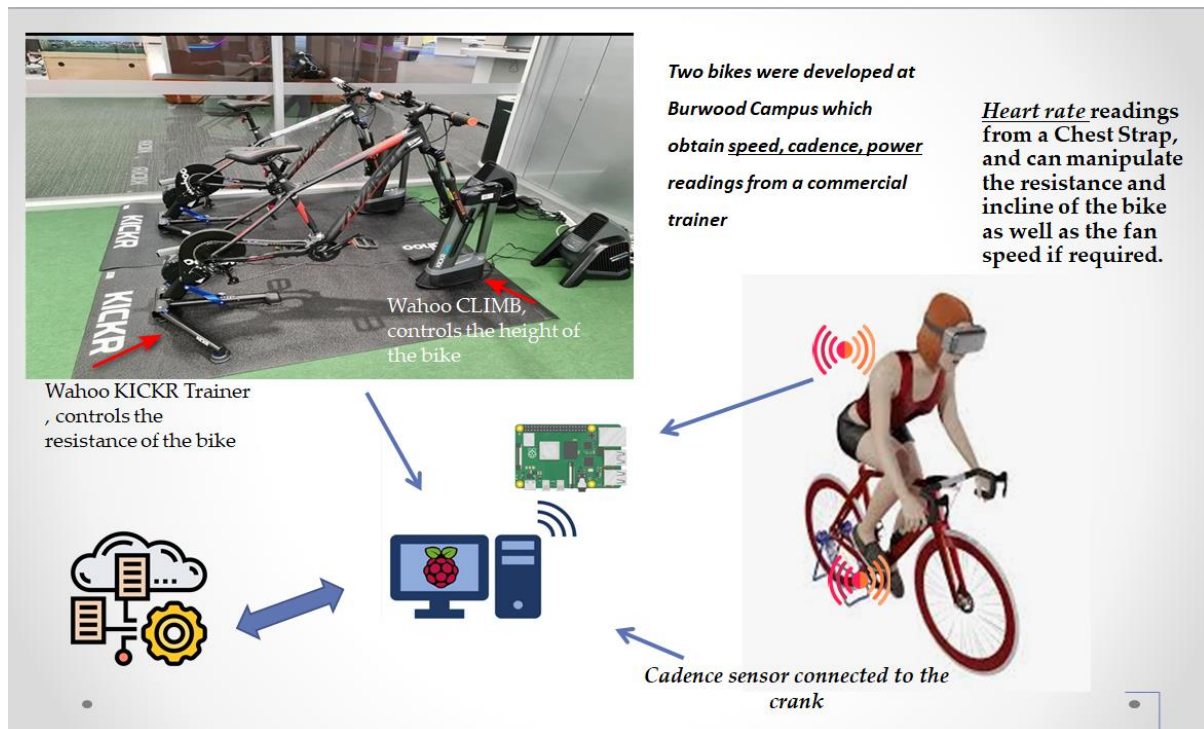## The Data Origin and Data Pipeline in Redback Company:

At Redback company we utilize "Contact Management System" (CMS). The data is received from bike's sensors (Whaoo) via Bluetooth using a Raspberry Pi and submitted via MQTT to the CMS, GCP, unity and mobile app.

In coding side, what is done is mostly coding in Python to get data from riders and sending it off to the mobile app to get used.
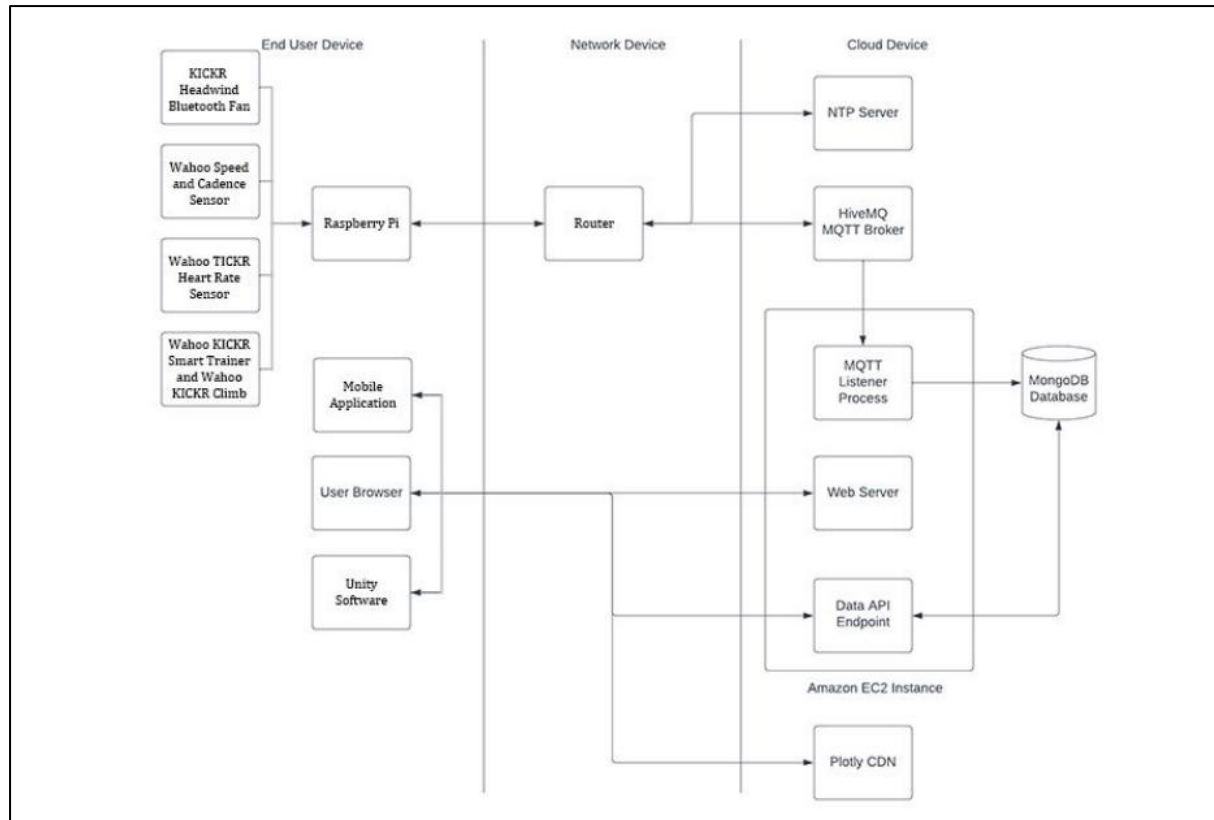
The protocol used for this data transport mechanism used by drivers is MQTT.

Two bikes were developed at Burwood Campus which obtain *speed, cadence, power* readings from a commercial trainer

Heart rate readings from a Chest Strap, and can manipulate the resistance and incline of the bike as well as the fan speed if required.

Wahoo CLIMB, controls the height of the bike

Wahoo KICKR Trainer, controls the resistance of the bike

Cadence sensor connected to the crank

The CMS is currently hosted at http://34.129.10.237 that is under the company owned GCP account.

The dashboard shows an overview of the data collected and displays the recent stored sensors data in real time (if there's any activity using the mobile cycling fitness app), the bikes page can be used to set up additional bikes, the devices page used to provide details for additional sensors, and device data used to search or edit the collected data.

UML Diagram

For more detail see the Sensor Architecture report in GitHub, under Tri 3 2023 folder

Data Pipeline Diagram