แนวโน้มยานยนต์ขับเคลื่อนอัตโนมัติ และงานวิจัยในพื้นที่ต้นแบบของไทย

Macnica Cytech (Thailand) Co., Ltd.
New Business Solutions Division

Ms. Thanaporn Adiraksatitkul

Macnica at a Glance

No.1 in Rank
Semiconductors Japanese Trading company

✚

Global solution provider for cutting-edge technologies

Established : 1972 (50th Anniversary)

Revenues (FY2021)
$5.9billion
(761.8億円)

Engineering Resources
30%
1,000+Engineers

Global Presence
24 countries
80 locations
(Headquarter at Yokohama, Japan)

Macnica Cytech(Thailand) Co., Ltd.
- Established: April, 2007 (15 Years)
- Capital : 100M THB
- FY2021 Revenue : 5,800M THB
- Location : Bangkok, S-METRO Building (Prompong Station)
- Total Member : 30+ people

Values & Strengths

Global Suppliers & Partners

230+

Exponential Technologies

- AI
- Mobility
- Robotics
- Healthcare
- IoT
- Space

MACNICA

Technology Fitting

Know the Customer → Market Intelligence → Technology Optimization

High Quality Engineering Support

- Technical Support
- Technical Proposals
- Reference Designs
- Training
- Design Services

Engineers account for 30%

Demand creation

- Board
- IP
- Module
- Software
- System

Global Customer Base

18,000+

Market Coverage

- Industrial
- Communication infrastructure
- Automotive
- Computer
- Communication terminal
- Consumer
- O A
- Cyber security

New Biz Department (Solutions Business)

MACNICA

- Autonomous Vehicle
- Fleet Management System (FMS)
- Mobility as a service (MaaS)

- LED Lighting Indoor/Outdoor
- Radiant Air Conditioning
- Energy Management System
- Solar/Perovskite

- SCADA
- Condition Base Maintenance (CBM Module)

macnica.ai

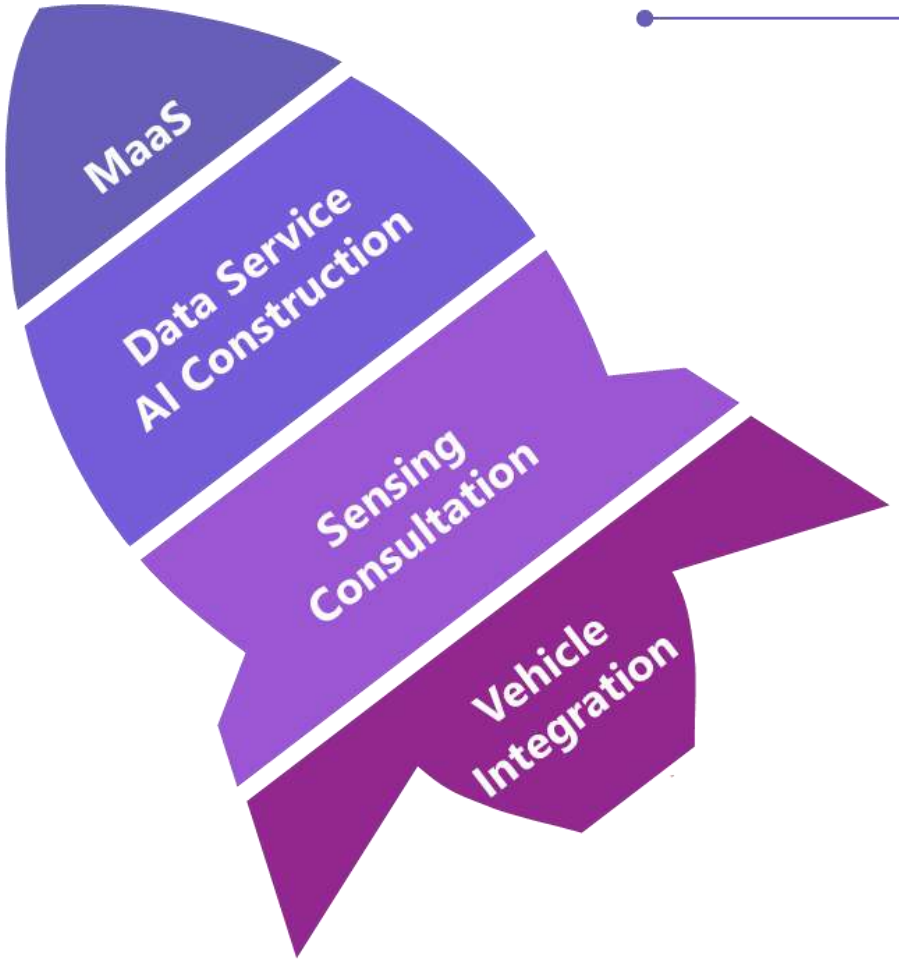
- Air Quality Visualization
- Sanitized LED Lighting

- Cleaning Robot
- Delivery Robot

Mobility - Main Products

Data service Simulation	Synspective, aptpod, OnRule, aiMotive, MACNICA Mobility Data Platform, dSPACE, Expolis
Algorithm	SEOUL ROBOTICS, Helm.ai, kudan COMPUTER VISION, iav, SwRI SOUTHWEST RESEARCH INSTITUTE
Sensor	INNOVIZ TECHNOLOGIES, BARAJA, CEPTON, HESAI, Leopard Imaging, ITD Lab, Continental
Vehicle Platform	AUTONOMOUSTUFF, STREETDRONE, R3E, nauya be fluid, YAMAHA
Autonomous software	NVIDIA, PERCEPTIN, DEEPROUTE.AI, nauya be fluid, THE AUTOWARE FOUNDATION, SafeAI, ADENU, oxbotica
OS/Security	BlackBerry, QNX
ECU	NVIDIA, KALRAY, Quanta Computer, wistron

Mobility – Our service



MaaS Service & Field Trial Support

PoC Support・Vehicle Management & Maintenance

Data Service & AI Construction

Data Collection, Pre/Post Processing, SLAM Mapping,

Sensor Consultation

Advanced Sensing Device Distribution, Consulting Service, Perception Algorithm

Vehicle Integration

Autonom Vehicle Integration,
Hardware Integration, Software implementation

Macnica Mobility

One stop solution based approach

Feature

Total Support
We can totally support to make use of autonomous driving from the beginning to the end.

Best System Building
We can build the best system for autonomous driving by our partner network based on customer requirement.

Commercial Design
We can support to design a commercial service for autonomous driving according to the customer usage.

AD Vehicles

Passenger vehicle


Compact vehicle


Shuttle bus


Cart

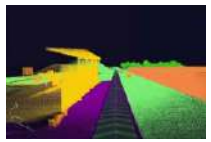

Tractor


Motor coach

Process

Proposal → Feasibility study → Implement → Maintenance → Utilization





Use Case

Smart city
Collage
Shopping mall
Factory/Plant
Airport
Hospital
Hotel
Theme park

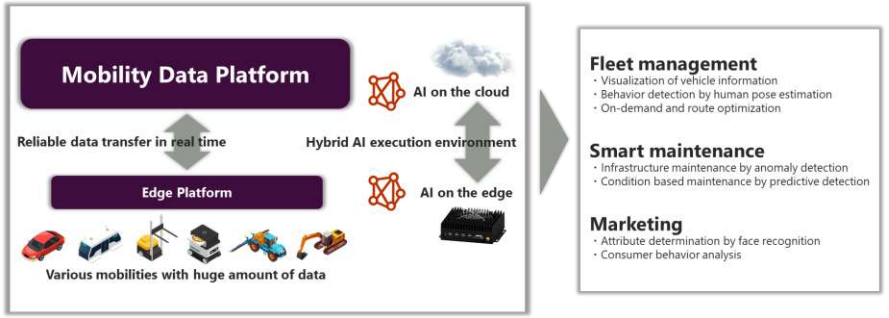
Macnica Key Point (2)

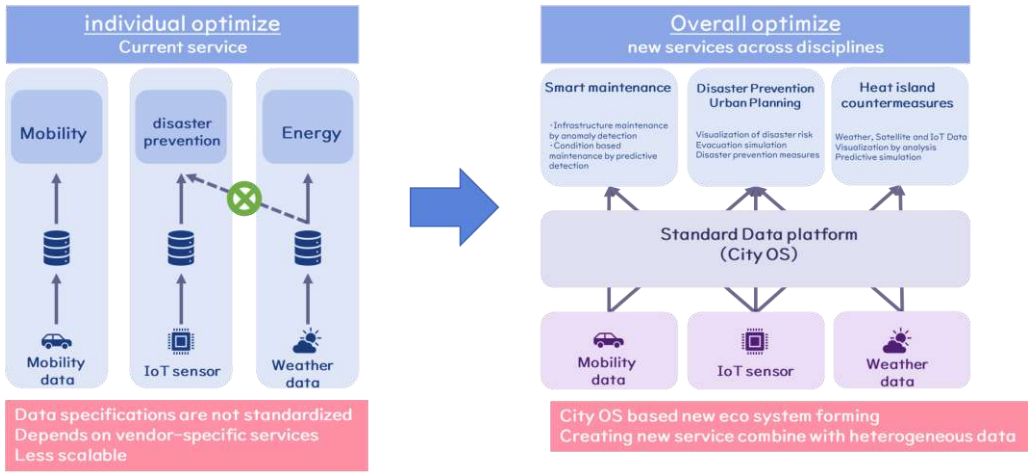
End to End solution

FMS/ON demand

Data linkage/City OS

Platform to utilize various data from mobility

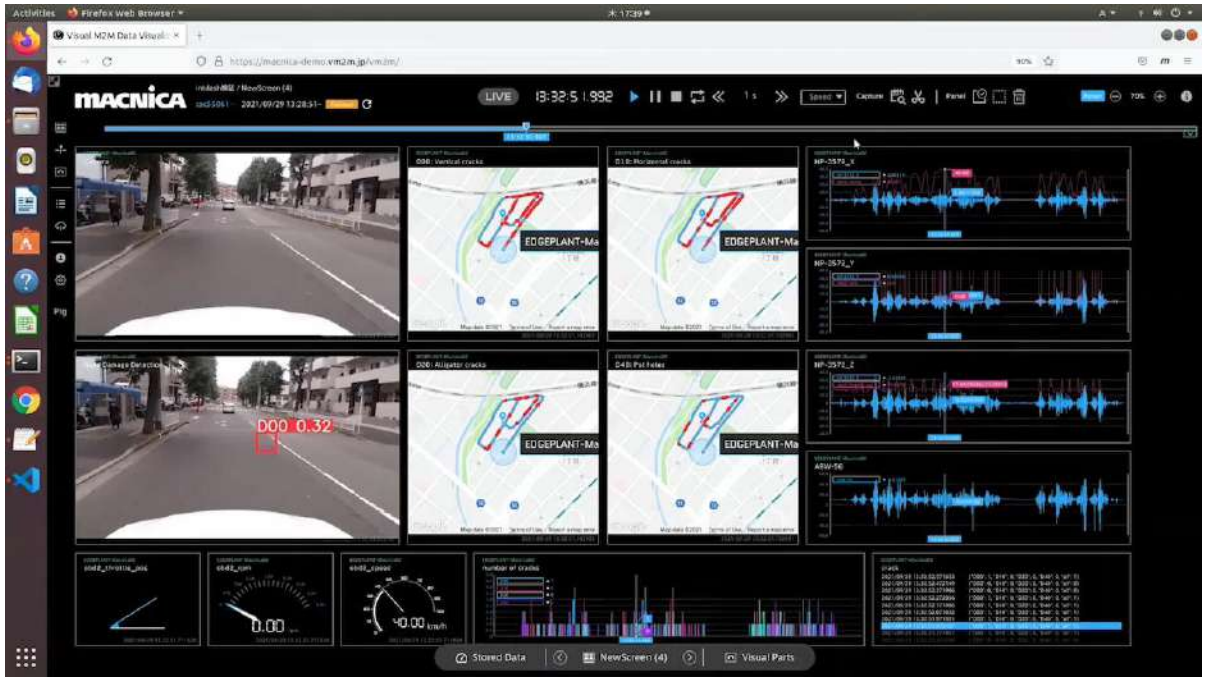




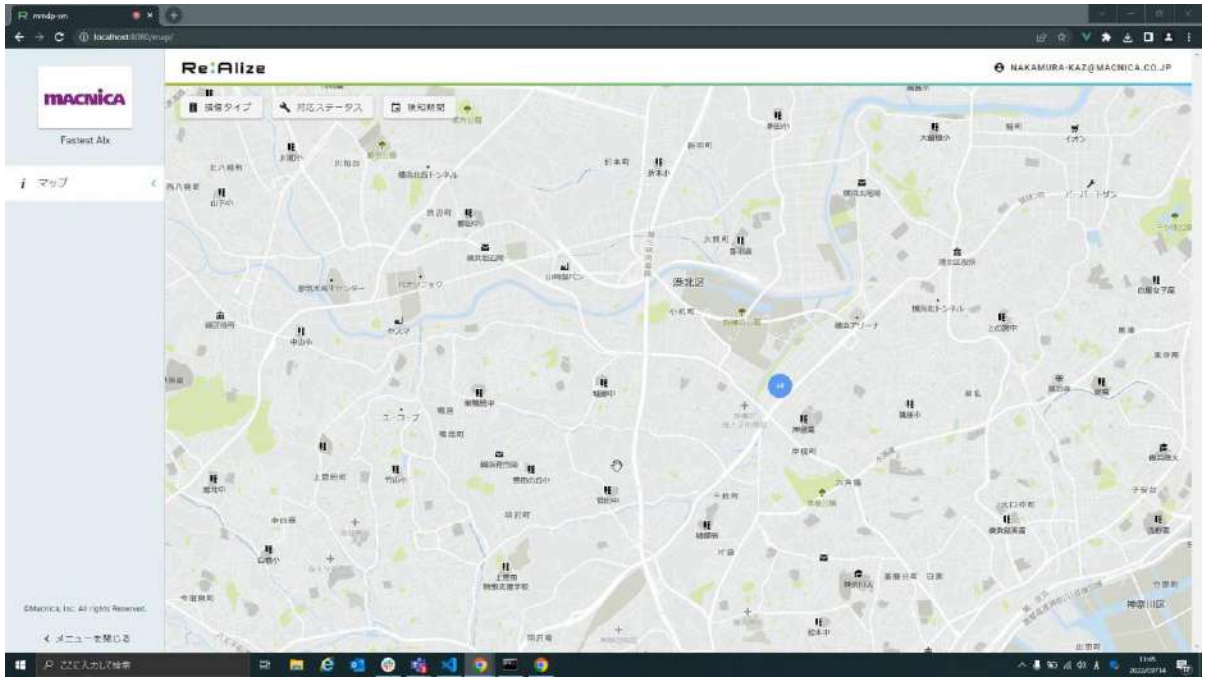
Data Utilization

condition based maintenance

Check for cracks in the road surface



Cracks map visualization



Have successfully supported autonomous driving projects

Ibaraki/Sakai town

Local government operating autonomous shuttle bus on public road for the first time in Japan.

Tokyo/Haneda innovation city

Operating a autonomous shuttle bus on shopping mall as a regular mobility service.

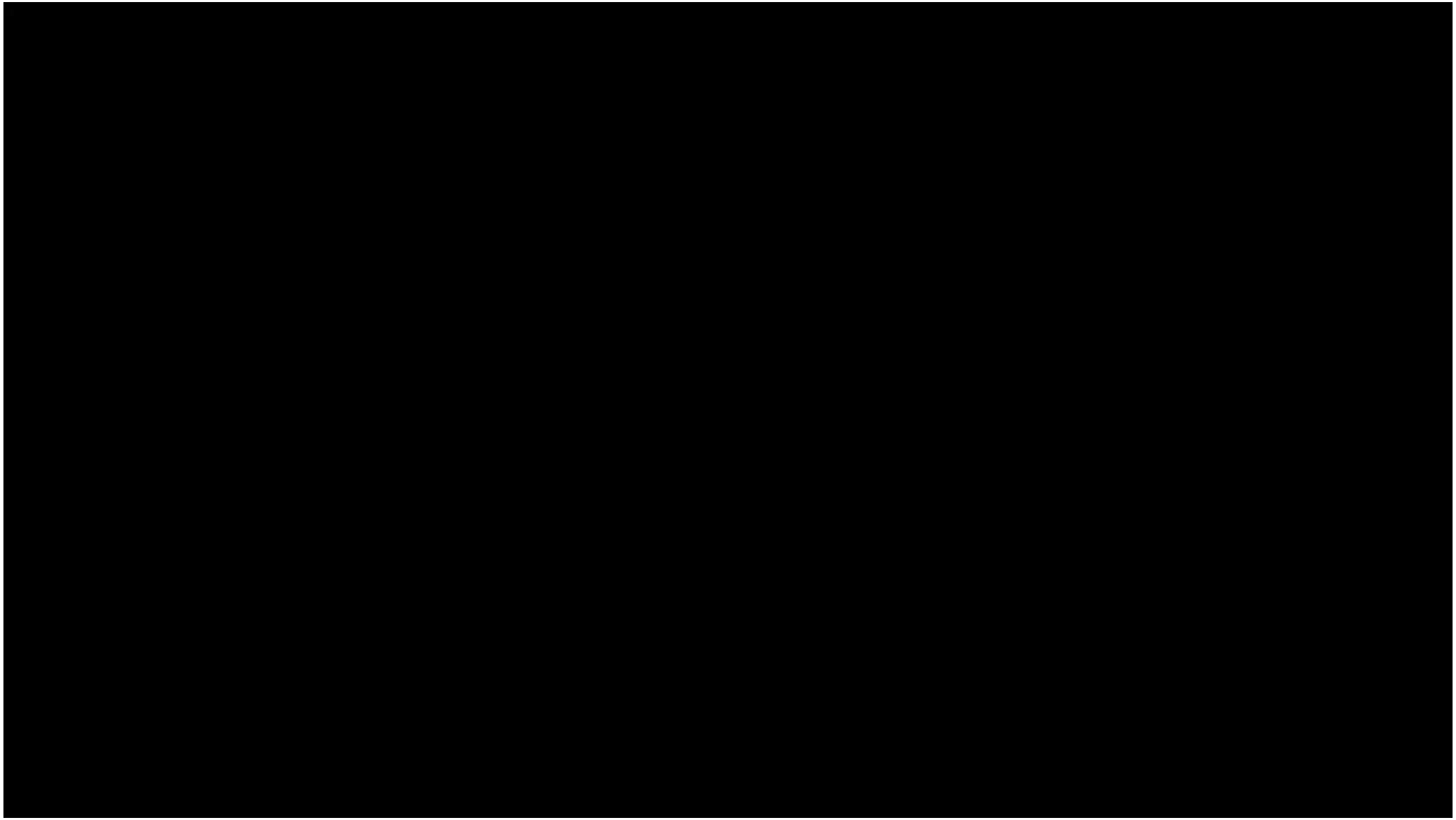
Nara/Heijo park

POC for autonomous cart at Heijo park under government project (MLIT) .

Shizuoka/ Misakubo-town

POC for autonomous compact vehicle on public road hosted by local government.

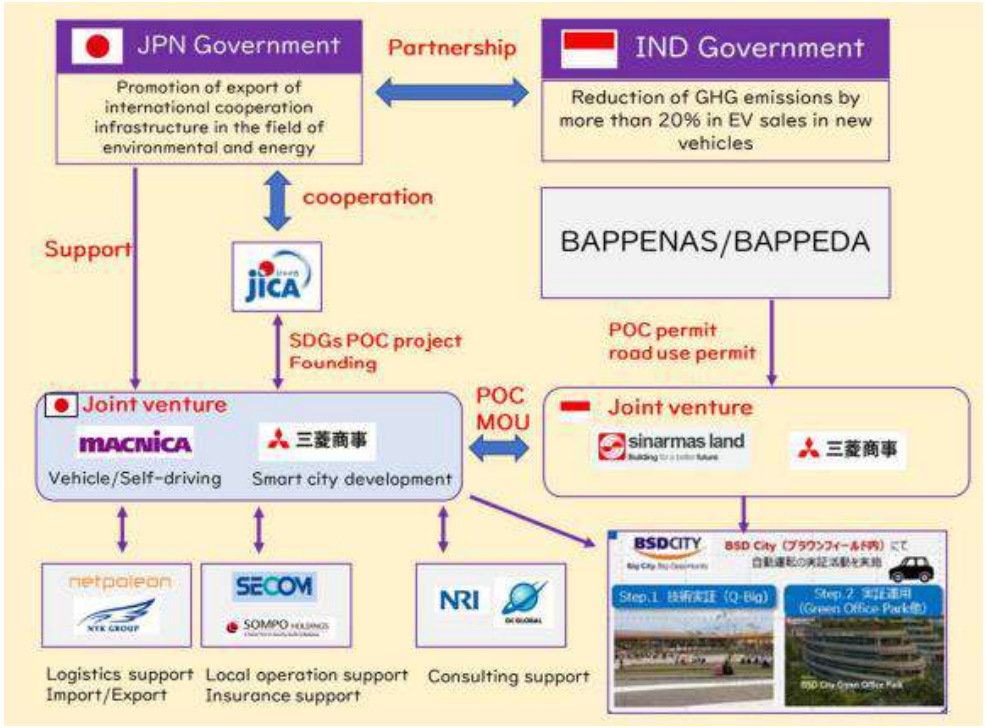
Autonomous Shuttle at Haneda Innovation City & Ibaraki

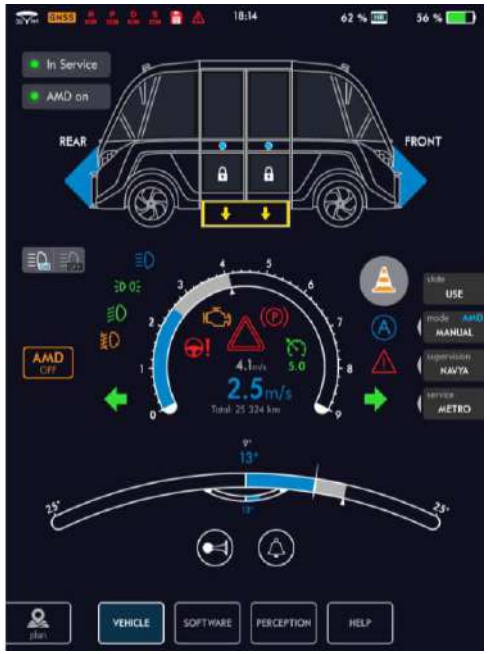


Navya ARMA/EVO Shuttle

JICA PROJECT

- First/Last mile AD Solution
- EV Shuttle
- 15 people
- 20km/h
- Up to 9h battery



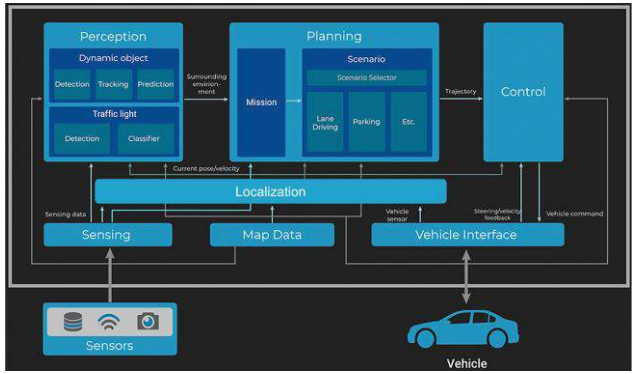


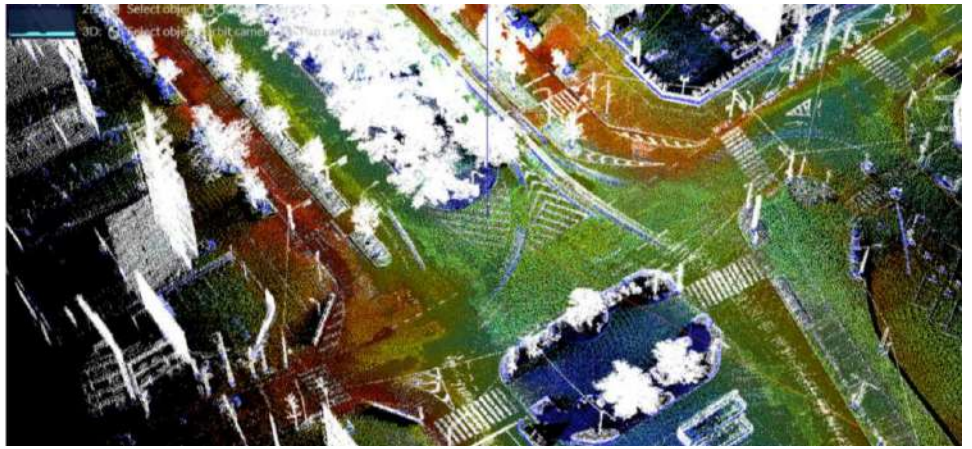
Autoware based AD Solutions

AUTOWARE

THE AUTOWARE FOUNDATION

- First fully Open Source Autonomous Driving Platform
- Build on top of ROS2 framework
- Platform agnostic
- Used for Level 3 Autonomy in closed area





R&D MacniCAR

- Urban environment
- Up to 40km/h
- Traffic light/Lane change
- Obstacle avoidance
- Pedestrian crossing

Macnicar Autonomous at Yokkaichi

Autonomous Golf Cart at Amata ASEAN Smart City 2019

Event : Exclusive VIP Program for ASEAN Smart Cities Delegates (A unique experience of Smart City Showcase)
Date : August 24th 2019
Venue : Amata Smart City, Chonburi
Route : Amata Chonburi Office Building Road
Vehicle : Macnicart(Yamaha Golfcart) x Autoware Tier IV

	Station	Partner	Location
1	AMATA Smart City Journey Wall	AMATA	AMATA Smart City Showcase
2	AMATA Nanjing Smart City Model *"The first Japan-China Third Market Collaboration Project"*	Nanjing Smart City	
3	Smart Security	SAAB	
4	New Innovation & International Partners	Yokohama Urban Solution Alliance (YUSA) and The Association of Thai Software Industry (ATSI)	
5	Smart Energy and Smart Traffic	ABP, Nissan, Macnica, Murata and MinebeaMitsumi	
6	State of the art "Data Center"	NTT Communications	
7	AMATA Command and Control Center	AIS	
8	Autonomous Vehicle Demonstration	Macnica	
9	Electric Vehicle & EV Charger	Nissan and Delta	
10	Smart Manufacturing – IoT / Big data	Hitachi Lumada Center	

Autonomous Passenger Vehicle

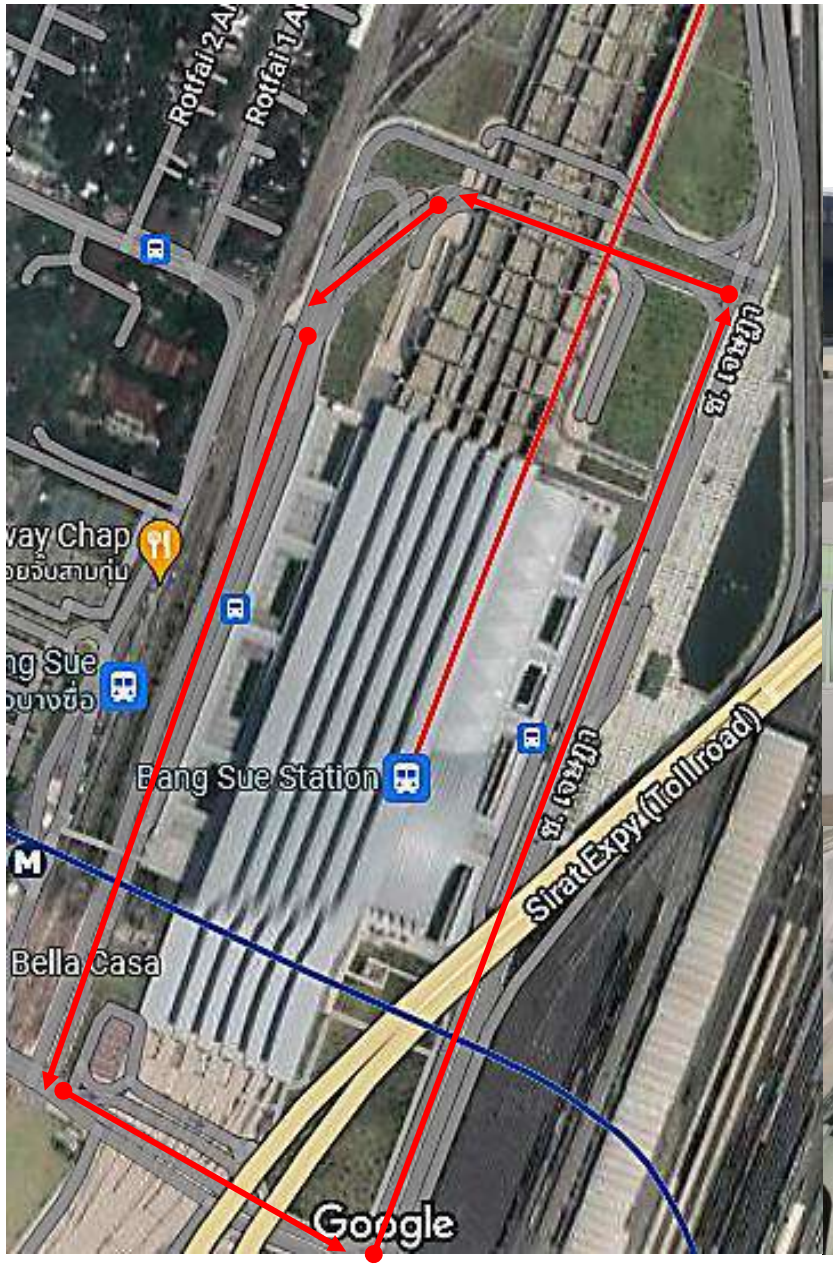
Demonstration EECi Route Test

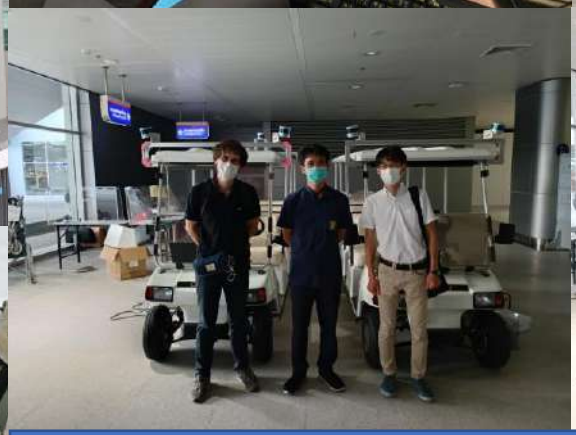
Date : 26 Semptember 2022

Location : EECi Wangchan, Rayong

Groups of experiment

Autonomous Golf Cart at Bangsue Grand Station



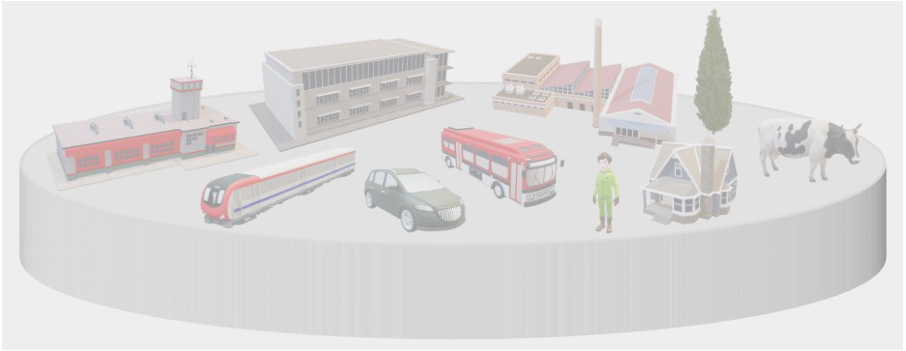


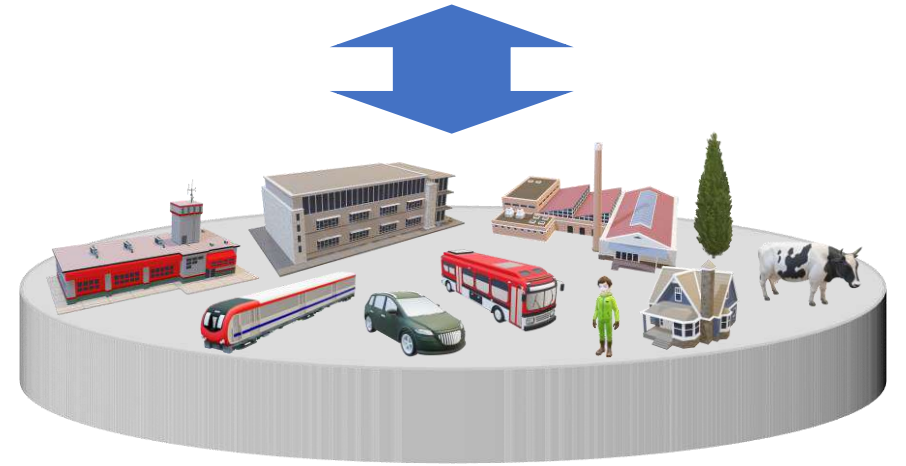
- Mapping
- Autoware Implementation (5 units)

Digital Twin of the City

Advanced sensing, data synchronization and real-time transmission technology
Highly integrated cyber space and physical space (real world)

Cyber space (digital)





Physical space (Real)

The value of the digital twin

Monitoring
City real-time visibility

Analysis and simulation
Pre-verification of urban conditions and changes under virtual conditions

Feedback
Analyze and predict data and reflect it in the real world

Economic Development
Social Problem Solving

Types of urban data

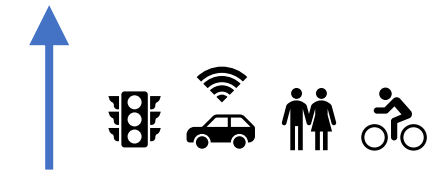
Dynamic information requires sensing accuracy and real-time performance.

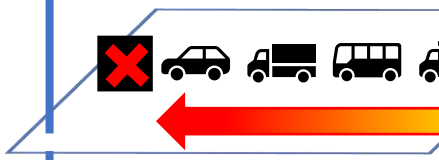
Urban data

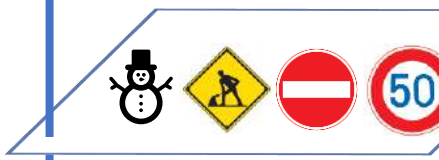
Use Autonomous driving to level up

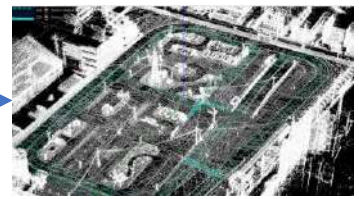
Sensor fusion

- Camera
- LiDAR
- GNSS/IMU









Dynamic information

Traffic information (vehicles, pedestrian, signal, etc.)
IoT data (river water level, power consumption, etc.)

Quasi-dynamic information

Accident, traffic jam, traffic control, road construction,
Narrow weather information, etc.

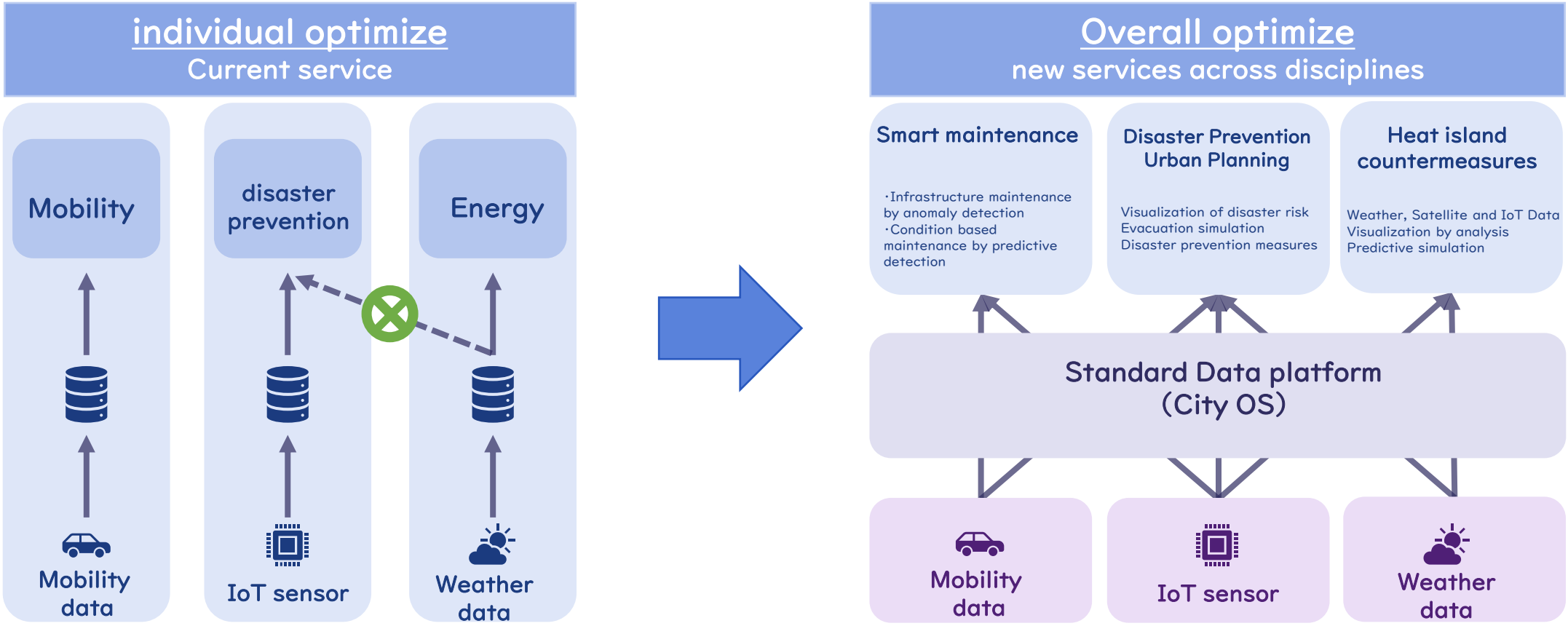
Quasi-static information

Traffic restriction schedule, road construction schedule,
Wide-area weather forecast information, etc.

Static information

HD 3D MAP
Road surface information, lane information, 3D structures, etc.

Transforming from Individual optimize to Overall optimize

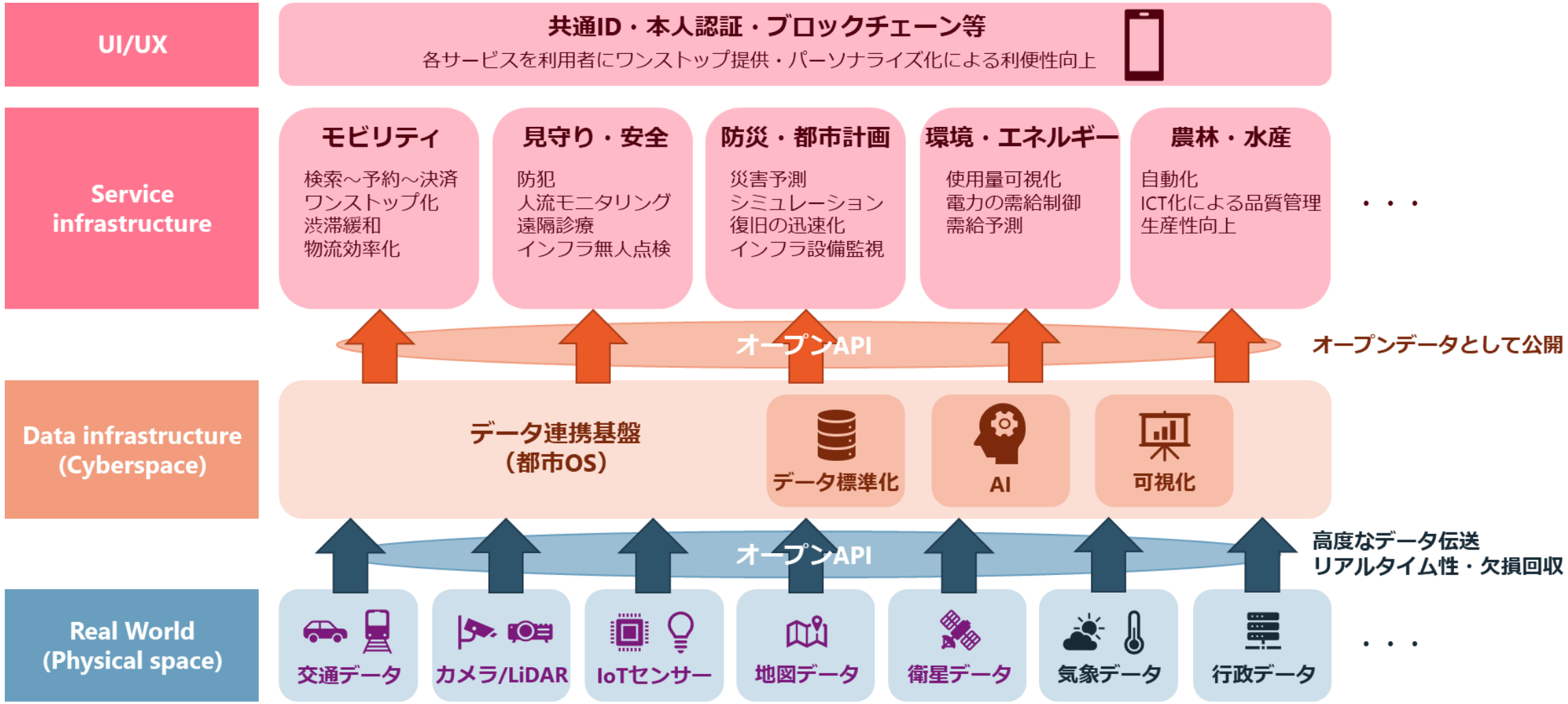


Data specifications are not standardized
Depends on vendor-specific services
Less scalable

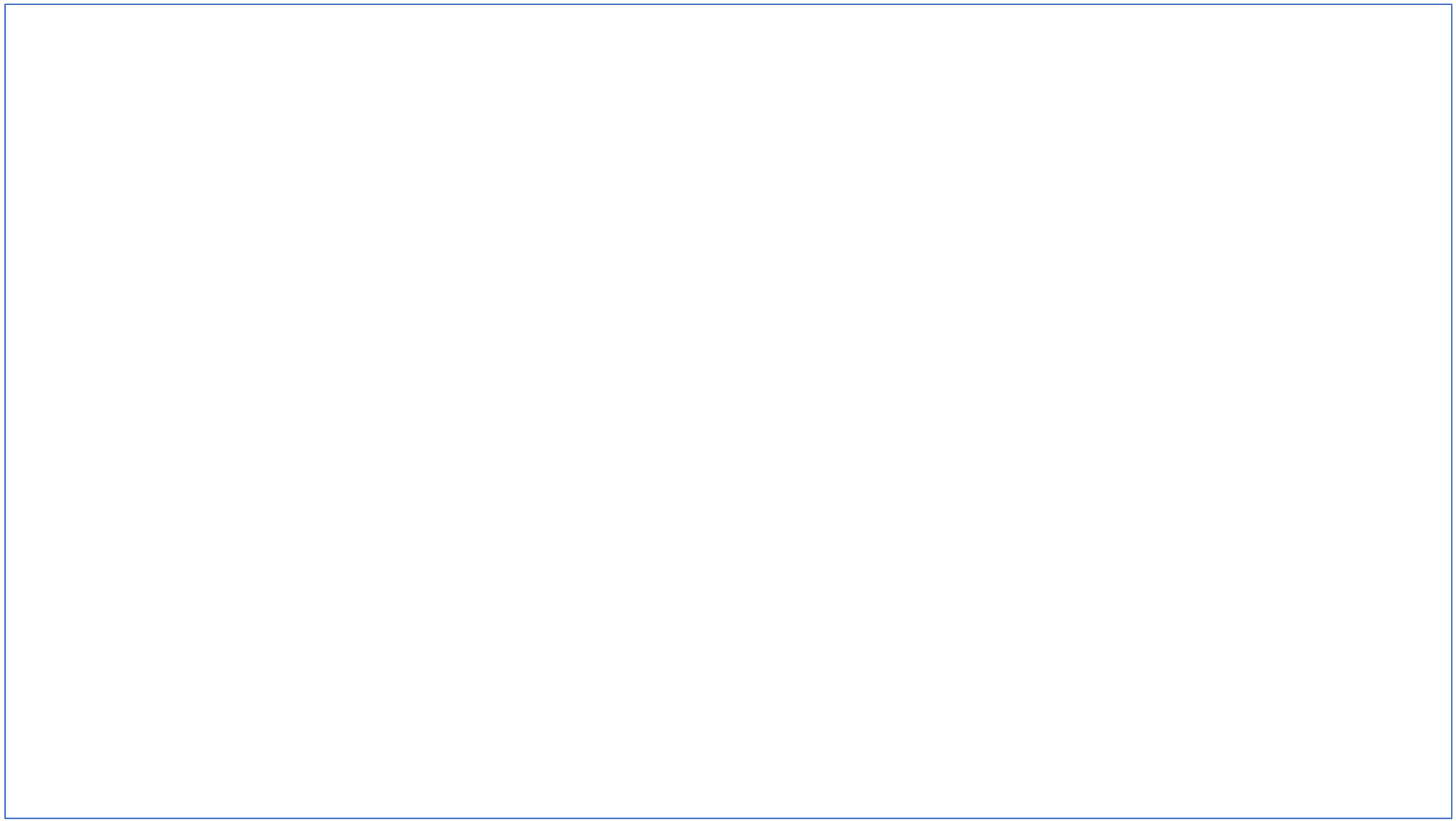
City OS based new eco system forming
Creating new service combine with heterogeneous data

Macnica Smart City-Super City Approach

- Members for Yokohama and Shizuoka supper city project
- Connect everything with common platform (City OS)



Concept video



Activities in Thailand

- CAV ROUNDTABLE (CONNECTED AUTOMATED VEHICLES)

HOST/CO-HOST (R&D Team):

KEY DRIVEN (Implement Team):

タイ陸運局

タイ高速道路庁

デジタル経済推進庁

東部経済回廊

- Member of CAV Business Alliance by Thailand Automotive Institute

- Collaboration with PSU at Patong Beach

Prine of Songkla University, Phuket Campus (colleges of computing)

- EXHIBITION FUTURE MOBILITY ASIA 2023

17-19 May 2023
Autoware Talk by Engineer on 17 May

THANK YOU

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Co.Tomorrowing

MACNICA