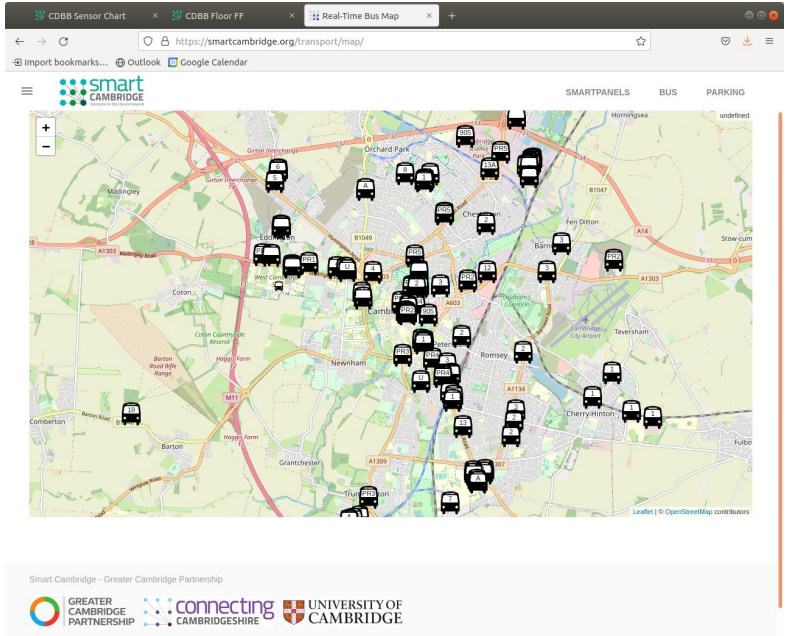

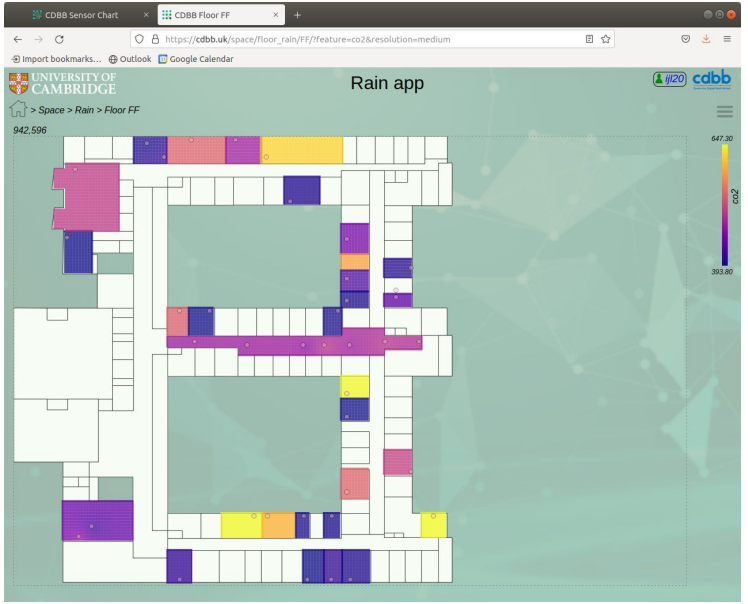

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Solutions for the city and beyond

Funding: Greater Cambridge Partnership

cdbb
Centre for Digital Built Britain

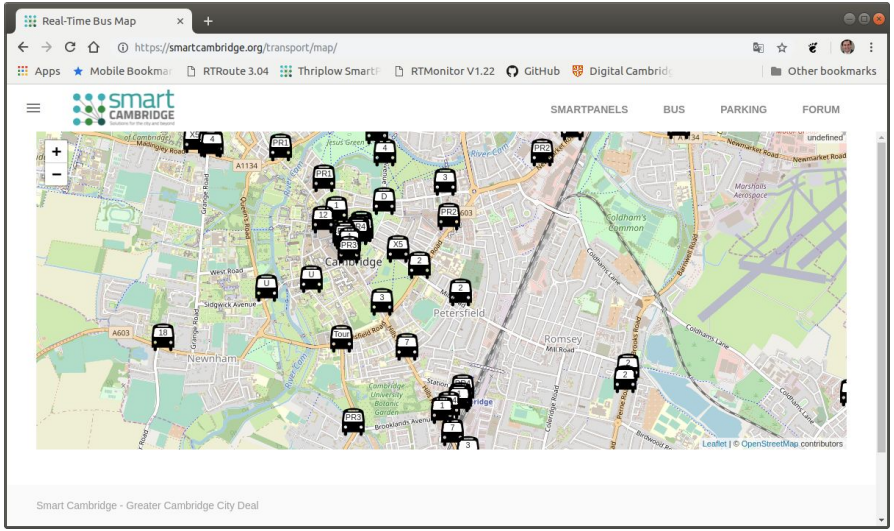
Funding: Department for Business, Energy & Industrial Strategy

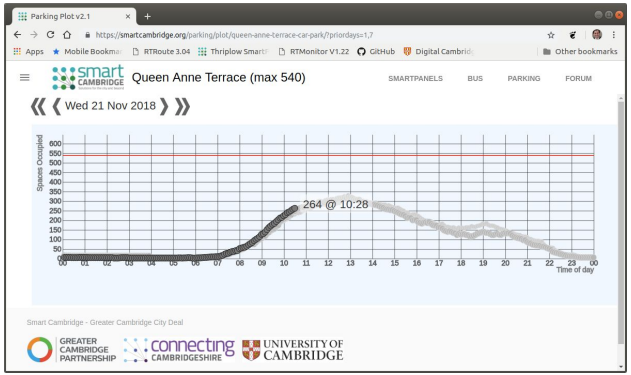
LPWAN
IoTUK BOOST
CAMBRIDGE
MEET UP

iotUK | Boost

CW CONNECTING THE DIGITAL WORLD

Data we collect:

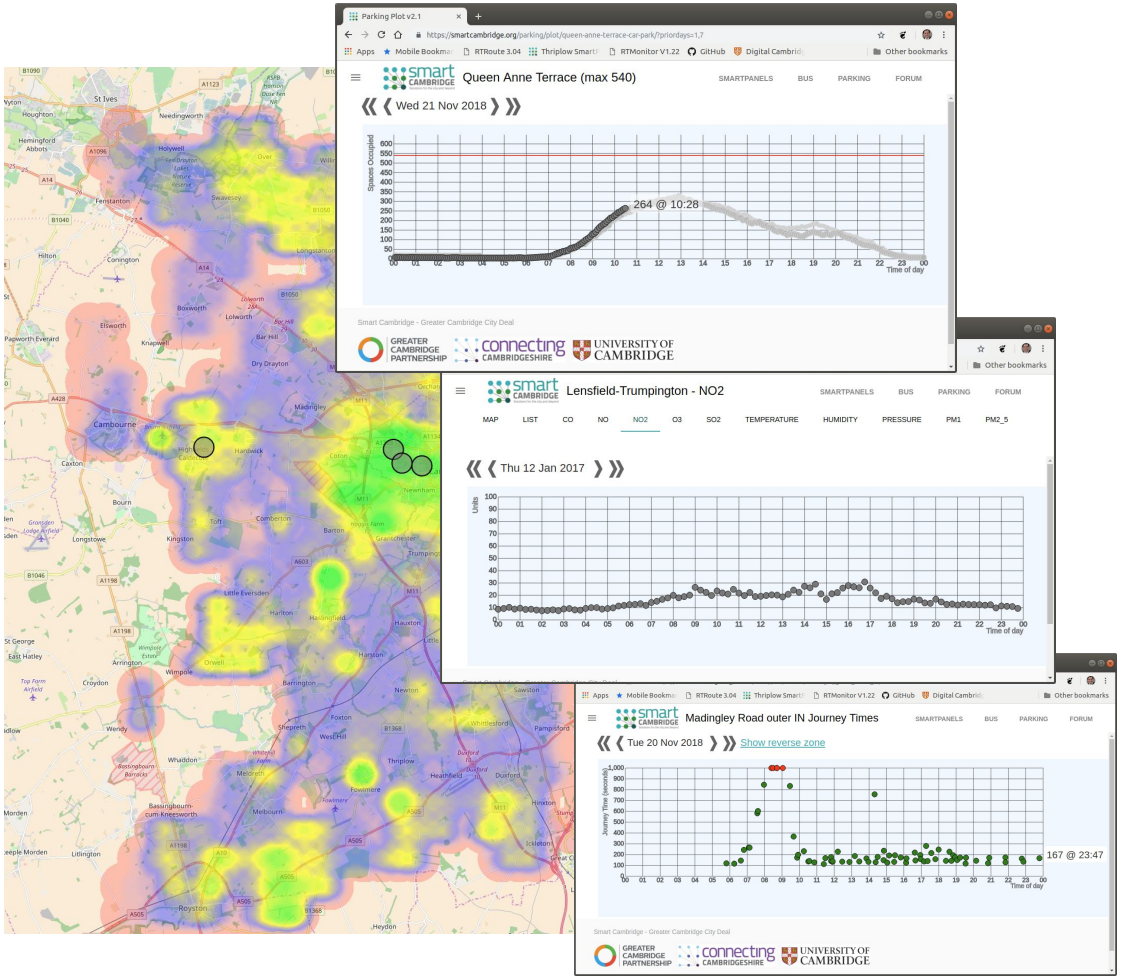




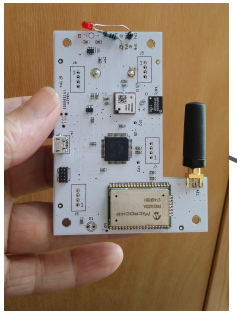
Spatio-Temporal Data:

1. Time
2. Space
3. “Other stuff”™

(vs. Geospatial)

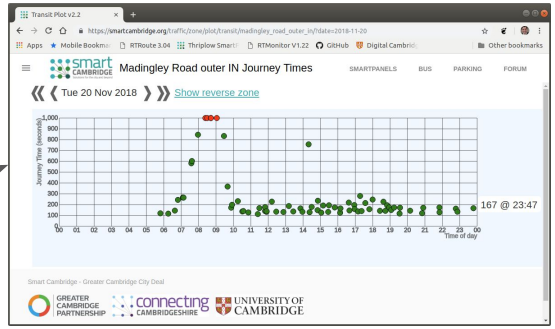


The Platform ?



Feed Collector

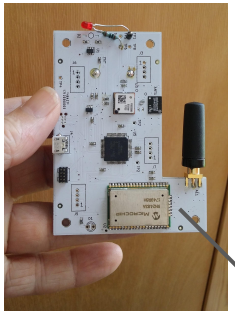
Website



REST API

REAL TIME ???

Responsiveness: Intelligent City Platform



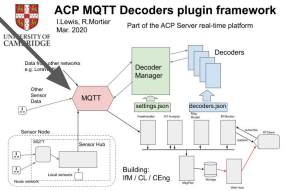
Sensor Networking

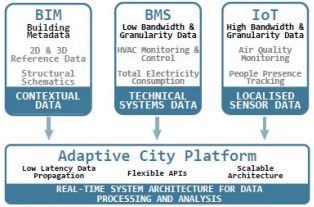
Building Information Management

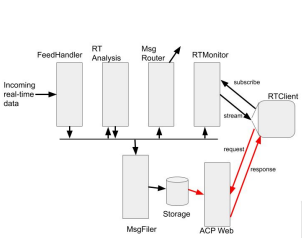
Stream Processing Architecture

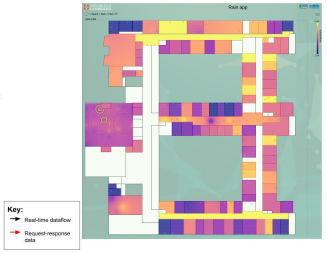
Derived Data / Visualisation

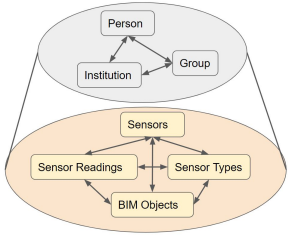
Privacy





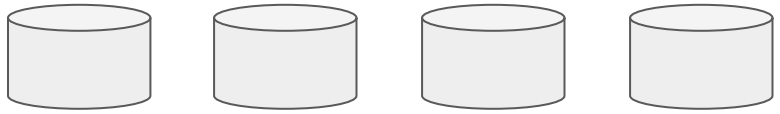




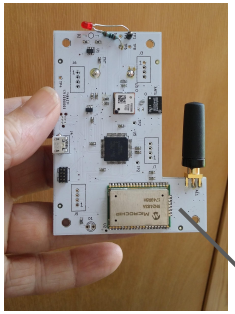


PUSH

PLATFORM



Platform tech we're actually using:



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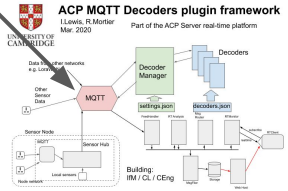
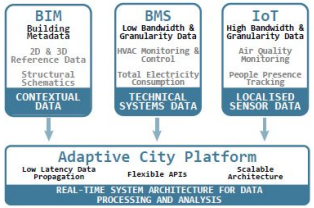
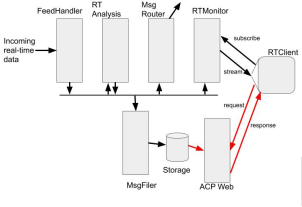
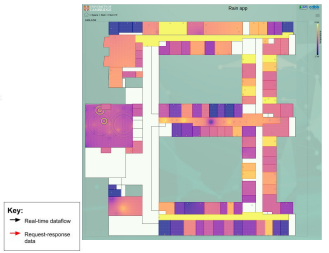
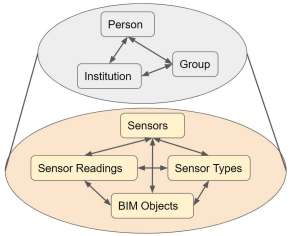










MOSQUITTO MQTT

PYTHON DECODERS

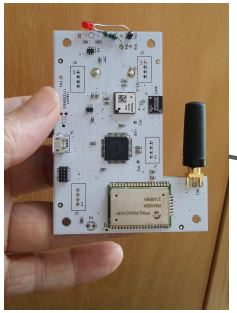
IN-MEMORY DATA STRUCTURES

VERTX.IO

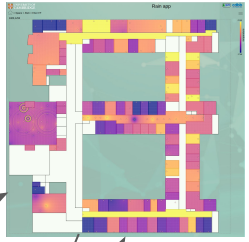
DJANGO WEBSITE
WEBSOCKETS

MQTT EMITTER.IO ?

PUSH PLATFORM



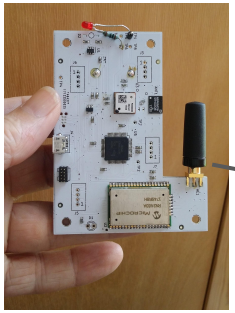
PUB/SUB

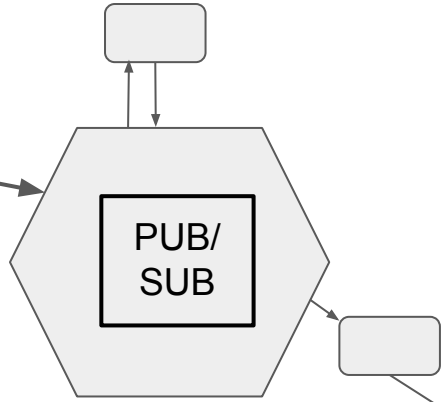


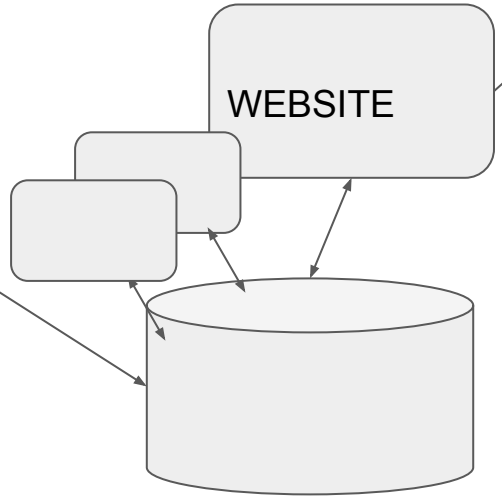
WEBSITE

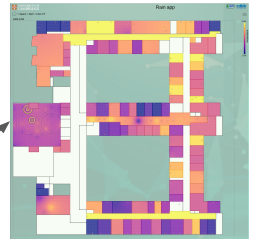
STORAGE IS NOT IN THE CENTRE

PUSH PLATFORM?

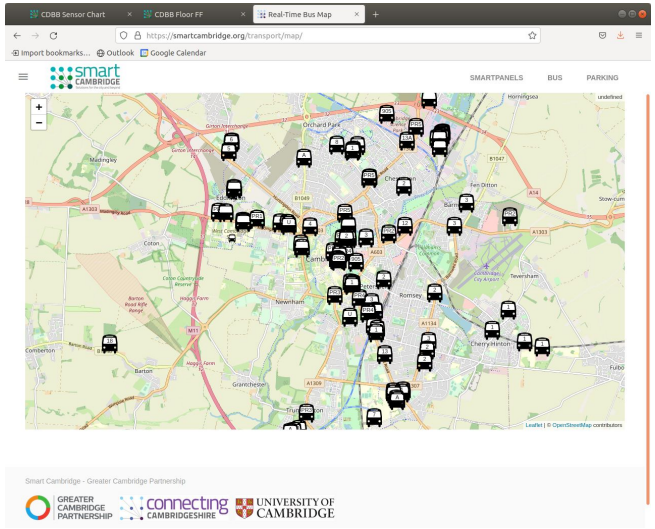


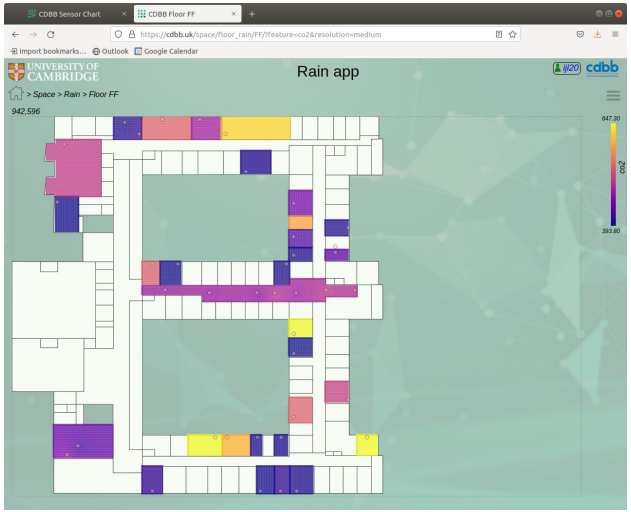






EXPANSION/EVOLUTION OF THE PLATFORM IN-BUILDING





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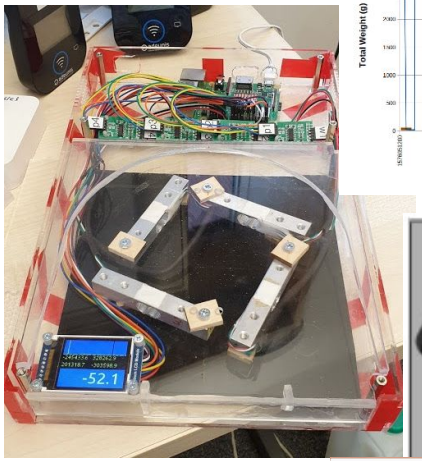
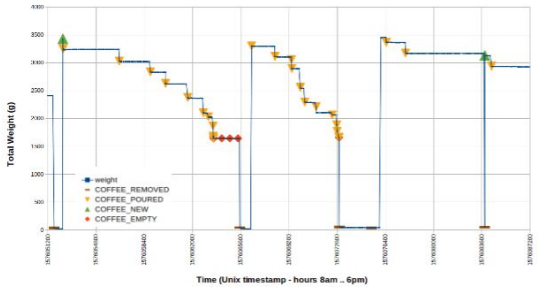
Scaled up the proportion of 'own' sensors

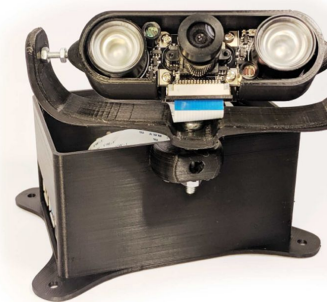
Environmental Sensors

Smart Plugs

Coffee Pot







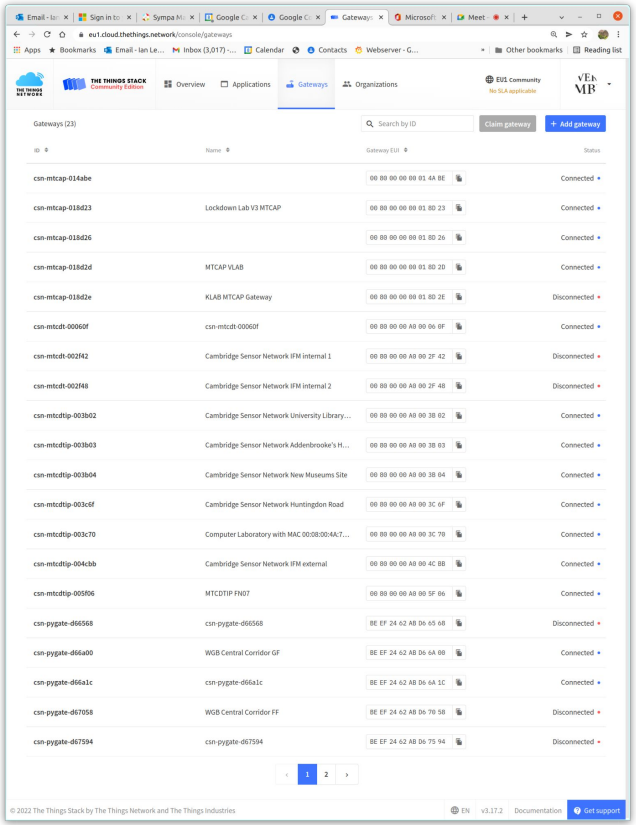
DeepDish

Dumb Sensors

Intelligent Sensors

Gateways

LoRaWAN TTN V3



Since ~ 2015:

Custom Lora G/W

Everynet V1 LoRaWAN

... SigFox (WND)

Everynet V2 LoRaWAN
+ homebuilt console

TTN V2 LoraWAN

TTN V3 LoRaWAN

Projects | CDBB Map Page Title

cdbb.uk/space/map/

Apps | Bookmarks | Email - Ian Le… | Inbox (3,017) -… | Calendar | Contacts | Webserver - G… | FB Messages | FB MSFS | Other bookmarks | Reading list

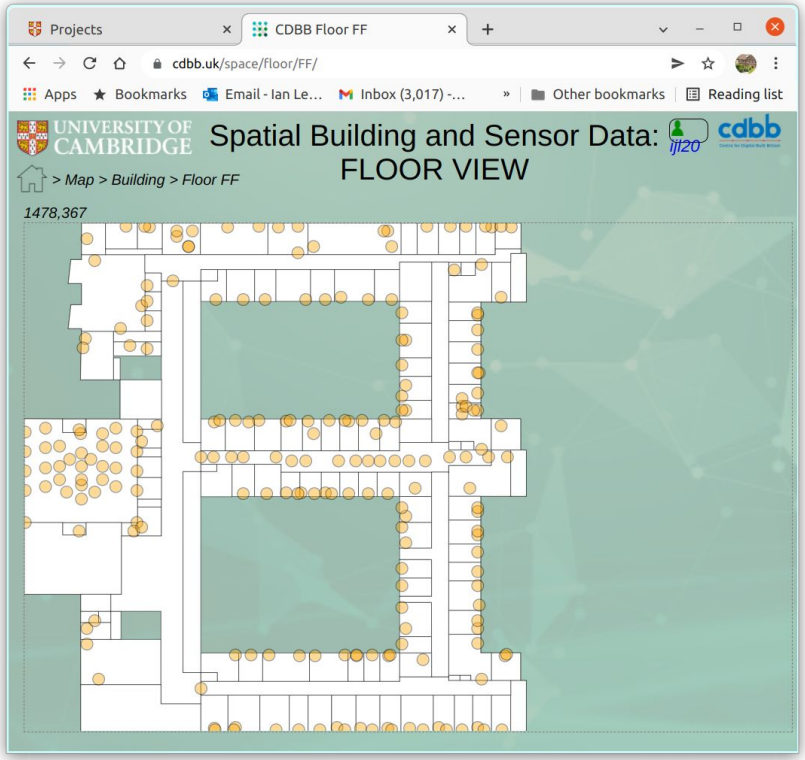
UNIVERSITY OF CAMBRIDGE

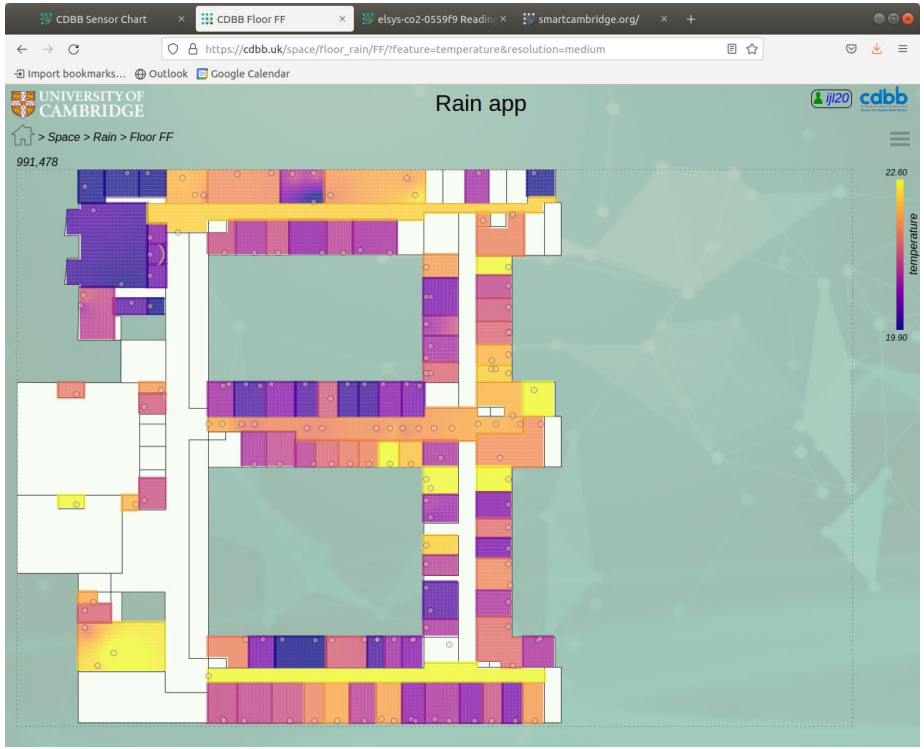
Spatial Building and Sensor Data: MAP VIEW

ijl20 | cdbb

> Map

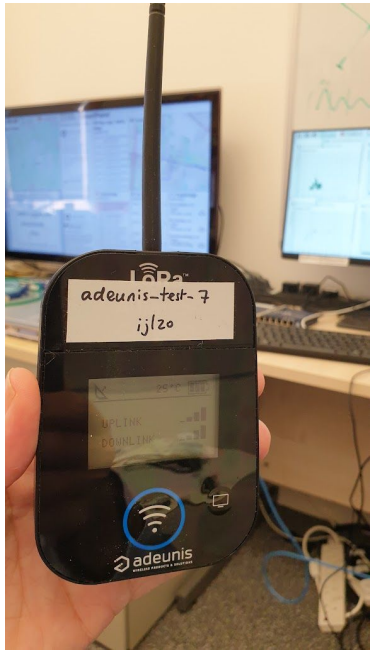
Deployment density and visualisations





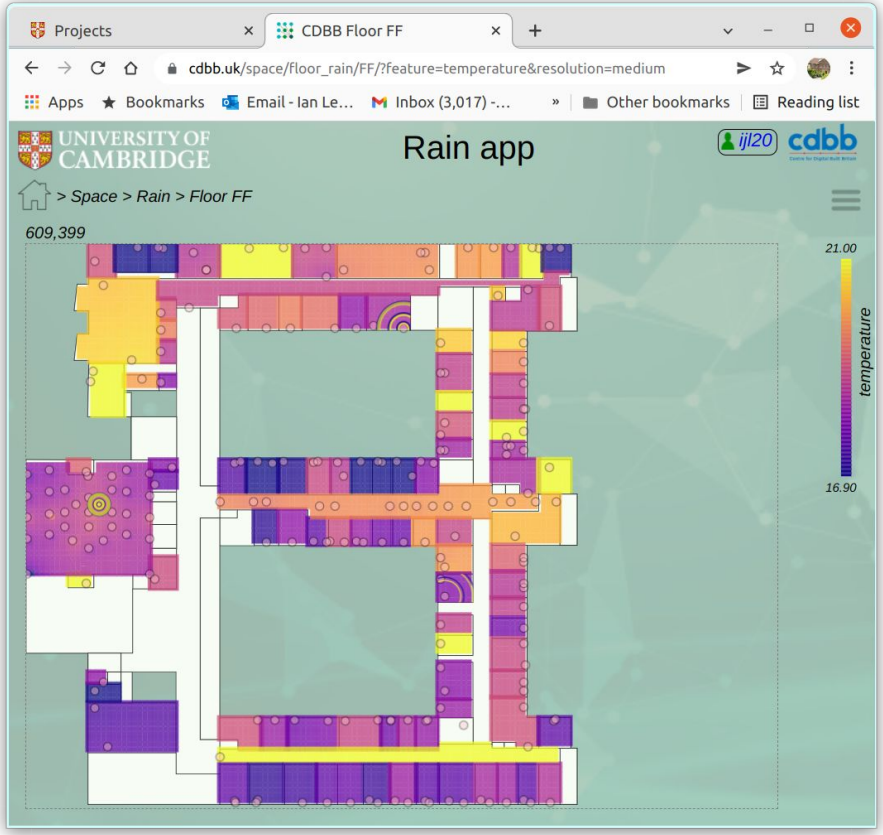
Multitech rooftop g/w's

Adeunis Field Test

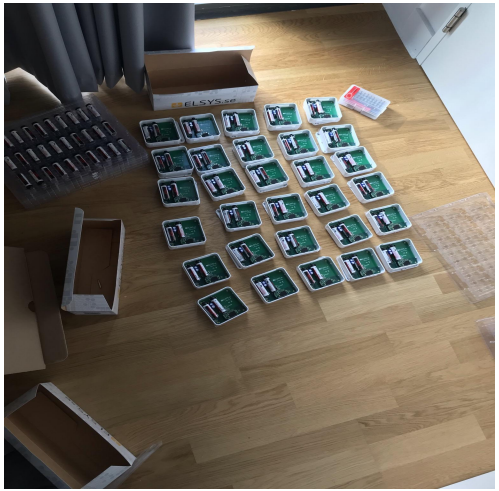


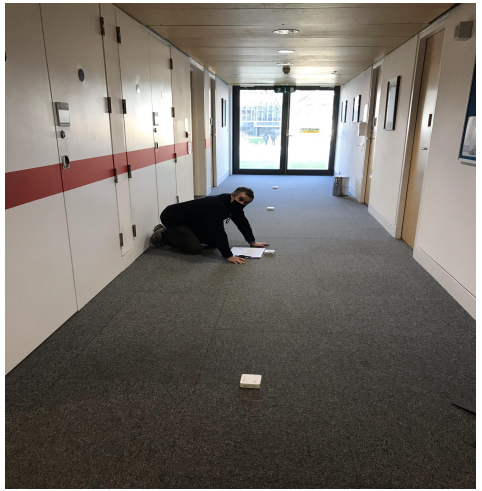
Pycom Pygate (LoPy4)

DEPLOYING LORAWAN SENSORS x600

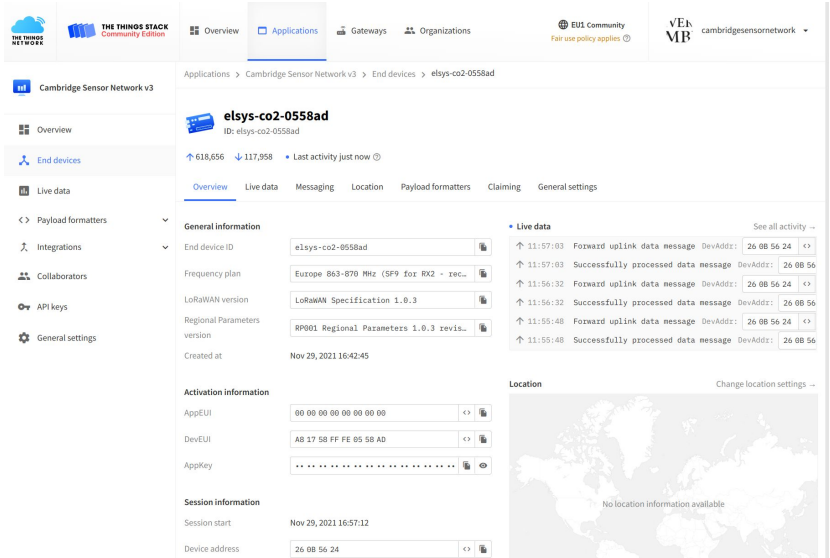


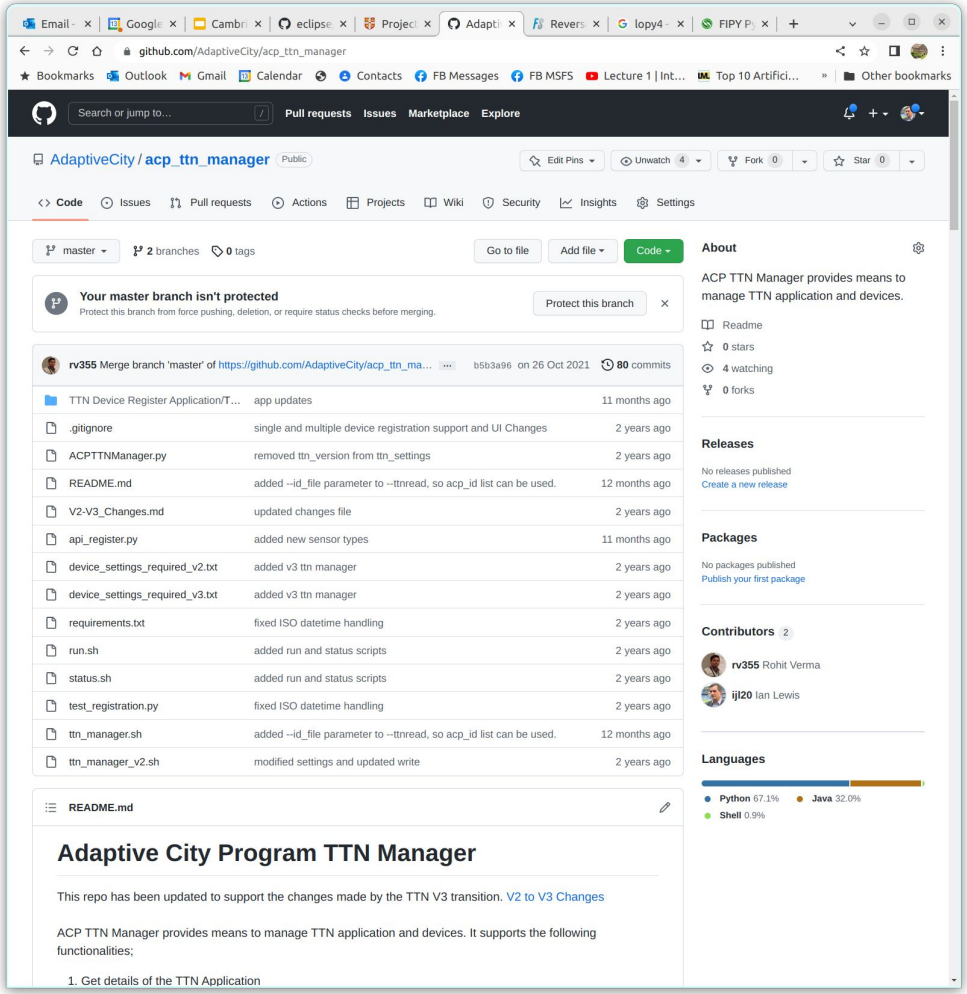
Deployment: Physical Layer Labour





TTN V3 Console





Elsys EMS

Elsys ERS CO2

Elsys Eye

LoPy4
Pysense
Exp board.

Temperature

Humidity

Lux

CO2

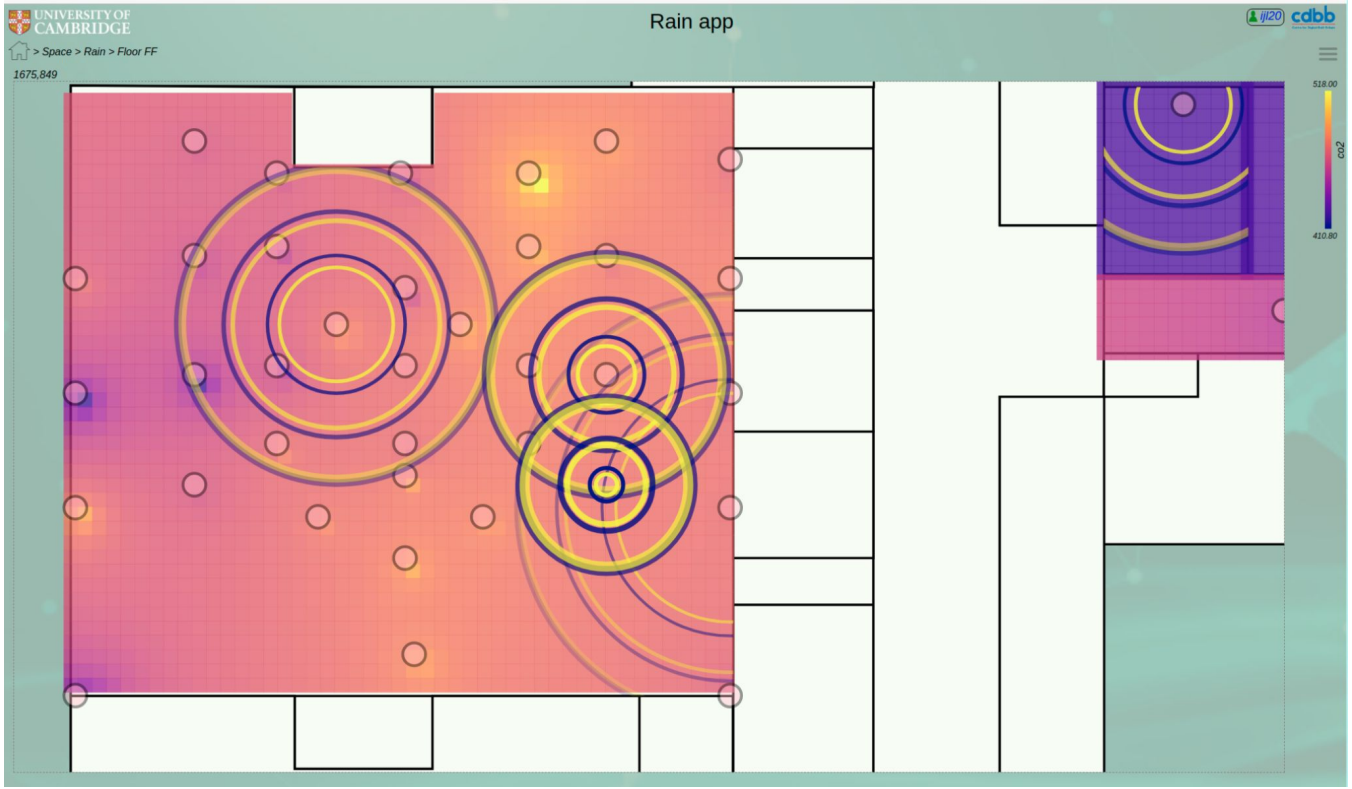
PIR / Door open/close

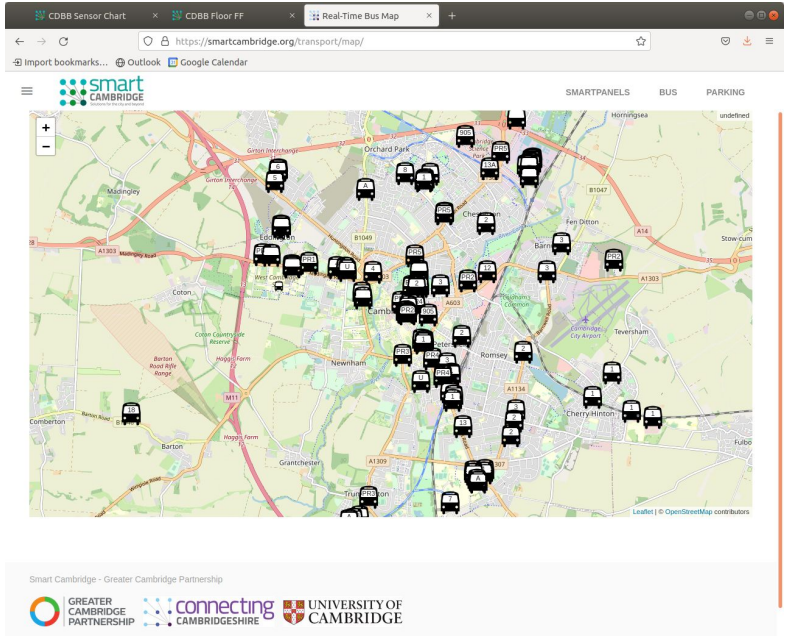
Effective device monitoring needed

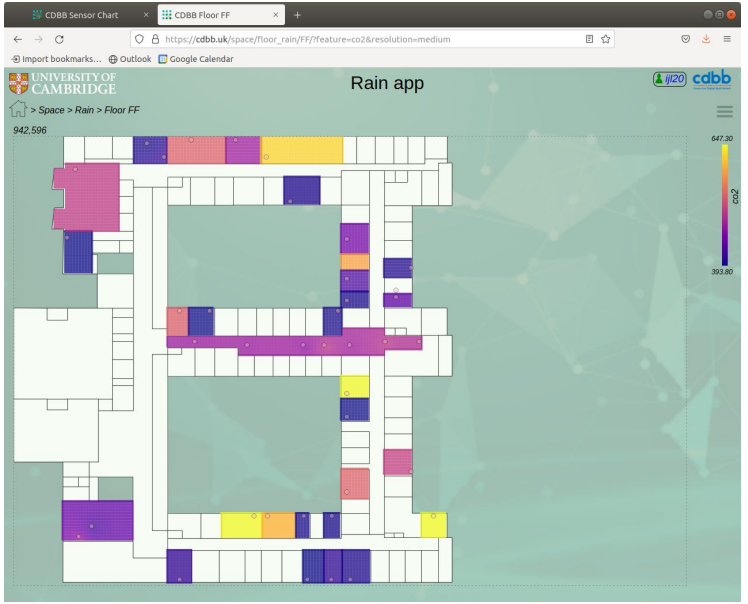
OTAA Connection delays with many g/w's

Unexpected outcome - CO2 Sensors during COVID

Current status - Platform is working well, real-time visualisations to the web.
Ongoing development.







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