10 Peaks Brecon Beacons

✓ **58 kilometres**

✓ **24 hours**

✓ **3000m of ascent**

✓ **…and 10 peaks (obviously)**

✓ **(very) random tech**

Priority 1.0

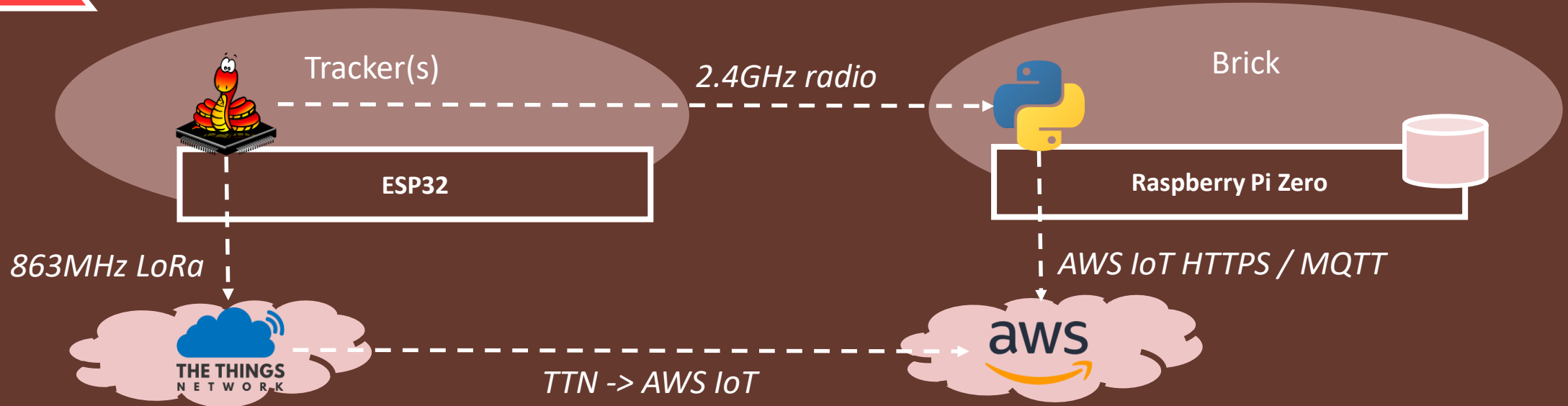✓ B.A.R.F. ™ = Begin > Attempt > Regret > (But hopefully) finish

Priority 2.0

✓ Convince family to track progress and race conditions
✓ Collect bucket loads of data that we'll probably never ever need
✓ Prove that true geekery can coexist with nature, outdoors
✓ Raise a few quid for charity

This DIY tech explained in 4 dotted lines

Tracker(s)

2.4GHz radio

Brick

ESP32

Raspberry Pi Zero

863MHz LoRa

AWS IoT HTTPS / MQTT

THE THINGS
N E T W O R K

aws

TTN -> AWS IoT

Tracker(s)

- Records current GPS location
- Broadcasts to brick and nearest TTN gateway

MicroPython

ESP32

U-blox Neo-6	Semtech SX1276	nRF24L01+

Brick

SQLite3 Buffer DB

- Records current GPS location and sensor readings
- Caches and uploads its own readings, and those from trackers

Raspbian OS

Raspberry Pi Zero

nRF24L01+	U-blox Neo-6

Lots of sensors of questionable value

Weather

BME280

2.4GHz radio <100m

863MHz LoRa 1km+

LoRaWAN Gateway

The Things Network (TTN)

AWS

3G/4G/0G (only when we manage to climb a peak)

IoT Core

Elasticsearch Service

IoT Events

Lambda

Web frontend

SES

DynamoDB

S3

Cognito

Unsuspecting family members

Graphs

Browsing

Notifications

www.rosietheredrobot.com

4

What on earth is going on in… aws

IoT Core
- Device (*thing*) management
- Message ingestion and processing
- Shadow document

IoT Events
- Device state monitoring (responding / not responding / lost)

Web frontend

DynamoDB
- Custom data storage (locations)

S3
- Static website hosting

Cognito
- Web frontend user identity store

SES
- Spamming family members with updates

Lambda
- General event processing (shadow document updates, notification emails, etc)

Elasticsearch Service
- General dumping ground of data (Elasticsearch)
- Data visualisation (Kibana)

Identity and Access Management
- Role, policy and permissions management

Check out the project in our GitHub repository:-
https://github.com/fantasticdonkey/rIOT

Follow us on Twitter for updates:-
@rosie_red_robot

Thanks!