

# 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?

