
 **Cyber-SHIP Lab**
SECURING MARITIME

 **Atlantic Council**

The Human Element

Strategies to Combat the Maritime Cyber Workforce Problem

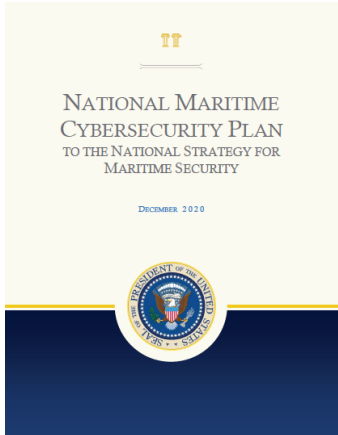
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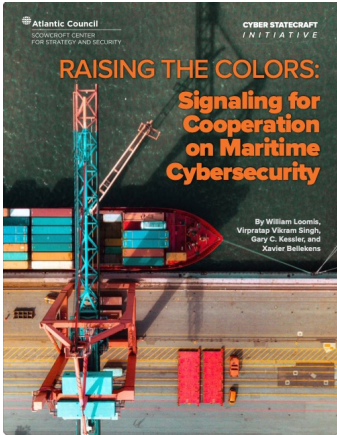
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Why Me?



NATIONAL MARITIME
CYBERSECURITY PLAN
TO THE NATIONAL STRATEGY FOR
MARITIME SECURITY
DECEMBER 2020

→



Atlantic Council
SCOWCRAFT CENTER
FOR STRATEGY AND SECURITY

**RAISING THE COLORS:
Signaling for
Cooperation
on Maritime
Cybersecurity**

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A Starting Point...

- "Anyone who thinks that technology can solve their problem does not understand technology or their problem." (A paraphrase by GCK)
- Cyberdefense is as much a people problem as it is a problem of technology
- People are the ~~weakest~~ most misunderstood link in cybersecurity

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Why Focus on Workforce?

- Defining the maritime cyber workforce
 - Cybersecurity (i.e., infosec) practitioners
 - Cybersecurity ≠ information technology
 - Users of information (i.e., everyone)
- We need to hire, train, educate, and find the practitioners...
 - ...but why are the users still so unaware?

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What is the Cyber Workforce?

- In the U.S. — 1M cybersecurity workers and 715K open positions (11/2021)
 - We need incident responders and infosec specialists
 - We also need multi-disciplinary skills: lawyers, policy experts, communications, ...
- Within the MTS environment...
 - Not enough maritime professionals understand cyber, not enough people who understand cyber work in the maritime industry
 - *Does that matter?*



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Workforce Lifecycle

- The challenge isn't just recruitment, but also retention, training, awareness, etc.
 - Talent pipelines/early career – academic training, curriculums, etc.
 - Mid-career talent management – mid-career talent management and workforce challenges, training/upskilling programs, exchange programs, retention, **mental health support**, etc.
 - Cyber awareness/hygiene – for ecosystem more broadly

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Some Examples...

- US Coast Guard
 - Marine Industry Training Program
 - AUXCYBER
- Idaho National Laboratory's OT Defender fellowship
 - Focus on operational technology within the energy sector
- United Kingdom's Knowledge Transfer Partnership
 - Knowledge transfer in many aspects of business
- Royal Caribbean Cruise Lines
 - Training and building internal incident response teams
- Maritime and Port Authority of Singapore
 - Maritime cyber and cyber-awareness training

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Where Do We Get Cyberdefenders?

- We must escape the Tyranny of the Computer Science Department
 - Why do we believe that only computer scientists can perform cybersecurity?
 - Does a cybersecurity practitioner need calculus and physics?
 - Do they need programming?
- Why has the hacker community run circles around the computer science community for the last 30 years?



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Creating a Culture of Cybersafety

- We are writing the same crappy code today as we did 25 years ago?
 - Remote code execution
 - Privilege escalation
 - Security feature bypass
 - SQL injection
 - Buffer overflow
 - Lack of input validation
- Does mandatory, one-hour, annual cybersecurity training promote a cybersafety culture?
 - When is your annual Word training?



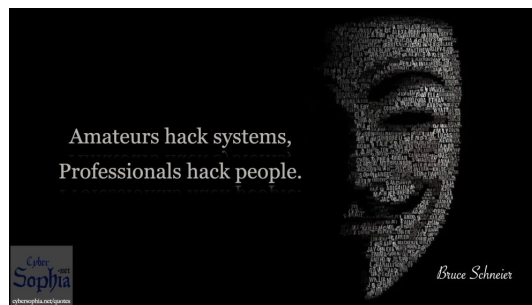
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We Need...

- Creativity
- Imagination
- Curiosity
- Problem solving
- Tech savvy
- The ability to think like a Bad Guy
 - And a moral compass!



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Keeping the Workforce Informed

- *Information sharing*
 - Internet Worm, CERT/CC, L0pht Heavy Industries, NTBUGTRAQ, MS-ISAC, Singapore IFC
 - Need to share knowledge rather than intel
 - Focus on protecting the community rather than the vendor
- *The open sharing vs. closed sharing debate continues...*

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Parting Thoughts



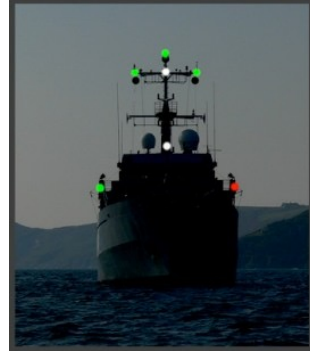
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Threats and Vulnerabilities and Exploits... Oh, my!

- Don't confuse *threat* with *vulnerability* or *threat actor*
 - Prioritize your defense strategy
- What is a *vulnerability*?
- What is an *exploit*?
- What is a *threat*?
- Who are the *threat actors*?



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[See Rule 27\(f\)...](#)

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