(IC)$^3$ brings together thought leaders from industry, academia and government with MIT faculty, researchers and students to address strategy, management, governance and organization of cybersecurity of critical infrastructure using an interdisciplinary approach.

Reducing hospital vulnerabilities to cyber-incidents

Recent surveys on healthcare and cybersecurity show that only about half of healthcare providers feel they are ready to defend themselves against cyber-attacks. Simultaneously, healthcare organizations are finding themselves at the receiving end of an average 11 attacks per year—and likely many more attacks that are never detected.

Building cybersecurity capabilities is imperative for healthcare organizations, but they have potential challenges. These include but are not limited to: a rapid transition to electronic health records, ubiquitous connected medical devices, and insufficient regulations.

This research examines the dynamics of cybersecurity capability development in healthcare organizations, particularly hospitals. By developing a system dynamics model, the (IC)$^3$ team aims to understand the dynamics of building cybersecurity capabilities and the challenges that hospitals deal with.

Our initial results show that the required strong focus on HIPAA compliance has created a shortfall between the actual level of cybersecurity capabilities required to build a secure organization and the target level required by HIPAA. The Healthcare Capability Development model can help simulate the consequences – both intended and unintended – of the behaviors and choices that stakeholders such as hospital executives make around developing capabilities. Additionally, using simulation analysis can help demonstrate decision biases that managers may exhibit. Better understanding decision consequences can help healthcare IT and security professionals better build cyber-resilient organizations.

**IMPACT:** Assist health care leaders to better understand the range of outcomes resulting from strategic decisions of cybersecurity capability development, so that they can better reduce the vulnerabilities that healthcare organizations have today.

(IC)$^3$ welcomes funding from sponsors for general support of the Consortium research, and from organizations interested in funding specific research topics. All sponsors receive invitations to (IC)$^3$ events, websites, newsletters, and other Consortium activities.

For more information, contact:
- Dr. Stuart Madnick • Professor and Director • smadnick@mit.edu
- Dr. Michael Siegel • Director • msiegel@mit.edu
- Dr. Keri Pearlson • Executive Director • kerip@mit.edu