



DATA ANALYTICS FOR RESEARCH AND EDUCATION
PROJECT'S INFORMATION EXCHANGE PLATFORM FOR THE PUBLIC SECTOR

Data Analytics for Research and Education (DARE)

Project 3: Information-Exchange Platform for the Public Sector

25 October 2019

Project Team

Project Management

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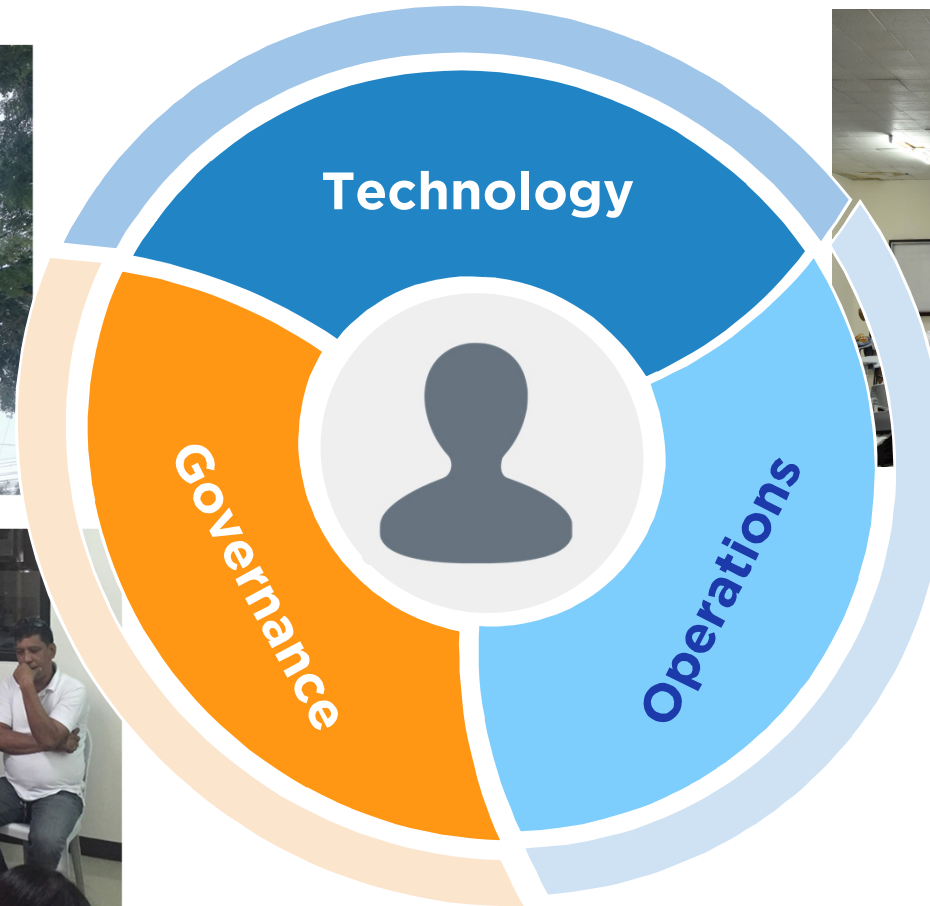
Project 3: Information-Exchange Platform for the Public Sector

Housed at the Open Source Geospatial Education Laboratory based in the U.P National College of Public Administration and Governance (UP-NCPAG), focuses on public administration viewpoint of setting, measuring and understanding performance indicators relevant to the Philippine setting that can be synthesized from the computational backends.

The deliverables of DARE are the following:

- ▷ Urban data inventory in the Philippines
- ▷ Definition of systems requirements for information exchange with public sector
- ▷ Pilot training on Transportation Decision Support Systems
- ▷ Recommendations/Policy development based on algorithm performance

Co-Designed People-Centric Public Transport Service



Key Activities



Conduct of Design Thinking Workshops



IoT Deployment and Data Collection

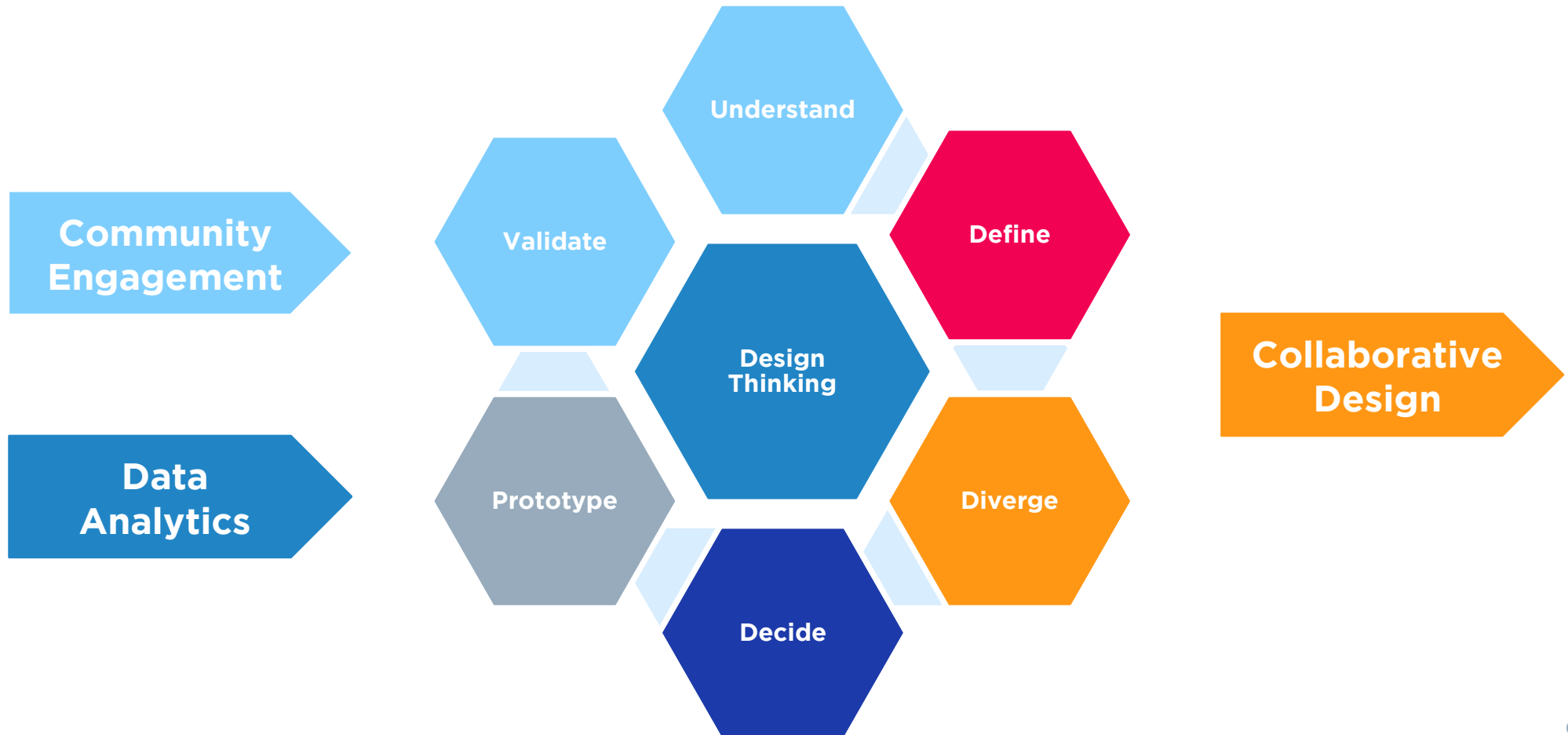


Data Analysis and Modelling

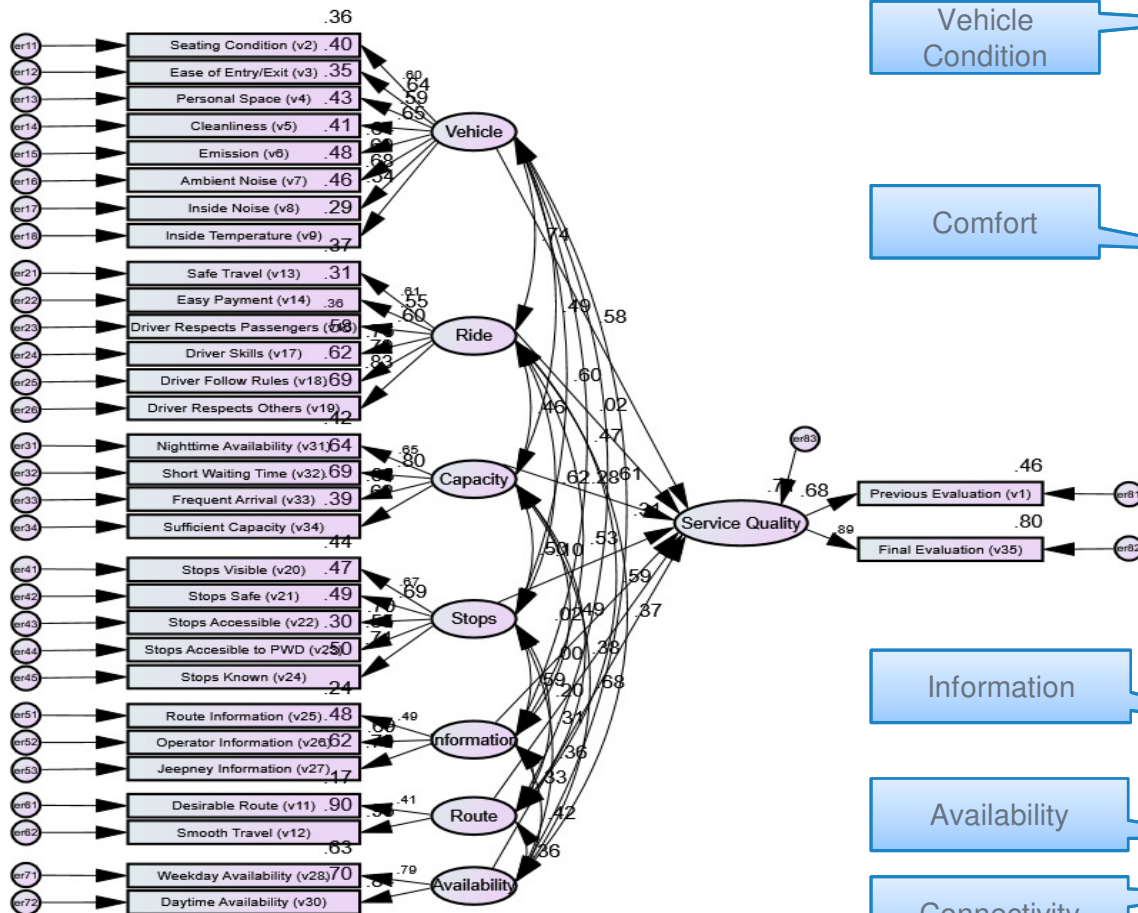


Institutional Capacity Assessment

A Framework for Co-Production of Information Exchange in Public Transport



Public Transport Quality of Service

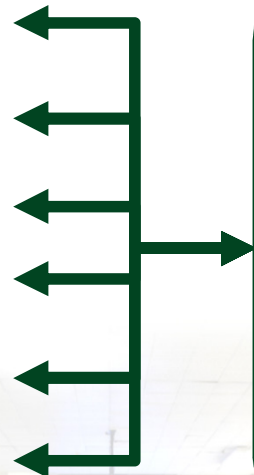


Latent Variable	Factor	Item
Vehicle Condition	Factor 1	Vehicle Condition
		Seating Condition
		Ease of Entry/Exit
		Personal Space
		Cleanliness
Comfort	Factor 2	Comfort
		Inside Temperature
		Ride Comfort
		Safe Travel
		Easy Payment
Service Adequacy	Factor 3	Service Adequacy
		Nighttime Availability
		Short Waiting Time
		Frequent Arrival
		Sufficient Capacity
Accessibility	Factor 4	Accessibility
		Stops Accessible
		Stops Visible
		Stops Safe
		Stops Accessible to PWD
Information	Factor 5	Information Provision
		Route Information
		Operator Information
		Jeepney Information
Availability	Factor 6	Service Availability
		Weekday availability
Connectivity	Factor 7	Daytime availability
		Route Connectivity
		Desirable Route
		Smooth Travel



How to Improve Public Transport Quality of Service?

-  AVAILABLE
-  RELIABLE
-  COMFORTABLE
-  PREDICTABLE
-  SAFE
-  ON TIME



-  TECHNOLOGY
-  DATA ANALYTICS
-  USER FEEDBACK
-  PARTNERSHIPS

How Might We (HMW) Rankings



Four (4) Stars

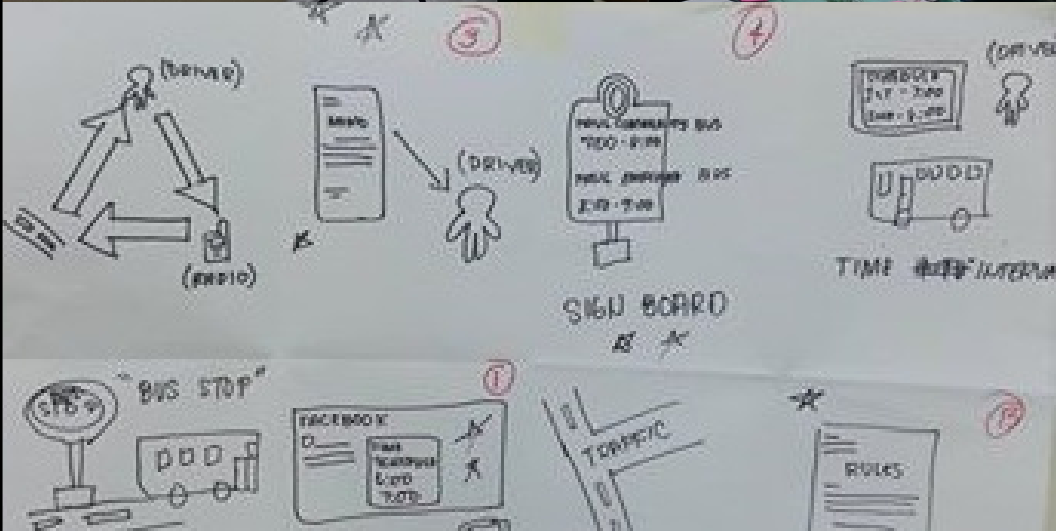
- How might we have real-time information of buses?
Paano kaya natin maiiwasan ang problema sa hindi pagsunod ng ibang driver sa tamang oras ng pag alis at dating ng bus?

Three (3) Stars

- How might we improve communication of bus service?
Paano kaya natin maiimprove ang communication ng bus service?

Two (2) Stars

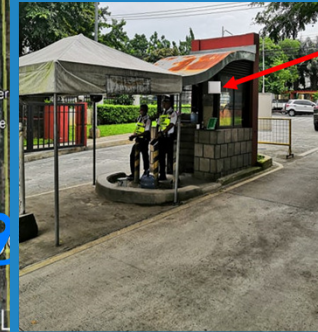
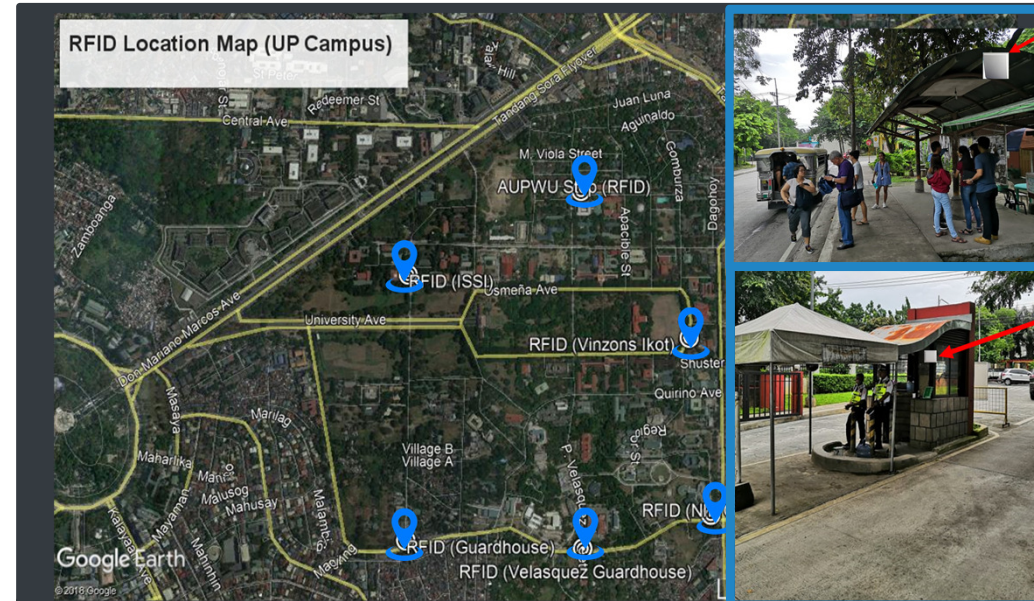
- How might we ensure that commuters can rely on the service?
- How might we improve bus schedules?
Paano kaya natin madidisciplina 'yung lahat ng driver o conductress para mapaganda 'yung operasyon?
- How might we find out O-Ds of passengers?
Paano kaya natin maipapaalam sa mga pasahero ang pagsunod sa tamang babaan at sakayan?
- How might we manage negative feedback better?
Paano kaya natin maiiwasan ang complaints ng mga pasahero?



Cost Effective Technologies

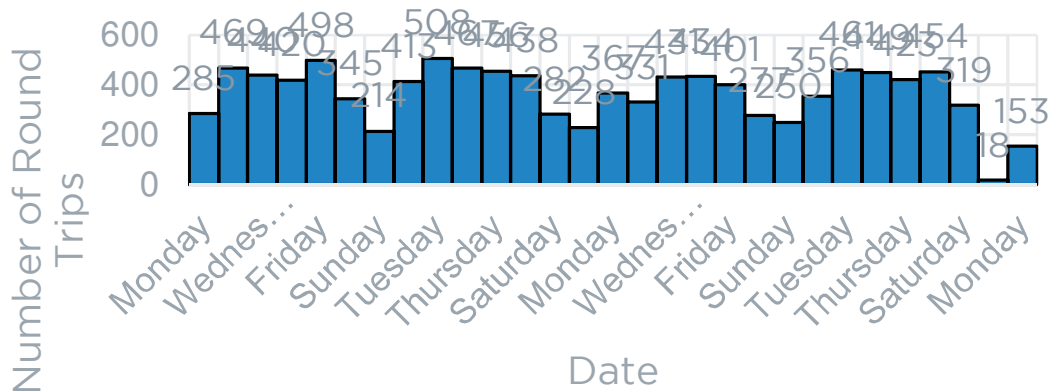
UPD Pilot	Unit Cost
Raspberry Pi	2,374.75
Casing	644.50
WiFi Dongle	800.00
SD Card 64GB	800.00
Power Supply	420.00
RFID Reader	10,000.00

Pasig Bus Pilot	Unit Cost
Raspberry Pi, Casing, and SD Card 64GB	3,819.25
Sixfab with Accessories	5,000.00
Camera	800.00
GPS Antenna	400.00
Internet Usage	399.00/month
Cloud Server Hosting	750.00/month



UP Case: RFID Data Output

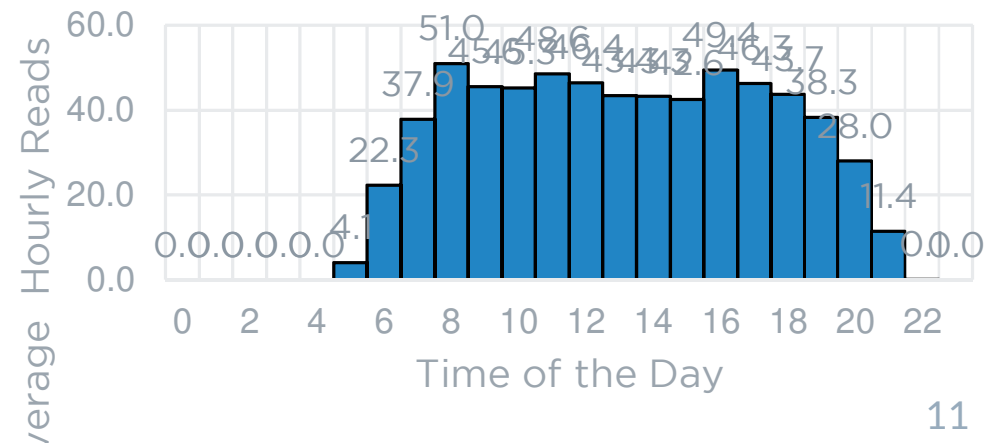
Number of Round Trips
(September 2019)



▷ RFID Data can be used to determine number of round trips done by a certain vehicle and estimating daily revenue for the jeepney drivers.

▷ RFID Data can be used to determine number of vehicles passing through the RFID Receiver for a certain period (hourly, daily, monthly).

Average Readings for 09Sept to 15Sept

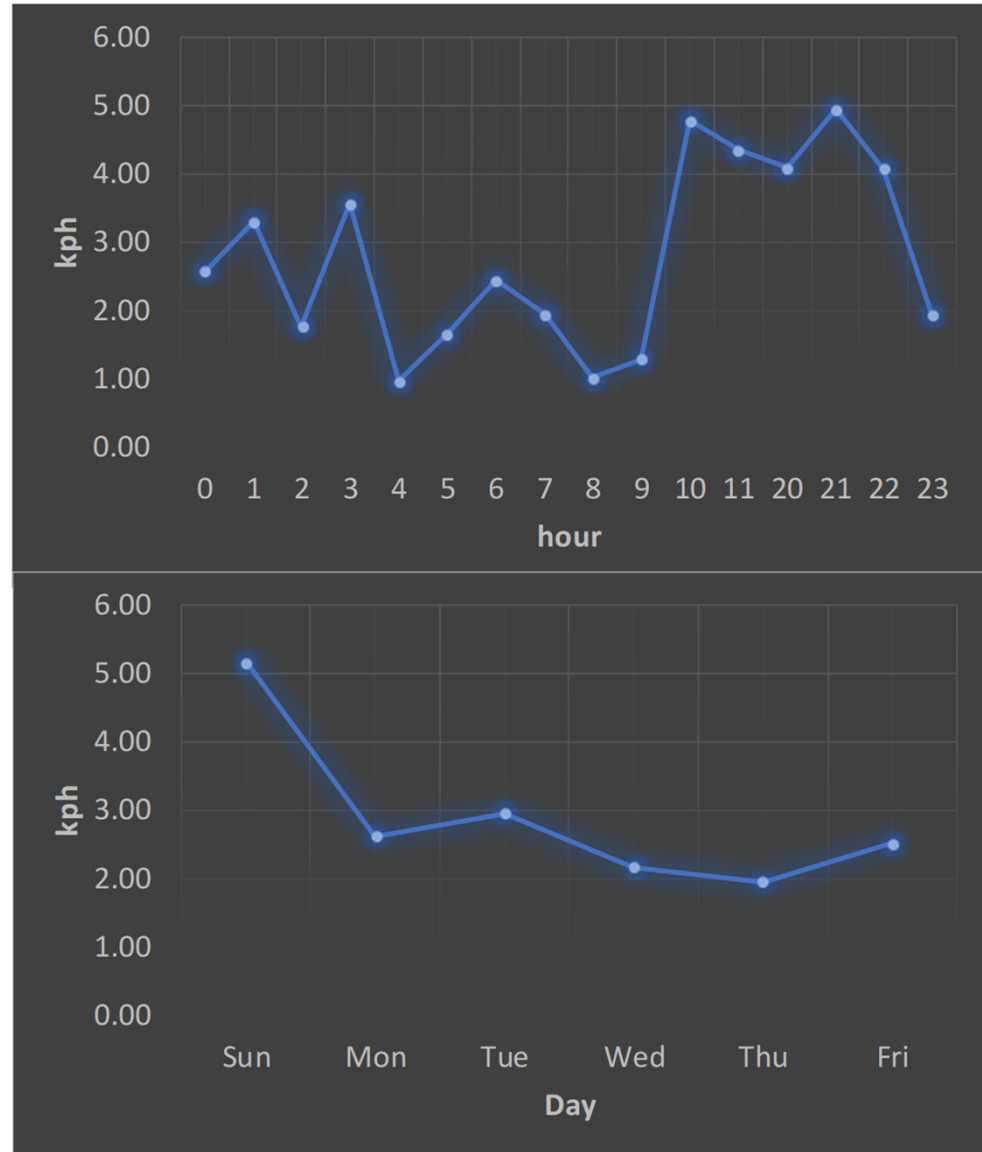
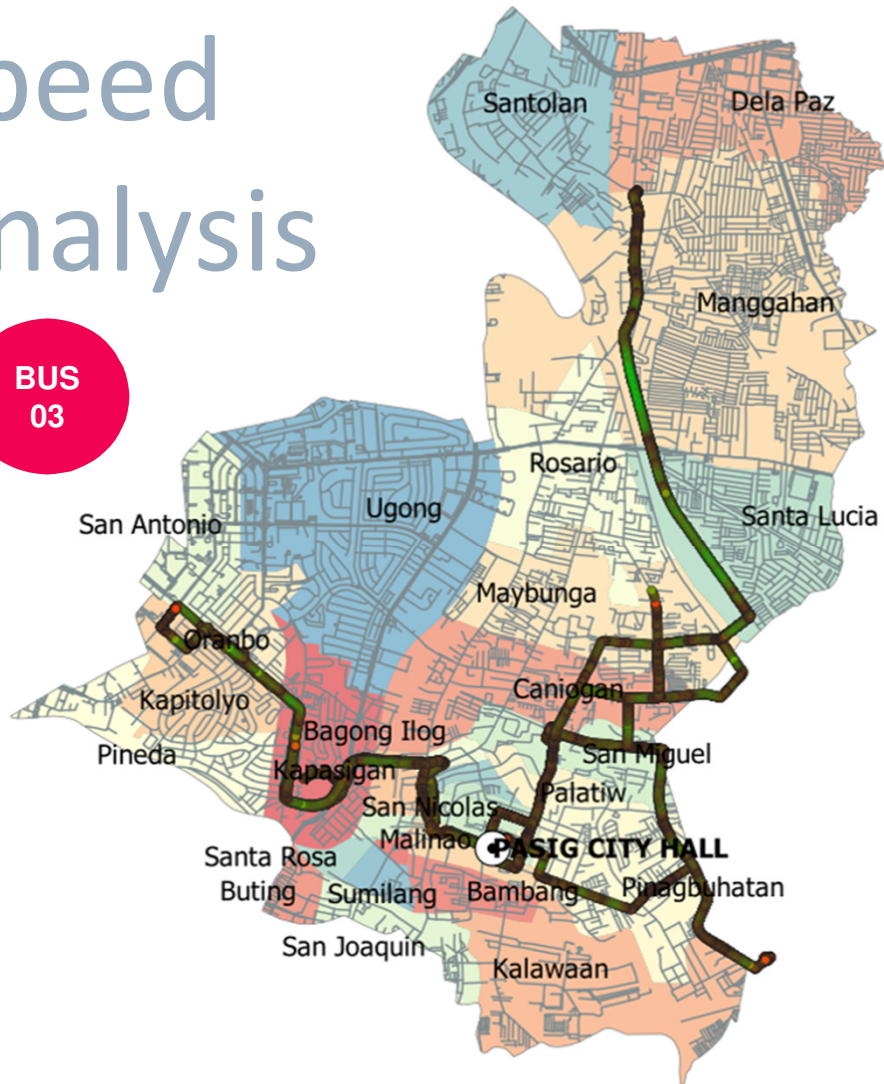


Pasig Case: Primary Needs for Bus Performance Monitoring

Bus Tracking Parameters	Collected?	Remarks
Real-Time Location	✓	Needs a quality check and data processing protocol
Boarding-Alighting	✓	Currently manual; potential for image processing using cameras
Stop Time/ Idling Time	✓	Needs algorithms or policy-based parameters to be detected accurately
Average Travel Speed	✓	Needs quality check and data processing protocol
Staff Delinquency	✗	None in current deployed technology
Fuel Consumption	✗	Needs additional module to be done or may be estimated using SFC rating (liters/100km)
Commuter Service Requirements	Collected?	Remarks
Customer Satisfaction	✓	Will be available through the app (WIP)
PWD Ridership	✗	None in current deployed technology

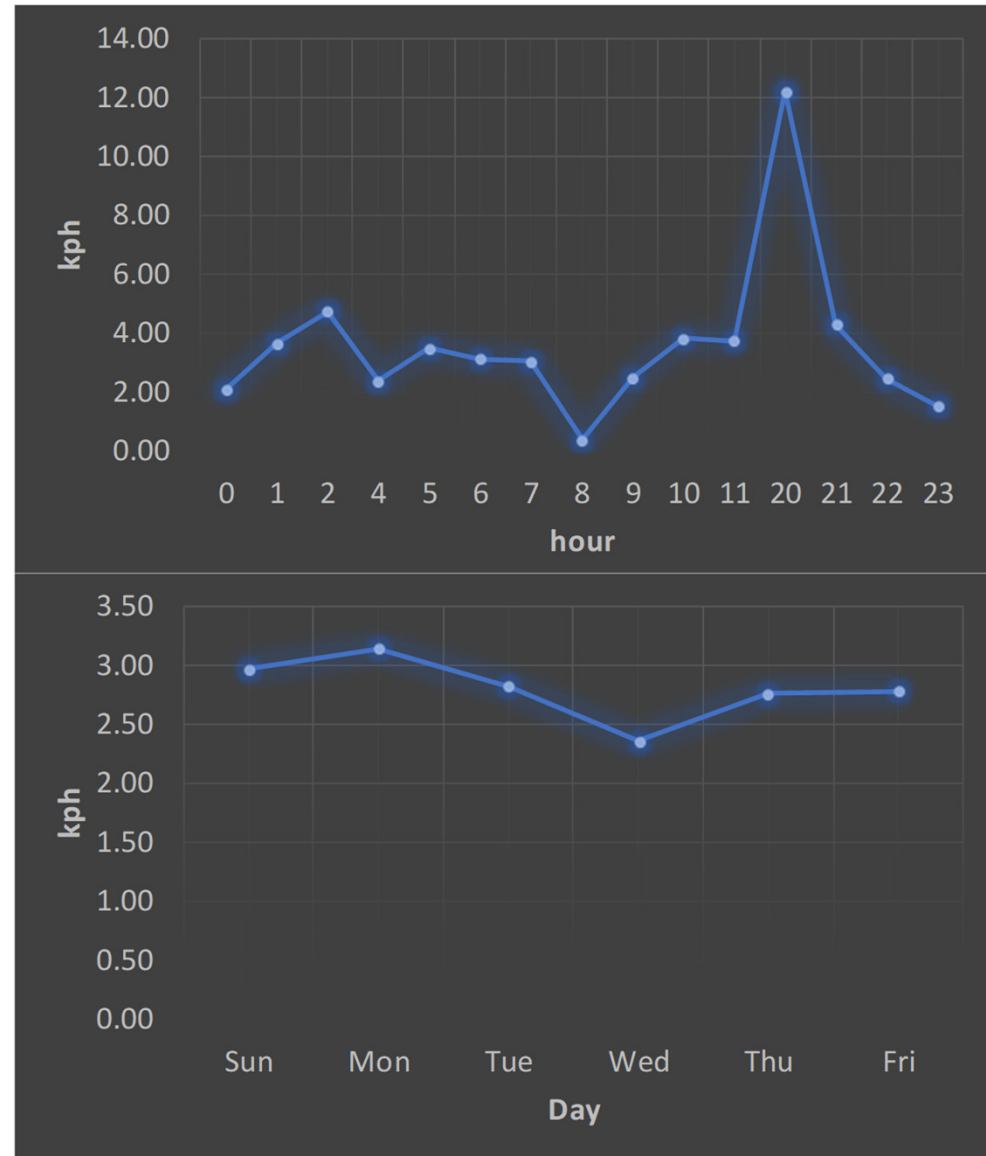
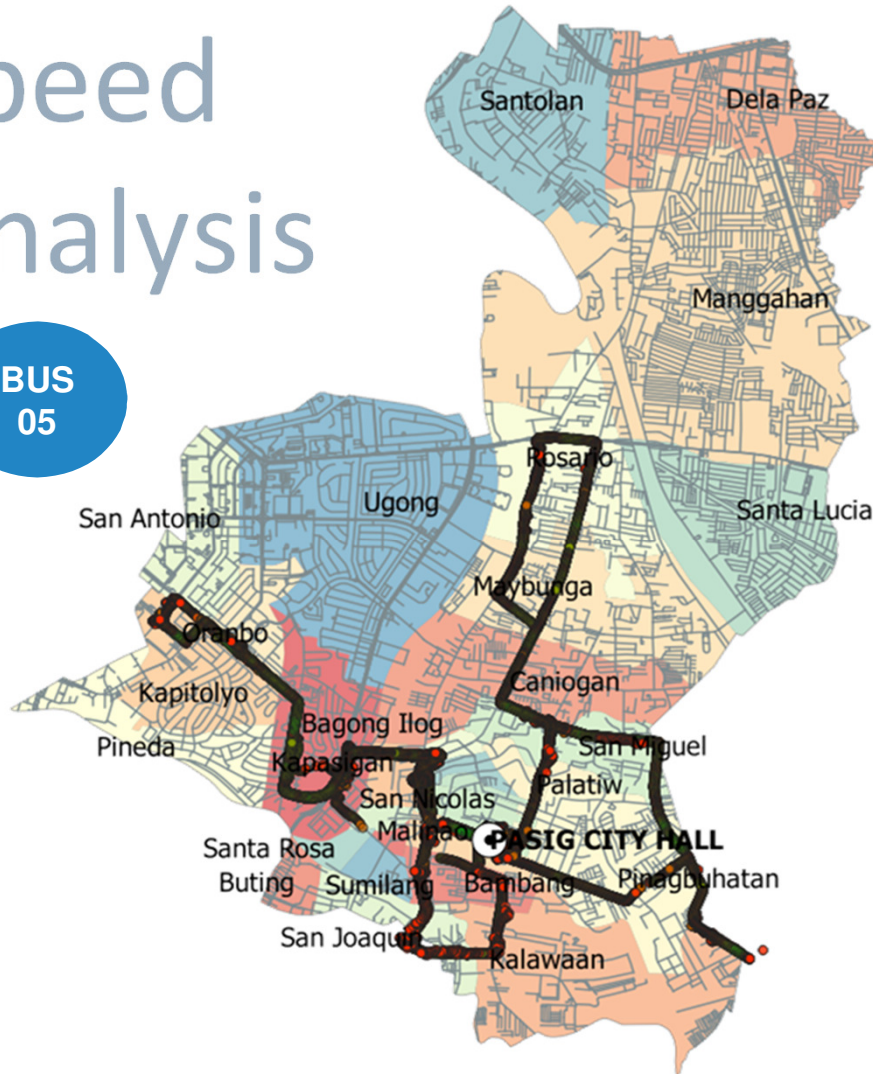
Speed Analysis

BUS 03



Speed Analysis

BUS 05



Challenges



Procurement



Integration of Systems



Integration of Design-Making Process



Staff Capacity in Data Management and Handling



Technology Investment Costs



System Reliability

Thanks!

Any questions?

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