Room Light Controller

Presentation of Mini Project

Sensor Network Lab
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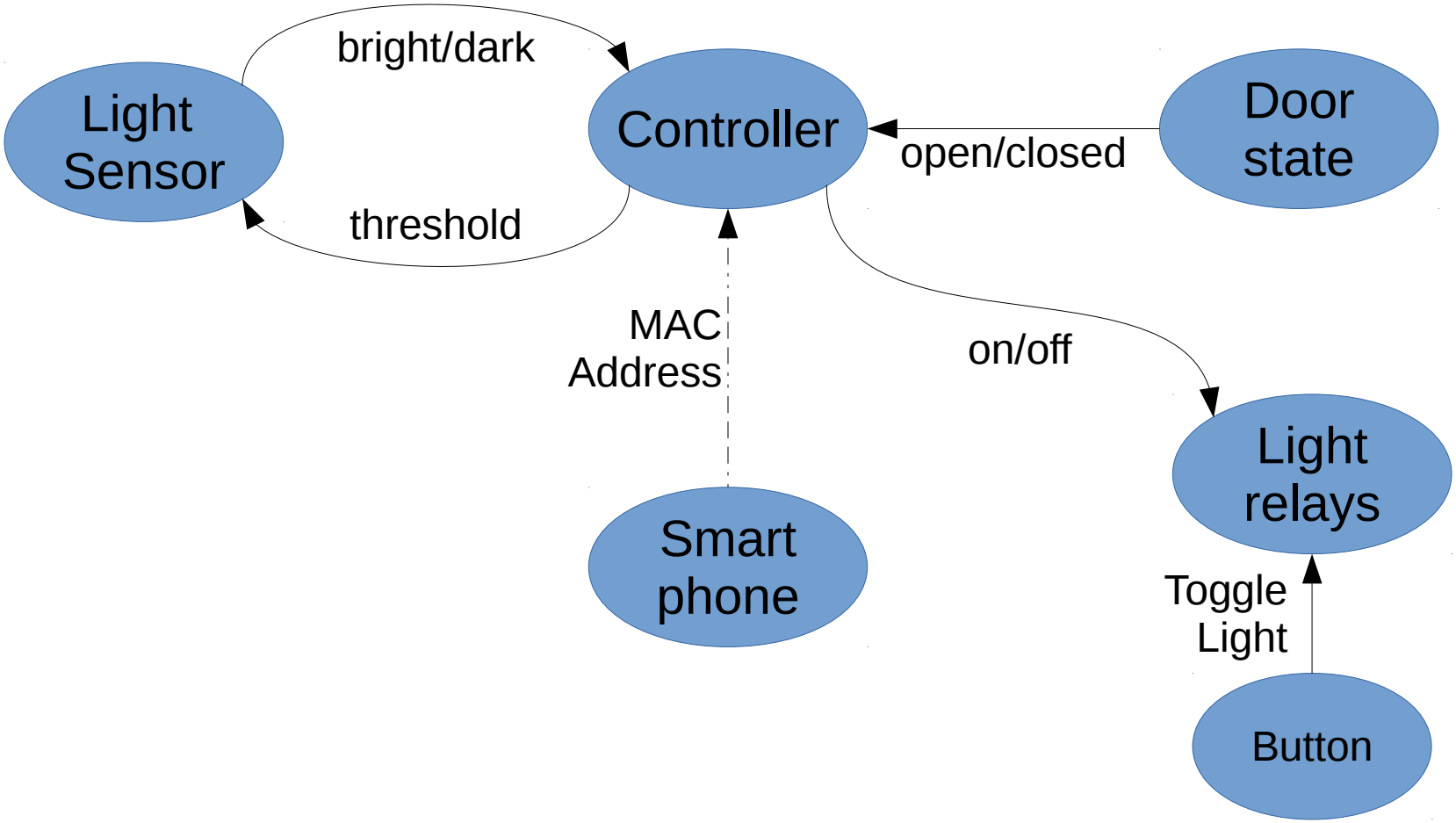
Motivation

- Switch off the light
  - If room gets empty
  - If sun is outside
- Switch on the light
  - If someone comes in
  - If sun sets / rain
- Debug
  - Toggle state

Sensors / Actuator

- Sensors:
  - Light Sensor (sensing outside)
  - Door Sensor (Reed Sensor)
  - WiFi AP (scanning for Smart Phones)
  - Manual Switch
- Actuators
  - Light Switch / Relays

Functional Diagram



Hardware

- 4x Launchpads
- 1x ULP Board
- 1x Booster Pack
- 1x Relays Board
- 1x Lamp
- 1x Beagle Bone (OpenThread Border Router)
- 1x Laptop (Gateway, Computation)
- 1x WiFi AP

Detect Smart phones

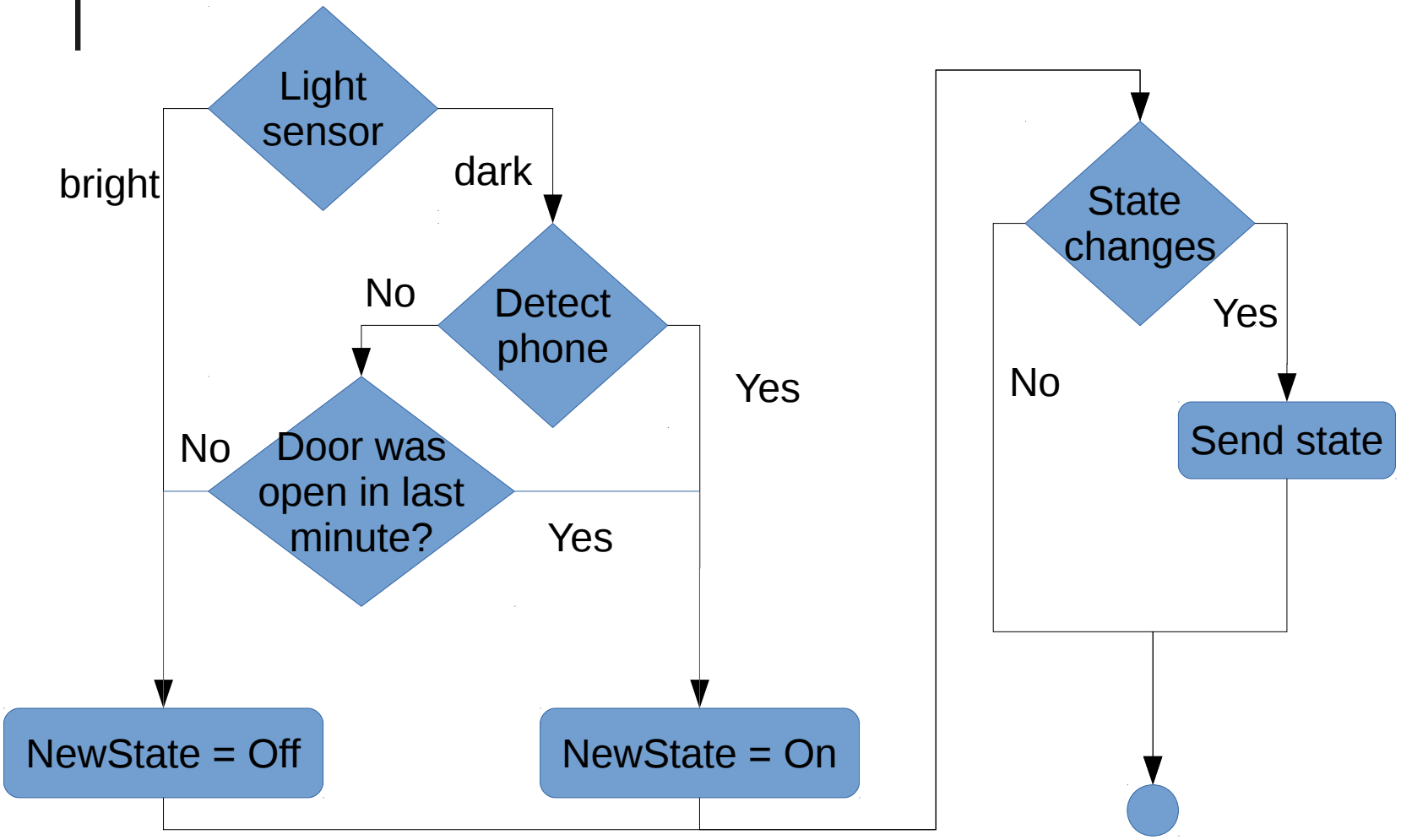
- Listen on internet traffic at gateway to Internet
- We use *tshark*
- Scan for MAC- Addresses
- Compare with registered devices
- Device is gone, if there is no frame for more than 30

  → *We have a smart phone that sleeps for 200 sec*

Critic

- WiFi has large transmission range (up to 100m)
- Bluetooth is better for our usecase
- But Bluetooth is normally off
- We don’t have a BLE device ;(

Controller logic



Demonstration

And now...

...have a look

:-)