

Ensuring Cyber-Physical Security in the Digital Built Environment

Emma Boakes

Why is this research important?

There is a need for organisations to develop processes that encompass cyber-physical security. Cyber-physical security concerns vulnerabilities in cyber security that can be exploited to target physical security, and vice versa.

There are already several documented instances of blended attacks:

- **Cyber attack on a physical system: Lappeenranta, Finland, 2017.**
Distributed Denial of Service attack causes heating systems to go offline, leaving residents without heating during the Finnish winter.
- **Cyber attack using physical systems: Target, US, 2014.**
Cyber attack via the Heating, Air Conditioning and Ventilation system leads to the theft of details from 40 million credit cards.
- **Physical security enabling cyber attack: Sony, 2014.**
Physical access and social engineering allegedly facilitated the hack. Confidential data, including unreleased films and personal employee information, was stolen and leaked.

What are the research aims and methods?

This research aims to understand how cyber and physical security currently converge within organisations, whether there is a disparity in language, policy and recognition of threat, and what barriers and challenges there are to collaboration.

A **user-centred design** approach, using **mixed methods** will be adopted that will include interviews, focus groups and questionnaires

What are the potential research outputs?

This research aims to develop a relevant, useful and usable intervention to facilitate effective collaboration, for example:

- **Scenarios** to provoke collaboration, or for tabletop or red team testing.
- **Matrix** of threat actors and capabilities to demonstrate differences between cyber and physical security perspectives.
- **'How to' guide** on steps to converge physical and cyber security.

How might physical security be compromised by inadequate cyber security throughout the development lifecycle of a building?

