Tracking player in a game-field

Internet of Things Project

Elias El Yandouzi & Lucas Chaloyard

Gather all the game

Project's motivation

Ultra-wide band

Enable precise localisation

Bluetooth Low Energy

Much less accurate

Let's have a closer look

Technology	Ultra-wide band	Bluetooth low energy
Location accuracy	< 20 cm	< 5 m
Range	Up to 100m	Up to 200m
Frequencies	2.4 GHz	3.1 - 10.6 GHz

A point about schedule

From thinking to demonstration

3-ish months project

November   **January** ➡️

A point about schedule

From thinking to demonstration

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November → **January**

- Thinking and design

A point about schedule

From thinking to demonstration

3-ish months project

November ——————————————————————→ **January**

- Thinking and design

- Research and implementation

A point about schedule

From thinking to demonstration

3-ish months project

November   **January**

- Thinking and design

- Research and implementation

- Test and debug

Thinking and design

Portable Devices

Localisation using triangulation

Web application to visualise data

Research and implementation

Make embedded cards communicate

Triangulation using RSSI

Push to and fetch from server

Tracking player in a game-field

Internet of Things Project
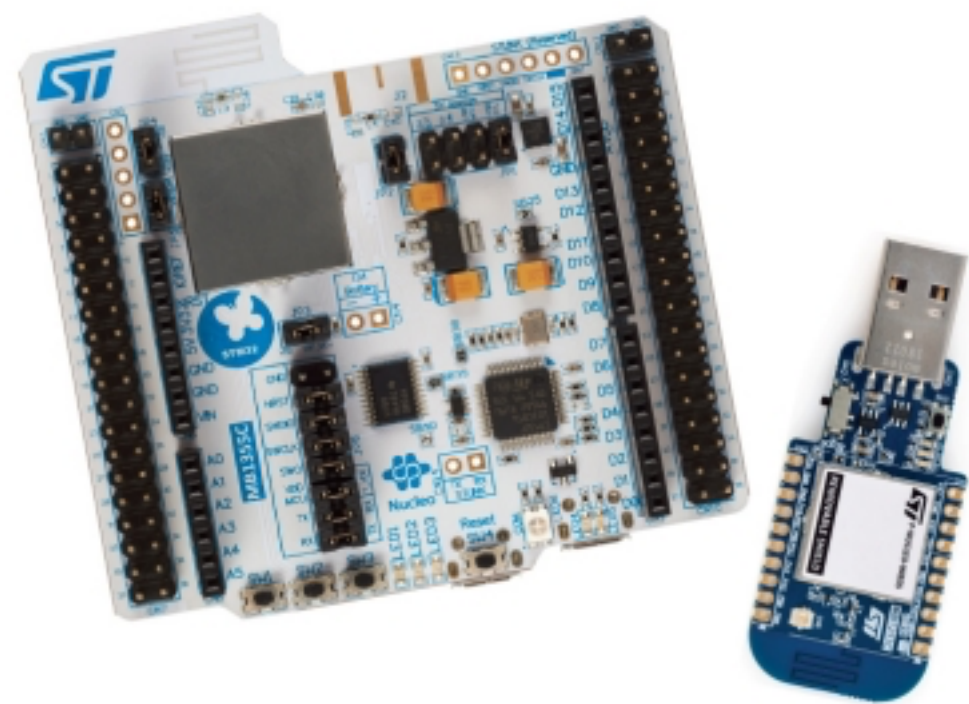
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Tracking people in a building

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Provided equipment
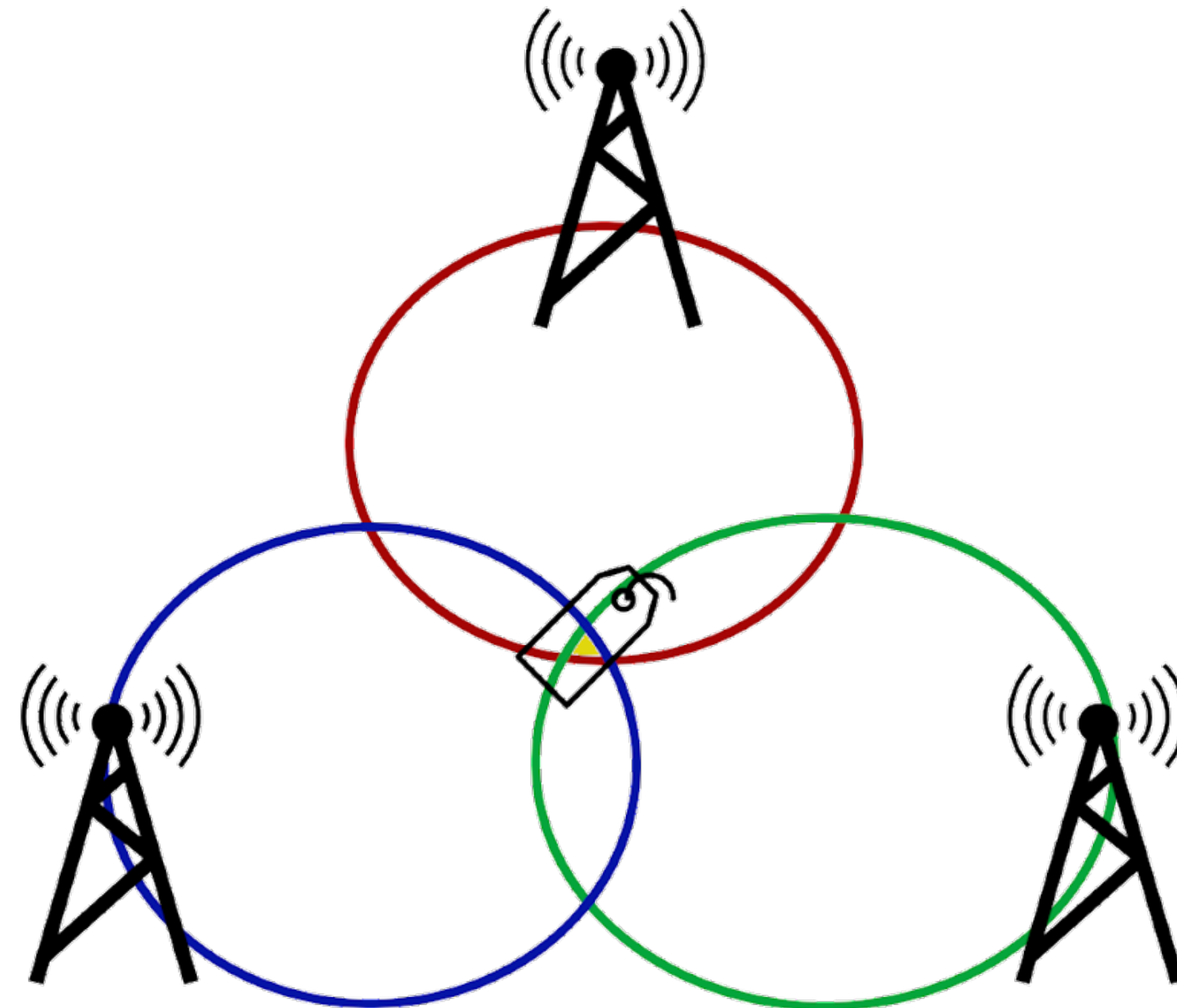## Embedded cards

Tags and anchors - BLE only

Gateway - BLE and LoRa

A focus on locating tag
Position estimation using triangulation

RSSI? What do you mean?
Received Signal Strength Indication

$$d = 10^{\frac{RSSI(d_0) - RSSI(d)}{10 \times n}}$$

Estimating the distance

$$n = \frac{RSSI(d_0) - RSSI(d)}{10 \times log\left(\frac{d}{d_0}\right)}$$

Auxiliary formulae