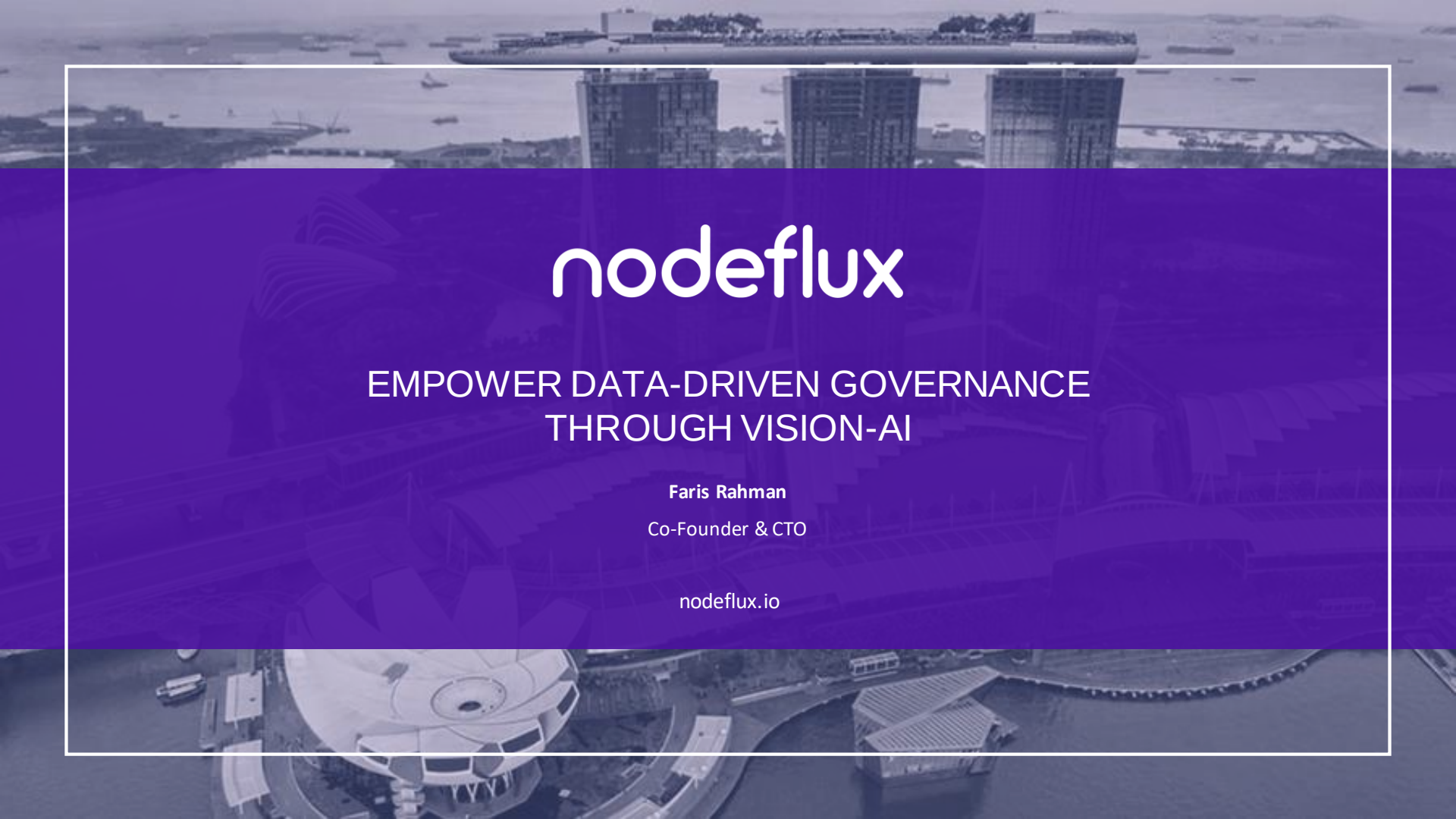


An aerial photograph of a city, likely Singapore, featuring a large bridge with a green roof and several tall, modern skyscrapers. The image is overlaid with a semi-transparent purple rectangle that serves as a background for the text.

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EMPOWER DATA-DRIVEN GOVERNANCE
THROUGH VISION-AI

Faris Rahman

Co-Founder & CTO

nodeflux.io

The Founders



Co-Founder & CEO
Meidy Fitranto

A technopreneur in his mission to contribute in bringing Indonesia forward. Meidy seek to generate impactful work that will sustain and leverage the quality of humanity. Innovate to solve problems has been his key driver to move forward and beyond.



Co-Founder & CTO
Faris Rahman

A Technopreneur with thought- leaderships and expertise in the field of distributed computation, high-performance computing, and artificial intelligence. Faris leverages his expertise by exploring advance technology to create impactful innovation that will bring greater good for societies at large.

Nodeflux Teams





nodeflux

MSPP Official Global Partner

Nodeflux is the only company from Indonesia among

24

Biggest AI company in the world



NIST Registered

Nodeflux also have received certification from National
Institute of Standards and Technology

1

Indonesian AI company received
certification



25

World's best from 90 Vision AI
company around the world

Research

'What if?' is the main instigator of almost every technology marvel in human civilization. In order to distil feasible 'what ifs', exploration through research and development (R&D) is necessary. Through R&D activities, we expect a great flow of ideas, knowledge, motivation, and countless opportunity to escalate the nation's resources quality.

Read the article here

2018



Best Presenter Awards on *The 3rd International Conference on Computer Science and Computational Intelligence (ICCSICI) 2018* Tangerang, West Java, Indonesia for The 1st Nodeflux Paper: **"An Improved Version of Texture-based Foreground Segmentation: Block-based Adaptive Segmenter"** by Kahilil Muchtar, Faris Rahman, Tjeng Wawan Cenggoro, Arif Budiarto, & Bens Pardamean.

Read the article here

2019



ICAIIJC (International Conference on AI in information and communication) 2019, Okinawa, Japan. **"A unified smart surveillance system incorporating adaptive foreground extraction and deep learning-based classification."** by Kahilil Muchtar, Faris Rahman, Muhammad Rizky Munggaran, Alvin Prayuda Juniarta Dwiyanoro, Richard Dharmadi, & Indra Nugraha.

Read the article here

2018



Outstanding Paper Awards on *The 23rd International Computer Symposium (ICS) 2018* Yunlin, Taiwan. **"An efficient event detection through background subtraction and deep convolutional nets"** by Kahilil Muchtar, Faris Rahman, Muhammad Rizky Munggaran, Alvin Prayuda Juniarta Dwiyanoro, Richard Dharmadi, Indra Nugraha, & Chuan-Yu Chang.

Read the article here

2019



IEEE (Institute of Electrical and Electronics Engineers) Transactions on Intelligent Transportation Systems (Q1 journal, Impact Factor: 4.051). **"Moving Object Detection through Image Bit-Planes Representation without Thresholding."** by Chih-Yang Lin, Kahilil Muchtar, Wei-Yang Lin, & Zhi-Yao Jian.



Data Acquisition



Gathering the image data.
Store it.



Data Annotation



Giving **label** to each data,
according to the
annotation policy.



Training



Train the **model**, generate
further **analytics** based on
the model, other **modules**
and **rules**.

Basically, create **workers**.



Platform



Place to run the analytics.
With its very own **system architecture**, ready to be
deployed on several
deployment.

Serve **integrations** to other
platform or solutions.



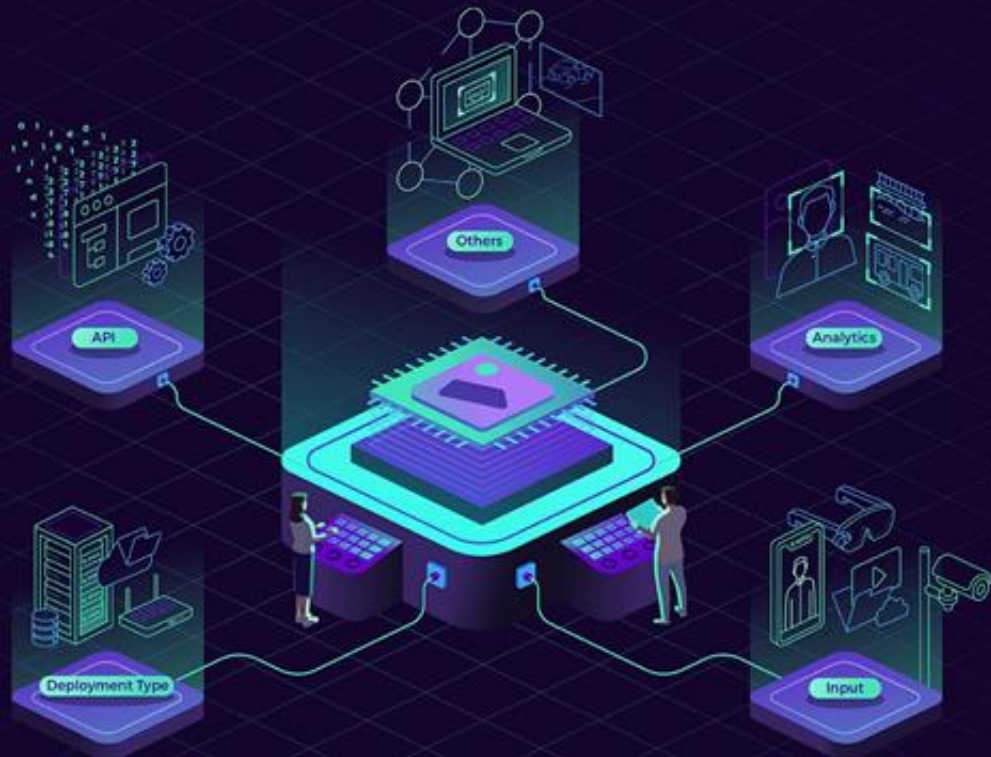
Solution



Deliver value to clients, using
Data from the platform for
further needs and
customisation. Become **use cases**.



VisionAlre represents years of experience in AI. It is positioned as the core - the brain - of vision AI implementation across all of Nodeflux's solutions and deployments. Going forward, visionAlre sits at the heart of all vision AI-related solutions and deployments, acting as the core that holds everything else together.





13

AI models that have been updated throughout our years of experiences to support the analytics



18

Pre-defined analytics, **counting, dwelling, intrusion, etc.**



2

Real Time Live Feed Video
&
Snapshot



2

Premise Cluster
&
Cloud



Face Recognition



License Plate Recognition



Sidewalk Vendor Detection



People Counting



Vehicle Counting



Water Level



People Dwelling



Vehicle Dwelling



Face Enrollment Service



People Trajectory



Vehicle Trajectory



Crowd Estimation



Vehicle Intrusion



Crowd Anomaly Behaviour



Vehicle Speed



RealTime
Analytics

Snapshot Analytics



Face Recognition
(1 : N)



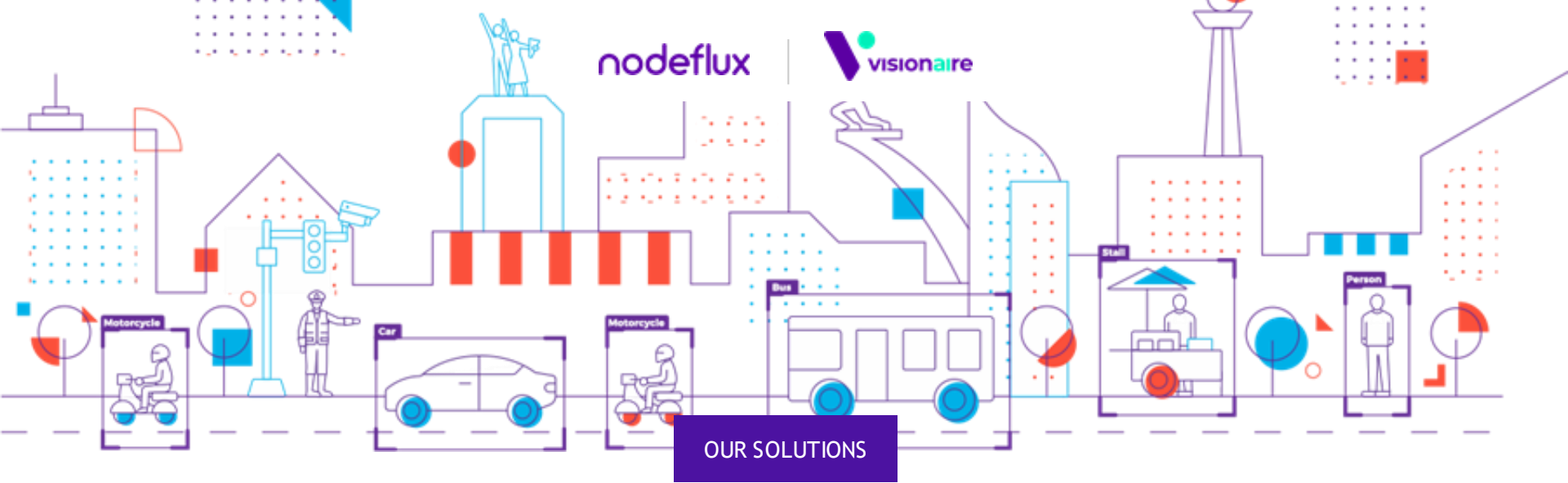
Face Match
(1 : 1)



Face Demography



License Plate Recognition



SMART CITY GOVERNMENT

VisionAlre Traffic Management & Surveillance

VisionAlre Public Safety

VisionAlre Law Enforcement

BUSINESS ENTERPRISE

VisionAlre People & Facility Management

VisionAlre Know Your Customer (KYC)

VisionAlre Store

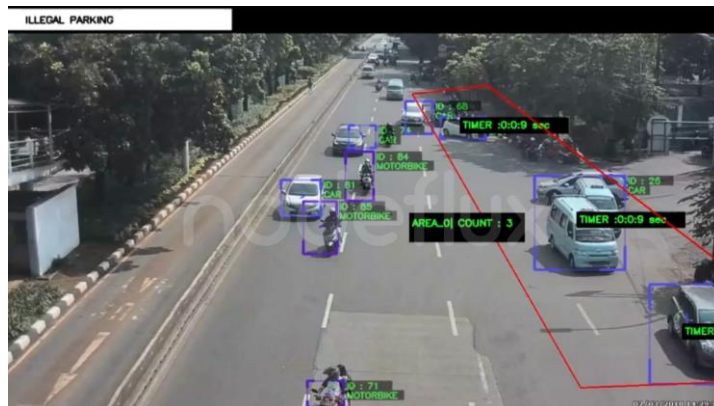
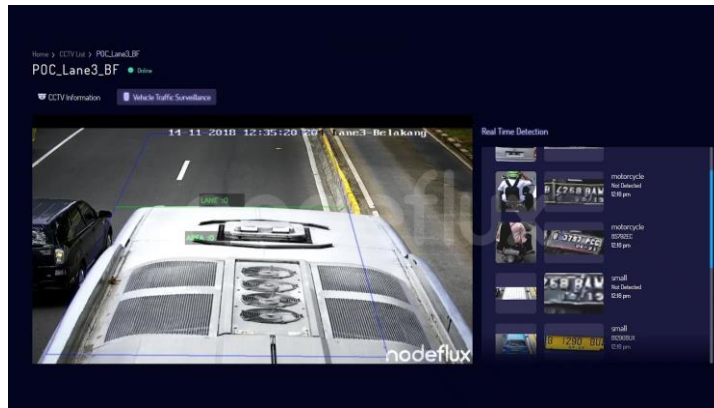
VisionAlre Ads

Nodeflux Solution Covers Wide Range of Sector including:
Smart City, Store, Banking, Hospitality, and Advertising.

Law Enforcement

In case of a traffic safety issue, with the underlying of traffic regulations about vehicle registration plate expiration, driving restrictions including making a restricted U-turn, and casually park vehicles while street vendors occupy on designated pedestrian designated isles.

To ensure the accuracy and reliability of the traffic operation system, the Artificial Intelligence (AI) plays a role on harnessing the process on managing a regulated vehicle registration and licensing system that implied to traffic regulations, as well as the improvement on road infrastructure management.



Vehicle Tax Compliance



Sidewalks Vending Observation



Illegal Parking Control

Public Safety

Public safety is one of the vital roles by the Government to ensure the protection of individual citizenship, institution, and the community at large against the threats of their well-being over the natural disaster and the act of unlawful crime.

The capabilities to support disaster management requires fundamental substances, including force agents, safety infrastructure protection, technology support, and general law enforcement in pre, during, and post-disaster situation.

In the concern of public safety, the Artificial Intelligence (AI) as one of the technology support enables to analyze and monitor some preference areas empowering by CCTV as the video or image outcomes for the prevention planning matters.



**Blacklisted Person
Surveillance**



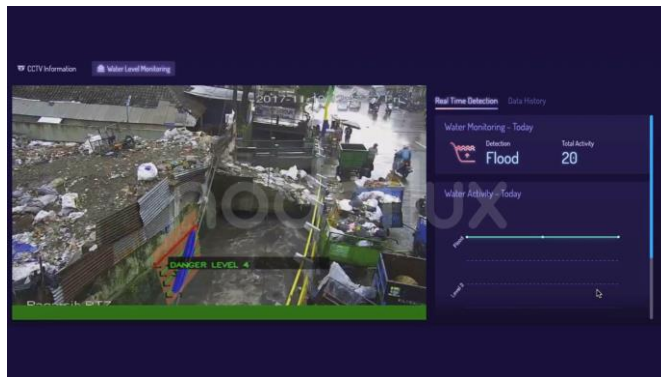
Events Security



Disaster Prevention



**Airport/Station
Security**



The trend of urbanization has created an experiencing of unprecedented growth in population and traffic congestion in urban cities. With this kind of growth, comes the need for the safe and convenient traffic operations, as well as improving a convenient for the road infrastructure.

In the concern of road efficiency, Artificial Intelligence (AI) technologies can help to analyze and identify the efficiency improvements that can be implemented – empowered by CCTV in each area while ensuring systematic traffic operations.

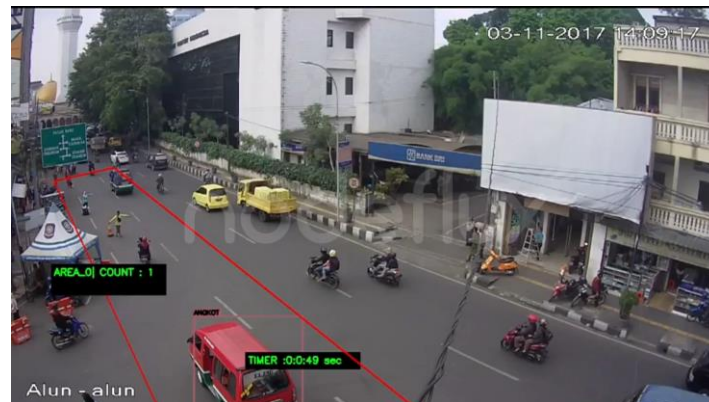
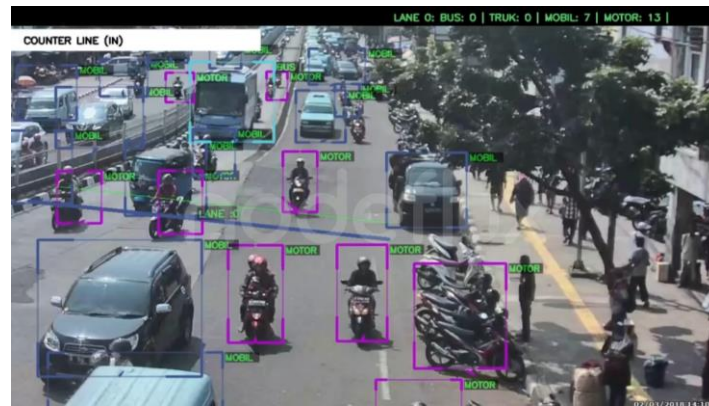
Analyzing data using AI can reveal patterns that can support the government and regulatory authorities to make a better data-driven decision or even automate the whole process of decision making. The implementation of AI can assure efficient and safe traffic operations by empowering the wide-traffic surveillance system and traffic control system to manage and minimize traffic accidents.



Road Traffic Monitoring



Mass Traffic Surveillance



Case Study: Ojek Online / Online Ride Hailing

Ojek Online run our vehicle counting with online ride hailing detection and passenger classification. We provide them data for about a year, on 127 camera spots around Jakarta.



Vehicle Counting





Case Study: Asian Games 2018

The 2018 Asian Games is an international sporting event which is the pride of Indonesia. It takes careful preparation and strict security to ensure this event goes on smoothly. Nodeflux is entrusted to assist the Indonesian National Police and organizers of the 2018 Asian Games in securing security.

With VisionAire as the main platform and interconnection with data from Dukcapil, Nodeflux is able to present an integrated solution to answer various challenges during the 2018 Asian Games, especially in terms of securing and analyzing 2018 Asian Games visitors.

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Case Study: IMF Annual Meeting 2018

Events with a scale as large as the 2018 Annual IMF Meeting have their challenges. Tight security has become a basic requirement, especially since guests who come are leaders from various countries in the world. Nodeflux is again involved in providing face recognition services with data connected to Dukcapil.

For the purposes of securing the 2018 IMF Annual Meeting, Nodeflux became the National Police integration partner. The entire security dashboard that uses artificial intelligence is provided by Nodeflux on VisionAIre as our artificial intelligence platform.



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2018 AI Implementation



2019 AI Implementation



On Progress Deploy

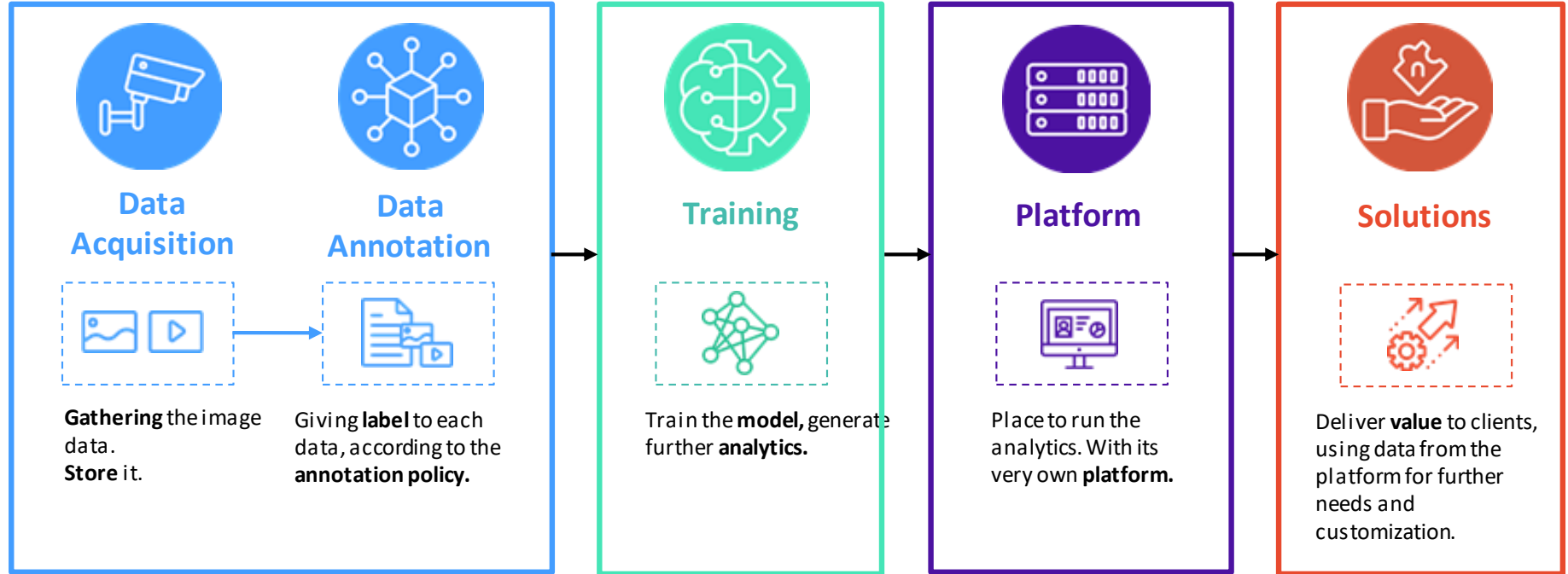


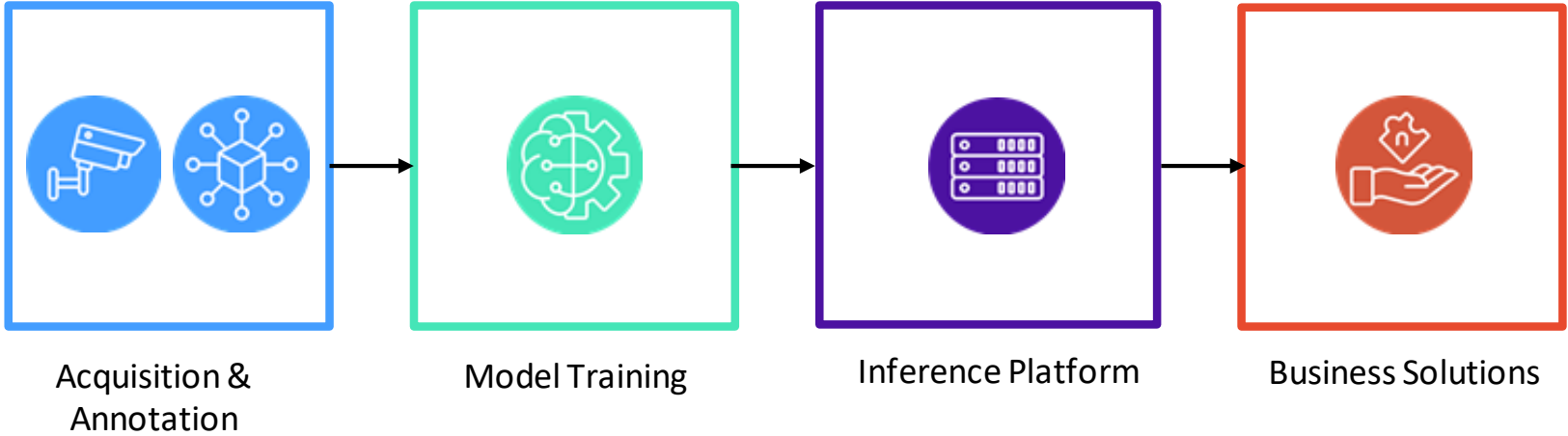
Planning Deploy

ECOSYSTEM

- Technology
- Industry
- Government
- Academics
- Communities

Technology





Collaboration

Local Communities

(Crowdsource, data-labelling)

Academics and Tech Communities

(Curriculum in AI, model training and development)

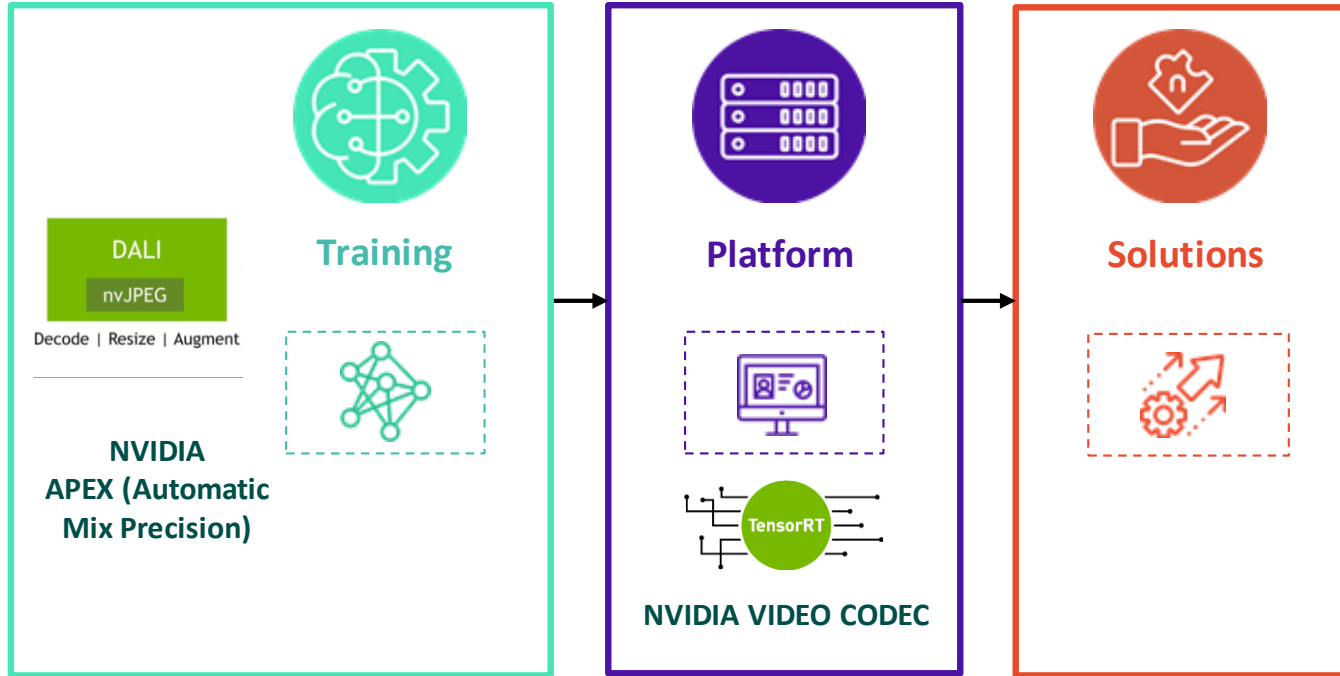
Hardware Vendors

(Technology)

Solution Integrator

(Industry)

Collaboration with NVIDIA





DISKOMINFOTIK
Provinsi DKI Jakarta



EMPOWER DATA-DRIVEN GOVERNANCE THROUGH VISION-AI

Sea area : 6,997.50 KM²



Land area :
662.33 KM²

JAKARTA *As Capital City*

REPUBLIC OF INDONESIA

Population : ± 10.3 Million people

Highest Density in Indonesia : ± 15,633 people each km²

Waste production : ± 7.1 tons per day

Number of vehicles : ± **13.3** Million
Motorcycles and ± **3.5** Million Cars

4 LEVELS OF CITY EVOLUTION

by **Marcus Foth**,
Professor of Urban Informatics,
Queensland University of Technology

CITY
4.0

The city government as a collaborator.
Citizens as co-creators.

CITY
3.0

The city government as a facilitator.
Citizens as participants.

CITY
2.0

The city government as a service
provider. Citizens as consumers.

CITY
1.0

The city government as an administrator.
Citizens as residents.

Sustainable Development Programme

Collaborator

Government

Co-Creators

Citizen

Academia

Media

Industry/Business/Investor

Other Governments

Vision and Mission
JAKARTA CITY 4.0

Digital Technologies and Innovation

Cloud

Big Data

AI

IoT

Blockchain



Road Congestion



Medical Services



Parking space



Flooding



Waste Management and Recycling



Air Pollution



School education



Local government services



Public Transport



Drink Water



Unemployment



Green spaces

Jakarta's Problems

Citizen's Needs

Developed City

Happy Citizens

Jakarta Smart City



Jakarta City 4.0

4 Principles

5 Co-Creators

6 Outcomes

7 Programs

Improving The Lives of Jakartans

Smart City Indicator



Governance



People



Mobility



Living



Economy



Environment

Jakarta Smart City

Role of Data & Analytics:

“to make better decisions, faster”

Alignment with JSC's Vision:

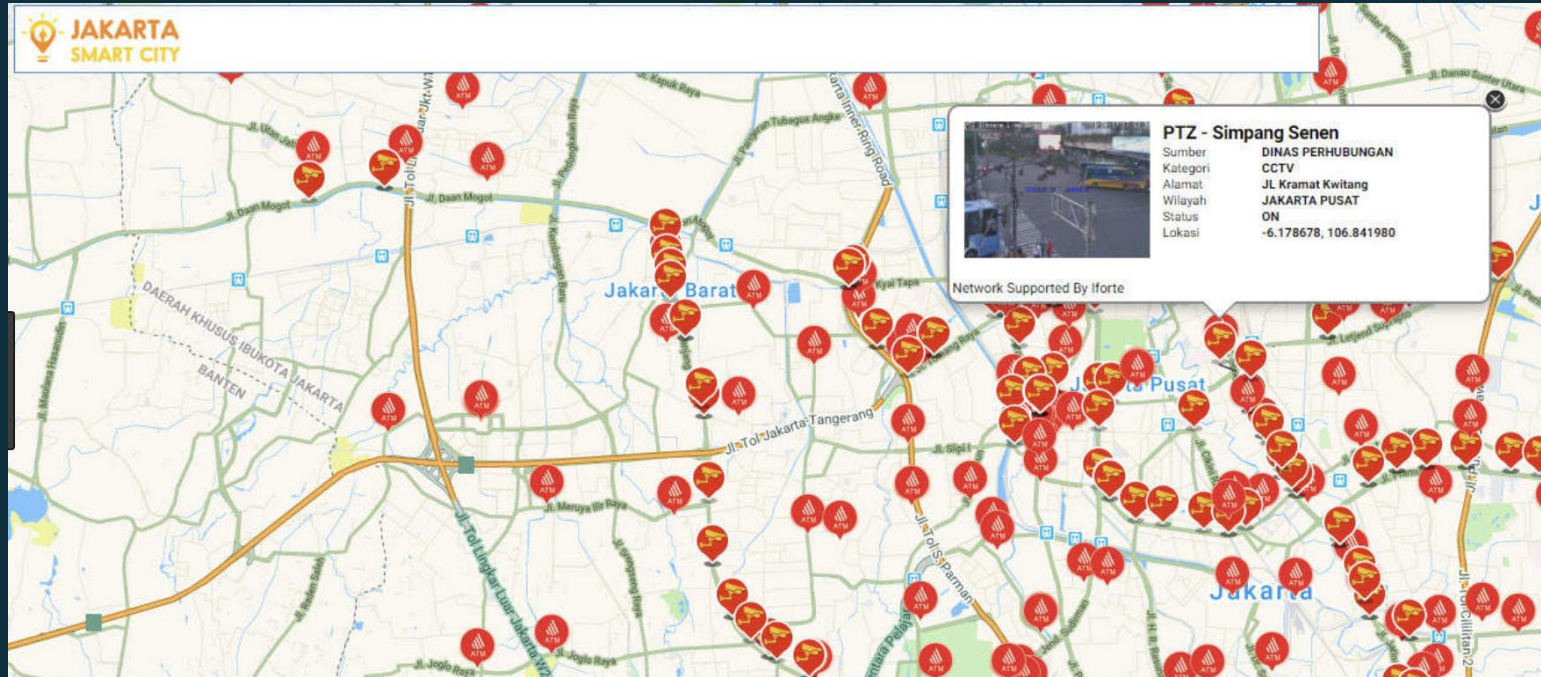
**“To improve satisfaction from citizen towards government,
through data-driven public policy & public services”**

DATA VARIETIES

(Not Exhaustive List)



CCTV MONITORING VIA PUBLIC REAL-TIME MAP



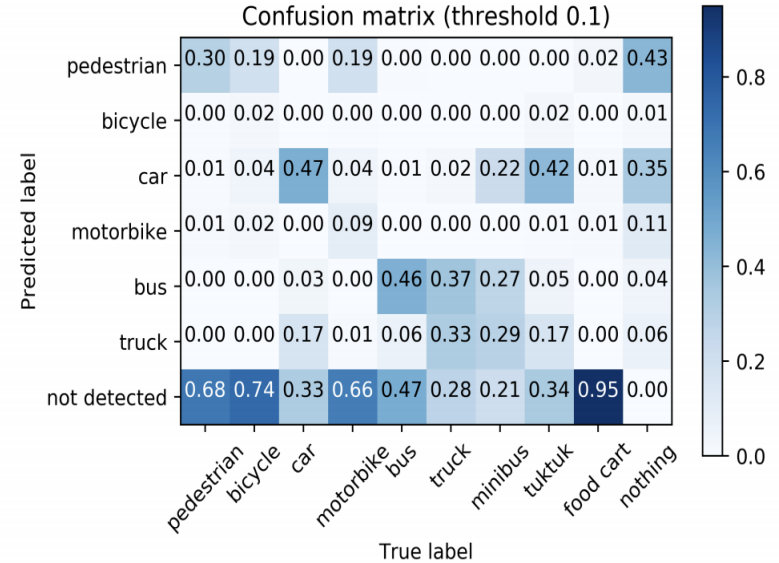
VIDEO ANALYTICS FOR TRAFFIC SAFETY



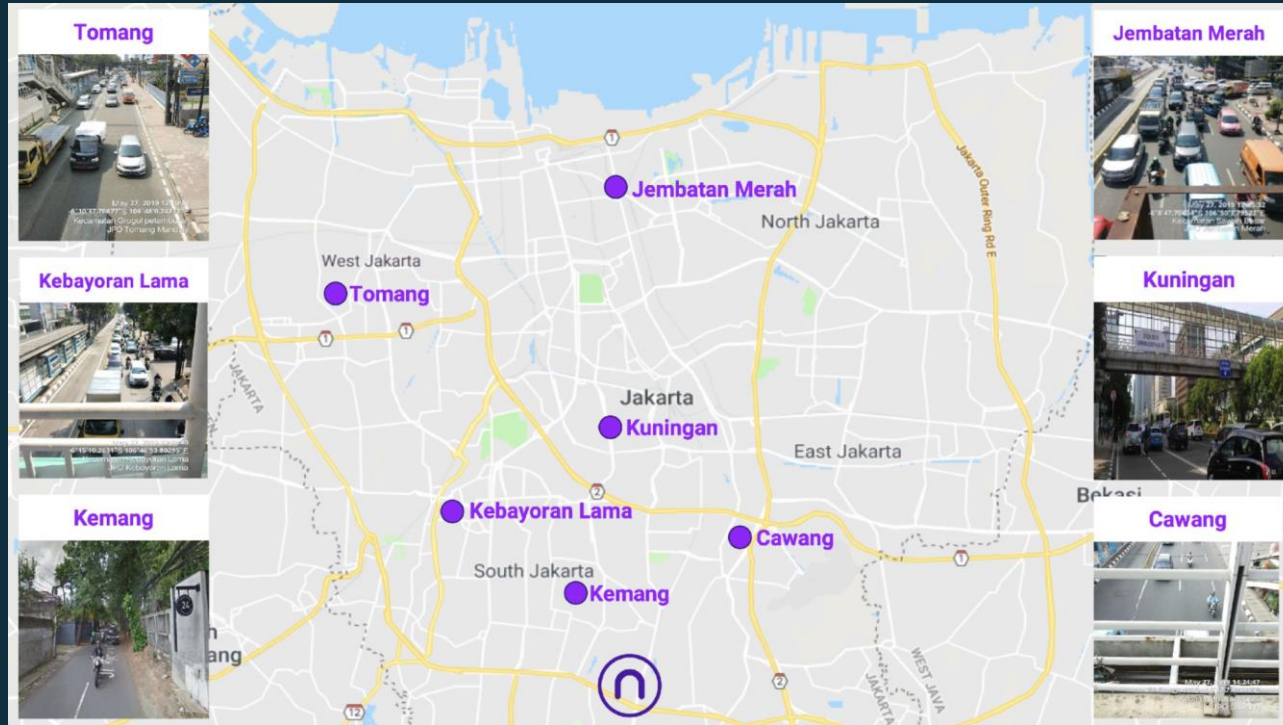
Figure 1: On the left, detection/classification with YOLOv3. On the right, motion detection with Lucas-Kanade Optical Flow.



Figure 2: A scene pre- and post-segmentation.



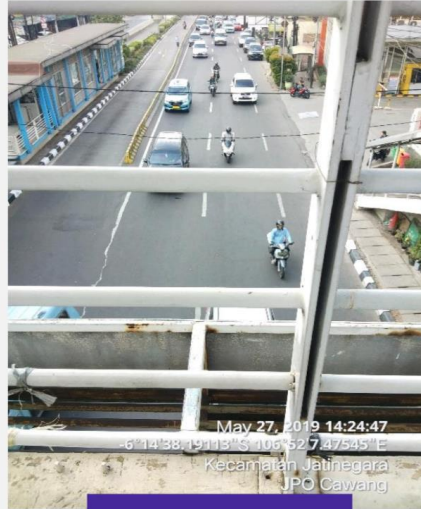
PILOT INITIATIVE WITH NODEFLUX



PILOT INITIATIVE WITH NODEFLUX



**Jembatan
Merah**



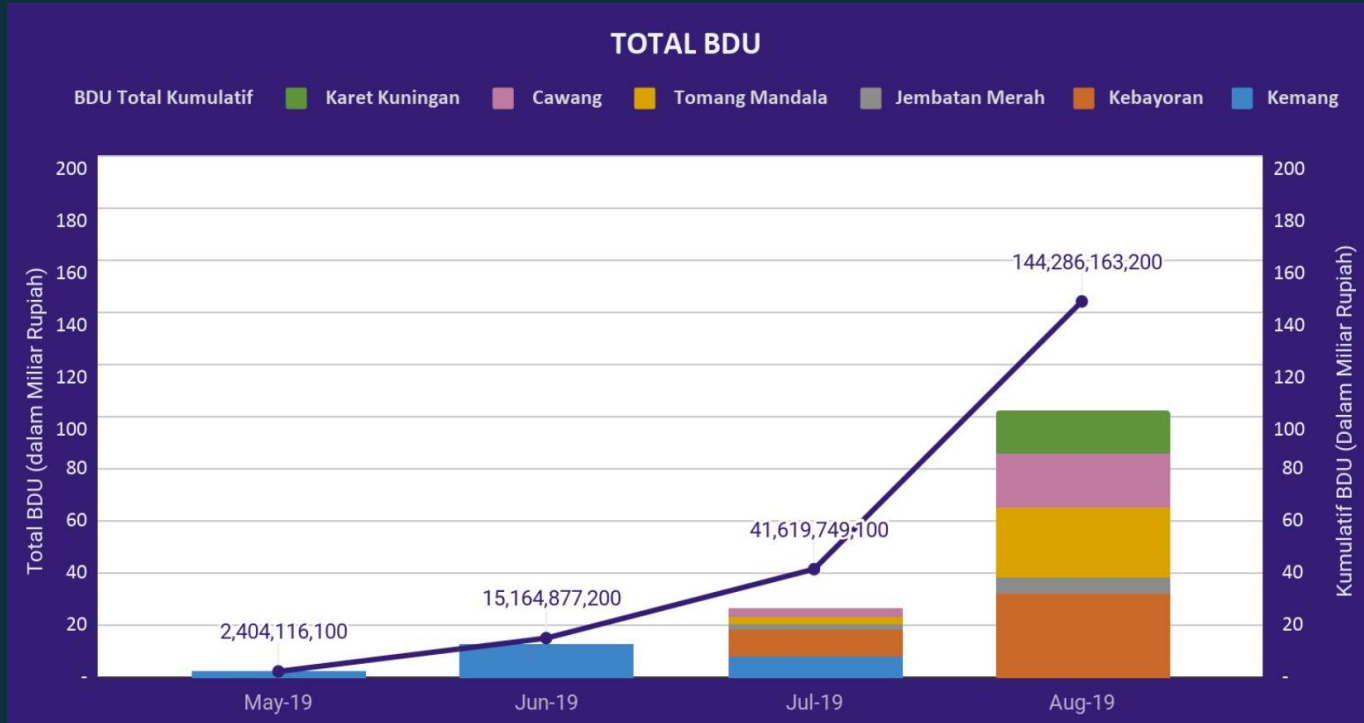
Cawang



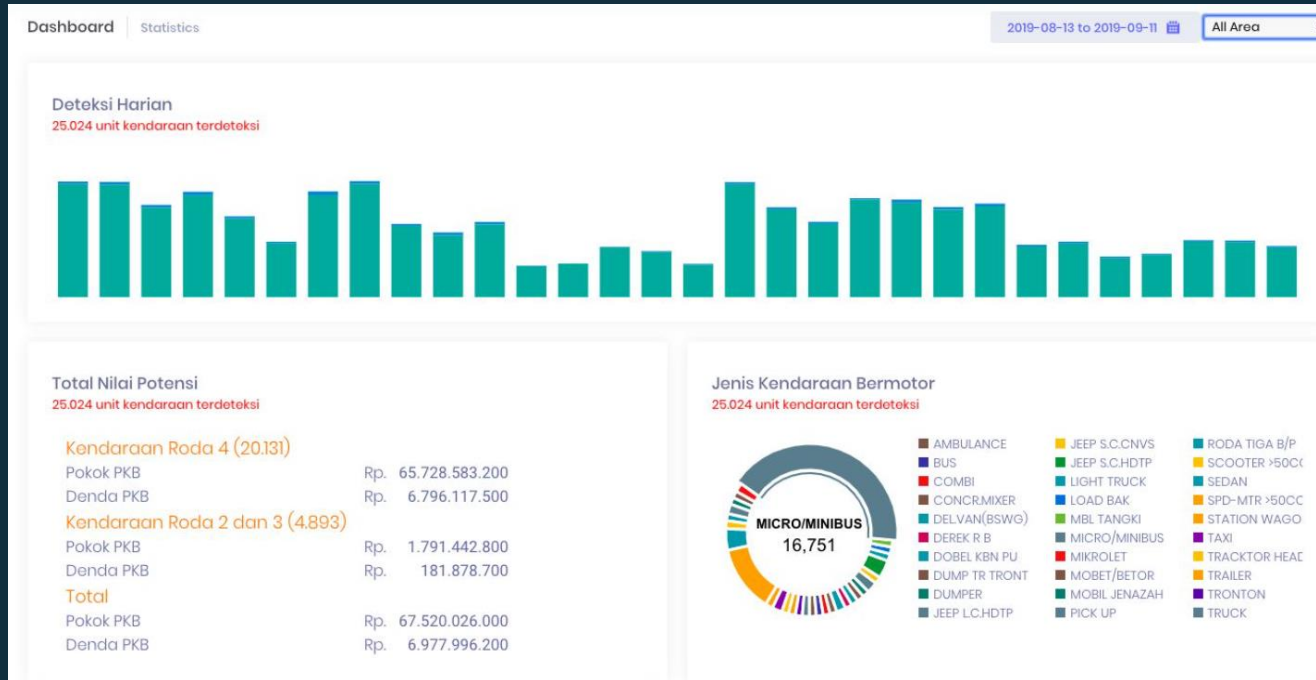
**Tomang
Mandala**



PILOT INITIATIVE WITH NODEFLUX



PILOT INITIATIVE WITH NODEFLUX



Thank You!

