

# Internet of Things

# **Smart Office Presence**

BLE-based Room Presence Detection with Edge Processing

# Problem



## No automated tracking

Card-scan systems are forgotten, ignored, or skipped entirely.



## Badge sharing

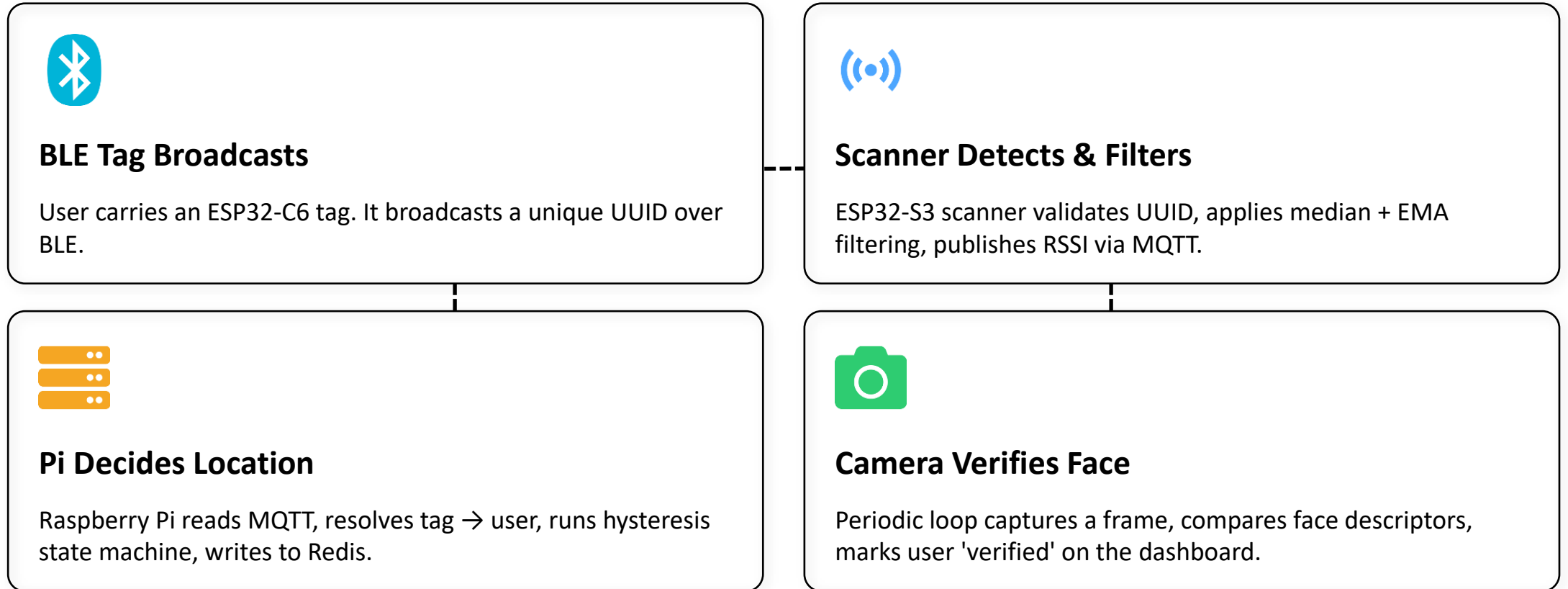
Anyone can use someone else's card; there's no identity check.

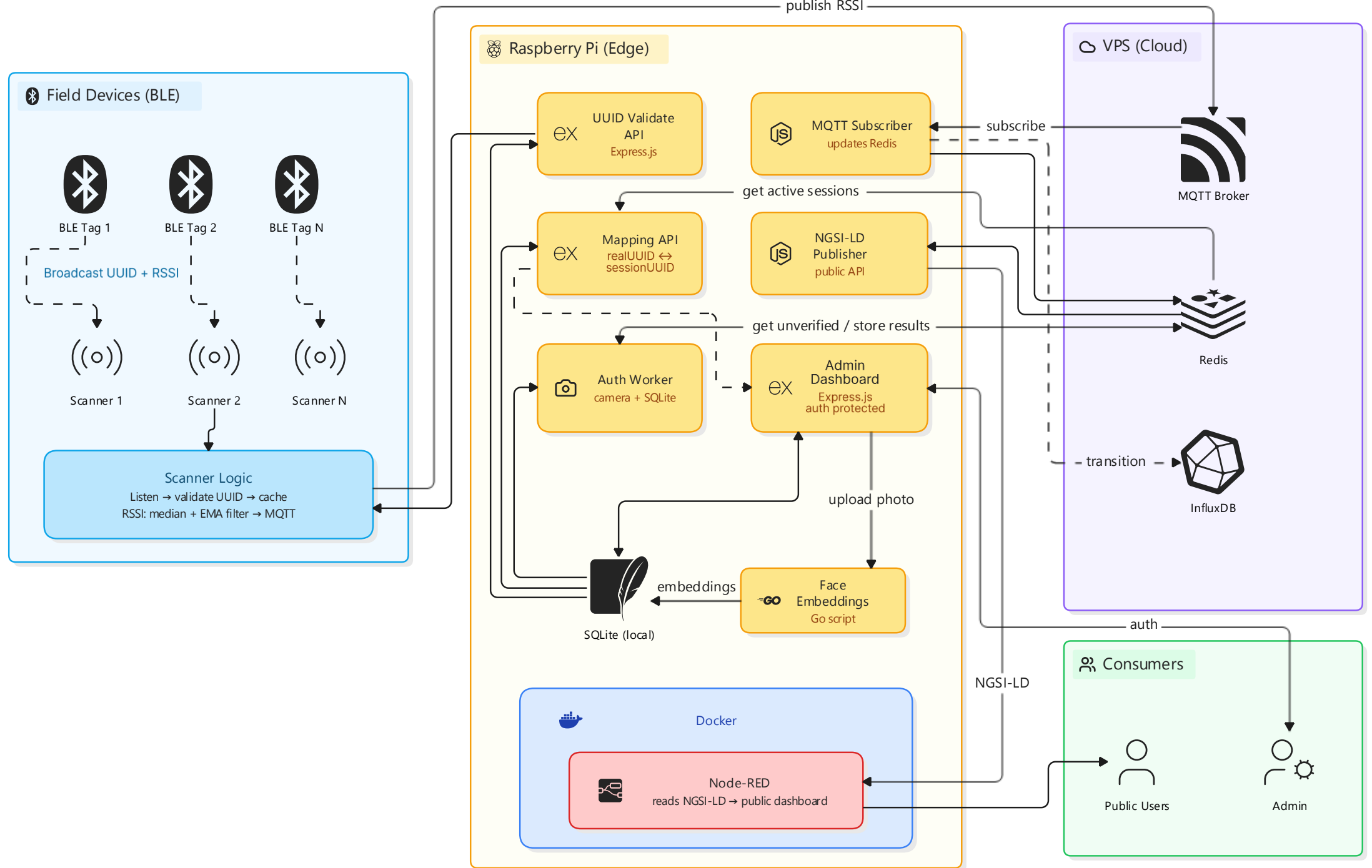


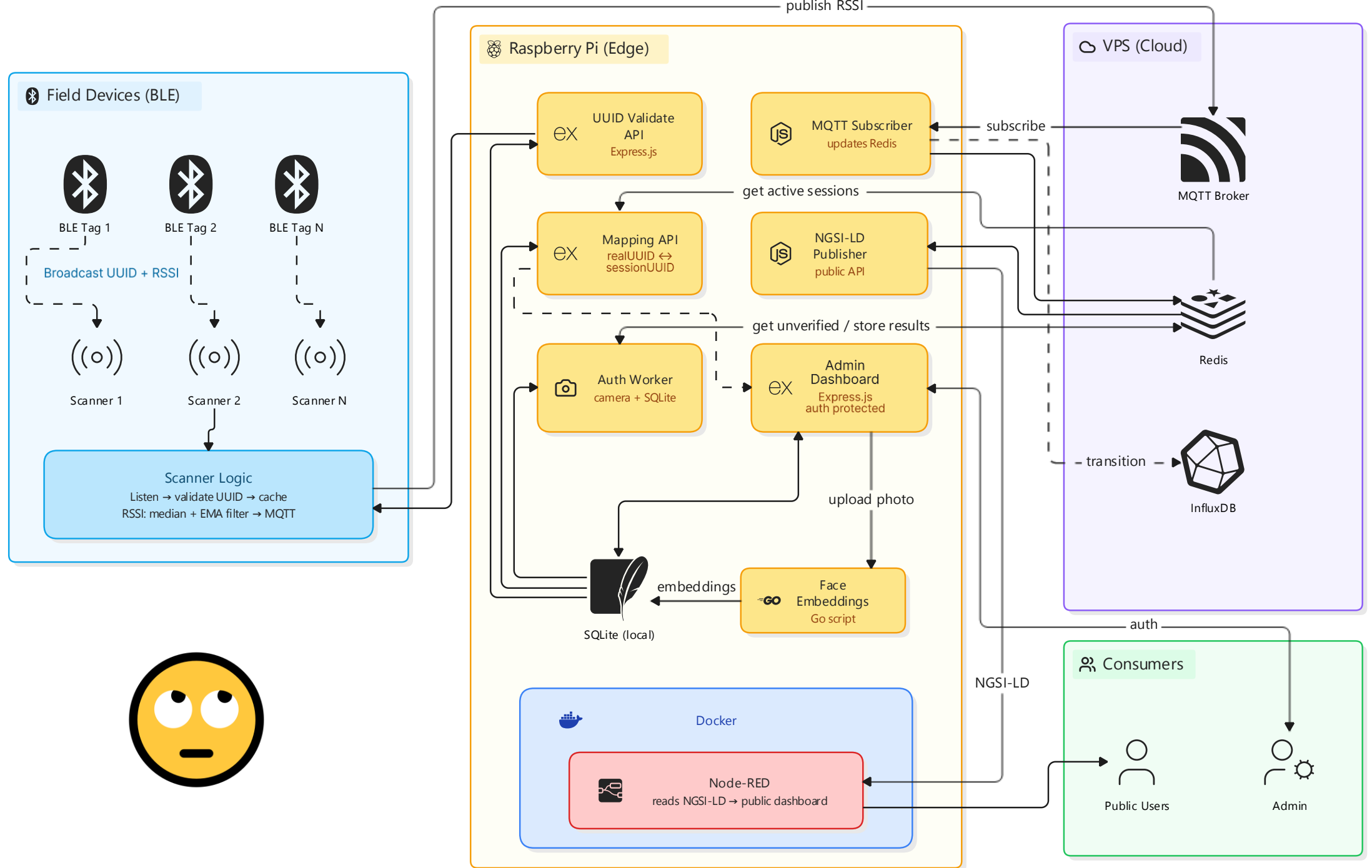
## Privacy & security

Existing systems tie real identities directly to location logs with no pseudonymization.

# Architecture







# Features



## Pseudonymized by default

Public dashboard & API show only pseudonymized nicknames and UUIDs.



## Two dashboards

Node-RED public view + AdminJS private panel.



## Hysteresis room transitions

Signal strength, debounce, and minimum sample confirmation; no flickering between rooms.



## GDPR-aware architecture

Face embeddings and user records live in SQLite only. Redis, MQTT, and the public API never expose real data.



## Face verification

Matches live camera frame against stored user embeddings.



## InfluxDB event logging

Room enter/leave events logged to InfluxDB for post-analysis.

# See your location LIVE!

- 1 Pick up a BLE tag and enter the room
- 2 Watch yourself appear on the dashboard pseudonymized
- 3 Walk to another room and see your location update
- 4 Power off the tag and you disappear after a few seconds



# Get verified LIVE!

- 1 Take a picture of just your face
- ! **Mirror** the image if using **selfie** camera
- 2 Set the image to your user account
- 3 Stand in front of the camera to get verified
- 4 Walking to another room will require new verification

