CNERG F24: Smart Campus Research

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Smart Campus Research Team

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Sprint Goal

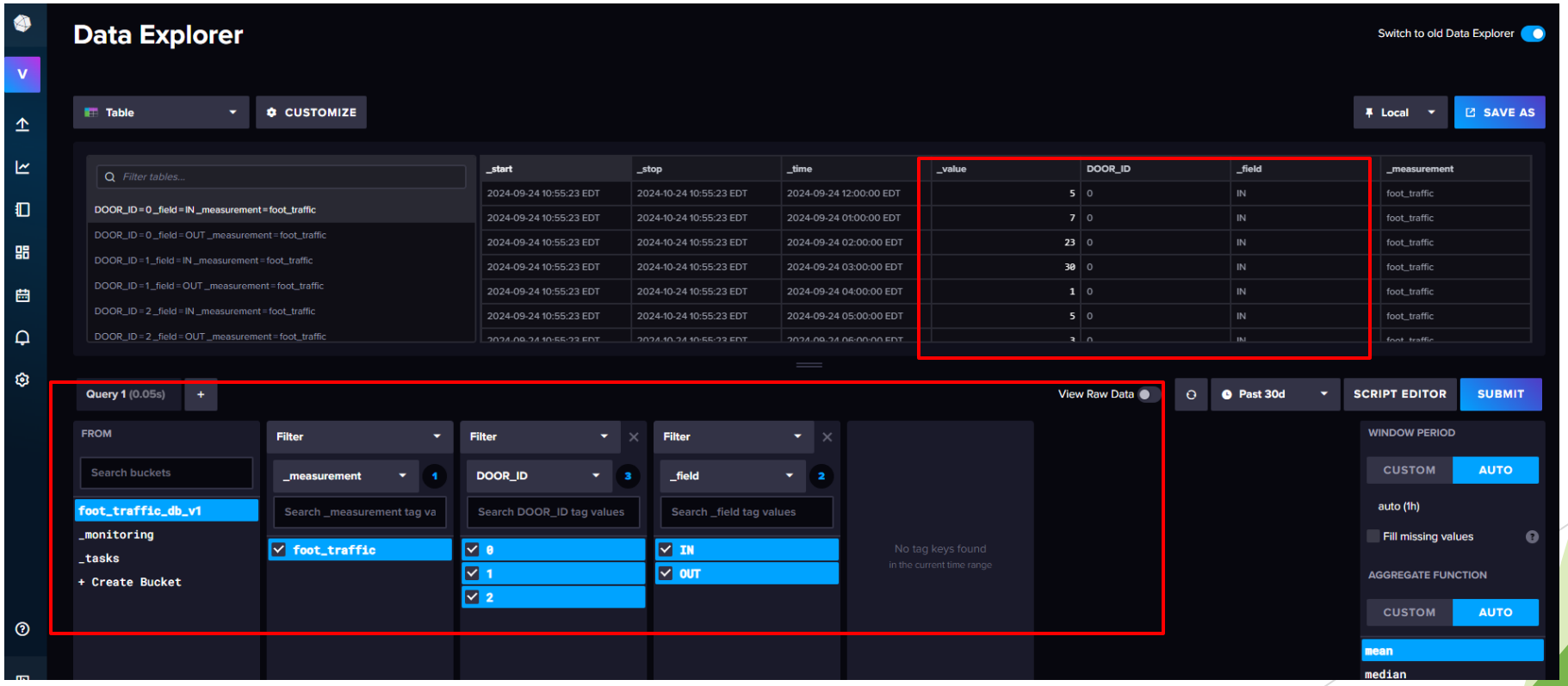
- Sensors
  - Install and validate sensors (HX-HE3).
  - Confirm sensor functionality and performance, decide on additional purchases.
- Dashboard
  - First attempts at building in unity.
  - Look in to purchasing assets and tools.
  - Determine what information to include in dashboard and how it will be displayed.
- 3D Simulation
  - Review NPC/AI integration.
  - Review AI Investigation Roll-a-ball machine learning.
- DB Server
  - DB Server Setup.

Sprint Activities Completed

- Sensors
  - Working on validate sensors. (Install sensors with receiver device on hinge side of door)
  - Determine location to test and validate sensors.
  - Draft memo to notify team of sensor installation to collect anonymous data. (In/out movement in rooms).
- Dashboard
  - Test data visualization tools (Power BI, Grafana, XChart).
  - Prototype dashboard design layouts.
- 3D Simulation
  - Examine AI Investigation Roll-a-ball project for use in 3D simulation.
- DB Server
  - Setup VM with Azure.
  - Setup InfluxDB with VM.

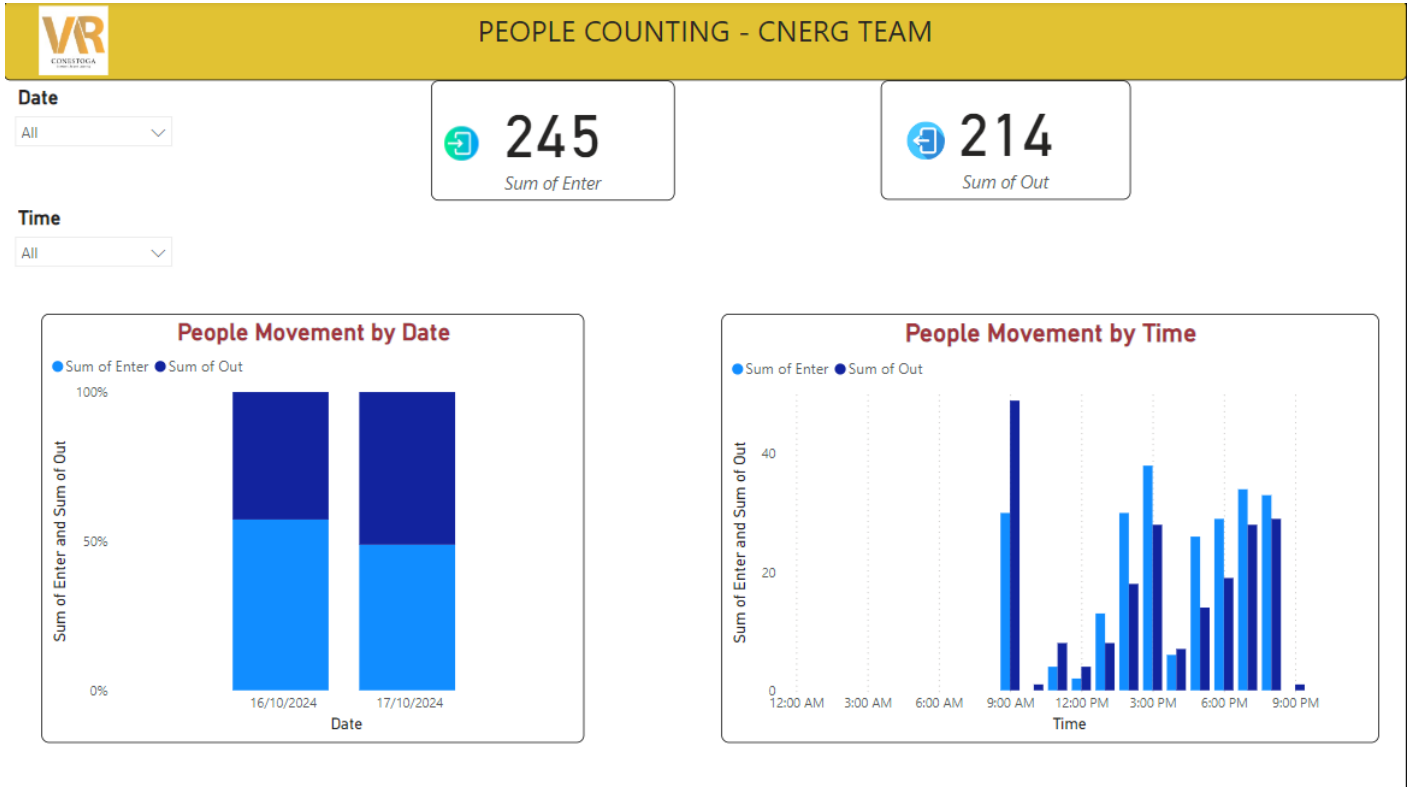
Demo (Database)

- DB Server : Setup InfluxDB with Azure VM
  : Below is InfluxDB web service UI



Demo (Dashboard Prototype)

- Prototype dashboard design for data visualization.



Demo (Dashboard Prototype)

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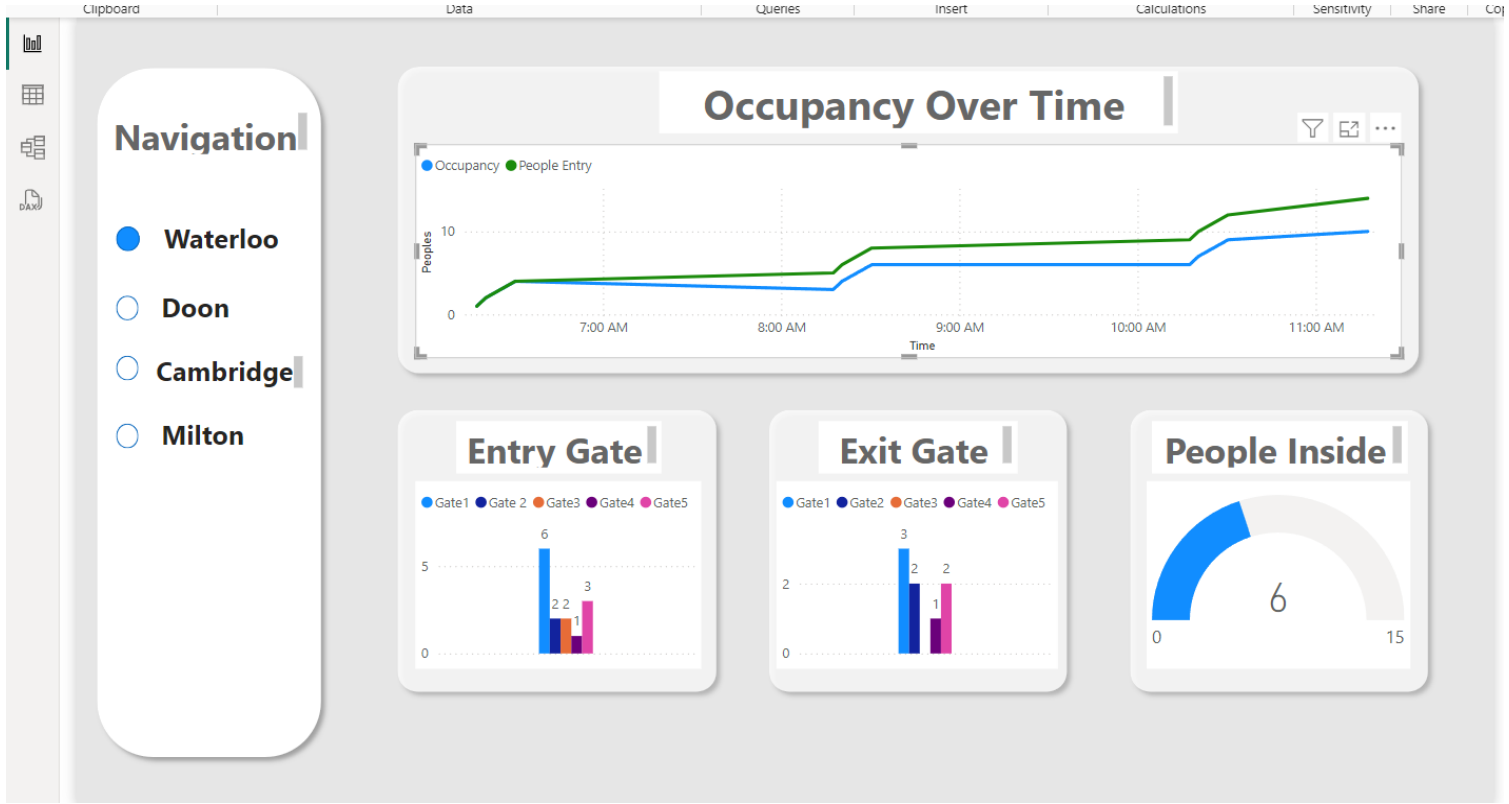
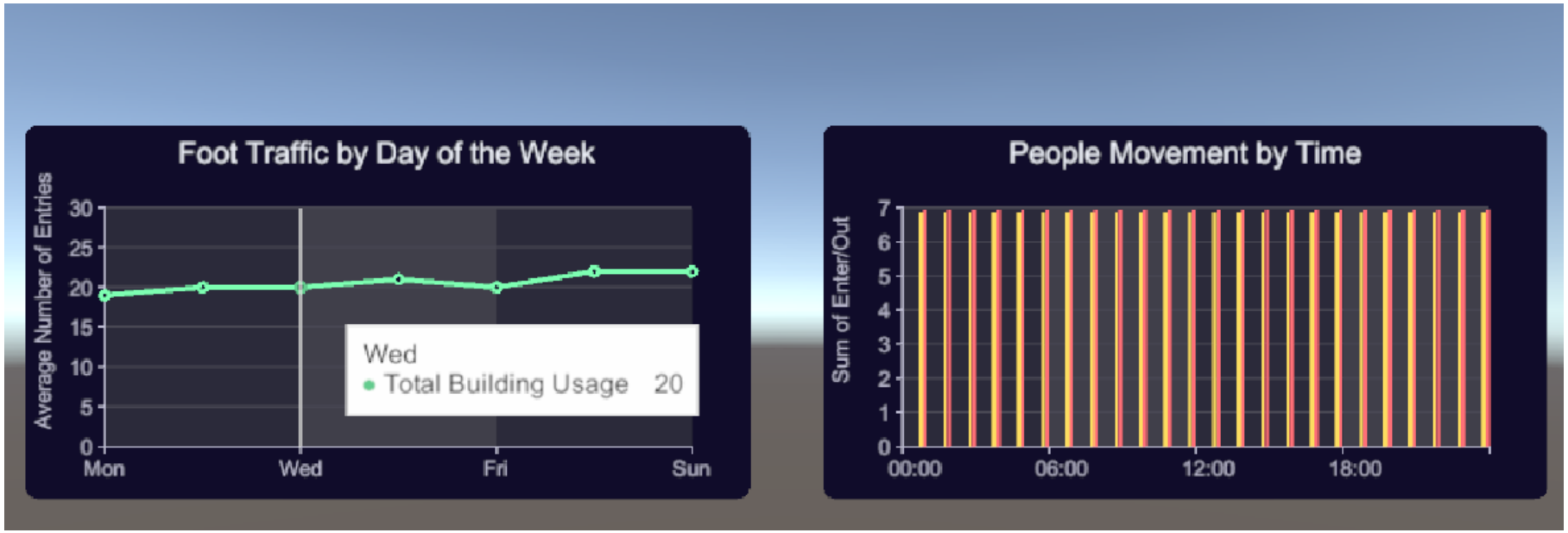


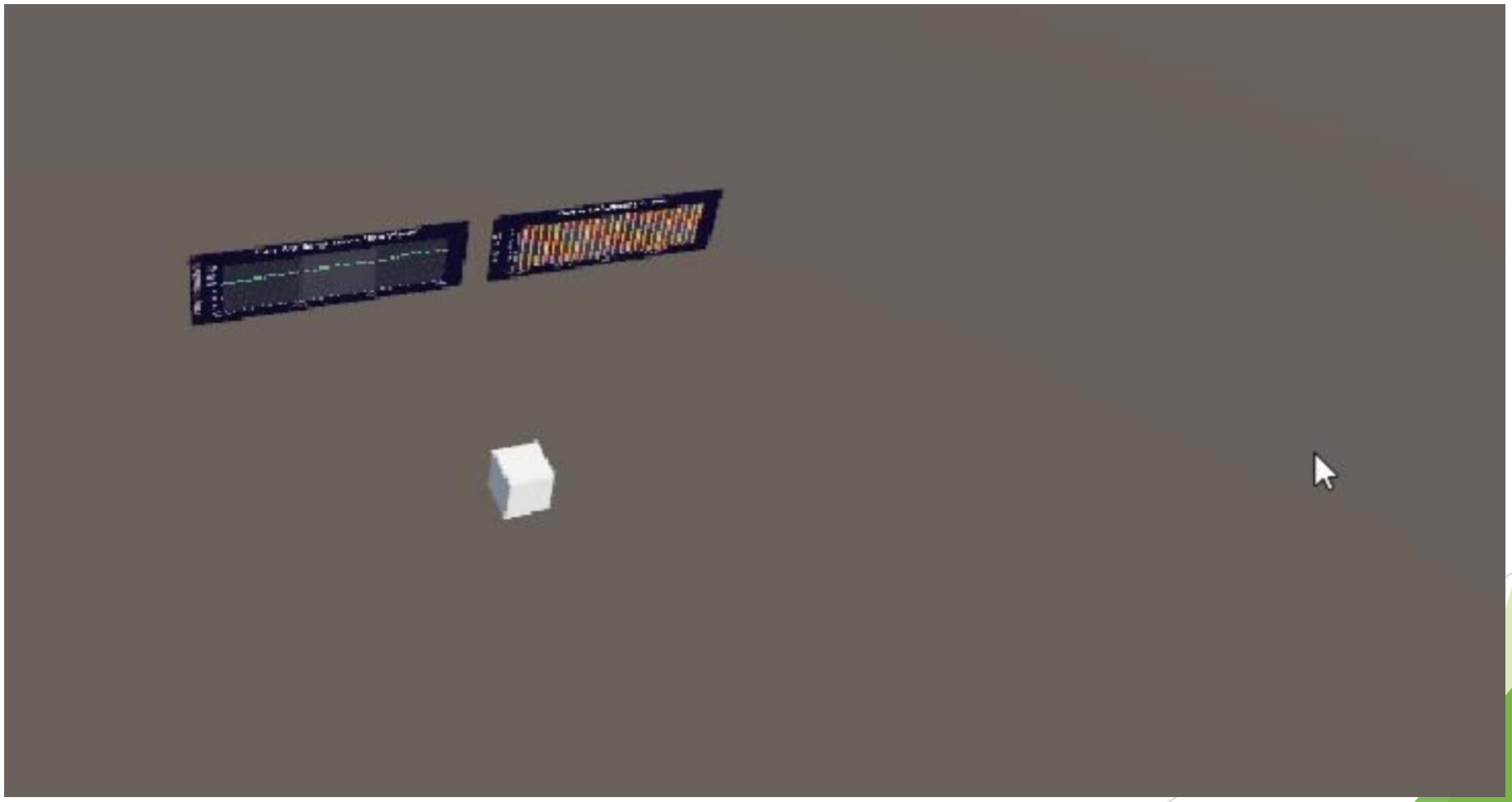
Demo (Dashboard)

- XChart data visualization in Unity



Demo (Dashboard)

- XChart data visualization in Unity with Tilt Five



Next Steps

- Sensors
  - Complete validating sensors functions and shortcomings. (Validate electronic count to actual count)
  - Post notice about sensors being used to collect anonymous data.
  - Install sensors in locations. (First in CVRI space, then student lounge, and someone watching and counting with sensors)
  - Order more sensors (HX-HE3).
  - Collect data from sensors and validate data.
- Dashboard
  - UI/Dashboard validation. (UX)
  - Interactive dashboard. (Interaction features)
- 3D Simulation
  - Look into AI heuristics applications.
  - Use data from sensors in 3D simulation.
  - Simulation should communicate our intention is to not track people.
- Digital Twin
  - Get a hold of blueprints for spaces to recreate.

Optimization opportunities

- Sensors
  - HX-HE2 sensor that can record in/out data in 5-minute periods.
- Dashboard
  - Utilize Canvas features for better data visualization
  - Paid assets.
- 3D Simulation
  - NPC heuristics.
- Digital Twin
  - CAD files for building digital twin environment(s).

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(mentioned in no specific order)

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- Jonathan
- Facilities
- Security

Any Questions?