From Cyber Security to Cyber Resilience:
The Essential Role of the Engineering Community

Engineering Change Lab – USA Virtual Summit
March 19, 2024

Program Description

In a world in which ever more complex digital systems intertwine with infrastructure and technology-enabled resources and services, cyber threats and dangers are outpacing societies' ability to effectively prevent and manage them.

A new, essential role for the engineering community is emerging -- *creation and stewardship of cyber-resilient critical infrastructure on behalf of society.* This virtual summit will explore the nature of the 'step change' required for the engineering community to fully embrace this leadership role.

- How can the engineering community move beyond cyber security to cyber resilience for national critical infrastructure and larger socio-technical systems?
- What mind shifts and new cyber-capabilities will be necessary to fulfill this leadership role on behalf of society?
- What major barriers are present that could constrain a proactive response to the multi-faceted cyber-threat environment society faces?
- How should the engineering community respond to an emerging "digital social contract" to create trustworthy technologies for society?
- How might this commitment to cyber resilient technology and infrastructure alter the engineering standard of care? What new macro-ethical dilemmas are present?
- What new alliances, partnerships, and collaborations within and beyond engineering will be required to fulfill this leadership role?

Pre-Summit Readings

- *The Global Risks Report 2022, 17ᵗʰ Edition, pages 45 – 56*, World Economic Forum, 2022, https://www.weforum.org/publications/global-risks-report-2022/

- *Countering Cyber Sabotage: Introducing Consequence-Driven, Cyber-Informed Engineering (CCE),* Andrew A. Bochman and Sarah Freeman, CRC Press, 2021.
  - *Selected Chapters:*
    - *Introduction (pages xxxi – xxxvi)*
    - *Chapter 1 through Chapter 3 (pages 1 – 73)*
    - *Chapter 9 (pages 165 – 177)*

- *In the impending cyberwar, engineers must be on the front lines*, Brad Allenby and Mikhail V. Chester, ASCE Perspective, 11/7/19, https://www.asce.org/publications-and-news/civil-engineering-source/article/2019/11/07/in-the-impending-cyberwar-engineers-must-be-on-the-front-lines

- *Cybersecurity Landscape Facing Engineering and Construction (Rev. 1),* Bob Prieto, ASCE Industry Leaders Council Whitepaper.

Preliminary Agenda

10:00 - 10:10   INTRODUCTION

- *Welcome*
- *Session Objectives & Agenda*
- *Virtual Logistics & Ground Rules*

10:10 - 10:30   EXERCISE I: CYBER THREATS TO CRITICAL INFRASTRUCTURE

10:30 - 10:35   VIDEO: THE AURORA EXPERIMENT

10:35 - 10:55   PROVOCATION

- *Jonathan Grant, National Grid*

10:55 - 11:00   MINI-BREAK

11:00 - 11:35   EXERCISE II: CYBER SECURITY AND ENGINEERING CULTURE

11:35 - 12:15   PROVOCATIONS
- *Chris Walcutt, Direct Defense*
- *Andrew Bochman, Idaho National Laboratory*

12:15 - 12:30   BREAK

12:30 - 1:05   EXERCISE III: MACROETHICS OF CYBER SECURITY & ENGINEERING PRACTICE

1:05 - 1:45   PROVOCATIONS
- *Mikhail Chester, Arizona State University*

1:45 - 1:50   MINI-BREAK

1:50 - 2:10   PROVOCATION
- *Andre Ristaino, International Society of Automation*

2:10 - 2:50   EXERCISE IV: THE ESSENTIAL ROLE OF THE ENGINEERING COMMUNITY IN CYBER SECURITY AND CYBER RESILIENCE

2:50 - 3:00   CLOSING REMARKS

- *Next Steps*
- *Closing Comments*

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