School of Planning and Architecture, New Delhi

Presented by **Dr. Prafulla Parlewar**

GeoSmart India
Urban Development & Smart Utility Summit

Session 2
Integrated Urban Growth: Overcoming Connectivity and Infrastructure Gaps

Theme - Accelerating Inclusive Urban Transformation through Digital Integration

Problems and Challenges

The Challenge: Fragmented Growth and Critical Deficits

01

Transportations

- Traffic Congesions
- Inaqequate Public Transport
- Parking Problems
- Low Walkability

02

Urban Sprawl

- Growth Control
- TOD/Compact Cities
- Migration Problems
- Pre-Urban Planning

03

Environment

- High Pollution
- Resource Depletion
- Climate Change
- Enegry Consumption

04

Digital Divide

- Governance
- Online Public Services
- Traffic Optimization
- Management

Overcoming Connectivity and Infrastructure Gaps

01

Digital Technology

- GeoSpatial Intelligence
- AI & Big Data
- IoT and Digital Twin

02

Integrated Planning

- TOD/Compact Cities
- Green Infrastructure
- Pri-Urban Planning

03

Legislative & Policy Interventions

- National Legislation
- Participatory Models
- AMRUT/Smart Cities

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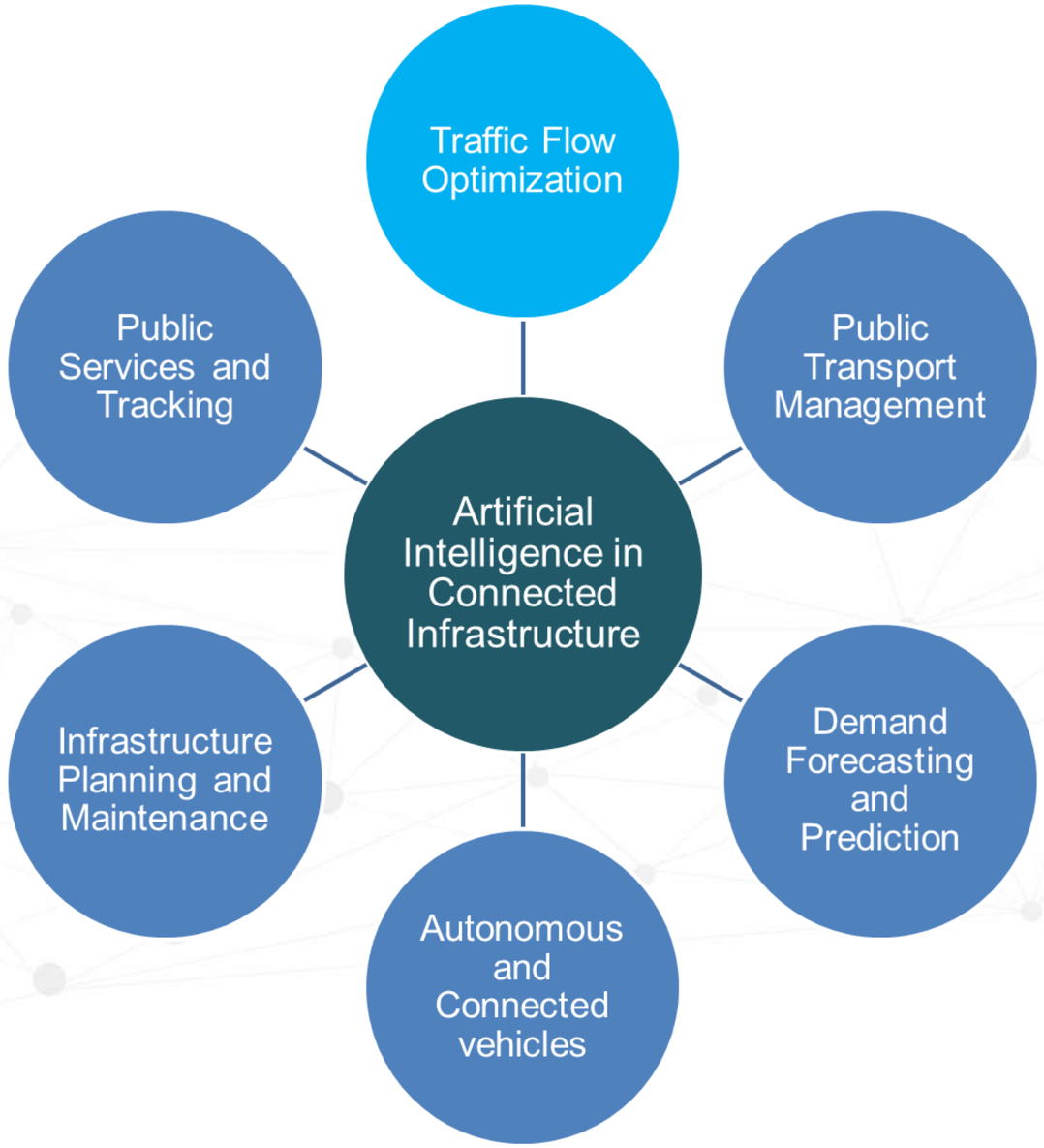
Aritificial Intelligence in Connected Infrastructure

Theme - Accelerating Inclusive Urban Transformation through Digital Integration

AI in Connected Infrastructure

- Efficiency and Reliability
- Data Driven Decision Making
- Predictive Maintenance
- Environmental Sustainability



AI in Traffic Management

Real-time

Real-time traffic prediction with machine learning

Adaptive Control

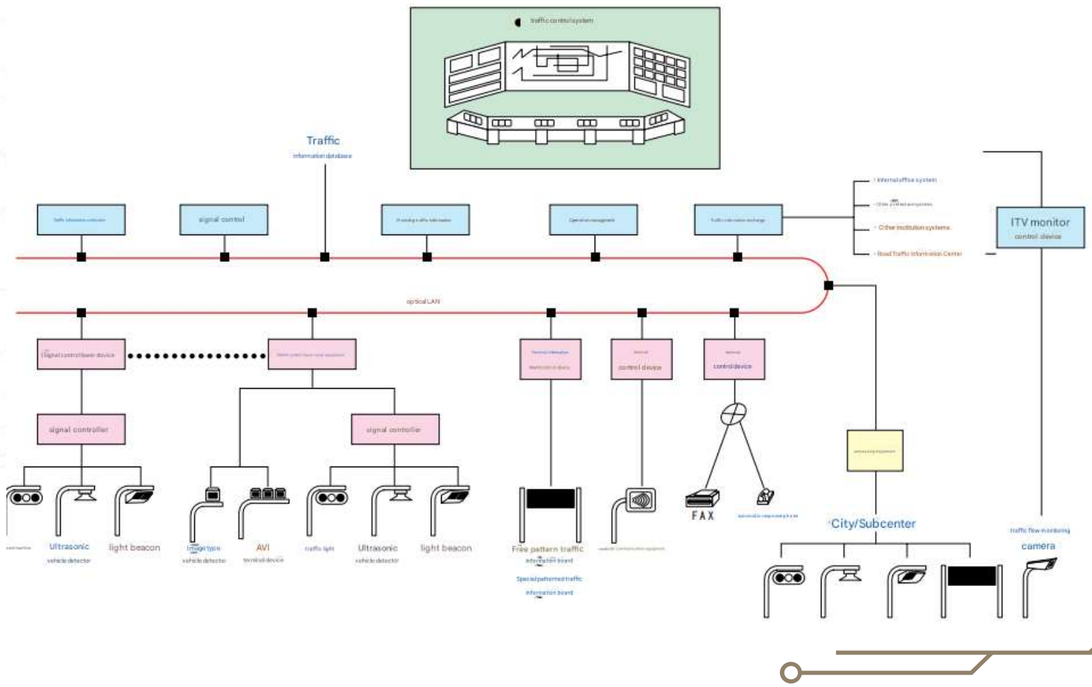
Adaptive signal control system in Japan

CNN Model

Computer Vision for incident detection

Dynamic Routing

Maps AI dynamic Routing



Autonomous Vehicles

DeNA and EasyMile - Robot Shuttle

LiDAR

LiDAR is installed on all four sides of the vehicle

CNN Model

Computer Vision for incident detection

Applications

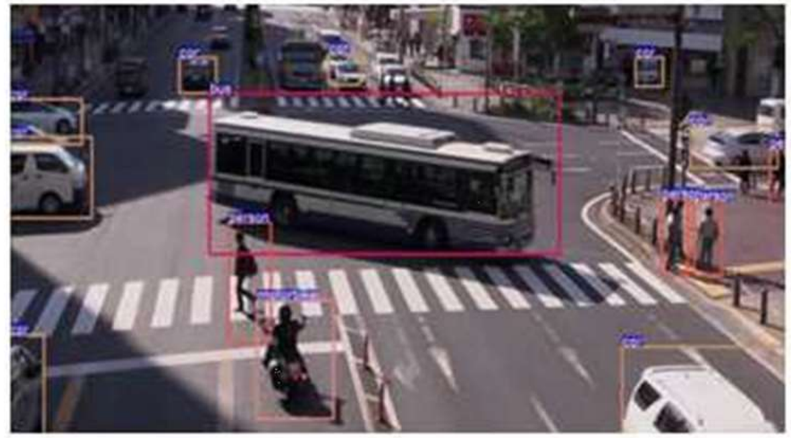
Zoos, universities, public roads, etc.

Applications

Public facilities and commercial facilities, etc.

Parking Management

Fujitsu Parking Management System

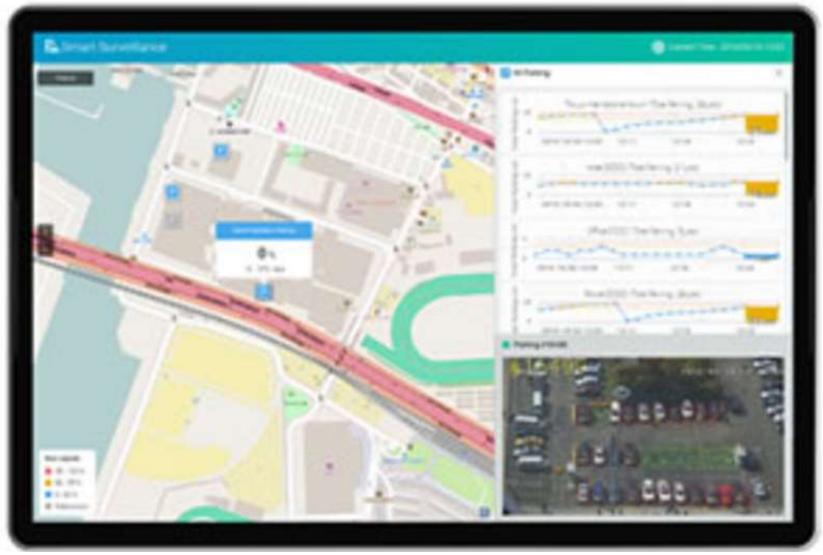


Parking Monitoring

City wide survillence of slot/zone monitoring

CNN Model

Computer Vision for incident detection



Violation detection

Detects parking in no parking zone

Real-time Model

optimize revenue for cities and facilitate citizens

Infrastructure Maintenance

NEC & Fukuda Road Damage Diagnosis System

CNN Model

Camera and GPS
Data set

National/Prefacture

ML Big Data at
National/prefecture scale

Rutting & Cracks

Allowing quick
interventions

Applications

Public facilities and
commercial facilities, etc.

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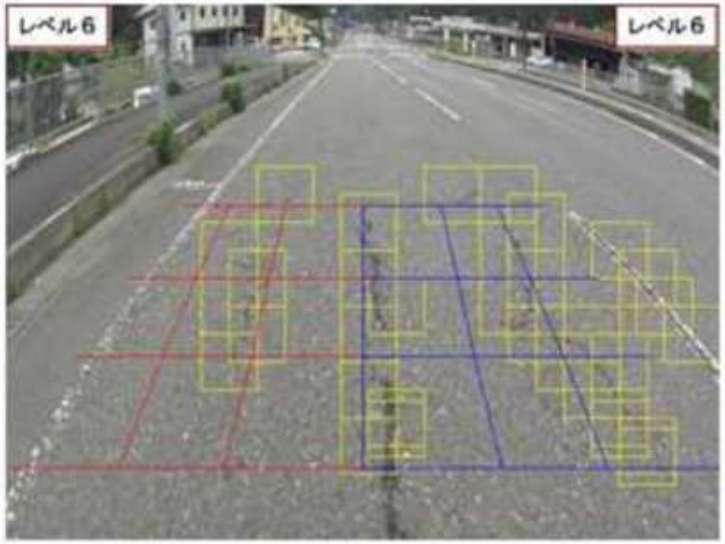

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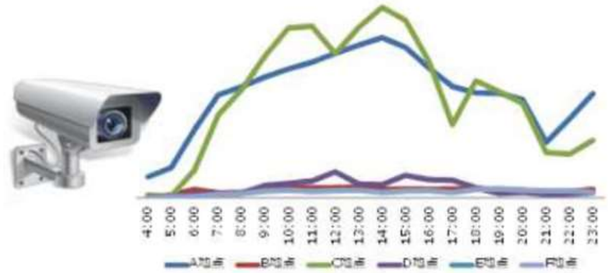
AI Traffic Surveys

Cloudian – AI Traffic Survey



Lower Cost

Low cost with Real-time continous data

Deep leanring

Computer vision for traffic counts

Direct Tracking

Vehicle direction: left, right, streight, and lane

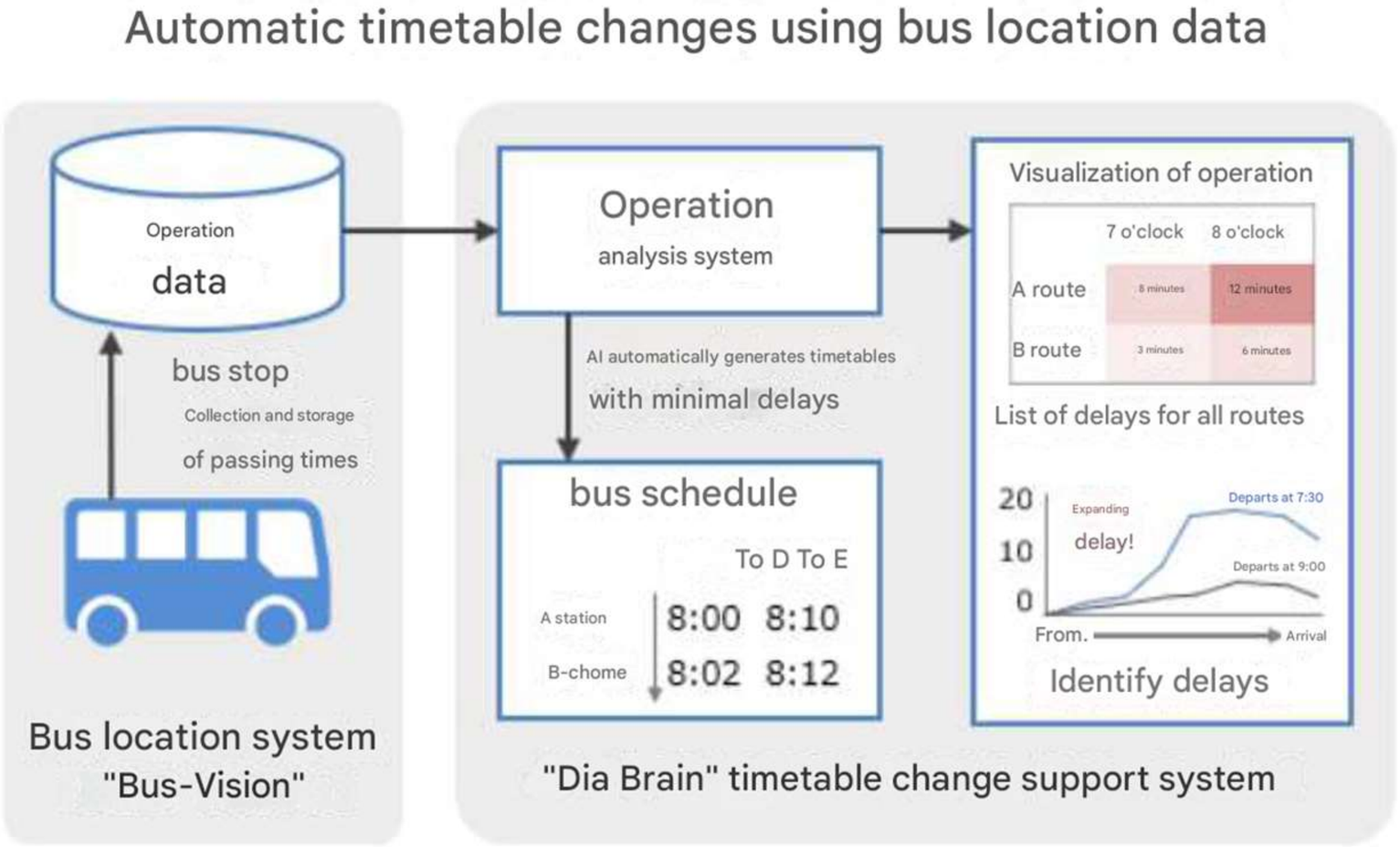
Speed and Jams

Measure travel speed and length of traffic jams

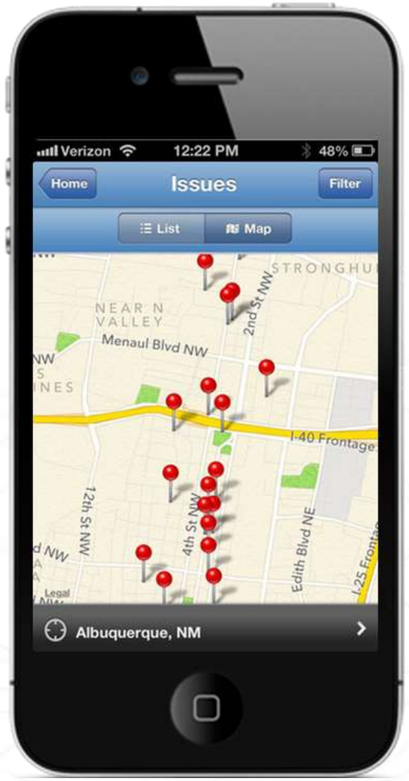
Traffic Brain (Dia Brain)

Automatic timetable updating system

- Operational data from a bus locational intelligence
- ANN Model generates optimal timetables



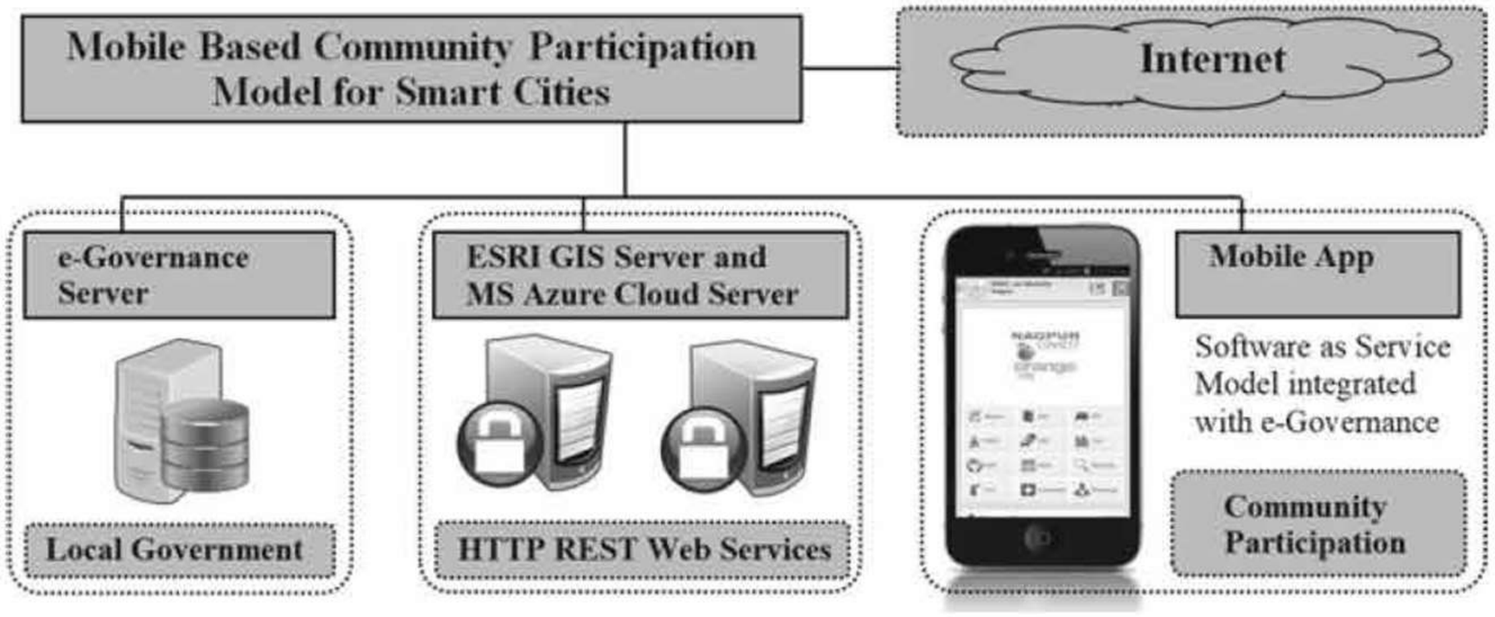
Main Screen



Geo-AI Maps

GeoSpatial Intelligence

- E-Governance & Connectivty
- Traffic and Transportation
- Real-time Responses
- Effective Project Management



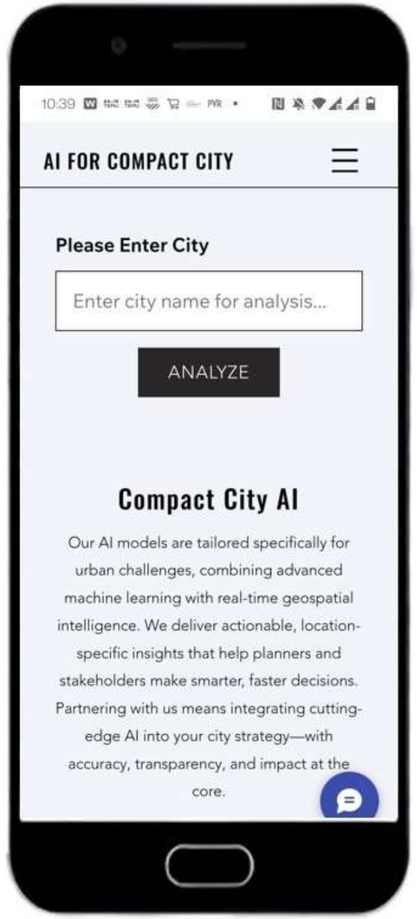
The Model

- Integrated E-Gov System
- Cloud Based Platform
- SaaS based Services
- ESRI GIS, MS Azure & e-Gov

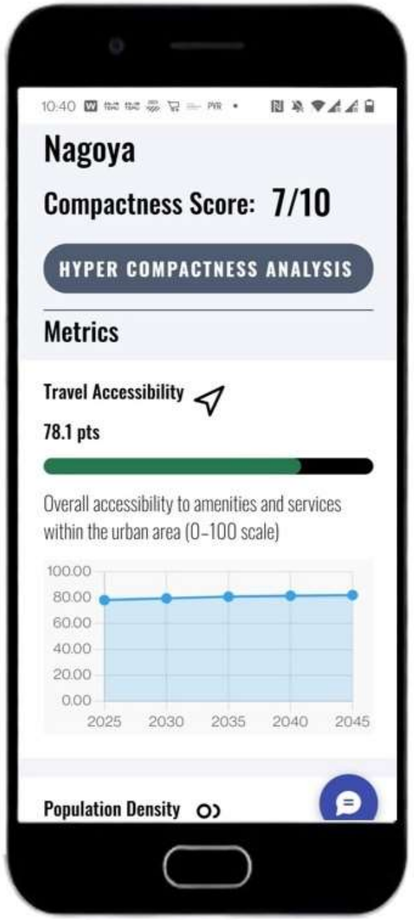
GeoAI in Metro System

- Planning & Implementation
- Traffic and Transportation
- Real-time System
- Effective Project Management

Main Screen



Real-time



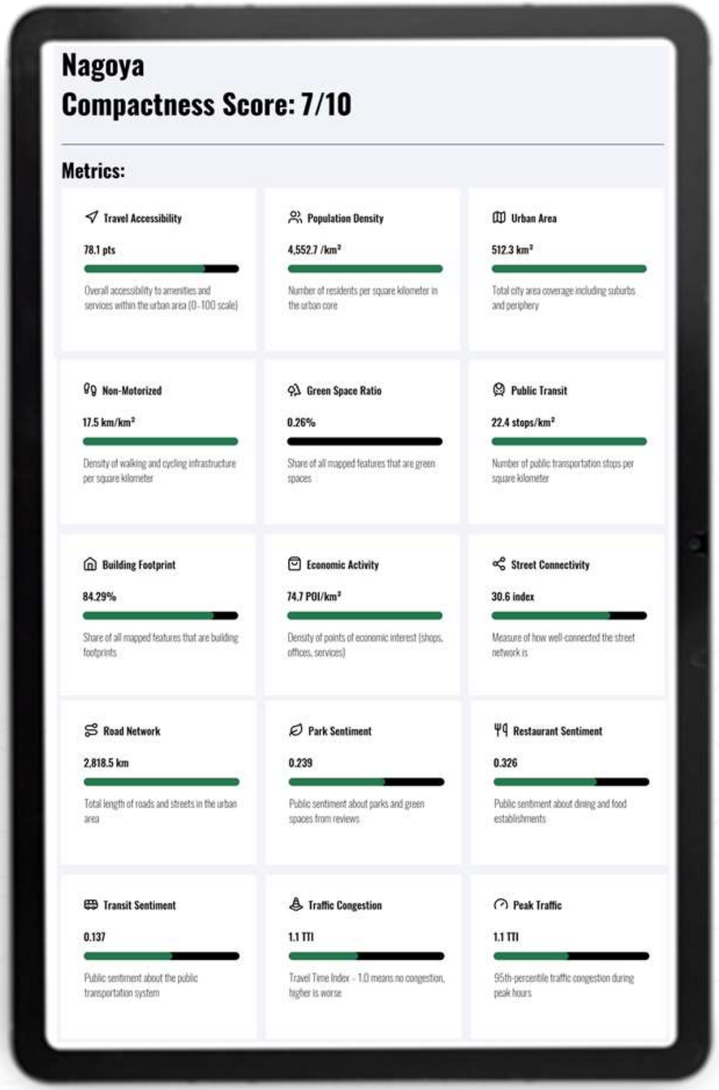
Results

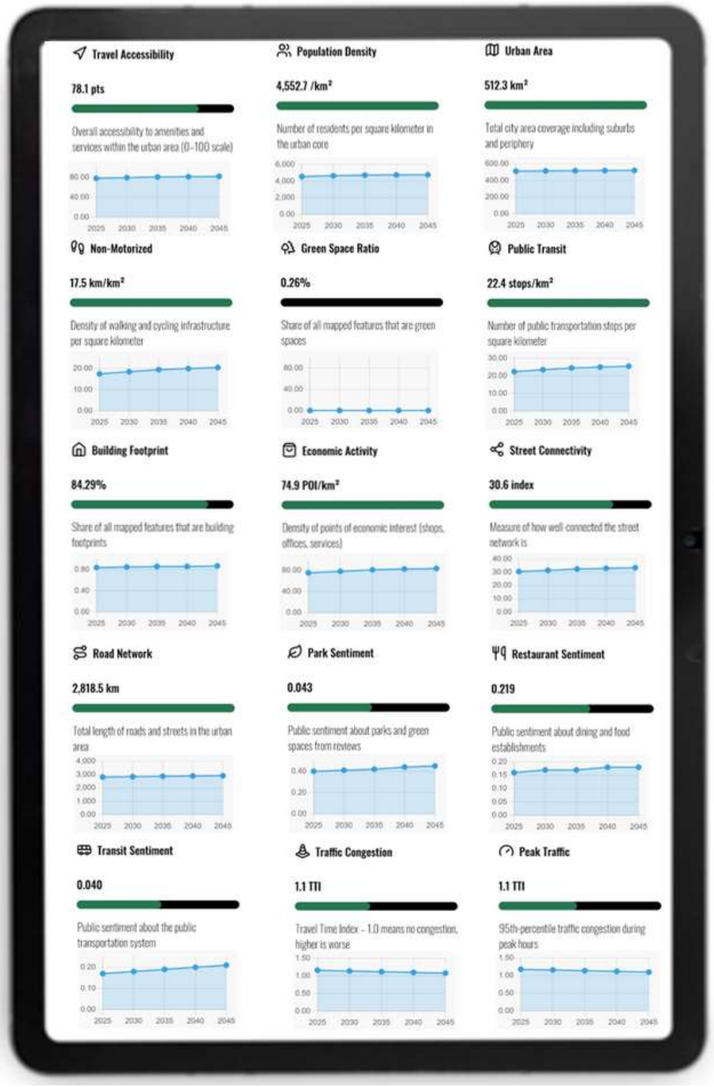
AI for Compact Cities in Japan

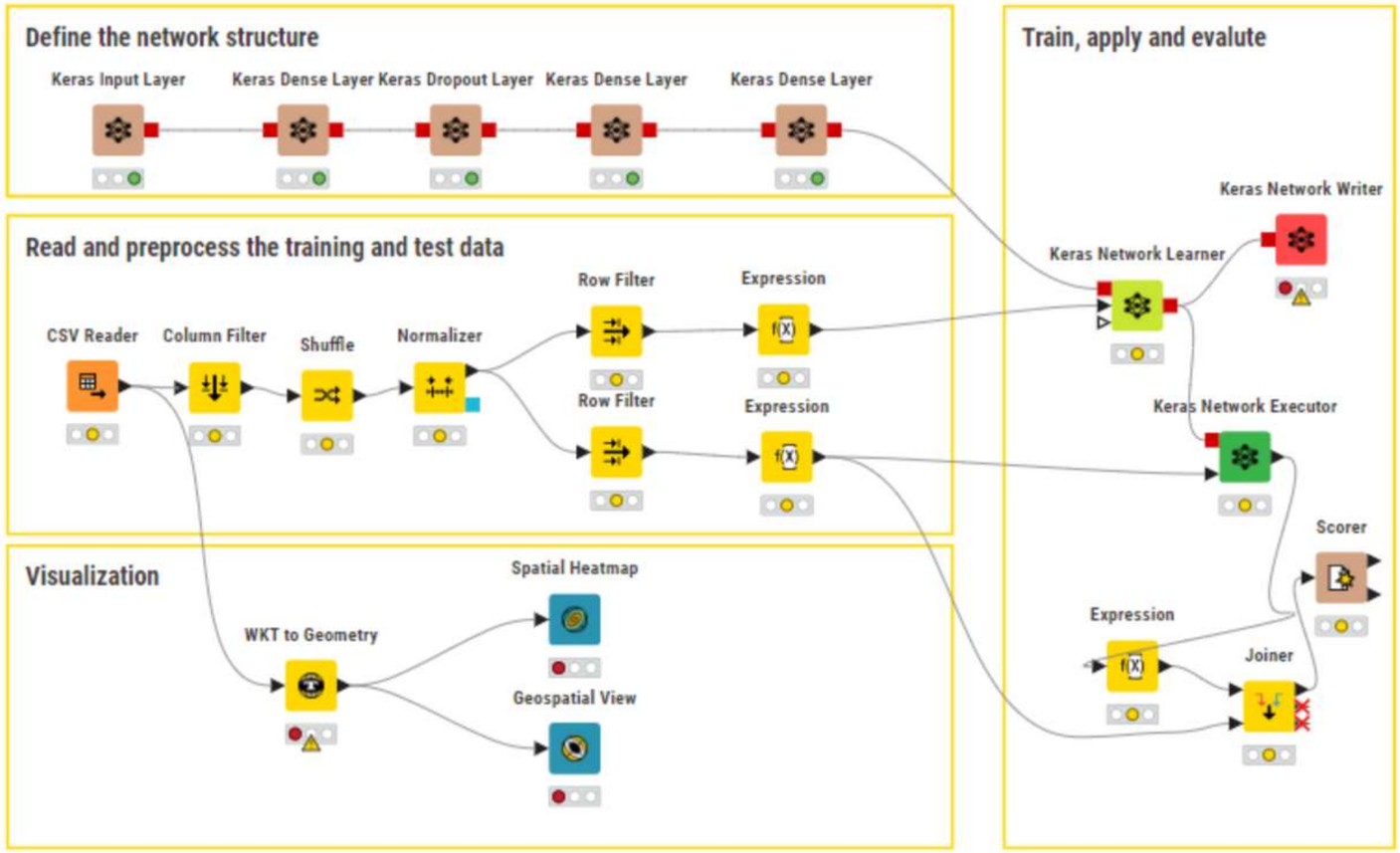
- Real-time AI Model
- Traffic and Transportation
- Public and City Official
- Strategic Intervention

AI for Compact City

- ANN Model
- Prediction Accuracy 99%
- KNIME-ONNX-Python Pipeline
- Prediction Future upto 2045







KNIME ONNX Python Pipeline

- Real-time Optimised Pipeline
- Compact City ANN Model
- Future Predictions in CIties
- Urban Management

Thank you