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| A picture of a winding road and trees  Model AB Building Test Bench  WP 8 Cybersecurity | Abstract  [Draw your reader in with an engaging abstract. It is typically a short summary of the document. When you’re ready to add your content, just click here and start typing.]  Walter Bassage  The University of Sheffield |

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Introduction

In our endeavour to conduct accurate and realistic research into the cyber security of an Active Building environment, we design and built a model of an active building that would encompass key systems that could be scaled down but keep a similar level of functionality allowing for testing and scenarios to be conducted with results and outcomes being of a similar nature to the full-scale counterpart. The AB model focuses on a singular floor but includes both base build system (landlord) and fit out system (tenet), meaning the simulation is not locked to one floor and if need be additional floors could be added and adjusted for different scenarios. In addition to the modularity both system works independently but can share information on usage from the singular offices such as flow metering and HVAC cooling and heating requests. For this model we also took the liberty to incorporate multiple network technologies into the building including ethernet, Wi-Fi, LoRa (If signal permitting) and the option for 5G to be added later. This document will outline the functions present in the systems and how base build and fit out systems are system of systems and what that means in the form of data transition and control over these sub-systems.

# Development

The model development had its initial designs taken from documentation provided by ABC looking at how the two systems would be active in an active building and how they may overlap or where systems should remain independent from one another. The development didn’t solely focus on the security aspect but that of a full system that would have security methods and protocols applied and they too could vary based on scenarios or research targets. Development can be broken into four key section the application, hardware, building, and network. In these sections we will outline d

## Application

### **Base Build Systems**

#### Main Controller

#### Lighting

#### Lift Control

#### Security

#### HVAC

#### Smart Energy

#### Flow Metering

#### Miscellaneous Functions

### **Fit Out Systems**

#### Main Controller

#### Lighting

#### Local HVAC

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#### A/V

#### Room Booking

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## Hardware

## Building

## Networks

# Components

# Research