ROYAL ACADEMY OF ENGINEERING | LEADERS IN INNOVATION FELLOWSHIPS

DOST - AIM 2019

Newton Fund

CATCH-ALL

INTELLIGENT TRAFFIC MANAGEMENT TOWARDS A SMART CITY

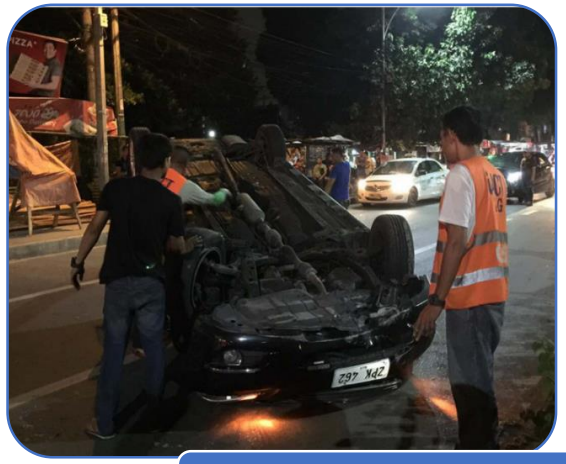
INTELLIGENT TRANSPORTATION SYSTEMS FORUM

Prof. Dr. Elmer P. Dadios
Full Professor and University Fellow
Chair – Department of Manufacturing Engineering Management
De La Salle University, Manila, Philippines

ROYAL ACADEMY OF ENGINEERING | LEADERS IN INNOVATION FELLOWSHIPS

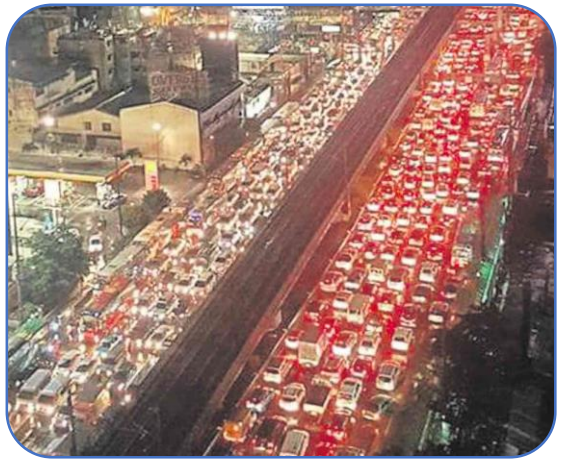
INTELLIGENT TRANSPORTATION SYSTEMS FORUM

Newton Fund



Accident

Traffic due to Accident



Increased Traffic Volume

Elmer P. Dadios, PhD.
PhD – Loughborough University, UK
Full Professor and University Fellow
De La Salle University, Manila, Philippines

CATCH-ALL

Problem

Heavy traffic is a major impediment, affecting the economy, the environment, and **human life.**

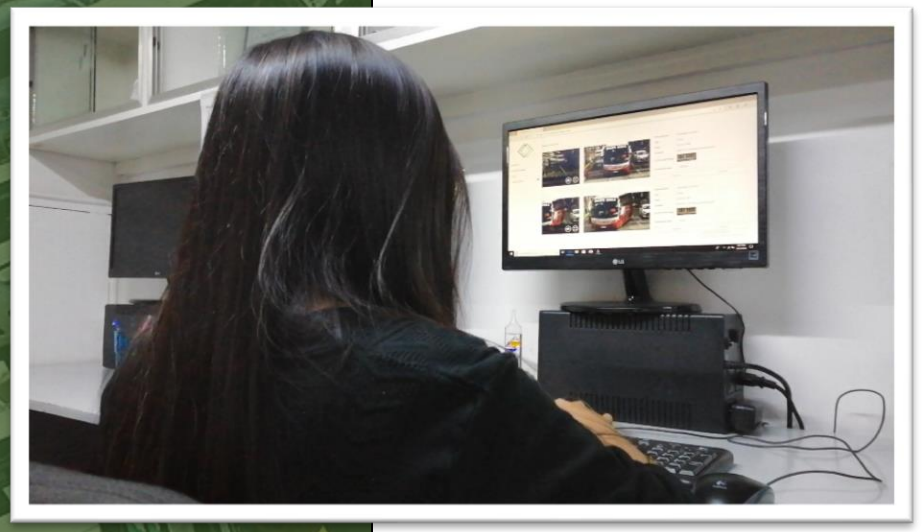
The goal

A Smart City integrating technology in everyday activities to improve **quality of life.**

Our vision

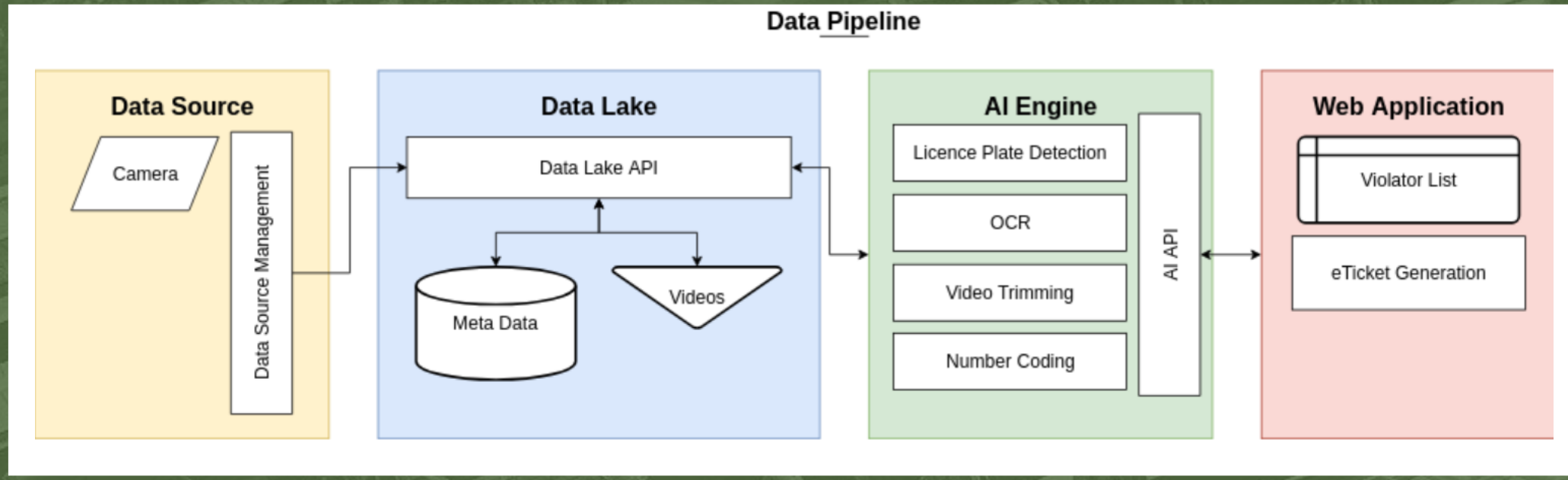
The use of information technology in traffic management towards a **Smart City.**

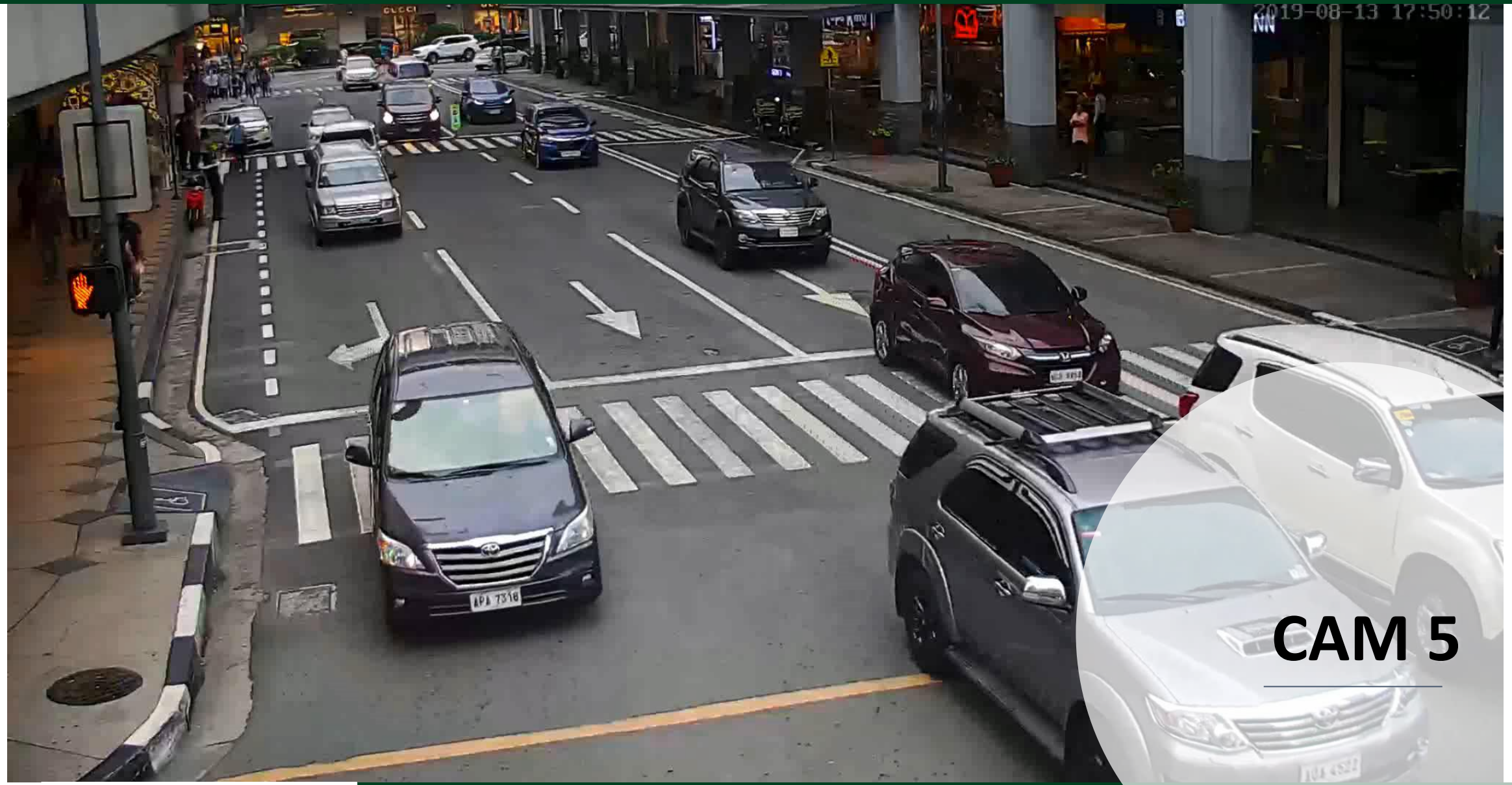
The Solution



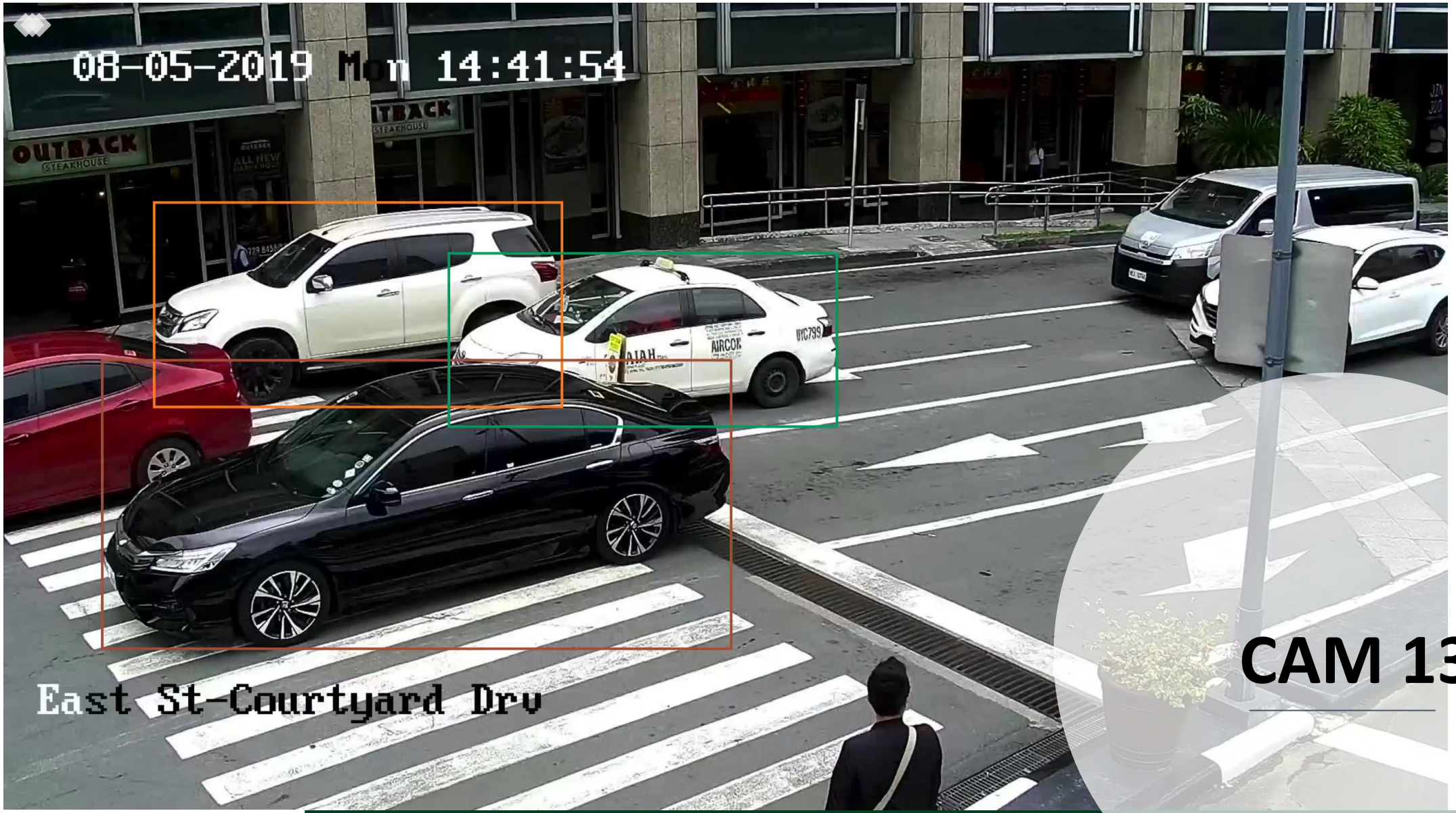
CATCH-ALL is a traffic management and analytics system based on computer vision and artificial intelligence.

The System


Data Pipeline
Data Source
Camera
Data Source Management
Data Lake
Data Lake API
Meta Data
Videos
AI Engine
Licence Plate Detection
OCR
Video Trimming
Number Coding
AI API
Web Application
Violator List
eTicket Generation



CAM 5


08-05-2019 Mon 14:41:54
OUTBACK
STEAKHOUSE
East St-Courtyard Drv

CAM 13

CATCH-ALL: Operator Traffic Apprehension and Report

****

DISCLAIMER: THIS IS A SAMPLE TICKET ONLY

****

REPUBLIKA NG PILIPINAS
TANGGAPAN NG PANGULO
METROPOLITAN MANILA DEVELOPMENT AUTHORITY

Heller, Sawayn and Rippin
3042 Pricilla Highway, Porterview, MD 20645-6285

NO PHYSICAL CONTACT POLICY PROGRAM

Alinsunod sa MMDA Resolution No. 16-01, Serye ng 2016, ang drayber ng sasakyan na nabanggit dito kasama ang larawan sa harap ay nakunan na lumabag sa mga alituntunin at batas trapiko na nakasaad.

URI NG BEHIKULO: Public
PLAKA BLG: ABX4369
LUGAR NG HULI: MALATE, Taft Avenue, Southbound
ARAW NG HULI: Friday, December 14, 2018
ORAS NG HULI: 10:56:04 AM
NILABAG: Number Coding
HALAGANG DAPAT BAYARAN:
One Hundred Fifty Pesos (P150.00) Only

The Workflow

Vehicle detection in surveillance footage

The Workflow

Vehicle detection in surveillance footage

License Plate classification

The Workflow

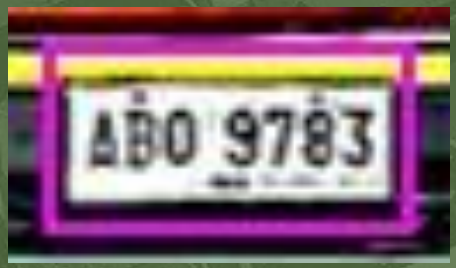
Vehicle detection in surveillance footage

License plate classification

The Workflow

Vehicle detection in surveillance footage

License plate classification

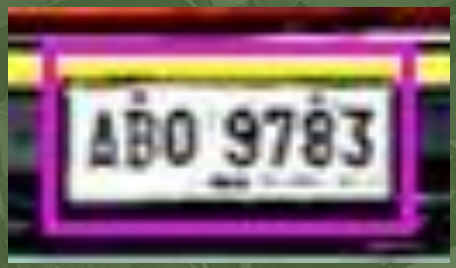


Optical Character Recognition

The Workflow

Vehicle detection in surveillance footage

License and classification



Optical Character Recognition

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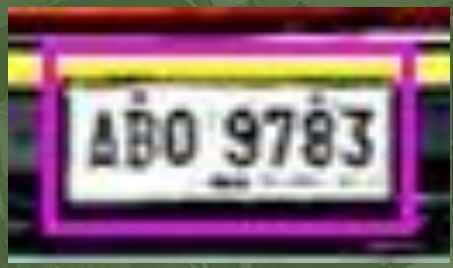


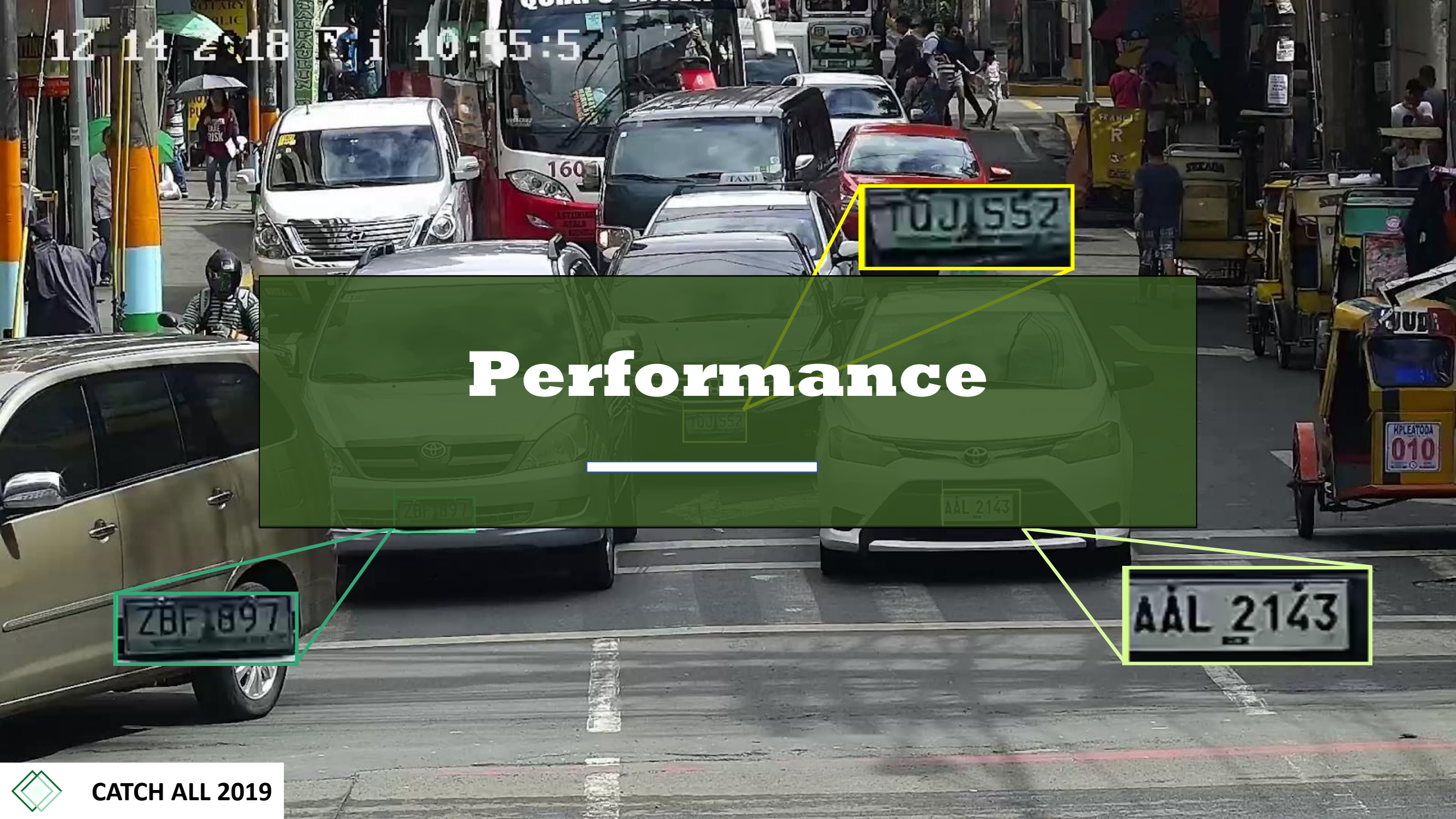
Optical Character Recognition

KEY FEATURES

Streamlined Workflow (RTVD)

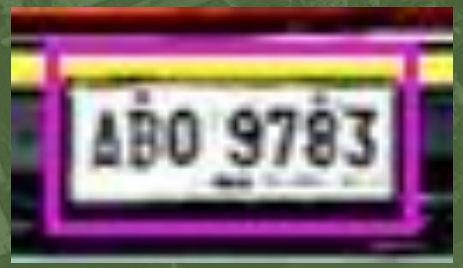
Visual Analytics

Centralized Data (Web Application)



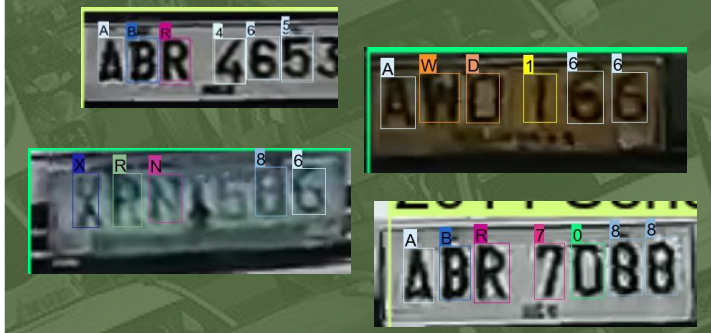
Performance

Performance



License Plate Detection

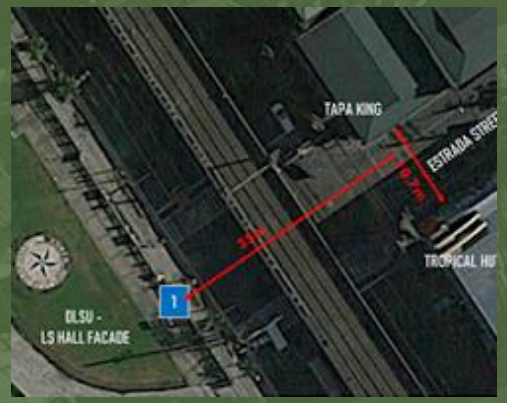
License Plate Classification



Optical character recognition

(7 Out of 8 Violations were recorded and recognized in the span of 20 minuets on each camera)

Performance: Camera Location



Camera 1

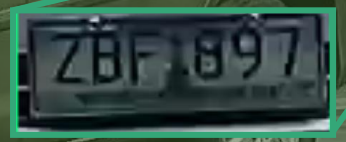
Camera 2

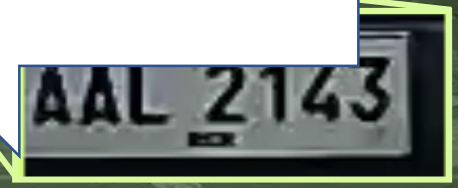
Performance

Plate Detection Accuracy	
Camera	98.41%

Camera 1

Camera 2





Business Development

Business Model

1 Installation and Royalties

Installation Fee
For installment of system and camera network

Royalty
Paid for each apprehension

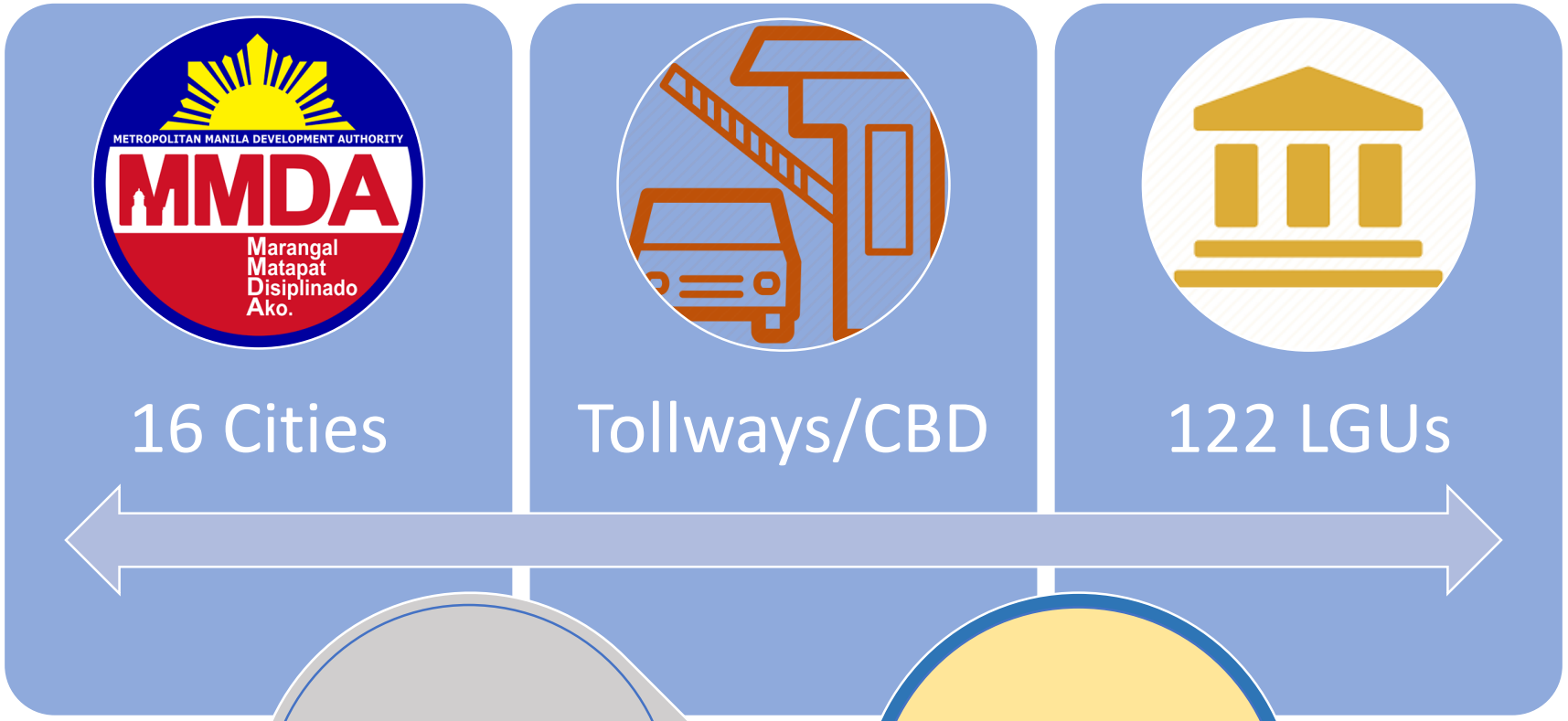
Maintenance Fees
For upgrades and post-sale services

2 Service Fee

Service Fee
Paid based on the amount of data to be processed

Database Management Fee
Recurring payments for storage and giving access to data.

MARKET OPPORTUNITY



COMPETITION

RISKS

Big companies that engages in traffic management and infrastructure solutions.

ADVANTAGES

Products and services offered by competitors do not have traffic violations detection applicable for Philippine license plate recognition.

24/7 Local Support Service and Less Costly

BOSCH

Invented for life

Bosch in the Philippines

Products and services

Mobility

Bosch brings together comprehensive expertise in vehicle technology with hardware, software, and services to offer complete mobility solutions.

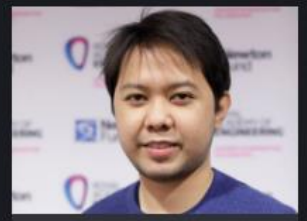
indra

THE ASK

THE TEAM

Dr. Elmer P. Dadios

Project Leader



Dr. ROBERT KERWIN BILLONES

Product Development Officer

Engr. JOHN ANTHONY JOSE

Lead AI Engineer

Mr. JOHNNY SY

Industry Consultant

Dr. ALEXIS FILLONE

Transport Planner

Dr. LAURENCE GAN LIM

Project Officer

Dr. EDWIN SYBINGCO

System Architect

Engr. KATE BRILLANTES

AI Engineer

Mr. CIPRIAN BRILLONES Jr.

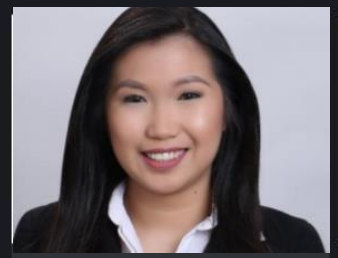
AI Engineer

Engr. XYZA RIVERA

AI Engineer

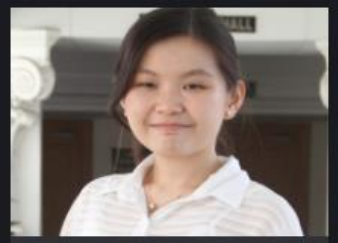
Engr. MARI AMON

AI Engineer



ENGR. JULIANNE DIAZ

Business Development Officer



Ms. PHOEBE CHING

Business Development Officer

THANK YOU …..
MABUHAY

CATCH-ALL

INTELLIGENT TRAFFIC
MANAGEMENT
TOWARDS A SMART CITY

inquiry@catchall.ai

2401 Taft Avenue, Malate, Manila, NCR,
0922, Philippines

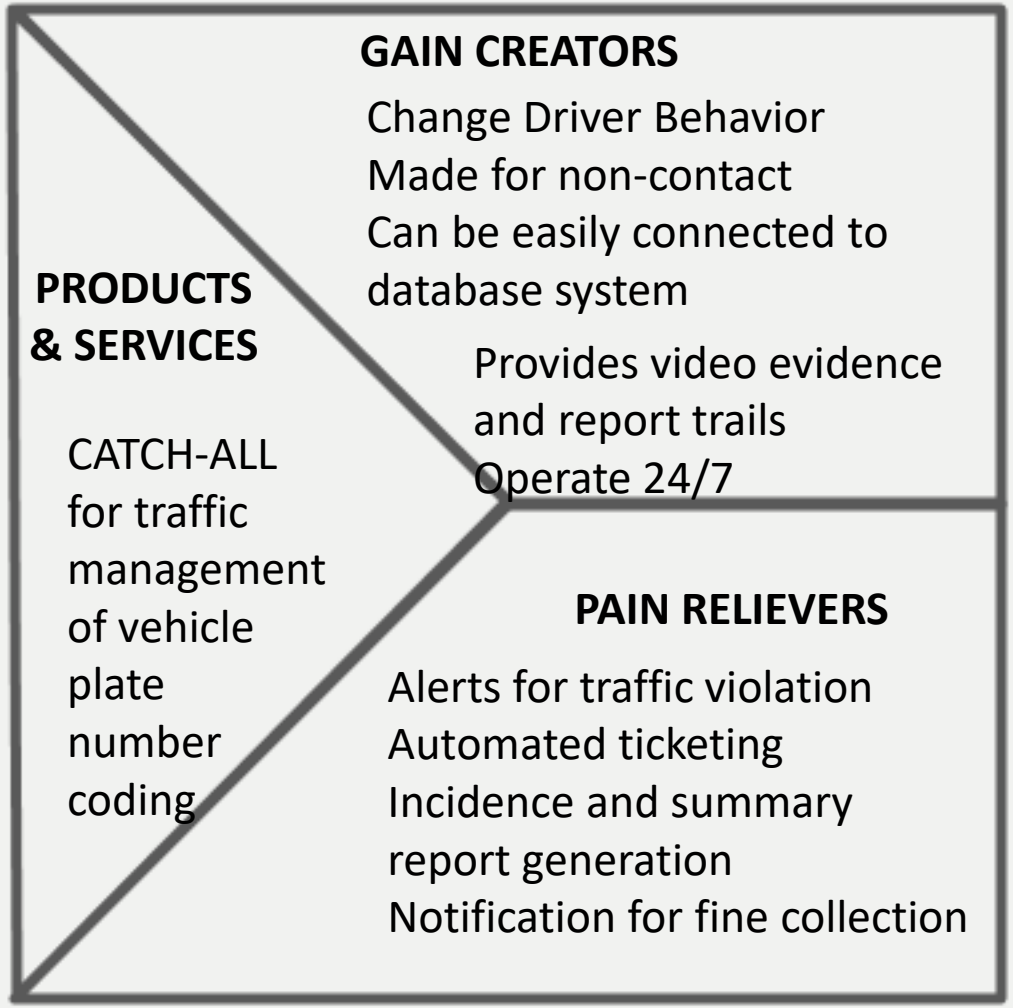
0
ABF 8031
XCEL DRIVING SCHOOL
AJA 6850
ABO 97

	Modules
FUNCTION	No right turn
	No left turn
	Swerving
	Obstruction of Pedestrian
	No Parking
	Obstruction on the Drive Way
	No Waiting
	Vehicle Profiling
	Vehicle Counting
	Tracking
	Congestion
	One way

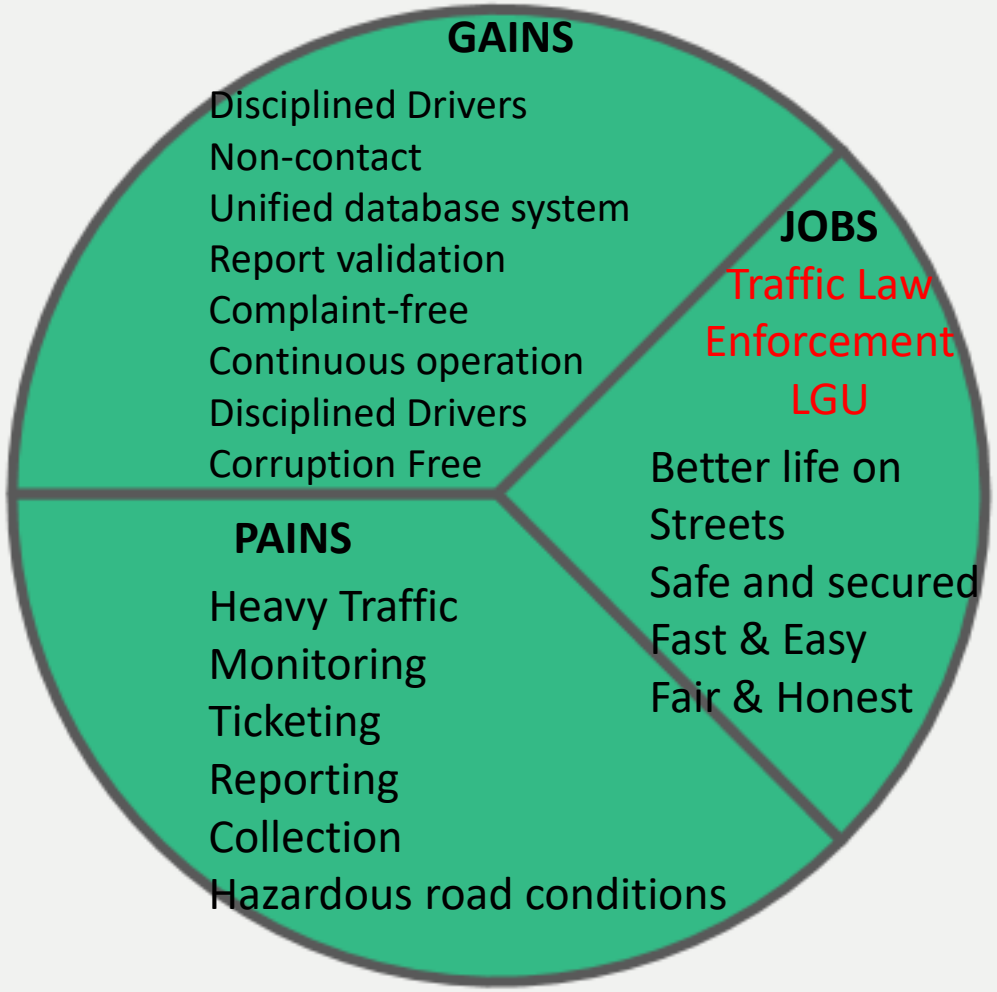
	Modules
WEB INTERFACE	User Registration
	User Authentication
	User Dashboard
	Violation Apprehension/Verification
	User Management
	Data Analytics
	Report Generation
	Camera Stream Dashboard
	Red Box Alert
	Map Congestion Color Coding

Executable Time
6 mon
1 Yr
1+ Yr

Value Proposition



Customer Segment



THE BUSINESS MODEL CANVAS

Designed for:	Date:	Version:
INTELLIGENT SYSTEMS AND INNOVATION	9/3/2019	2

Key Partners

DE LA SALLE UNIVERSITY MANILA

DOST-PCIEERD

Animo Labs
Technology Business Incubator

Center for Engineering and Sustainable Development Research

Key Activities

- Research and Development
- Software Service
- Platform Management

Key Resources

- Software Developers
- Software
- Platform

Value Proposition

VISUAL ANALYTICS

- Auto-generation of reports for monitoring.
- Visualization of traffic data over various time scales

WEB APPLICATION

- Data center was created for a centralized reference
- Data center enables cross referencing of data acquired.
- Monitoring of live traffic feeds

ROAD TRAFFIC VIOALTION DETECTION

- Continuous monitoring and detection of road violations
- Computer vision extends the operators' field of vision.
- Encoding is a click away with the web app.

Customer Relationship

- Collaborative R&D (Customized Features and App Development)
- Service and Maintenance
- Responsive Service

Channels

- catchall.ai
- Business/Tech Conventions

Customer Segments

- Government Agencies
- Local Government Units
- Commercial Parking Lots
- Logistics
- Real Estate Developers
- Highways and Major Highway Roads

Cost Structure

- Software Development
- R&D Equipment and Operation
- Intellectual license
- Leased Line and Equipment From the Customer/External Party

Revenue Streams

- Web Application Module Revenue
- Visual Analytics Module Revenue
- Road Traffic Violation Detection
- Software Installation
- Software Maintenance

THE BUSINESS MODEL CANVAS

Designed for:	Date:	Version:
INTELLIGENT SYSTEMS AND INNOVATION	9/3/2019	2

Key Activities

- **Research and Development**
- **Software Service**
- **Platform Management**

Key Partners

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- De La Salle University Manila
- Animo Labs Technology Business Incubator
- Center for Engineering and Sustainable Development Research

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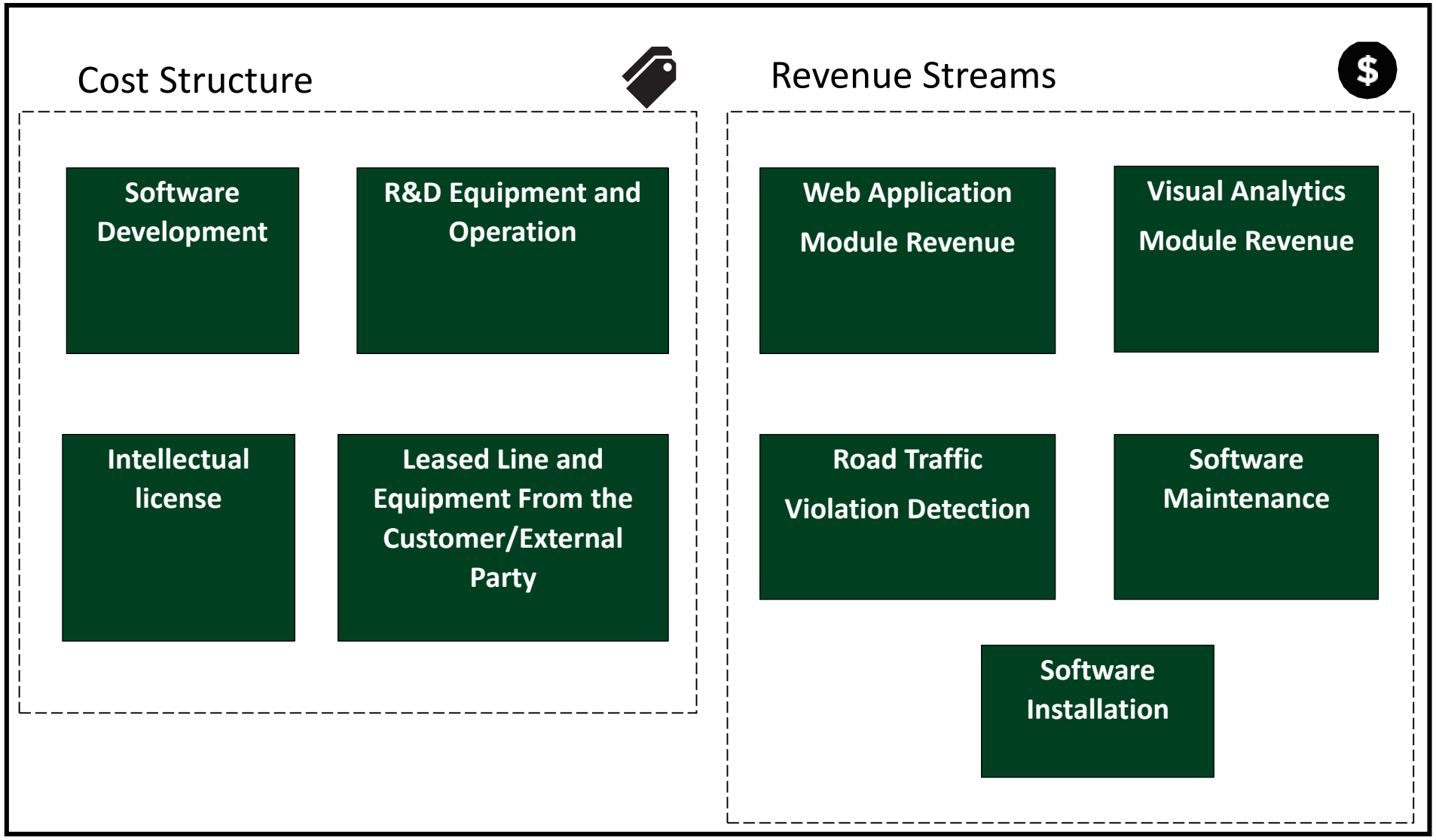
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