

Designing a Smartphone Application for Identification of Network Devices

Ebba Busch and Richard Magnusson

Lund, May 2019

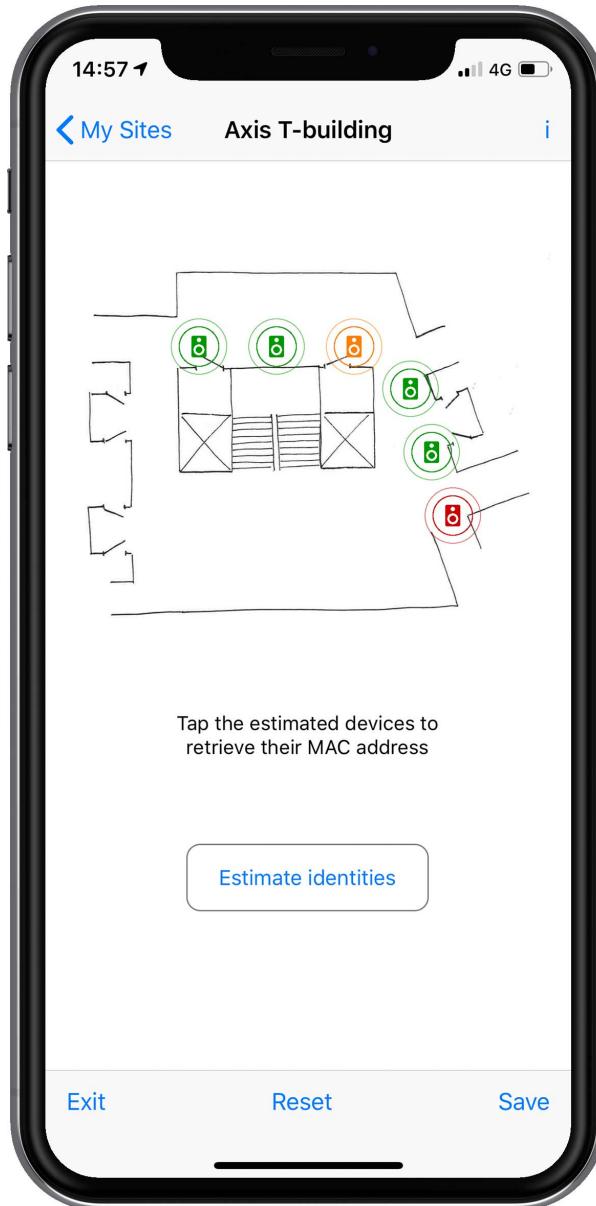
Today, an increasing number of physical devices are connected to the internet, such as home entertainment systems or home lighting. In home environments, devices may be plugged in to the network one at a time, discovered by a smartphone app and given a name such as *living room TV* or *kitchen speaker*. However, for a company which has internet connected speakers in every room of a building, how does one identify many individual speakers when you have not yet given them names?

In our master thesis we have, together with Axis Communications, investigated how an iPhone application could help installers of Axis network speakers to identify devices mounted in inaccessible places. A prototype of such an application was developed and evaluated during the thesis work.

To achieve the goal of identifying inaccessible network devices we made use of a Bluetooth technology called Bluetooth Low Energy (BLE). BLE is a wireless Bluetooth technology operating on low power, which allows the Bluetooth transmitters to run on small batteries.

The proposed solution consists of an iPhone app and BLE transmitters, which are to be placed on the speakers during manufacturing. When the iPhone app is running, it listens to the BLE transmitters. An installer can run the installation app in order to determine the identities of the speakers.

We evaluated how well the BLE technology performed for the specified purpose and designed an easy-to-use application for performing the identification. We saw that BLE has some potential in providing the identification data, however issues with determining what network device sent which identity information remains to be solved.



Screen shot from the implemented prototype

After an evaluation, we concluded that the prototype was intuitive to use and that it provided a suitable number of features. Our test users liked the look and feel of the application but to further increase the usability, more extensive instructions of usage must be added to the application.