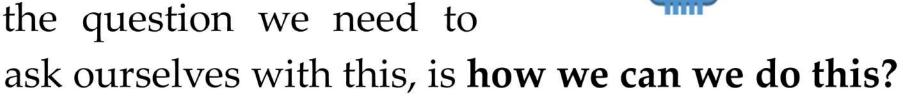
# BleiD: A platform for controlling loT

# Jeroen Ceyssens

## Introduction

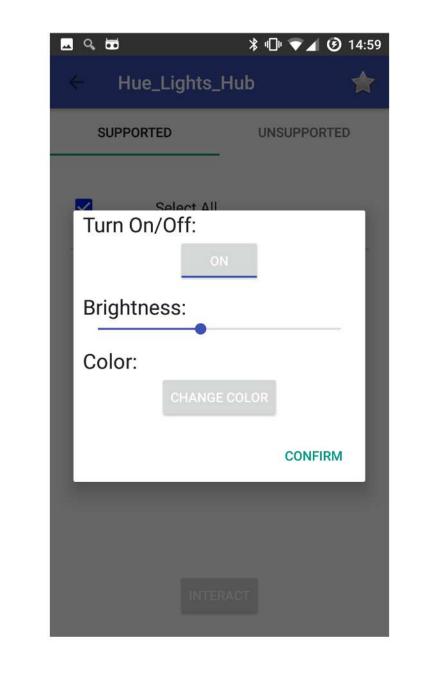
- The amount of IoT devices keeps increasing at a very high rate, which makes supporting all of these devices harder by the minute.
- Compatibility problems like these need to be avoided as much as possible. But the question we need to



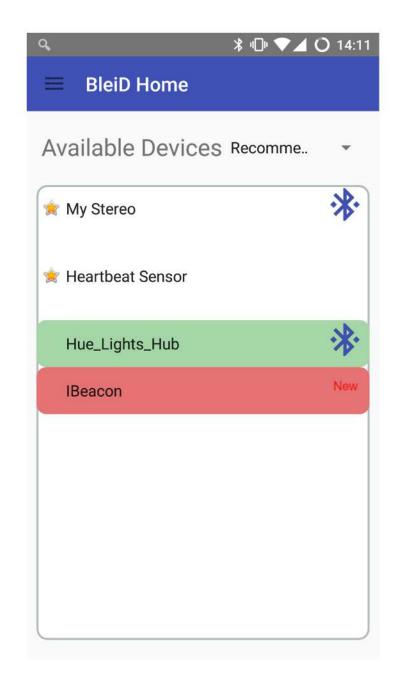
- Some examples of techniques that try to tackle this problem are **Bluewave**, **Wi-Fi Aware and IBeacon**. The problem with these techniques is the fact that they rely on other applications or services to provide the actual interaction needed.
- This is where our system the **BleiD** ("Bluetooth Low Energy Interaction Device") comes in. By letting a separate device **communicate** with all the other devices, **detect** their services and provide the appropriate **interaction**, compatibility issues

### Results

Thanks to the system we have built, the Android application no longer needs to know how the devices connected to the BleiD work. The Bleid provides the connection and interaction with the devices and the Android application can both manage, edit and control them.

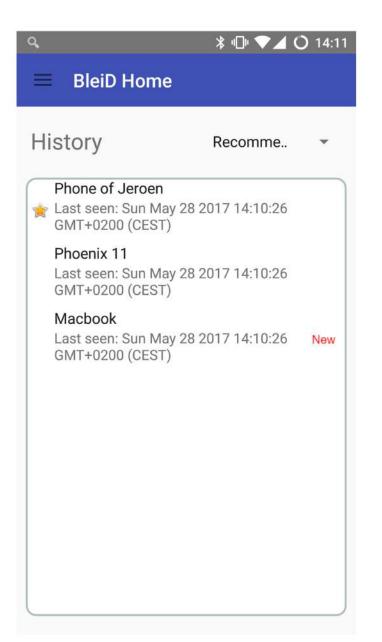


The World of IoT



The BleiD is currently limited to using Bluetooth Low Energy for the connecting and detecting of devices, but other techniques can be supported in a similar manner. It's not a matter of "if" this can be done, but rather "when" this will be done.

An accounting system has been made for the BleiD that allows users to keep track of the devices that have been found and manage them. This counts for both the devices that can be interacted with and the devices that can not be interacted with.



#### Materials Android application - Connects to the BleiD through Wi-Fi as client. - Manages the devices in the database. - Interact with devices through commands sent to the BleiD. - Shows information about devices and can edit them if desired. -----BleiD Wi-Fi **BleiD Bluetooth Hue Light** Wi-Fi Hue LE Hub **Parser** Server Peripheral - Exchanges informa-- Acts as a Bluetooth - Acts as a Bluetooth Parsest commands tion and commands LE Central. LE peripheral and information through Wi-Fi. - Receives information Sends information from the Hue - Maintains a data about devices. about devices. bridge. base of found devi-- Provides interaction - Detects and inter-- Interacts and conthrough BT LE serces and their methnects with devices acts with Hue

vices.

# Philips Hue Lights

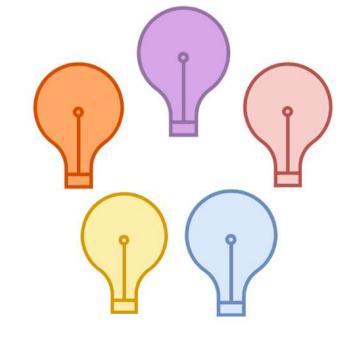
ods.

- Notifies users on

database changes.

through BT LE ser-

vices.

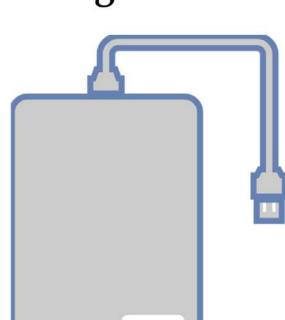


# Philips Hue Bridge

Controls the Philips
 Hue Lights through
 Zigbee.

lights.

- Provides interaction with its services through Wi-Fi.



### Conclusion

- A layer of abstraction has been made for the connection and interaction with the devices.
   This allows us to support the devices that weren't supported originally.
- The main difference with techniques like Bluewave, Wi-Fi Aware and IBeacon, is the fact that no service-specific application needs to be installed. The only application that is required is the one of the BleiD, which makes users able to control all the other devices.
- The accounting system provides intelligibility for the users with notifications, feedback and a global overview.
- The current system only allows the use of specific "supported devices". Improvements can be made in the future to specify more interaction as well for the "non-supported devices". The basic concept of the application however, will remain the same.

# **Cited Literature**

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