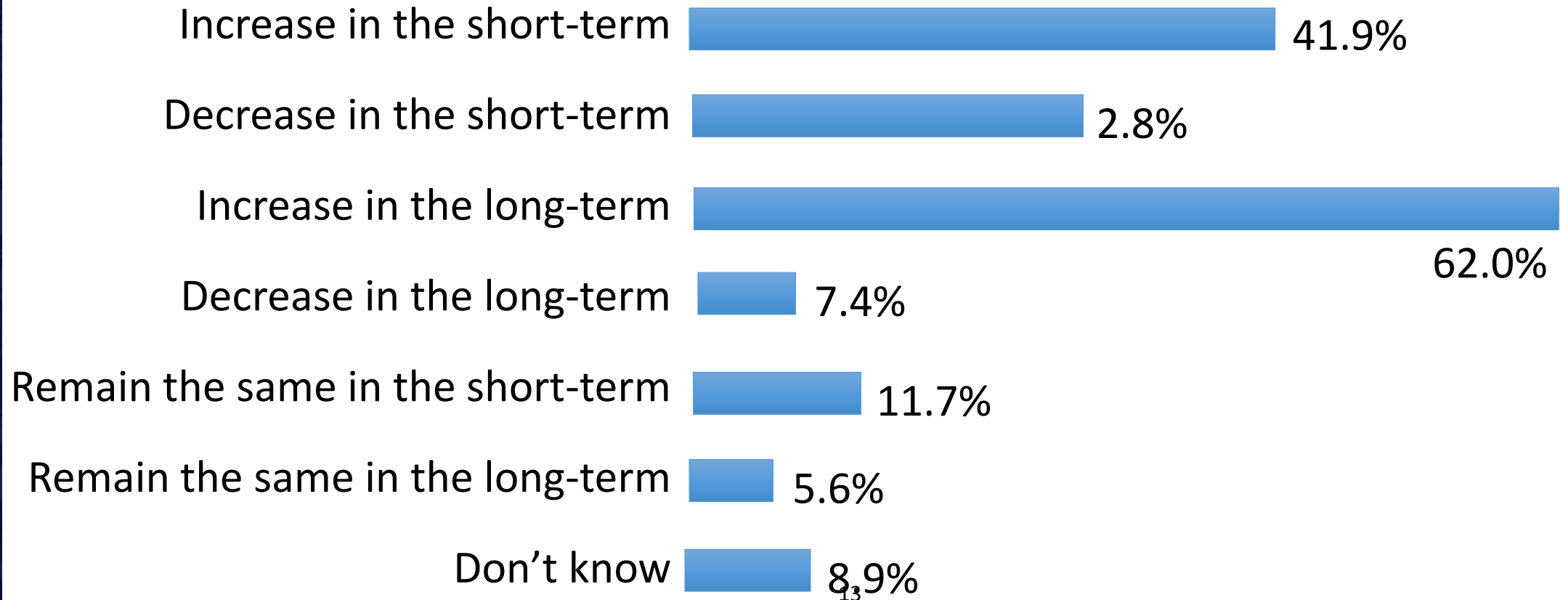

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Artificial Intelligence and Cyber Risk



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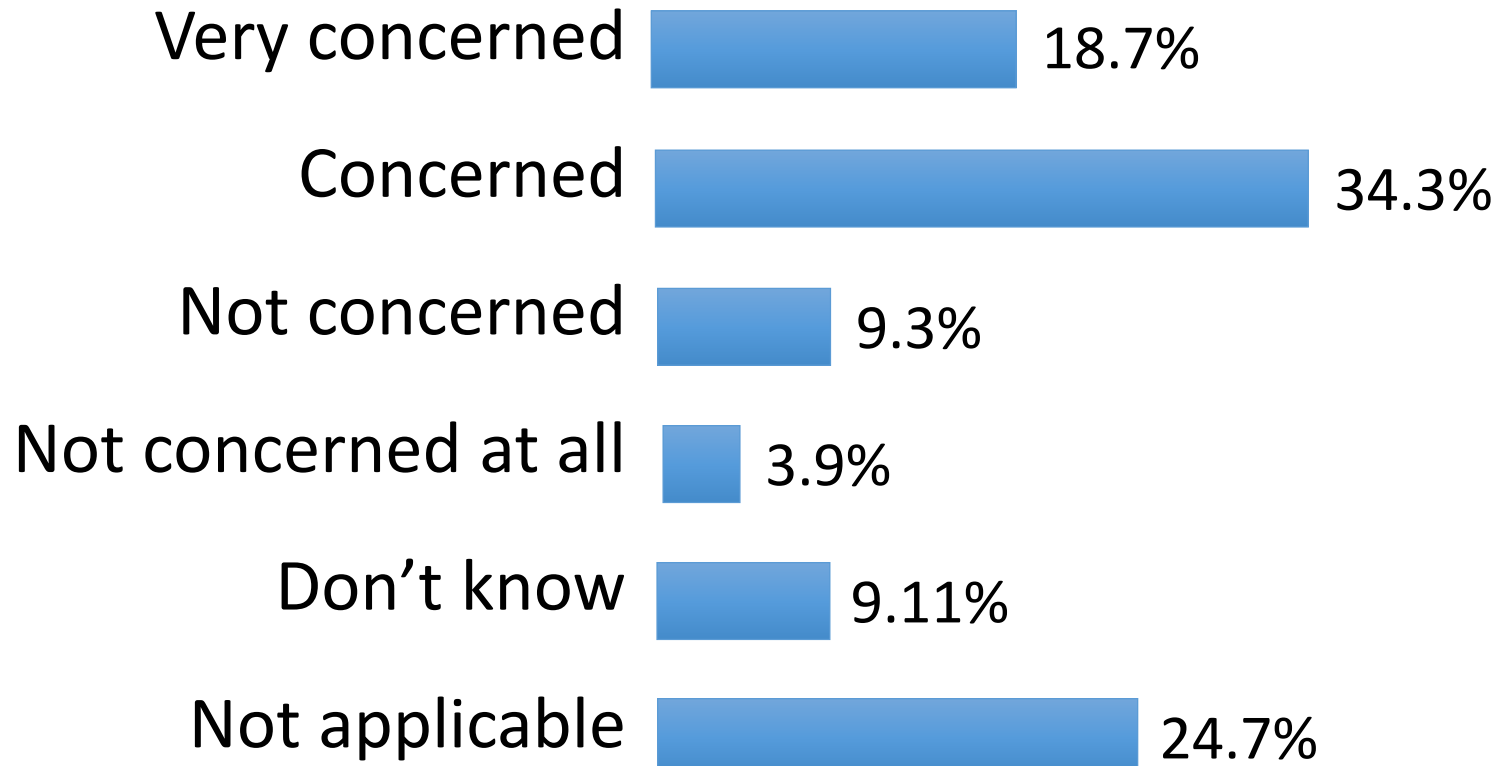
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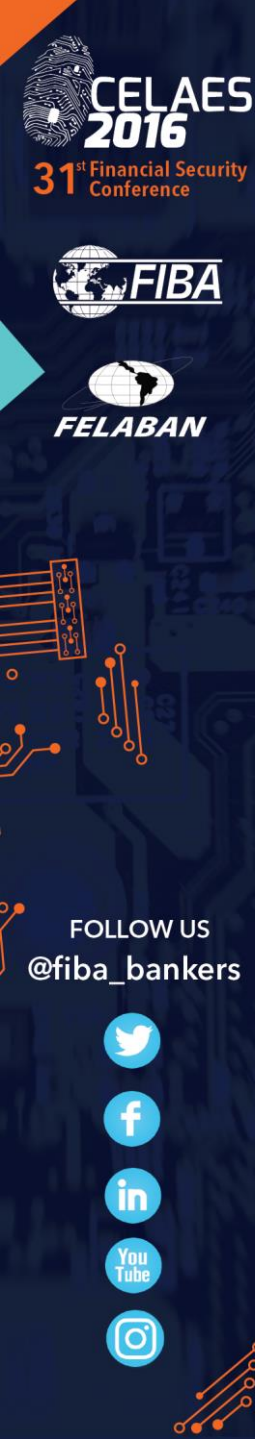
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Concern for Internet of Things Risk





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Challenges in Addressing Skill Shortage

- Cyber is not a clear or advertised career path
- There is no clear entry point
- Junior people need experience to progress to more senior positions
- Need more internships, more junior roles, more mentoring



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Education & Experience Demand

Education


- 61% Bachelor Degree
- 23% Master Degree
- 16% Associate or Lower

Experience


- 17% - 0 to 2 years
- 48% - 3 to 5 years
- 20% - 6 to 8 years
- 15% - 9+ 1



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Top 10 In Demand Jobs


- System and Network Penetration Tester
- Application Penetration Tester
- Security Monitoring and Event Analyst
- Incident Responder
- Counter Intelligence / Insider Threat Analyst
- Risk Assessment Engineer
- Secure Coder and Code Reviewer
- Security Engineer / Architecture & Design
- Security Engineer / Operations
- Advanced Forensics Analyst



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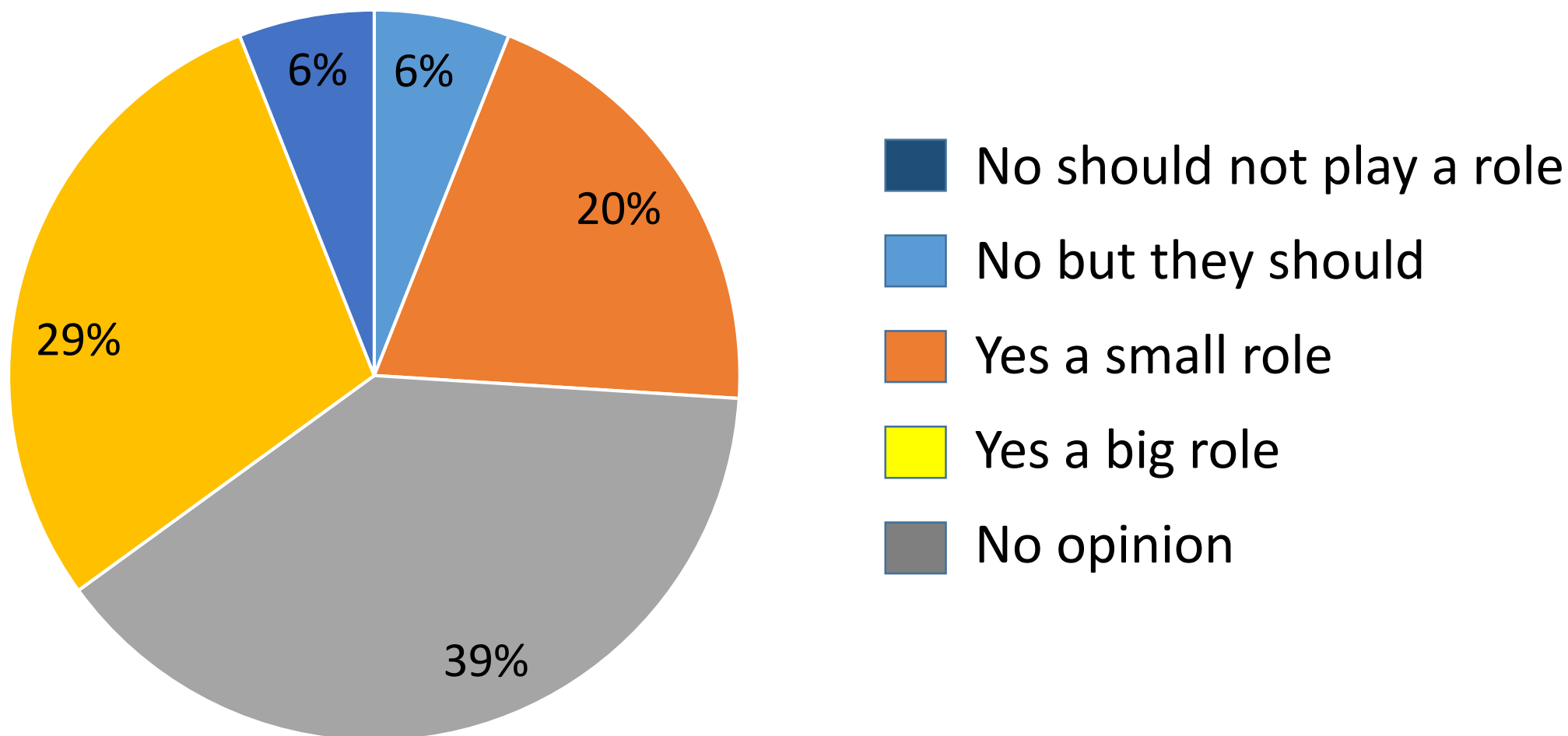


Needed Capabilities of Cyber Professionals

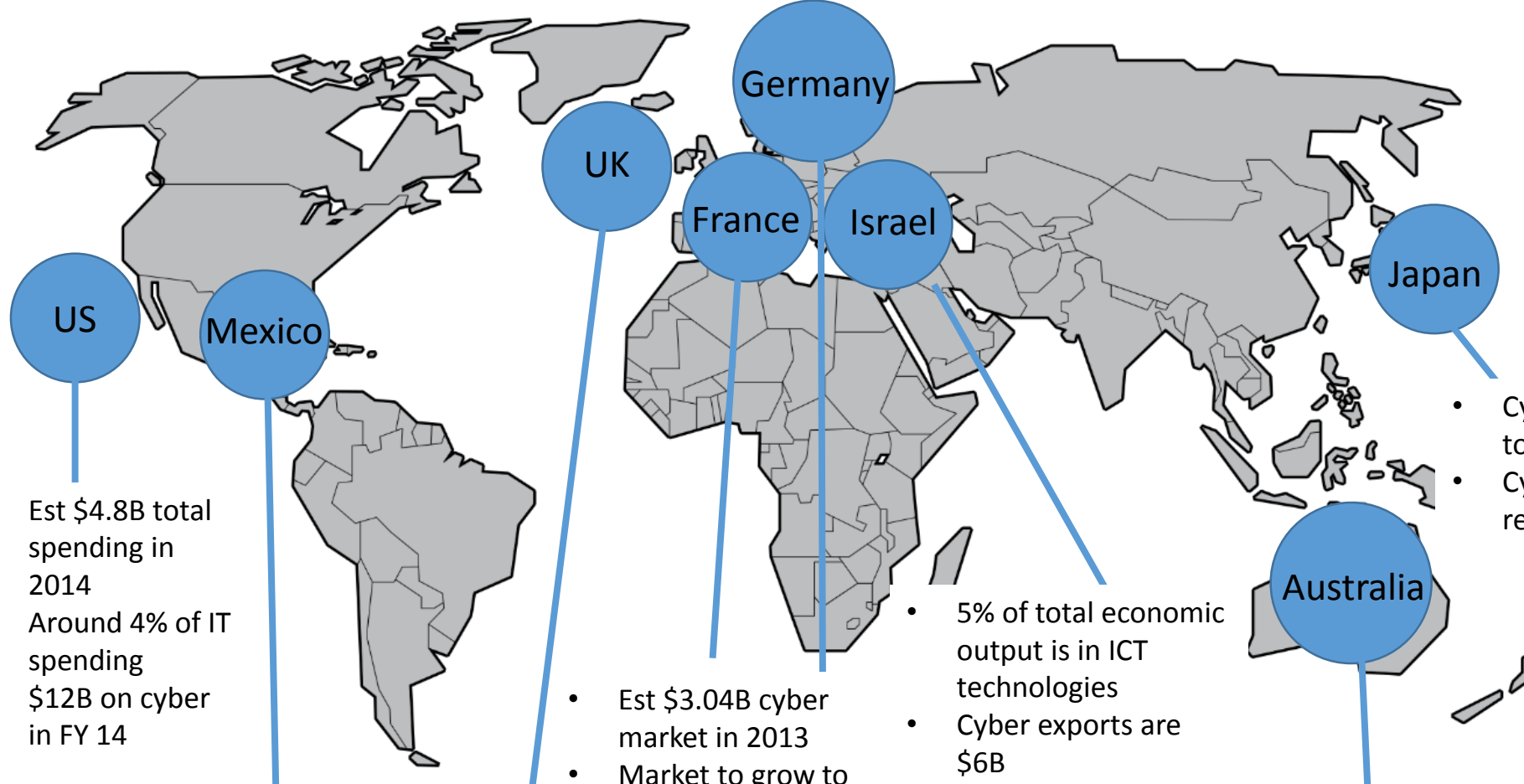
- Broad understanding of the security field (92%)
- Communications skills (91%)
- Technical knowledge (88%)
- Understanding of the latest threats (86%)
- Policy formulation and application (75%)
- Leadership (68%)
- Business Management (57%)
- Project management (55%)
- Legal knowledge (42%)

(ISC)2 Global Information Security workforce Study

Do national hacking competitions (e.g. capture the flag competitions) help develop cybersecurity skills in your country?



“If organizations don’t have employees with the skills needed to fight back at cyber-criminals we will be fighting a losing battle. This will ultimately lead to fewer jobs all round as business suffers the repercussions of cybercrime. NATO



- Est \$4.8B total spending in 2014
- Around 4% of IT spending
- \$12B on cyber in FY 14

- Est \$1.3B total spending in 2014

- Est total cyber market in 2014 was \$3.9B


- Est \$3.04B cyber market in 2013
- Market to grow to \$4.75B in 2018

- Est \$3.71B Cyber market in 2013
- Market to grow to \$5.88 in 2018


- 5% of total economic output is in ICT technologies
- Cyber exports are \$6B

- Est \$590M cyber market revenue in 2012
- Cyber market expected to grow to \$1.6B in 2019


- Cyber market estimated to grow by 19% in 2016
- Cyber market should reach \$2.7B in 2016



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What we have is a large patchwork of qualifications which due to a lack of industry regulation means there can be some very low barriers to entry for people proclaiming to be cybersecurity experts






Cyber Market Chaos

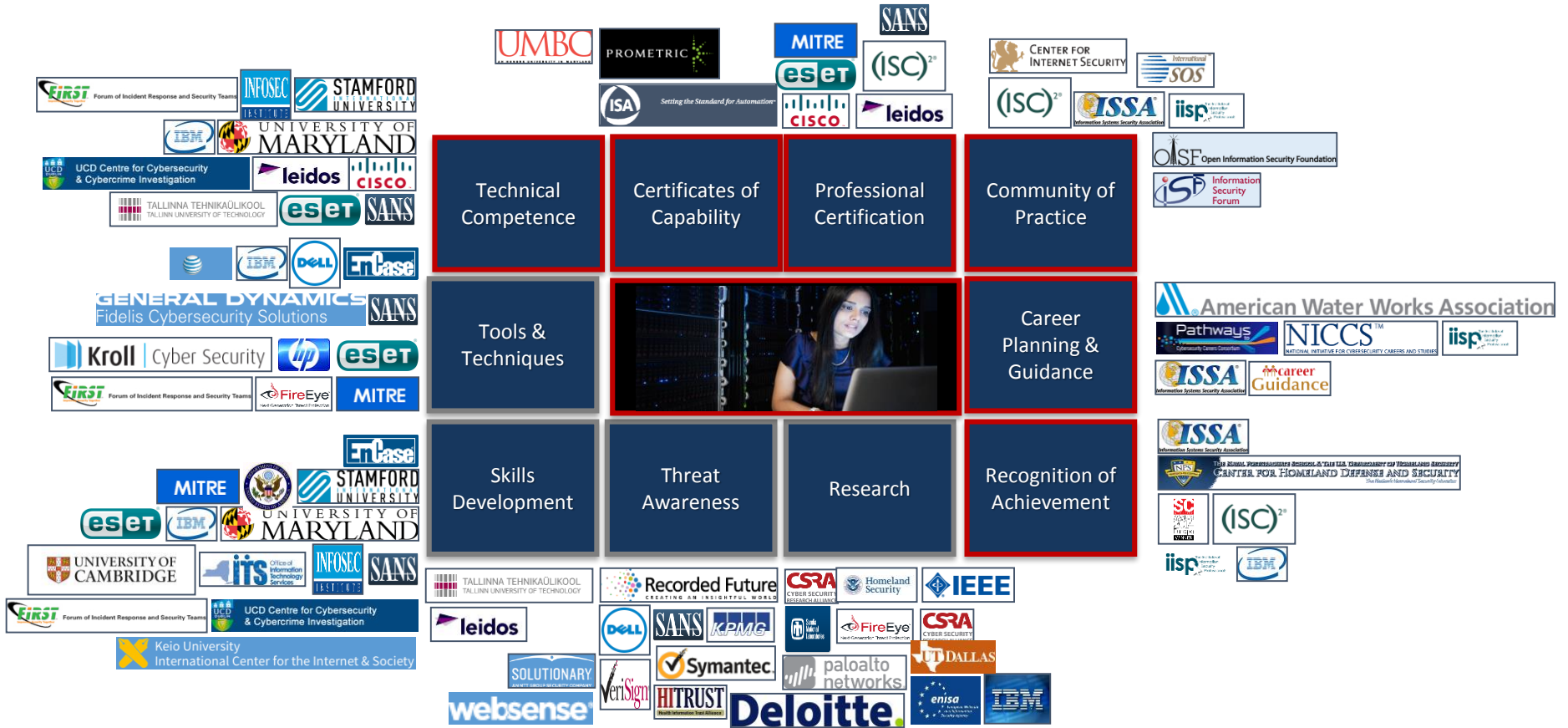
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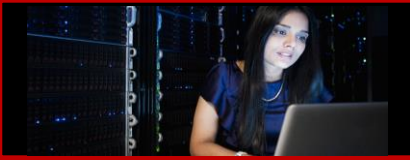

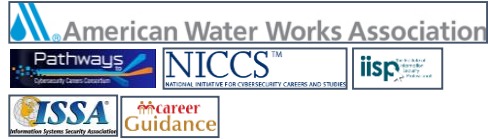




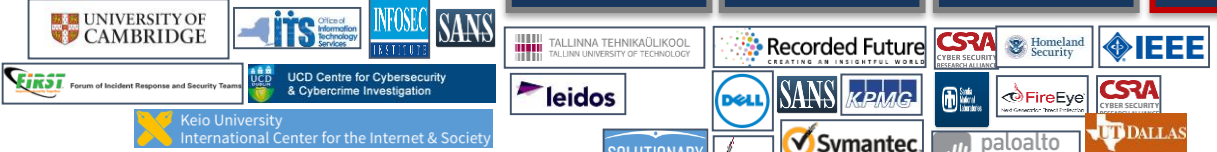

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 <p>Technical Competence</p>	 <p>Certificates of Capability</p>	 <p>Professional Certification</p>	 <p>Community of Practice</p>
 <p>Tools & Techniques</p>		 <p>Career Planning & Guidance</p>	 <p>American Water Works Association</p>
 <p>Skills Development</p>	 <p>Threat Awareness</p>	 <p>Research</p>	 <p>Recognition of Achievement</p>
 <p>websense</p>	 <p>Deloitte</p>		



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Diversity of Cyber Certification Requirements

Director Level	CISSP, CISM, CISA, CEH, SCSIH, PMP, ITIL, GIAC, CIPP, PCI
Manager Level	CISSP, CISM, CISA, GIAC, PMP, SECURITY+, PCI, CEH, MCSE, SSCP, GSLC, GCIH, GPEN, GSEC, CCNP, COBIT, CGEIT, CRISC, CCNA, GISF, MCP, CAP, SANS, OSCP
Engineer Level	CISSP, Security+, CEH, CISA, GIAC, CCNA, CISM, GSEC, GCFA, CCSP, CCNP, CCSA, CISCO, CAP, CSA, OWASP
Analyst Level	CISSP, CISM, GSEC, GCIA, CEH, GIAC, CISA, GREM, GCFA, GPEN, GCCF, CCNA, CCSP, CRISC, GCED, GCFW, GISP, GSLC, SANS, NET+

Certifications and Areas of Coverage

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	IDENTIFY						PROTECT						DETECT			RESPOND					RECOVER		
	Asset Management	Business Environment	Governance	Risk Assessment	Risk Management	Risk Mgt. Strategy	Access Control	Awareness & Training	Data Security	IP Processes & Procedures	Maintenance	Protective Tech	Anomalies & Events	Continuous Monitoring	Detection Processes	Response Planning	Communications	Analysis	Mitigation	Improvements	Recovery Planning	Improvements	Communications
CREST (2)				■												■		■					
EC-Council (11)				■	■		■									■					■		
GIAC (11)				■			■				■	■	■										
ISACA (1)	■			■	■		■		■	■	■	■	■	■	■	■			■	■	■		
ISA / IEG (5)				■	■					■	■	■	■		■	■					■		
ISC2 (1)	■		■	■	■		■		■		■	■	■			■		■	■		■	■	
Mile2 (13)		■	■	■	■		■		■	■		■	■			■					■		
Offensive Security (5)					■																		

Thank You

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