Case Studies

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Modern Datawarehouse

1. Challenge

A distinguished healthcare provider, faced challenges in sustaining their on-premises SQL data warehouse. The associated costs and the substantial support hours required for maintaining physical database servers across multiple environments prompted the need for a more efficient solution.

2. Scope of work

I spearheaded the migration of the client's on-premises data warehouse to the cloud. My responsibilities encompassed providing technology recommendations, implementing the cloud data warehouse, migrating and converting SSIS packages, transitioning SQL agent jobs to the cloud, and repointing Power BI reports to optimize data modeling.

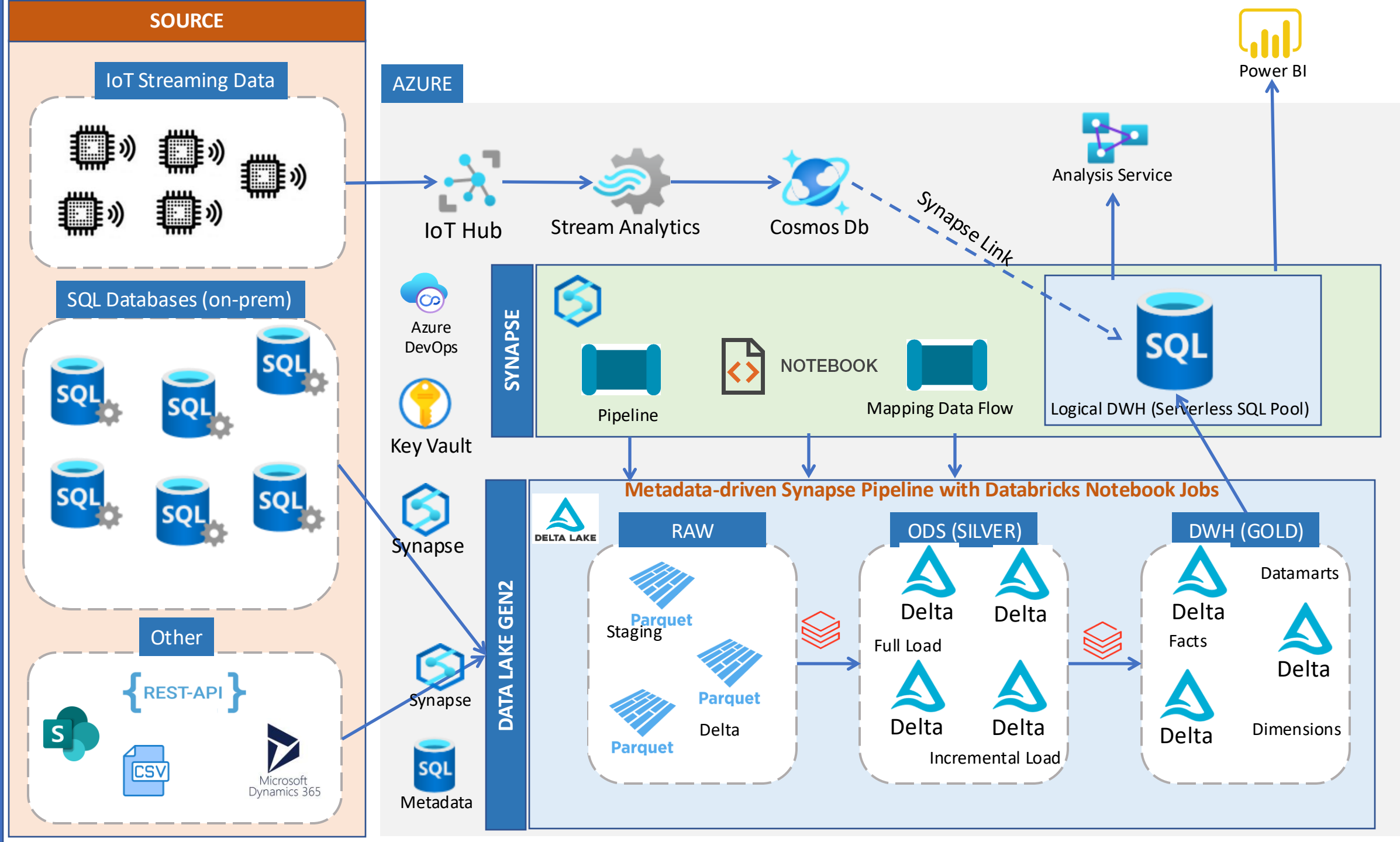
3. Technology stack

- Microsoft Azure Cloud
- Microsoft SQL Server
- Azure Data Factory
- Synapse Analytics Workspace
- Synapse Serverless SQL pool
- Data Lake Gen2
- Databricks
- Private Endpoints

4. Outcome

- Fully productionized medallion architecture Azure Cloud data warehouse
- Decommissioned on-prem data warehouse
- Lightweight data centre
- Freed support hours and
- Massive cost savings

Project : Modern Datawarehouse



IoT Solution Architecture

1. Challenge

One of the largest local government of Australia, was looking to explore and expand their capability in Smart Technologies (i.e. IoT, RPA and Augmented reality). They do not have proper process or technical architecture to support demanding IoT use cases to support different of their organizational units.

2. Scope of work

Assuming the role of a Technical Domain Experts for IoT capabilities, I undertook the establishment of a robust Azure cloud ingestion architecture at a production level. This encompassed the provision of comprehensive support for metadata, data models, and the creation of replicable IoT Proof of Concept (PoC) use case templates. The objective was to facilitate the streamlined implementation of multiple IoT use cases by adhering to consistent and effective patterns.

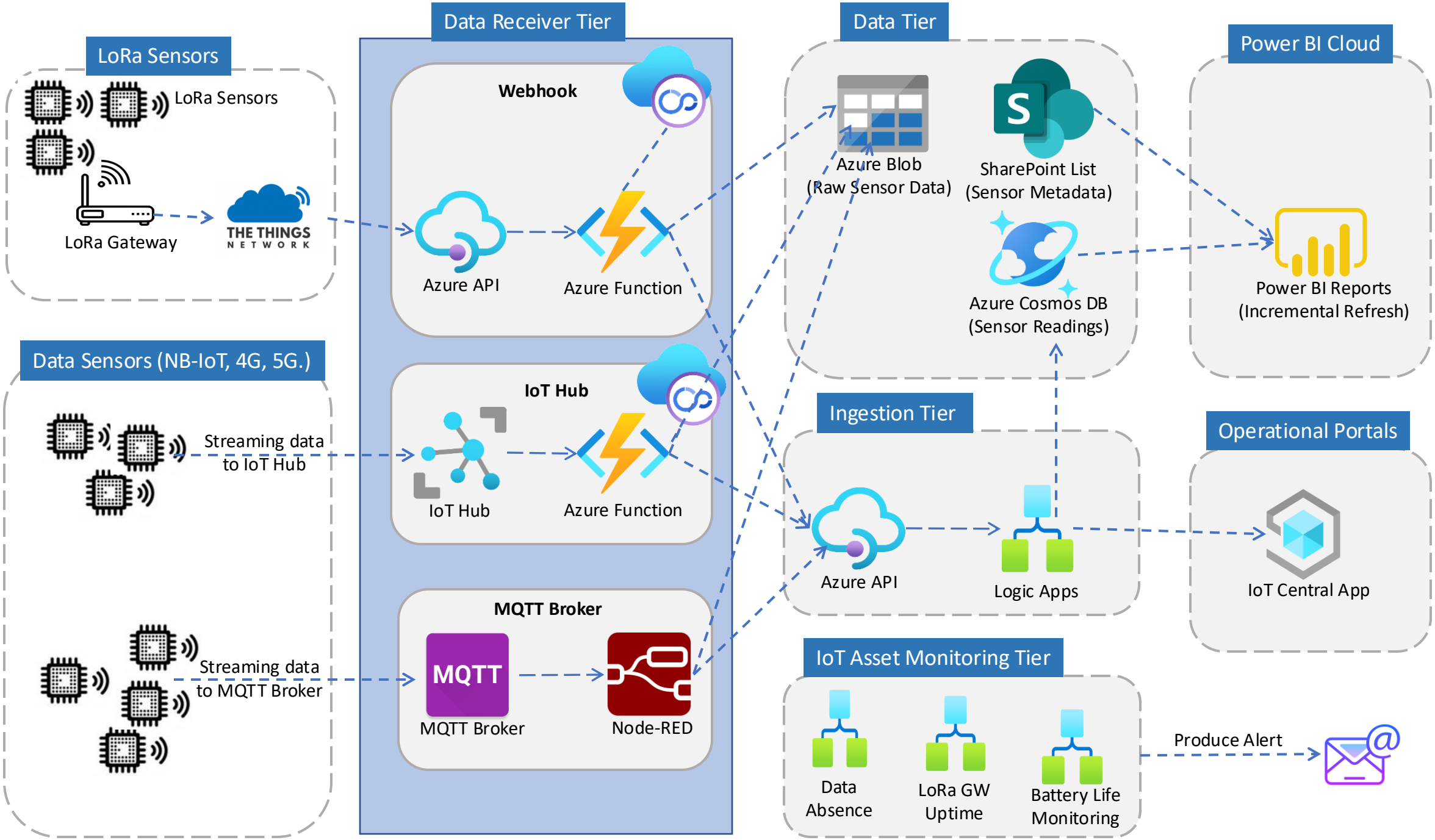
3. Technology stack

- Microsoft Azure Cloud
- Azure Logic Apps
- Azure Cosmos DB
- SharePoint
- IoT Hub
- Data Lake Gen2
- Azure API Management
- Node-RED

4. Outcome

- Fully productionized IoT data ingestion architecture
- 3 different IoT product packages (i.e. templates)
- Implemented 7 different use cases and receiving data from various type of sensors (e.g. Soil Moisture, Water level, water quality, air quality, Smart street lights, Bike counter, People counter etc)
- Multiple Power BI dashboards

Project : IoT Solution Architecture



Filter by Date Range (Select 2 dates)

23/08/2019 25/02/2020

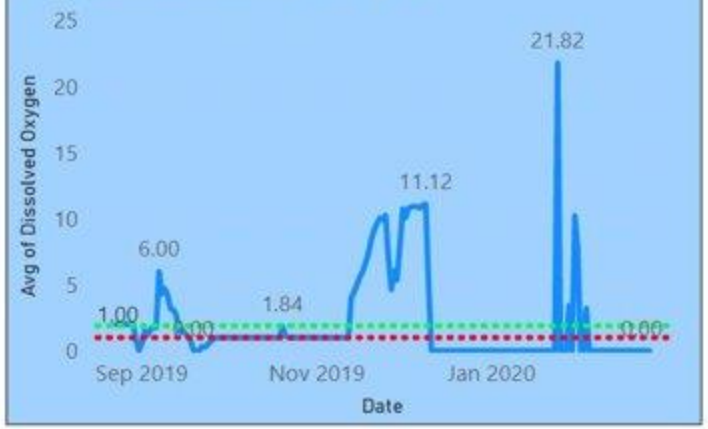
Filter by Hour of Day (23 = 11 PM)

0 23

Filter by Season

- Select all
- Spring
- Summer
- Winter

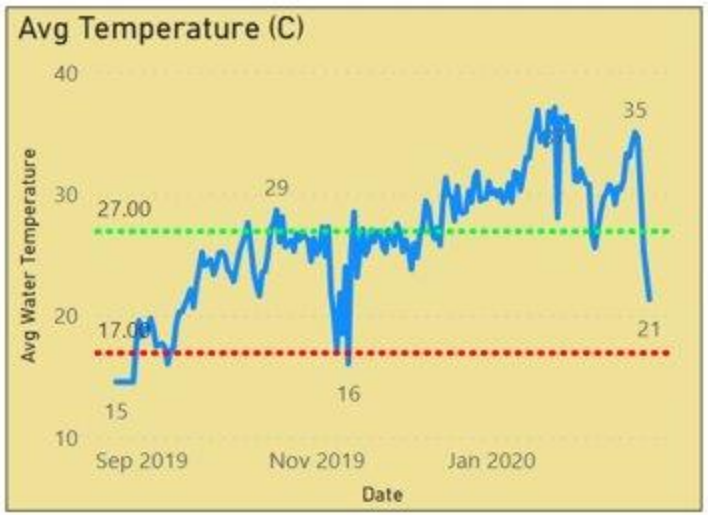
Avg Dissolved Oxygen (mg/L)



Avg Electrical Conductivity (µS/cm)

WQM Devices

Avg Temperature (C)



Average pH Level (units)

3	Avg Dissolved Oxygen	Avg Electrical Conducti...
Devices	2.49 (mg/L)	1.28 (µS/cm)
5605	**Avg Temperature**	**Avg pH Level**
Data Points	26.33 (C)	5.63 (units)

Date Range

31/08/2020 25/10/2020

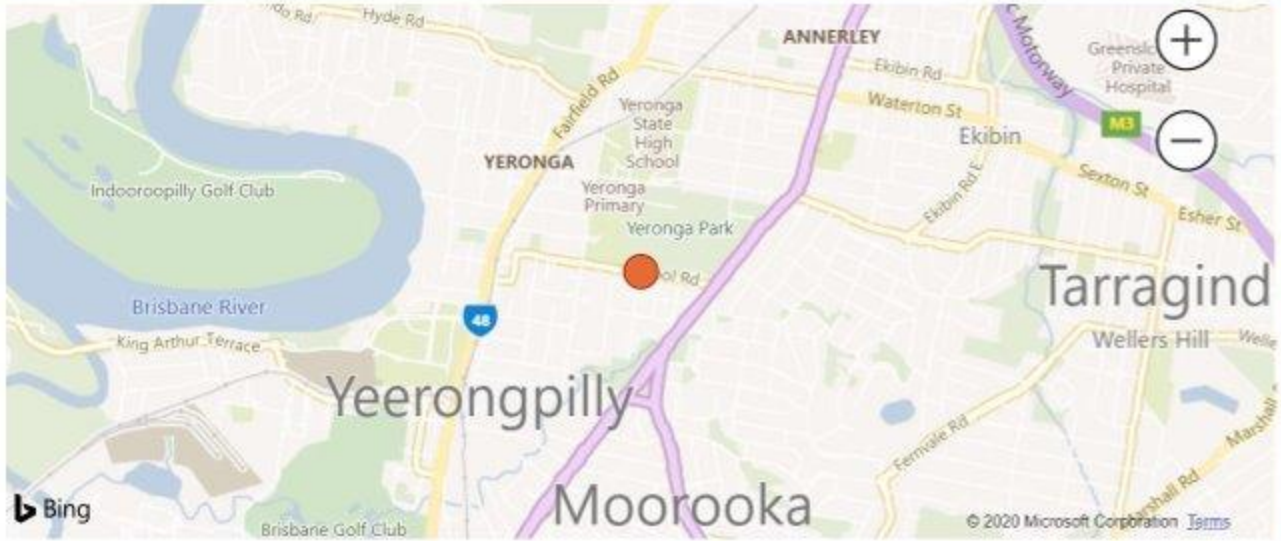
Hour Range (0-23)

0 23

1
device(s)

926
data points

1.92K
Total Consumption (KL)



Day of Week

- Friday
- Monday
- Saturday
- Sunday
- Thursday
- Tuesday

Seasons

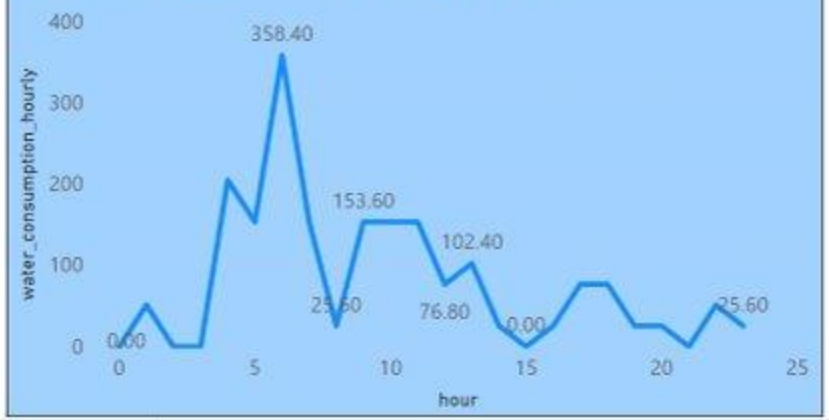
- Spring
- Winter

Water Meters

- Select all
- Yeronga Pool Water Meter - Main

Total Water Consumption (KL)

Avg Hourly Water Consumption Total (KL)



Consumption Report

DAILY

WEEKLY

MONTHLY

FRONT | Daily-Consumption | Weekly-Consumption | Monthly-Consumption

BACK

Site-wise Water Consumption (Weekly)

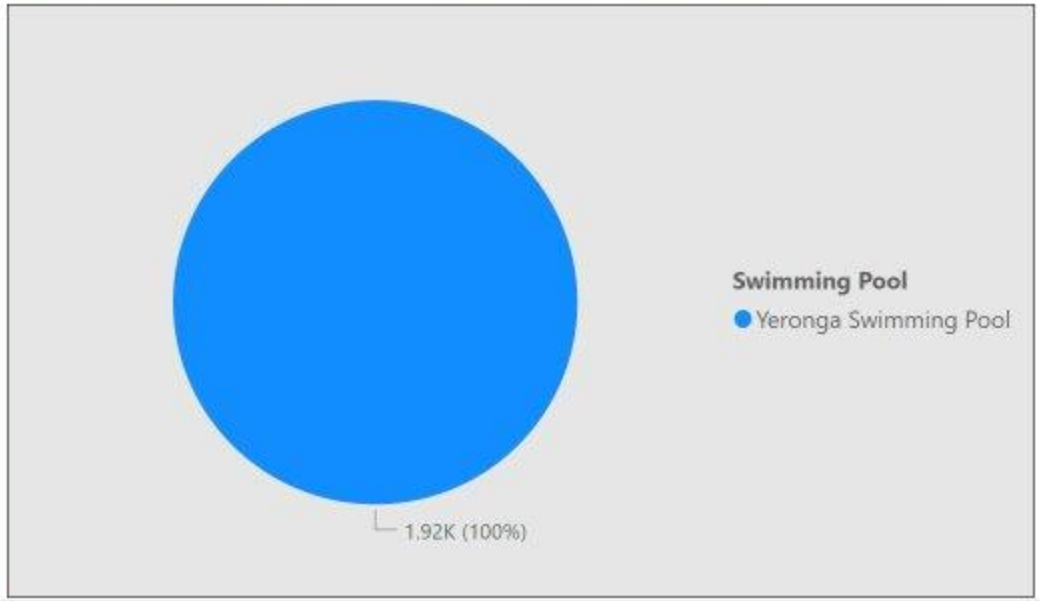
Sites

Yeronga Swimming Pool

Week Range

36 43

1	1.92K	240.00
Site(s)	Total Consumption (KL)	Average of Weekly Consumption



FRONT | Daily-Consumption | Weekly-Consumption | Monthly-Consumption

Campus Streaming WAP data Ingestion

1. Challenge

One of the renowned US university deployed around 2000 Cisco Meraki Wireless Access Points (WAP) which are capable to identify presence of people and streams presence data every 15 minutes. They intended to capture and use this presence data to show foot traffic, identify COVID compliant distance and finally to keep these data for aggregation as well as machine learning models.

2. Scope of work

In my capacity as a subcontractor and technical specialist, I undertook a multifaceted project comprising three distinct phases.

The initial phase involved executing scenario-based simulations, randomizing floor traffic, and subsequently streaming the data, which was then presented in real-time through Power BI.

The second phase focused on capturing real-time streaming presence data from Cisco Meraki Wireless Access Points (WAPs) and visualizing the traffic patterns within Power BI.

The third and final phase centered on trialing Azure Data Explorer with the streaming data, assessing the environment in collaboration with the Data Science team.

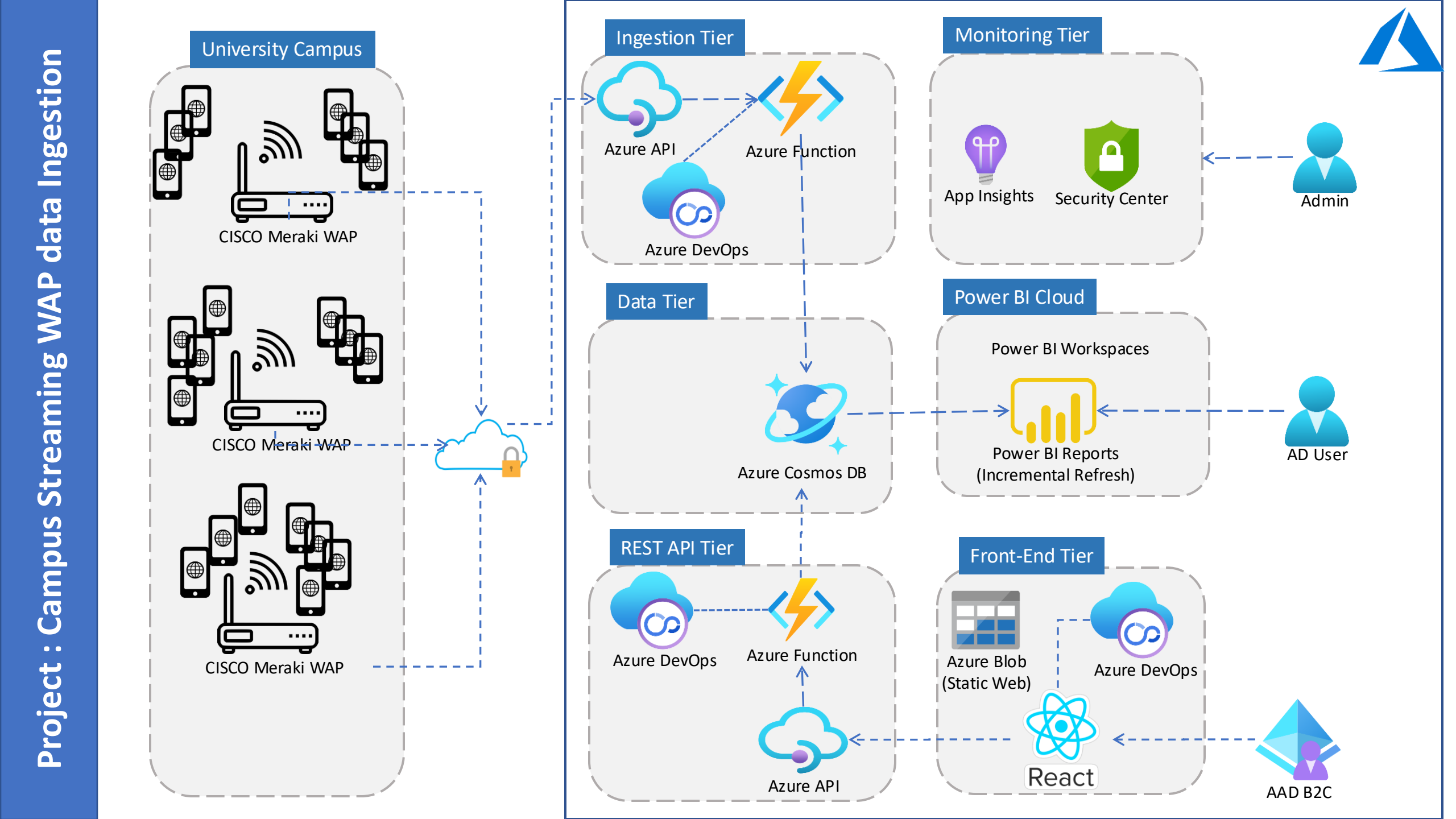
3. Technology stack

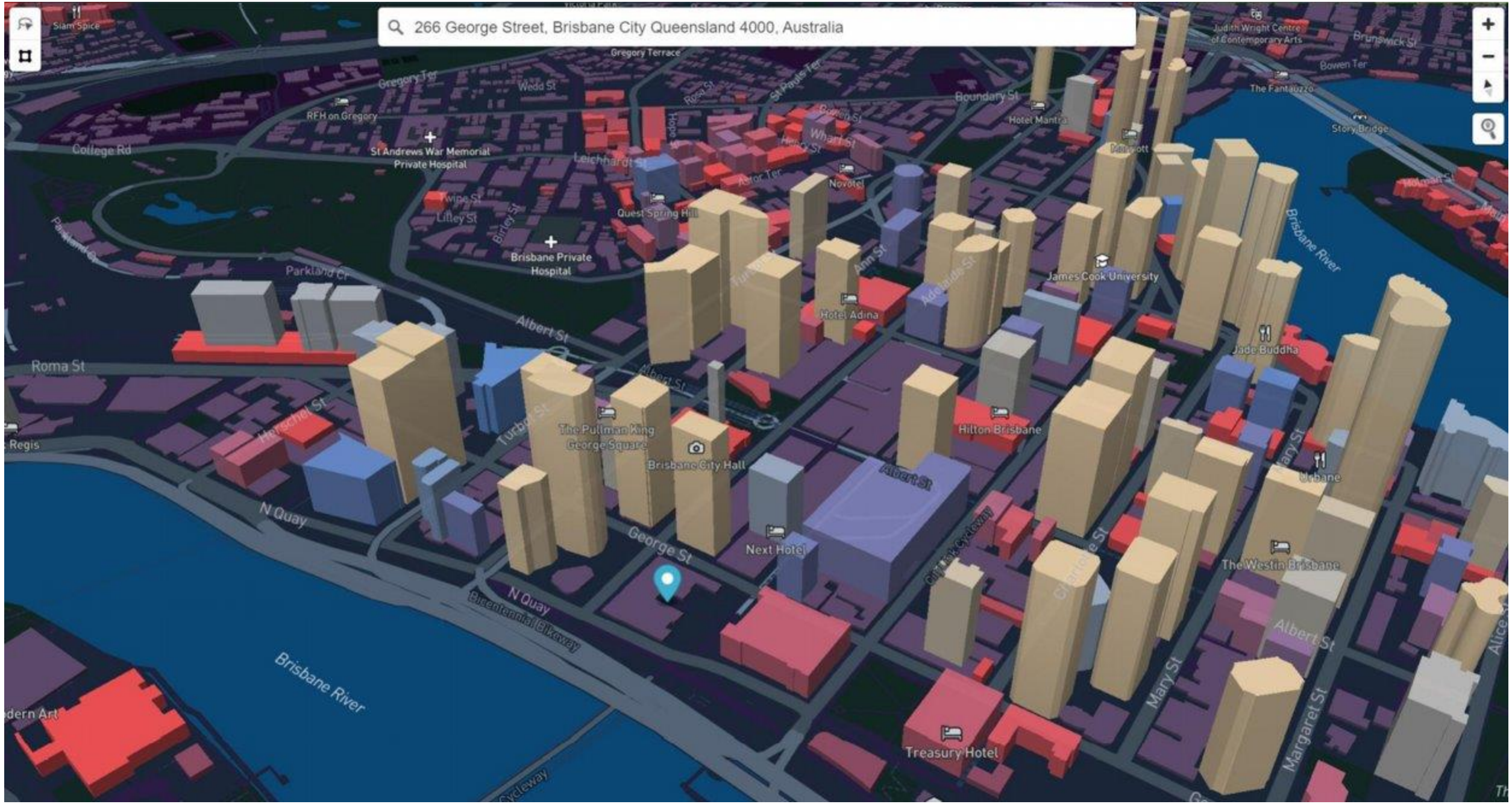
- Microsoft Azure Cloud
- Azure Logic Apps
- Azure Cosmos DB
- SharePoint
- IoT Hub
- Data Lake Gen2
- Azure API Management
- Node-RED
- Azure Data Explorer

4. Outcome

- Fully productionized IoT data ingestion architecture
- 3 different IoT product packages (i.e. templates)
- Implemented 7 different use cases and receiving data from various type of sensors (e.g. Soil Moisture, Water level, water quality, air quality, Smart street lights, Bike counter, People counter etc)
- Multiple Power BI dashboards

Project : Campus Streaming WAP data Ingestion




266 George Street, Brisbane City Queensland 4000, Australia
Siam Spice
Gregory Terrace
Gregory Tce
Wedd St
RFH on Gregory
College Rd
St Andrews War Memorial Private Hospital
Leichhardt St
Hope St
Rose St
St Pauls Ter
Bowen St
Wharf St
Aeror Ter
Boundary St
Hotel Mantra
Novotel
Quest Spring Hill
Wipe St
Lilley St
Birley St
Brisbane Private Hospital
Parkland Cr
Albert St
Roma St
Ann St
Turbot St
Hotel Adina
James Cook University
Brisbane River
Judith Wright Centre of Contemporary Arts
Brunswick St
Bowen Ter
The Fantazzo
Story Bridge
Jade Buddha
Hilton Brisbane
The Pullman King George Square
Brisbane City Hall
Herschel St
N Quay
George St
Next Hotel
N Quay Bicentennial Bikeway
Brisbane River
Cycleway
Treasury Hotel
Clarence St
Mary St
Margaret St
The Westin Brisbane
Albert St

Date

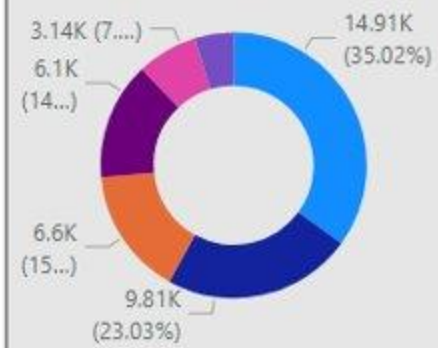
12/05/2021 16/05/2021

Hour

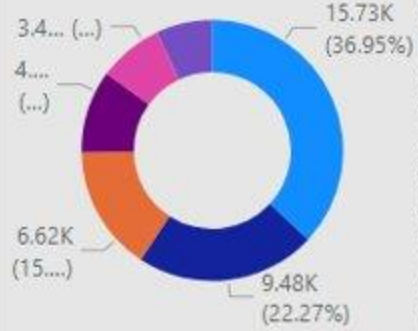
0 23

12.70K	2170	42.57K
client MACs	WAP MACs	observations

Visits by Building Types



visits by Period



Building

- Art (Faculty Studios)
- Barr Building
- Crossroads Dining Hall
- Freshens
- Human Resources
- Hunter Hall
- Starbucks Coffee
- Stophel Hall Apartments
- University Center Food Court
- UTC Admin Building
- UTC Alumni House

Level

- 1
- 2
- 3
- 4
- 5
- 6