JASCA Seminar & Business Matching in Indonesia 2023

DX for Sustainable Urban Mobility

November 2023

Kenichi Kouchi

NIPPON KOEI

Introduction

Introduction

Kenichi Kouchi

Professional Engineer (Civil Engineering, Urban & Regional Planning)

2006.4 - Work for Nippon Koei

- Program Management for Smart Mobility Challenge in Japan
- Project Management for Demonstration of Transportation Services using Autonomous Vehicles in Japan
- Public Transportation Masterplan, Various Cities, Japan
- Study on ITS Masterplan in Brazil etc.

2022.7 – Nippon Koei Singapore Office

Education	:	Master of Engineering (Civil Engineering), Tokyo University
Qualification	:	Professional Engineer, Japan (Civil Engineering, Engineering Management)
	:	Professional Engineer, Japan (Urban & Regional Planning, Road Engineering)
	:	Project Management Professional, PMI Agile Certified Practitioner (Project Management Institute)

ABOUT NIPPON KOEI

JAPAN AND GLOBAL

JAPAN'S NO:

1

INTERNATIONAL CONSULTING COMPANY

ESTABLISHED IN

1946

WITH OVER 75 YEARS OF EXPERIENCE IN THE INDUSTRY

OVER

6163

MULTIDISCIPLINARY PROFESSIONALS FORM ALL OVER THE WORLD

WE OPERATE IN OVER

160

COUNTRIES

OVER

9000

NUMBERS OF ORDERS PER YEAR

OVER

80

PATENTS ON NUMERICAL ANALYSIS AND EXPERIMENTS IN CIVIL ENGINEERING TECHNOLOGIES

4M

HA LAND

*SUPERVISION WORLDWIDE, ABOUT THE AREA OF SWITZERLAND OR TAIWAN R.O.C. OR KYUSHU

5.6K

KM RAILWAY TRACK

DESIGN AND SUPERVISION WORLDWIDE, EQUIVALENT TO THE DISTANCE FROM NEW YORK CITY TO LONDON

13 K

KM POWER TRANSITION LINES

*SUPERVISION WORLDWIDE, OVER 1/4 OF THE CIRCUMFERENCE OF THE EARTH

Singapore Office

With a team of experienced data scientists, architects, and urban/transportation planners, we bring together expertise from various disciplines to offer comprehensive solutions that address the complex challenges of the mobility and urban development sector.

KUNIHIRO UZAWA
GENERAL MANAGER

KENICHI KOUCHI
SENIOR EXECUTIVE ENGINEER (TRANSPORTATION)

ANDY WONG
TECHNICAL DIRECTOR DATA SCIENCE

NAMITA DINESH
SENIOR SMART CITY DESIGNER (MOBILITY)

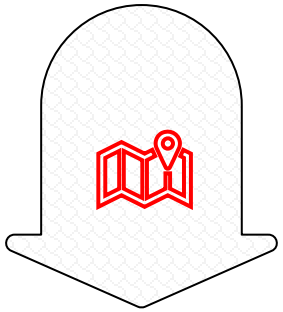
WANG ZI
DATA SCIENTIST

Activities in Singapore Office
– Mobility as a Strategy –

Background

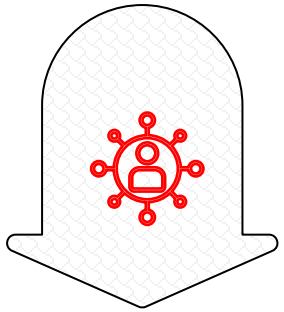
STRATEGIC USE OF MOBILITY DATA

mobility data can provide valuable insights into how people move around a city and how they interact with buildings and developments, which can be used to improve the overall experience for tenants and optimize the performance of assets.



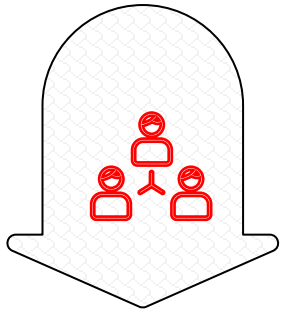
LOCATION ANALYSIS

Mobility data can be used to understand how people move around a city and identify areas where there is high foot traffic, which can be useful for identifying potential sites for new developments.



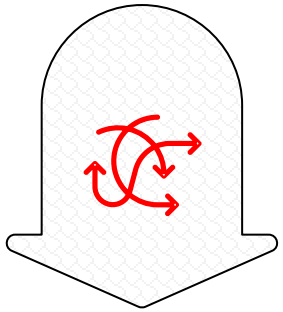
TENANT/ POPULATION PROFILING

Mobility data can be used to understand the demographics and behavior of tenants in a building or area, which can inform decisions about building amenities and services, and help to attract and retain tenants.



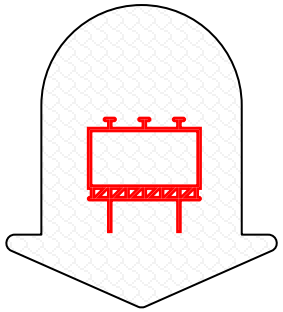
PROPERTY/ ASSET MANAGEMENT

Mobility data can be used to monitor the usage and occupancy of buildings and common areas, which can help to optimize energy consumption, improve security, and enhance the overall experience for tenants.



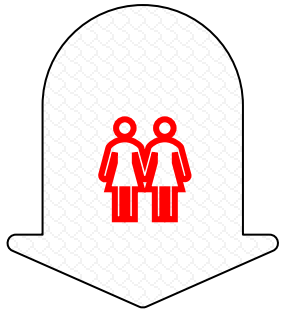
URBAN/ TRANSPORTATION PLANNING

Mobility data can be used to understand how people are getting to and from a building or development, which can inform decisions about transportation infrastructure and services.



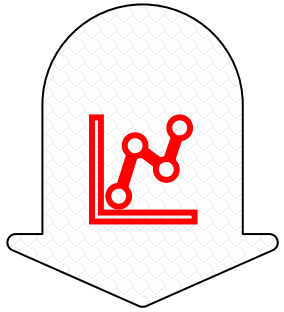
MARKETING AND ADVERTISING

Mobility data can be used to analyze consumer behavior and target marketing campaigns based on where people go and what they do.



REAL TIME MONITORING/ DIGITAL TWIN

Mobility data can be used to monitor the activity of the property in real-time, allowing property managers to respond quickly to any issues that arise, such as overcrowding or security breaches.



PREDICTIVE ANALYTICS

Mobility data can be used to predict future trends in tenant behavior and occupancy, which can inform investment decisions and help to mitigate risk.

PROBLEM

- Siloed Data
- Broken Analytics and Biased Insights
- High Velocity
- High Set Up and Infrastructure Cost

Purpose

MISSION

Our **mission** is to aggregate and analyze mobility data from across Asia, providing accessible and actionable insights to empower **individuals, businesses, and governments** to make informed decisions.

OBJECTIVES

Developing **advanced analytics capabilities** to extract insights from the data, such as identifying transportation patterns and trends, predicting demand, and identifying areas for improvement.
Providing **easy-to-use tools and interfaces** that allow users to access and interact with the data and insights, such as dashboards and APIs.
Insights and Intelligence at scale that encourage **Seamless knowledge transfer** between all enterprises, governments, and consumers.
Continuously **monitoring and evaluating the impact of the insights** and recommendations provided by the platform on the mobility landscape in Asia.

VALUE PROPOSITION

BENEFITS FOR COMMUTERS AND SOLUTION PROVIDER

FOR COMMUTERS

For improving personal choices, savings, rewards and social status

FOR SOLUTION PROVIDER

Gathering time-series analysis of the health of the transportation and city, real-time analysis on results

SAFETY

A MaaS super app can provide real-time information on traffic, weather, road conditions, as well as information on safe and secure Walk-Cycle-Ride transportation options.

COST SAVINGS

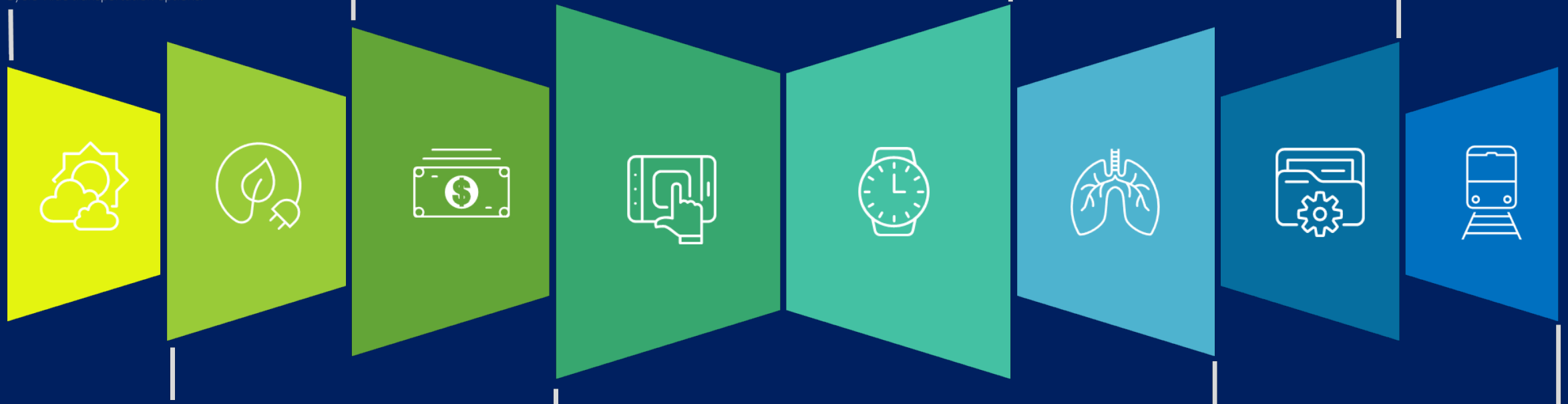
By providing information on the most cost-effective transportation options, a MaaS super app can help users save money on transportation costs.

REDUCED TRAFFIC CONGESTION

By encouraging the use of public transportation and other shared mobility options, a MaaS super app can help to reduce traffic congestion and improve traffic flow in cities.

DATA COLLECTION AND ANALYSIS

A MaaS super app can collect data on transportation patterns and user behavior, which can be used by government agencies to make more informed decisions about transportation policy and planning.



SUSTAINABILITY

A MaaS super app can encourage more sustainable transportation choices by providing incentives and rewards for eco-friendly transportation options.

SEAMLESS WALK-CYCLE-RIDE

A MaaS super app can help to provide a seamless and convenient transportation experience for users by integrating multiple modes of transportation and providing real-time information on schedules and delays.

IMPROVING AIR QUALITY

A MaaS super app can encourage more sustainable transportation choices, such as using electric vehicles or public transportation, which can help to reduce air pollution and improve air quality in cities.

MULTI-MODALITY

By integrating multiple modes of transportation and providers, a MaaS super app can help to create a more efficient and integrated transportation system, which can improve mobility for all residents and visitors to a city.

DIGITAL JOURNEY PLANNER

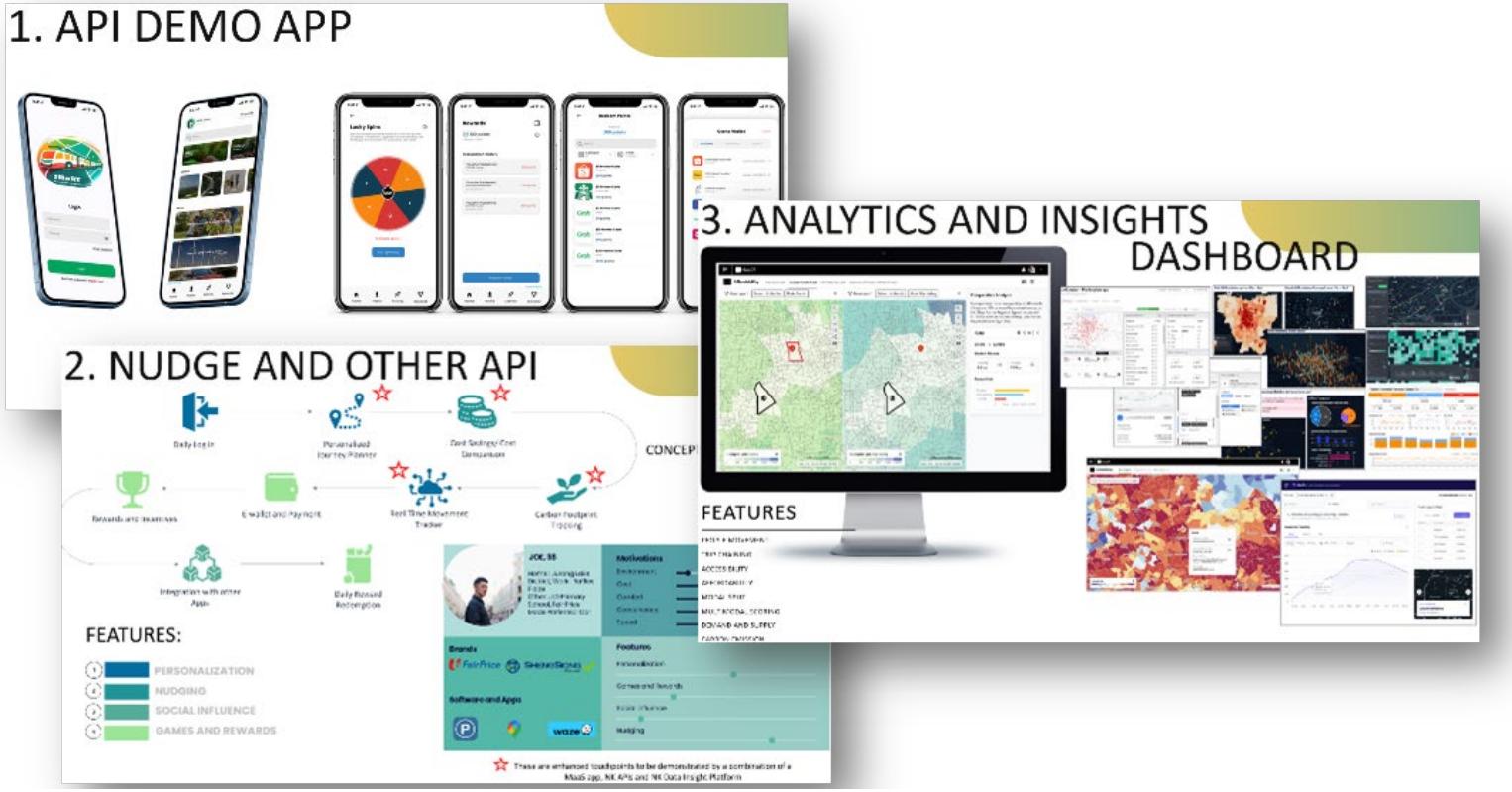
Nudging behaviour to encourage more Walk Cycle Ride

Open innovation challenge in Singapore

Problem Statement of Land Transport Authority

How might we encourage drivers to go **car-lite and promote more Walk-Cycle-Ride modes of transport for trips** within the Jurong Lake District?

Proposed Solution



PROPOSED SOLUTION

FEATURES FRONT END

Offering the new Social Status in the SMaRT Eco-system:

SMaRT Producer

The overall approach will give the users a way to measure their behavior, make changes to become SMaRTer, claim Score points for rewards, and Share this new social status with their peers, friends and family.

PERSONALIZATION

Login: This feature will allow users to securely log in and out of the app using their email or social media accounts.

Personalized journey planner: This feature will allow users to plan their journeys based on their preferences, including mode of transportation, cost, travel time, and carbon footprint.

Real-time movement tracker: This feature will allow users to track their movement in real-time while using public transportation or other Walk-Cycle-Ride modes.

NUDGING

Calorie/ carbon footprint comparison: This feature will allow users to compare the cost and environmental impact of different transportation modes and routes.

Cost savings: This feature will allow users to track their transportation expenses and identify cost-saving opportunities.

SOCIAL INFLUENCE

Integration with other apps: This feature will allow users to seamlessly integrate with other transportation or lifestyle apps, such as ride-sharing or restaurant apps. Including share badges on social media.

GAMES AND REWARDS

Rewards and Games: This feature will allow users to earn rewards for using eco-friendly modes of transportation and redeem them for various benefits, such as discounts, free rides, or other rewards.

Redemption feature: This feature will allow users to redeem rewards within the app. It can include a catalog of available rewards and a mechanism for users to claim them.

E-wallet payment: This feature will allow users to make payments for transportation services within the app.

CONCEPT WALKTHROUGH

A VARIETY OF 'NUDGE' LOGIC

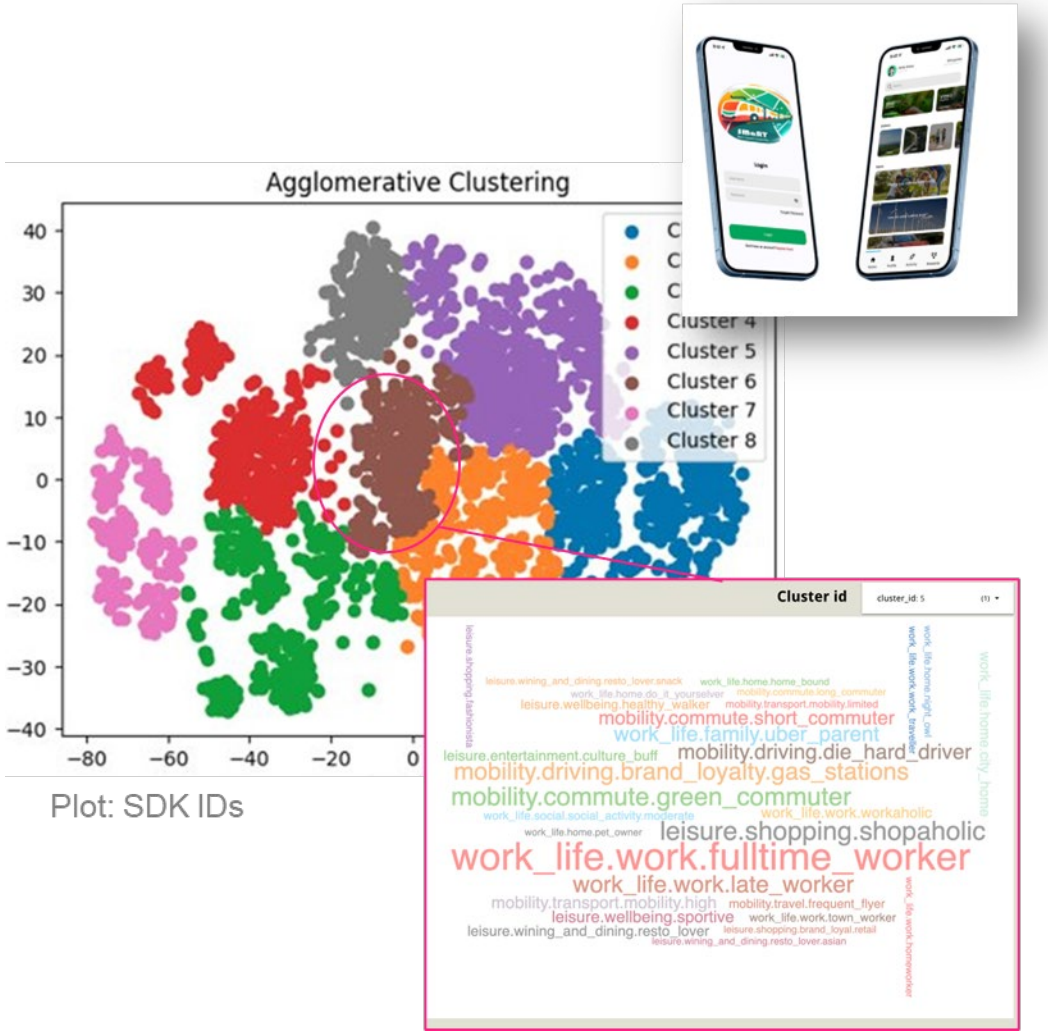
Nudge Types	Suggestion	Comparison	Challenge	NK Nudge API
Cost 	**Cost-conscious Commuter** "Save cost for ERP and parking when you go to CBD."	Saving (S$) of cost compared with driving and parking	**Money Savings Challenge:** For each trip taken on public transportation, the user earns a number of points equal to the cost savings they achieved by not driving.	API calculate the savings by subtracting the cost of the public transportation trip from that of driving for the same route using the Route API.
Carbon Emission 	**Eco-conscious Commuter** "Choose public transport from multiple route options to improve your CO2 emission."	Reduction (%) of CO2 emission compared with driving	**Eco Challenge:** For each trip taken on public transportation, the user earns a number of points based on the amount of carbon emissions they avoided by not driving.	API calculate the carbon emission produced by cars and comparing it to the emission produced by public transportation using Route API and Route CO2 emission module.
Time 	**Time-conscious Commuter** "It's not too far. Cycling and using public transport is faster instead of car."	Cycle usage (%) and public transport usage (%) for similar distance.	**Time Savings Challenge (Peak Hour):** For each trip taken on public transportation, the user earns a number of points based on the amount of time they saved by not driving.	API calculate savings by subtracting the time taken by driving from that taken by cycle and public transportation for the same route using the Route API.
Calories 	**Fitness-focused Commuter** "Today it's sunny! Take the opportunity to walk and cycle by combining with public transport."	The increase of walking and cycling distance public transport usage (%) on sunny day.	**Burn Challenge:** For each trip taken on public transportation, the user earns a number of points based on the number of calories they burned by walking or cycling to and from the transit stops or stations.	API calculate calories consumption based on the distance traveled and the average number of calories burned per mile by cycle and walk using the Route API and burned calories module.

For reference: OPTIMUM by European Commission project, Experiment of nudging commuters in Rotterdam, Targeted message and Personalised advice for nudging in London

CONCEPT WALKTHROUGH

USE CASE – NUDGING THE CAR DRIVER TO BE CAR-LITE

App Personas	Persona Description
 1. Penny Pincher	**Cost-conscious Commuter**
 2. Eco-Warrior	**Eco-conscious Commuter**
 3. Time Master	**Time-conscious Commuter**
 4. Fitness Fanatic	**Fitness-focused Commuter**



For personalised nudging, persona is set through the user behaviour analysis and profiling.
Users are classified into clusters based on activities and preferences from SDK data

MaaS DATA INSIGHT BUSINESS

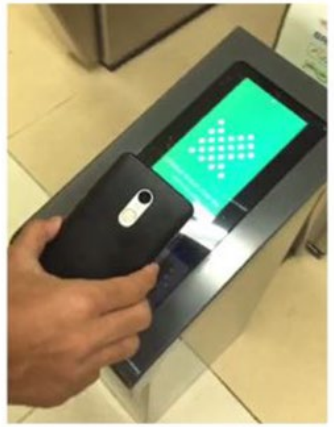
Non-ticket business to strengthen the MaaS concept

Project
Proof of Concept for data insight business using MaaS app. data

Counterparty
PT JakLingko Indonesia

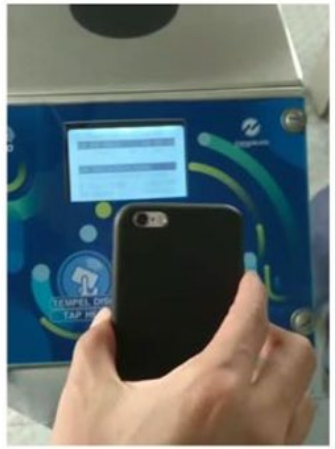
Purpose of the project
Evaluation of data insight using data obtained from MaaS App

JakLingko digital and physical infrastructure

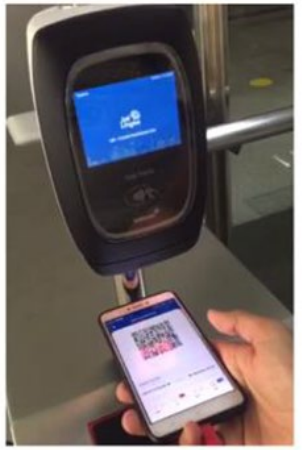


MRT JAKARTA

KAI COMMUTER/KCI



TRANSJAKARTA



LRT JAKARTA

COLLABORATION WITH JAKLINGKO

Non-ticket business to strengthen the MaaS concept

Project
Proof of Concept for data insight business using MaaS app. data

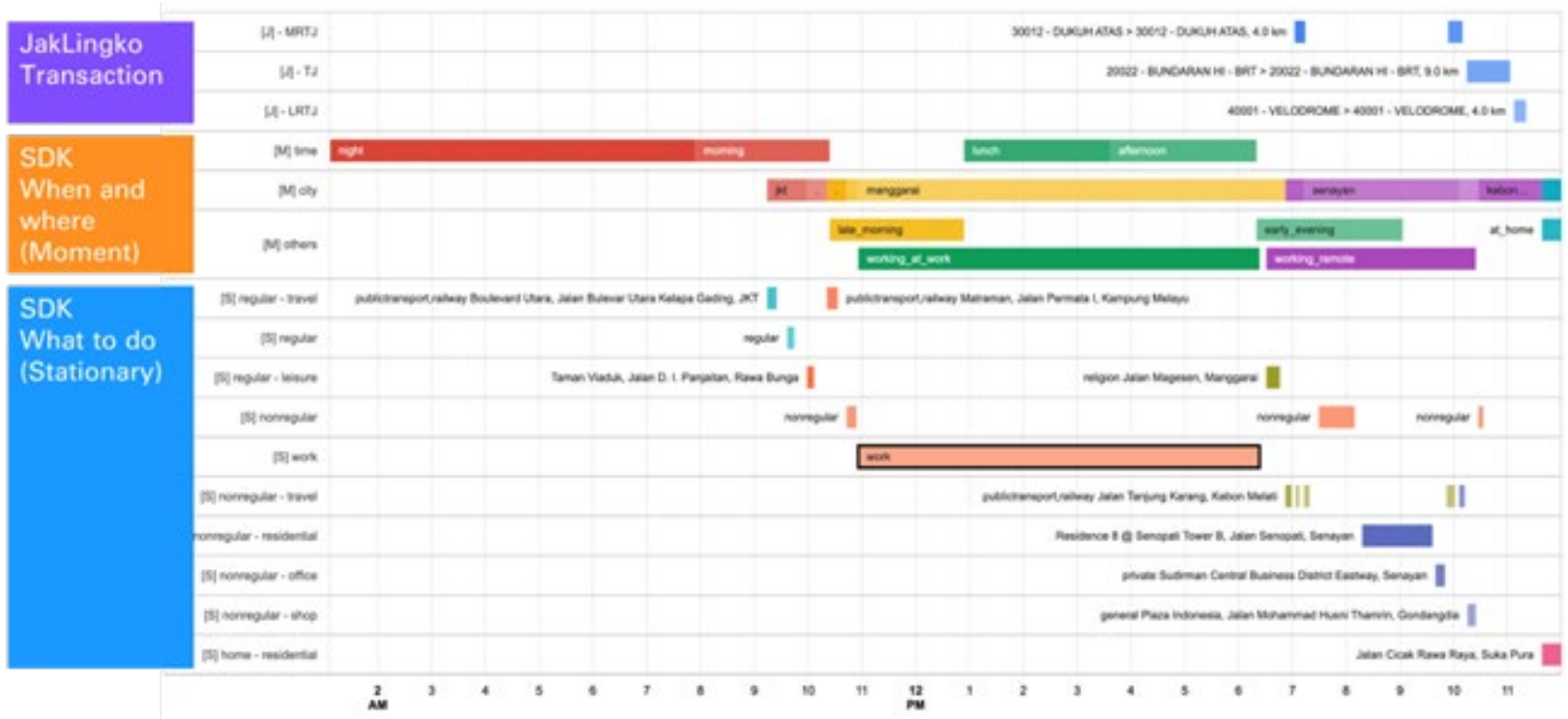
Counterparty
PT JakLingko Indonesia

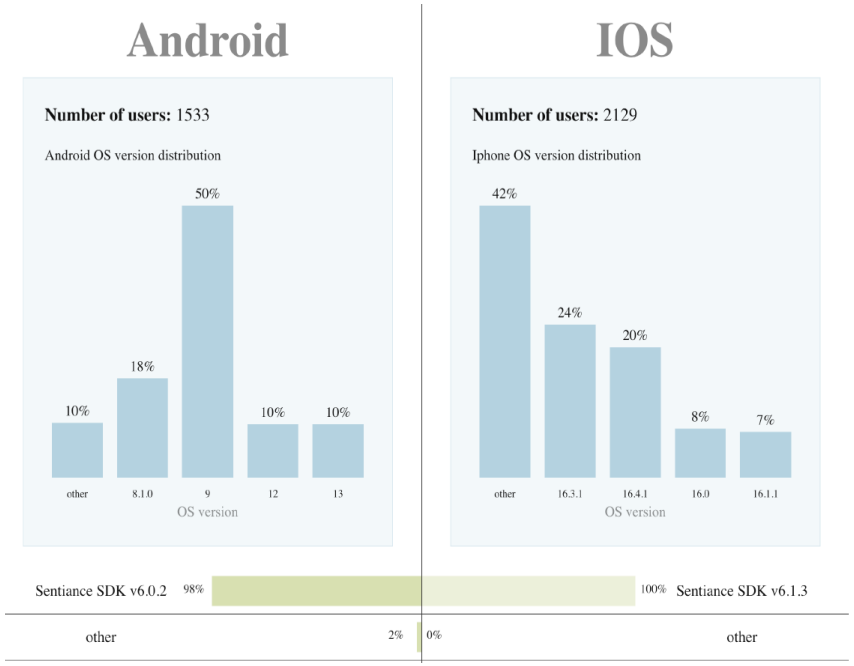
Purpose of the project
Evaluation of data insight using data obtained from MaaS App

Problem statement for MaaS business

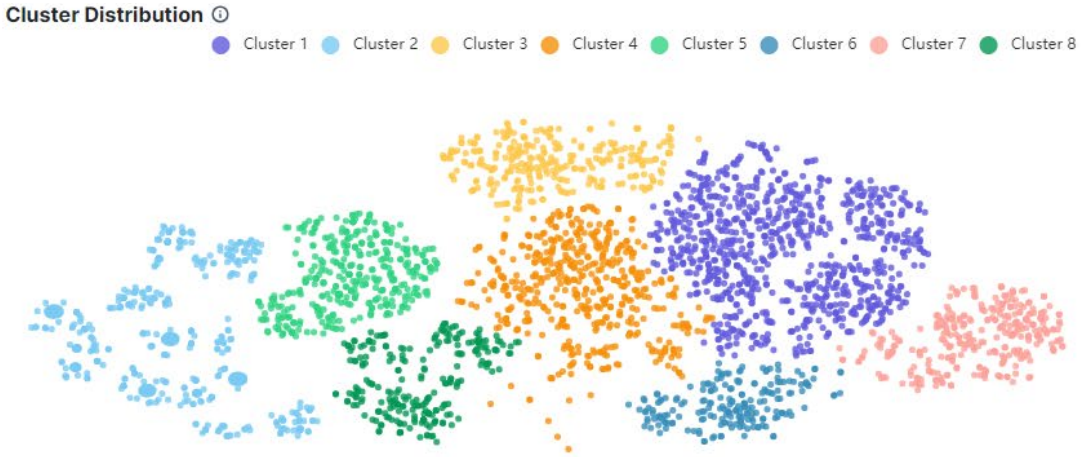
1. Who will get the benefit from Mobility as a Service?
2. How is public transport payment integration program effective for users?
3. How can data platform perform live monitoring of users for quick decision making?
4. Does MaaS realise sustainable urban development by increasing PT modal share?

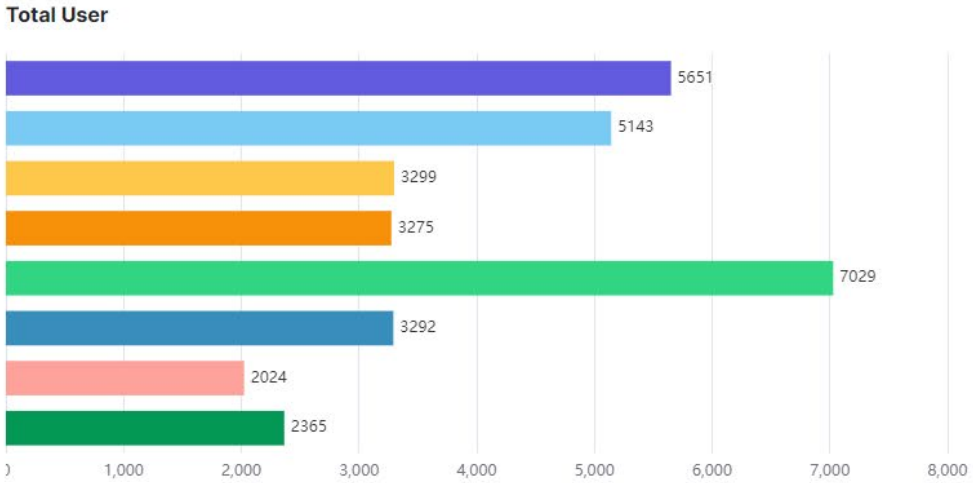
Data collection via JakLingko app.





User segmentation

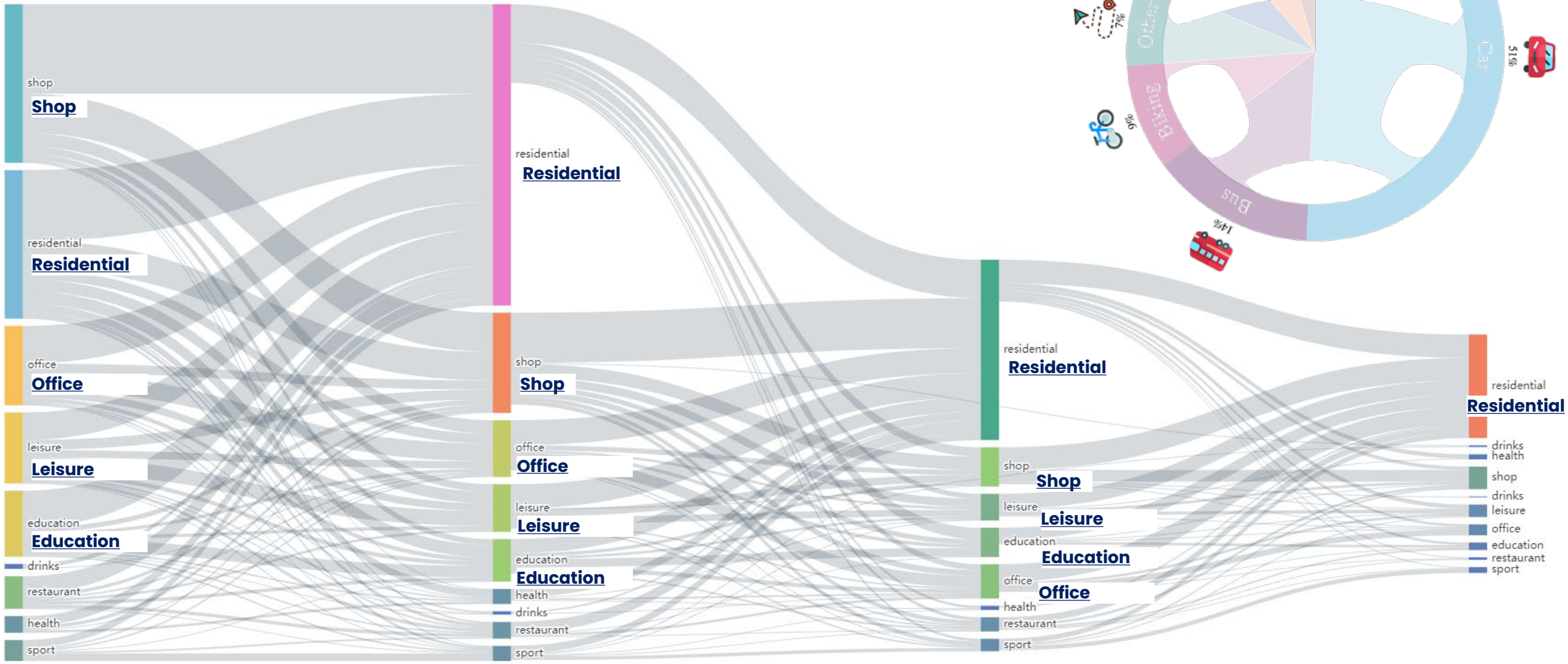




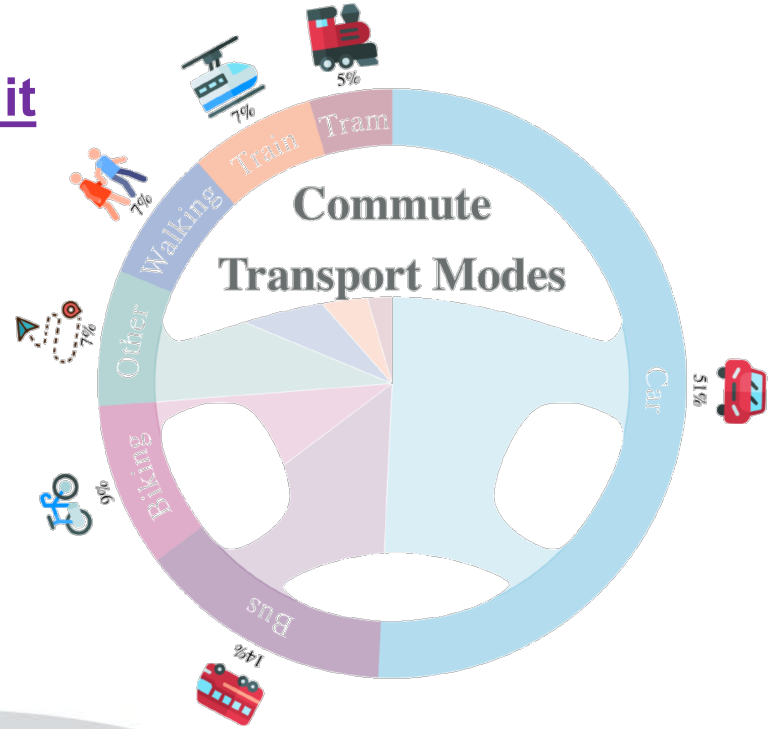
Cluster 3

Cluster 6

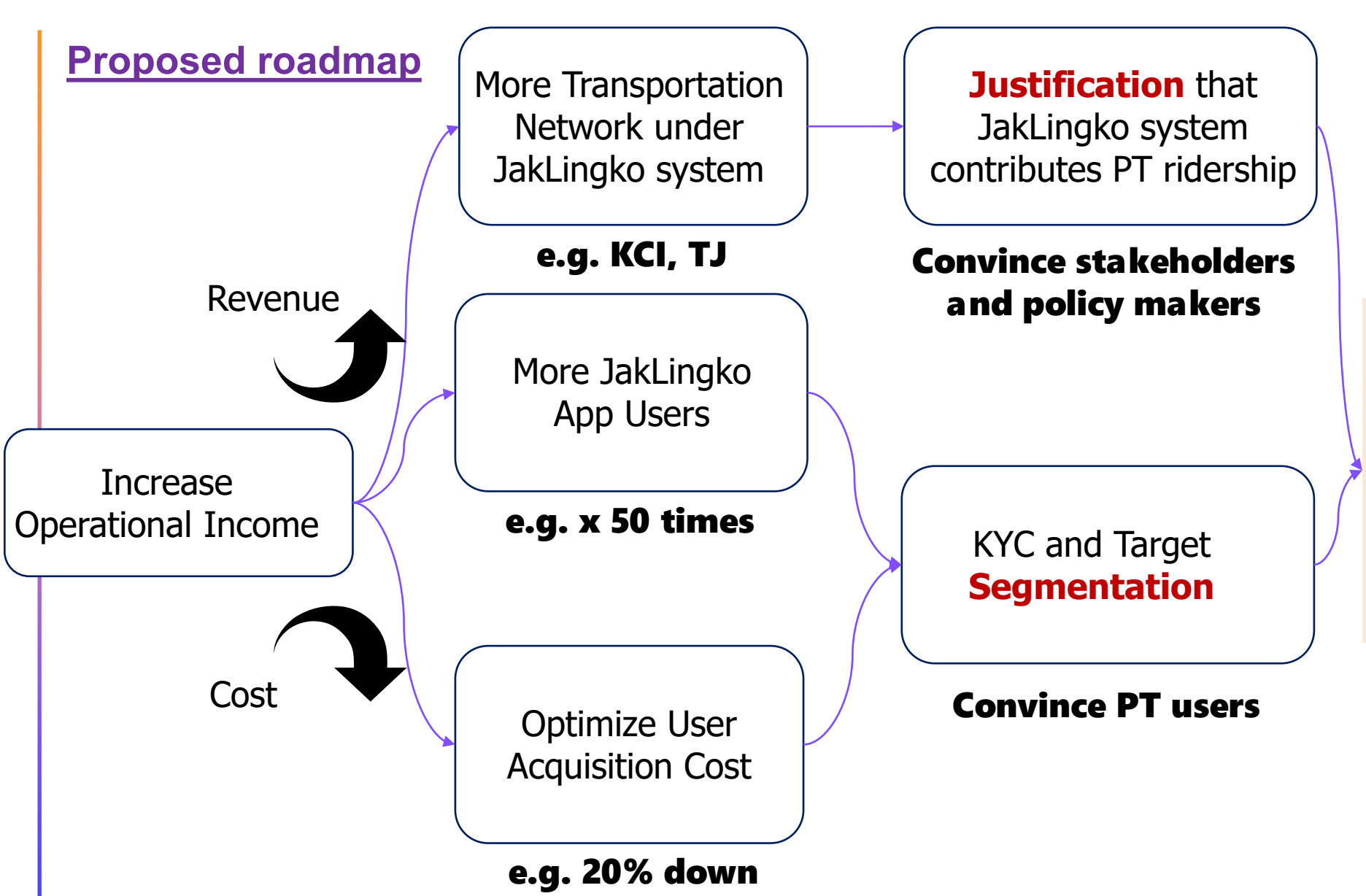
Pattern of activities



Modal split



Proposed roadmap



Data(Evidence) Driven Strategization and Implementation

- ✓ Statistic Data
- ✓ Geographic Data
- ✓ Mobility Data
- ✓ Traffic/Transit Data
- ✓ Synthetic Data (AI/ML)
- ✓ Analytics
- ✓ Iteration

Conclusion

Our Vision

To transform transportation in Asia by providing valuable insights and

co-creating better infrastructure and services through the use of mobility data

THANK YOU

NIPPON KOEI | 2023