ABILITY

# A LEADING MANUFACTURER OF AI-ENABLED SMART CAMERAS
## -INNOVATIVE ODM/OEM SERVICES PROVIDER-

Realizing the Power of Artificial Intelligence

TensorFlow mxnet Caffe

OpenVINO™

Customized SDK Tool

intel MOVIDIUS inside

intel RFP READY

intel IoT Solutions Alliance

ONVIF

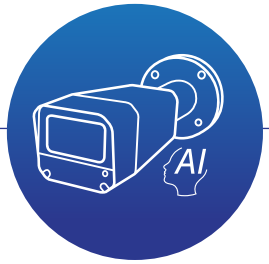
NDAA Compliant

# ABOUT ABILITY

By utilizing the edge computing capability, powered by Intel® Movidius™ Myriad™ X VPU and developed with Intel® OpenVINO™ toolkit, these cutting-edge AI-enabled smart cameras are perfectly suited for applications in smart city, smart transportation, smart factory, smart retail, and smart healthcare, etc. With the combined expertise in hardware manufacturing and advanced AI algorithm development and integration, Ability is your perfect OEM/ODM partner.

**Unmanned Management**

**Contactless Applications**




**Immediate Reaction**

**Fast Deployment**

# SYSTEM INTEGRATION CAPABILITIES

## Firmware

- System
- Middleware
- Connectivity
- User Applications
- 3A/IQ
- 360 Video Stitching
- AI Enabling

## Optical

- Lens Design and Production Technology
- Lens Module Qualification
- Lens Active Alignment
- Lens Mounting Technology
- IR LED Bright Study
- Optical simulation and Optical Center Adjustment

## Hardware

- Plenty Experience of SoC Platform
- Peripheral Sensor, Power, EMC and RF Experience
- Hardware Modularization and System Integration
- Perform MTBF for Reliability Prediction

## Mechanical

- Mechanical Design and Simulation
- Thermal Design and Simulation
- Environment Reliability ( Waterproof, Vibration, and IK10)
- Yield Rate Management

# 20+ YEARS OF CAMERA ODM

**1999~2002**

**PC Camera**

**2003**

**Digital Camera**

Compact & Slim
Waterproof
Big Sensor
High Zoom
Interchangeable Lens
WIF/BT/NFC

**2014**

**Action Camera**

4K Video recording
IP 68 WIFI/BT/NFC

**2015**

**IP Camera**

IP66+IK10

**Lens Module**

Action camera
Wearable camera, IoT device
Drone
Industrial application

**2016**

**Rugged Wearable**

**ROV**

**2017**

**Automotive Device**

Camera Module
Image System

**Car Recorder**

**AI-Vue ANPR Cameras**

**AI-Box Cameras**

**AI-Vue Cameras**

**AI Camera Modules**

**AI-Speed Dome**

**2018**

**360 Camera**

3D VR Camera
Pre Camera stitching

**2019**

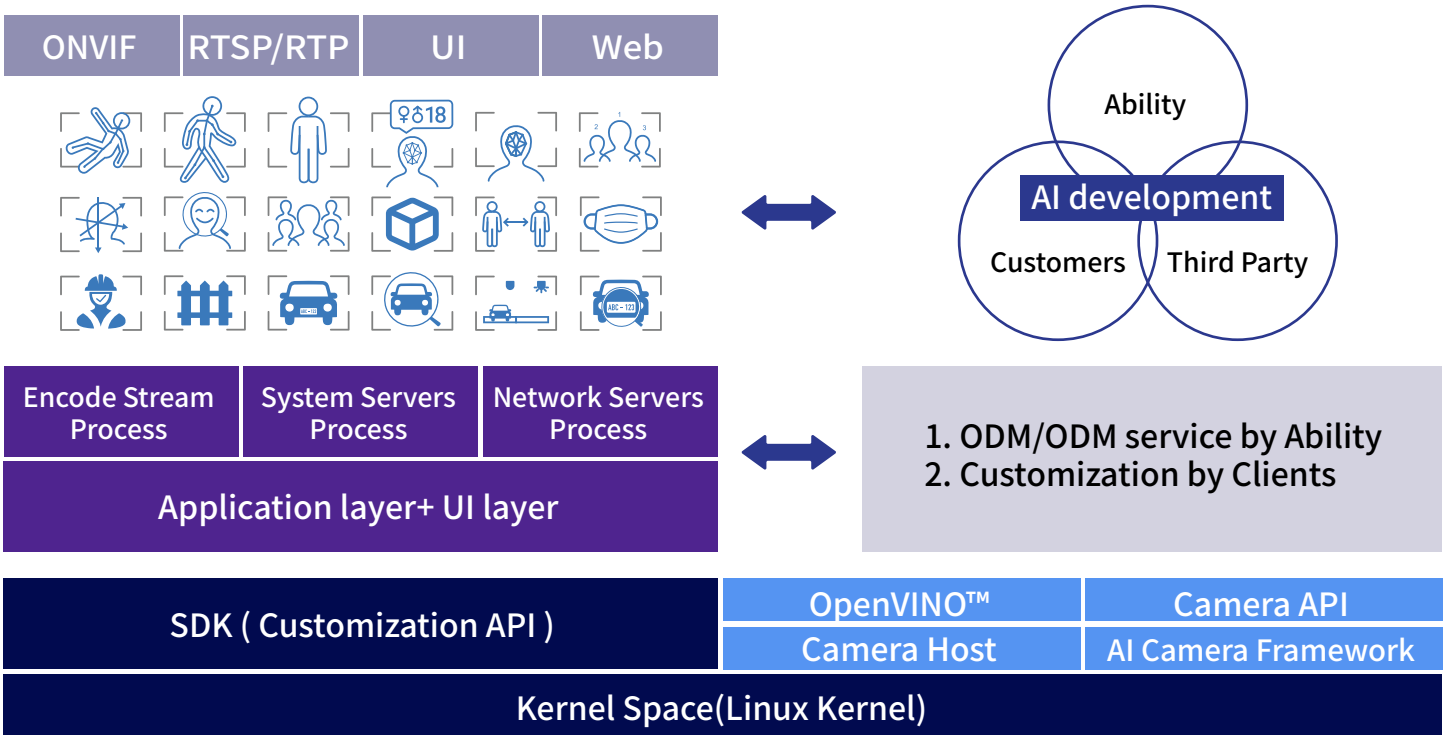
**AI-Cube USB Cameras**

**2020**

**2021**

# CUSTOMIZED DEVELOPMENT

## Driving Edge-Cloud Collaboration and Intelligent Transformation




# PRODUCTION SITES

**SMT Line (Class : 100,000)**

12 Lines
(900K sets /Month)
(480,000,000 Points/Month)

**Assembly (Cell)**

DSC Assembly & Test
20 Cell lines
(1000K EA/Month)
IPCAM Assembly & Test
6 cell lines(90K EA/month)

**Packing (Cell)**

22 Cell Lines
(1200K EA/month)

**Lens Assembly (Class : 1,000)**

Assembly & Test -8 cell lines (460K EA/month)

**COB (Class : 100)**

Assembly & Test -3 line
(400K EA/month)
COB-3 line
(1.2 million EA/month)

**Liao Bu Factory**
Capacity : 14~16KK sets/year

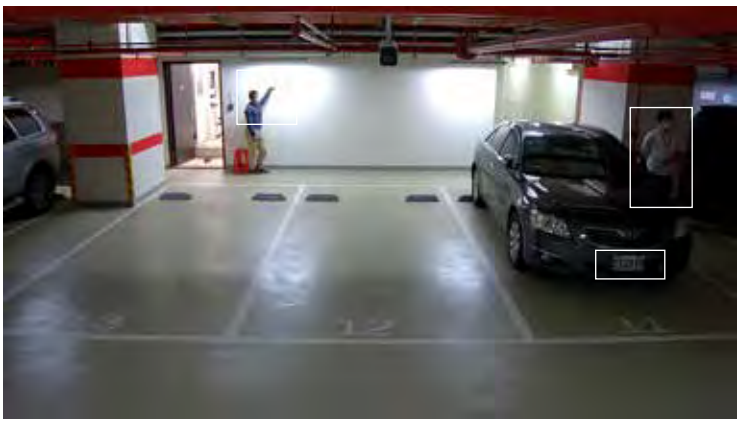
**Wu Gu Factory**
Capacity : 420K sets/year

# A CLEARER VISIBILITY AI APPLICATIONS CAN HAVE THAN BEFORE

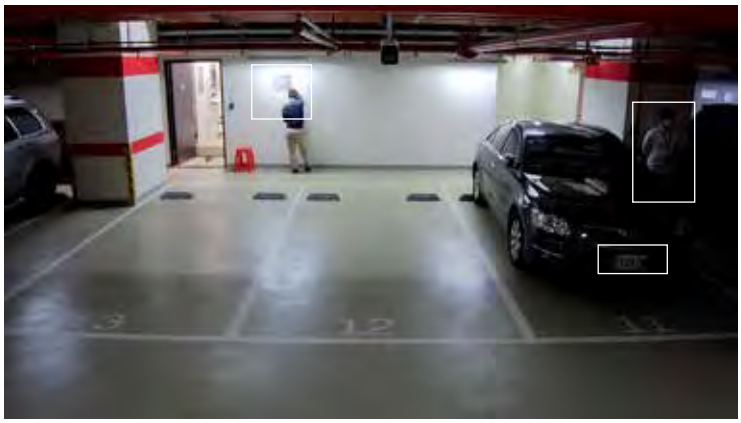
Ability Super HDR Pro (HDR+WDR) is featured with a synchronized utilization of both HDR & WDR. The performance of Ability Super HDR Pro (HDR+WDR) ensures images with quality to severe outdoor scenarios and meets high accuracy requirement for AI applications as test result shows by Imatest. This brings AI-capable cameras to next level of industry standard.

## NA

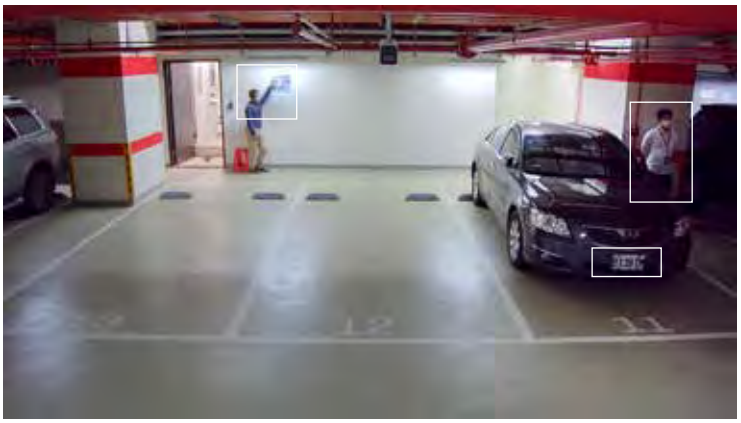
## HDR



## WDR

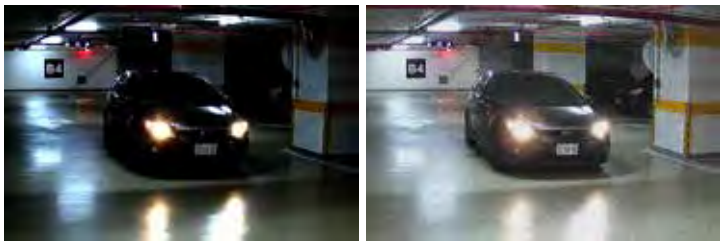


## HDR+WDR



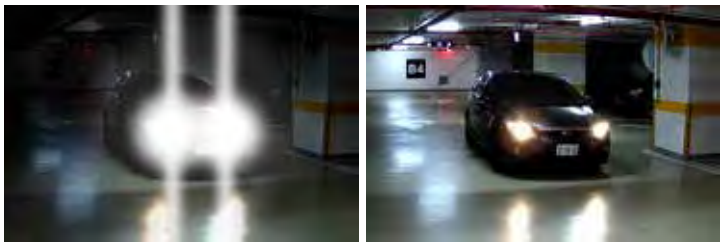
## License Plate - Special Parameters

## Low Light



## IR Uneven

## Contrast Issue



# OUR PRODUCTS

## AI-Vue 8M/2M Camera Myriad™ X
## VS1NL70 / VS1NN60

Built-in Intel® Movidius™ Myriad™ X 2485 VPU
SONY Starvis 1/1.8 inch 8M (VS1NL70) / 2M (VS1NN60) CMOS sensor @30FPS
4.4mm~11mm AF Motorized Zoom , FOV (D)136.6~45.98(VS1NL70)
2.8mm Fixed Lens, FOV (D)134.45°(VS1NN60)
Smart IR Technology to counterbalance overexposure, effective up to 30 meters
HDR for greater visibility in high light contrast environments
Weather-proof IP66/IP67, vandal-proof IK10 rated housing, -30°C ~ 60°C wide temperature
Support three power sources PoE/DC12V/AC24V
ONVIF Profile S

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## AI-Vue 8M/2M Camera Myriad™ X
## VS6NLB0/ VS6NN60

Built-in Intel® Movidius™ Myriad™ X 2485 VPU
SONY Starvis 1/1.8 inch 8M(VS6NLB0) / 2M (VS6NN60) CMOS sensor @30FPS
4.4mm~11mm AF Motorized Zoom , FOV (D)136.6~45.98(VS6NLB0)
2.8mm Fixed Lens, FOV (D)134.45°(VS6NN60)°
Smart IR Technology to counterbalance overexposure, effective up to 30 meters
HDR for greater visibility in high light contrast environments
Weather-proof IP66/IP67, vandal-proof IK10 rated housing, -30°C ~ 55°C wide temperature
Support three power sources POE/DC12V/AC24V
ONVIF Profile S

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## AI-Vue 2MP Camera Movidius™ X
## VS1NN70

Built-in Intel® Movidius™ Myriad™ X 2485 VPU
SONY Starvis 1/2.8 inch 2M CMOS sensor @60FPS
3.2-10.5mm ± 5% AF Motorized Zoom , FOV (D) 126.9°~34.8°
Smart IR Technology to counterbalance overexposure, effective up to 30 meters
HDR for greater visibility in high light contrast environments
Weather-proof IP66/IP67, vandal-proof IK10 rated housing, -20°C ~ 60°C wide temperature
Support three power sources POE/DC12V/AC24V
ONVIF Profile S

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## AI-Vue 2MP ANPR Camera Myriad™ X
## VS1NNL0

Built-in Intel® Movidius™ Myriad™ X 2485 VPU
SONY Starvis 1/2.8 inch 2M CMOS sensor @60FPS
5.1-51mm±5% AF Motorized Zoom , FOV (D) 62.5° ~8.1°
Smart IR Technology to counterbalance overexposure, effective up to 40 meters
HDR for greater visibility in high light contrast environments
Weather-proof IP66/IP67, vandal-proof IK10 rated housing, -20°C ~ 60°C wide temperature
Support three power sources POE/DC12V/AC24V
ONVIF Profile S

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## AI-Vue 2MP 4G ANPR Camera Myriad™ X
## VS12110

Built-in Intel® Movidius™ Myriad™ X 2485 VPU
SONY Starvis 1/2.8 inch 2M CMOS sensor @60FPS
5.1-51mm±5% AF Motorized Zoom , FOV (D) 62.5° ~8.1°
4G LTE modem with GPS. Multi-band support for FDD LTE / TDD LTE / WCDMA / GSM / LTE Cat4.
Support Solar Panel 280Wp, 3 X 430Wh Li-ion Battery modules
Battery management system
External sensors (anemometer, thermometer, air quality, hygrometer, etc).
Smart IR Technology to counterbalance overexposure, effective up to 40 meters
HDR for greater visibility in high light contrast environments
Weather-proof IP66/IP67, vandal-proof IK10 rated housing, -20°C ~ 60°C wide temperature
Support two power sources POE/DC12V
ONVIF Profile S

# OUR PRODUCTS

## AI-Cube 8MP USB Cam Myriad™ X
## VSUNQJ0

Built-in Intel® Movidius™ Myriad™ X 2485 VPU
4K UHD CMOS Sensor
Wide Horizontal Angle up to 123.1° ( FOV )
Standalone operation
HDMI output
Plug-and-Play USB
Support USB 2.0
Power: DC 5V

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## AI-Cube 8MP USB Cam Myriad™ X
## PVSUPRH1

Built-in Intel® Movidius™ Myriad™ MA2085 VPU
4K UHD CMOS Sensor
2.8mm±5% Fixed Lens, 128° (D)
Support UVC 2K(2560*1440), 30FPS
Plug-and-Play USB
Support USB 3.0
Power Connector: USB type C

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## AI-Cube 8MP USB Module
## MIT All in One AI SOC

DLA (Deep Learning Accelerator) engine with computing power up to 1.5 TOPS
SONY Starvis 1/2.8 inch 8M CMOS sensor @25FPS
2.8mm±5% Fixed Lens
Dual Core ARM® Cortex™ A9
DDR 2Gb+Flash 4Gb
Support USB 2.0
Support power sources POE/DC12V

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## AI-Eye 8MP Camera
## MIT All in One AI SOC

DLA (Deep Learning Accelerator) engine with computing power up to 1.5 TOPS
SONY Starvis 1/2.8 inch 8M CMOS sensor @25FPS
2.8mm±5% Fixed Lens
Smart IR Technology to counterbalance overexposure, effective up to 30 meters
HDR for greater visibility in high light contrast environments
Weather-proof IP66/IP67, vandal-proof IK10 rated housing, -20°C ~ 60°C wide temperature
Support two power sources POE/DC12V

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## AI-Eye 8MP Module Camera
## MIT All in One AI SOC

DLA (Deep Learning Accelerator) engine with computing power up to 1.5 TOPS
SONY Starvis 1/2.8 inch 8M CMOS sensor @25FPS
2.8mm±5% Fixed Lens
Dual Core ARM® Cortex™ A9
DDR 2Gb+Flash 4Gb
Support power sources POE/DC12V
Dimension 42*42 mm

# FLEXIBLE MODULAR SOLUTION

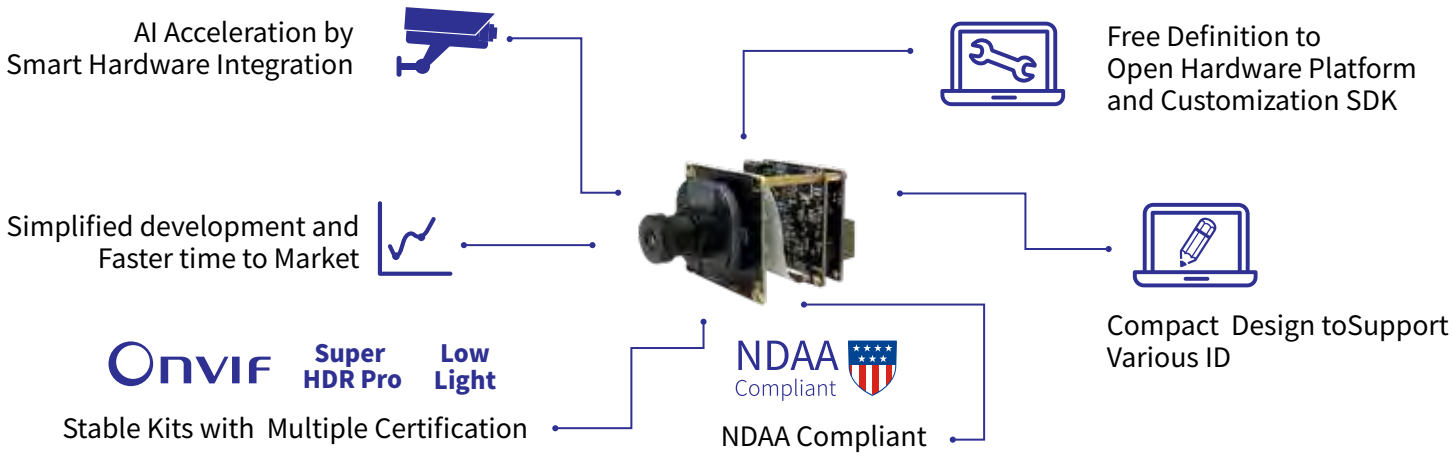
IR Board + Lens + Sensor Board + MB + Power I/O

2M/5M/8M

MIT SOC

1.PoE
2.PoE +DC 12V
3.PoE +DI/DO
4.PoE+DI/DO+Audio

# BENEFITS for EDGE AI VISION DEVELOPERS




# APPLICATIONS FOR THE EVERYDAY LIFE

SAFER

MORE EFFICIENT

HIGHER QUALITY

MORE FUN

PRODUCTIVE

RELAXING, SAFER

MORE EFFICIENT

HEALTHFUL

# POST-COVID19 WORLD


Face Mask Detection

Crowd Detection

- Maintain and improve current safety standards at the workplace and beyond
- Face-mask detection and social distancing can be implemented through the object and crowd detection models
- Having real-time analysis allows for a quick reaction and correction by the relevant authorities – especially in public spaces

# USING AI to MAKE CONSTRUCTION SITE SAFER

### Weather Awareness System

Rain Air Temperature Earthquake

Sending Environment Changes to Help Construction Personnel React to These Situations Promptly

### Dangerous Area Management

Human Detection and Virtual Fence
Avoid Workers Crossing Dangerous Area

### Automatically Alarm system

PC & Mobile Device





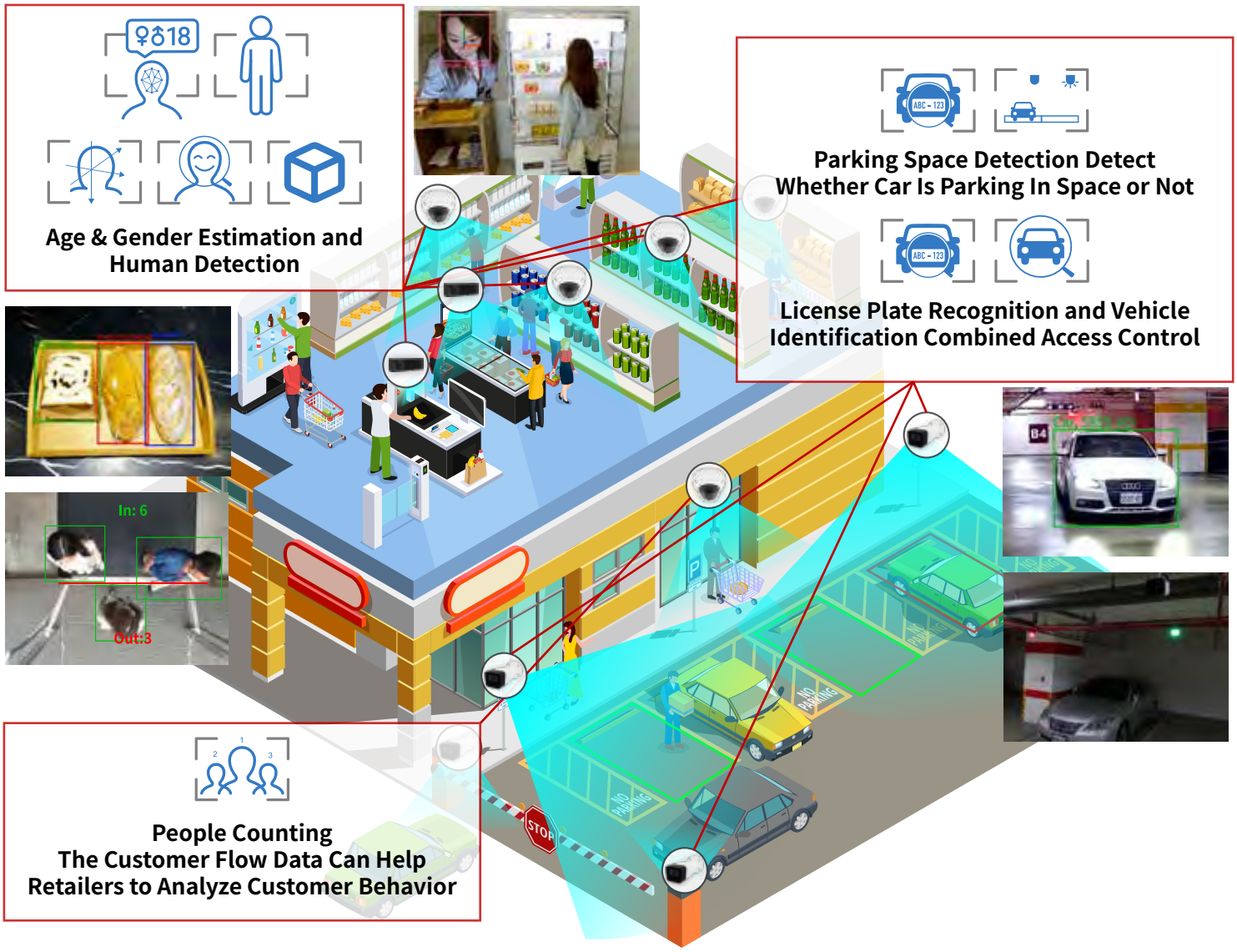
### Minimizing Vehicle Movements

LPR and Vehicle Identification
Combined Access Control to provide
Car and van parking for the workforce
And visitors away from the work area

### PPE Policy Enforcement

PPE Detection Combined Access Control
Keeps workers safe more efficient and
Consistent

# AI-BASED ANALYTICS AND INTELLIGENCE for RETAIL BUSINESS




# INTELLIGENCE SCHOOL BUS


Driver behavior monitoring system

Alarm System

Passenger Notice


| | |
|---|---|
| ❶ | Monitors Driver Seat and the Entrance |
| ❷❸ | Monitors the Inside of the Bus Without Blind Spots |
| ❹ | Monitors the Areas in Front of the Bus |
| ❺ | Monitors Entrance from the Outside |
| ❻ | Monitors the Side Traffic and Exterior of the Bus |
| ❼ | Rear-Facing Security and Traffic Camera |

# PARKING MANAGEMENT MADE SMARTER

**License Plate Recognition and Vehicle Identification Combined Access Control**

**Automatic Number Plate Recognition**




**Parking Space Detection Detect Whether Car Is Parking In Space or Not**



**Face Recognition**



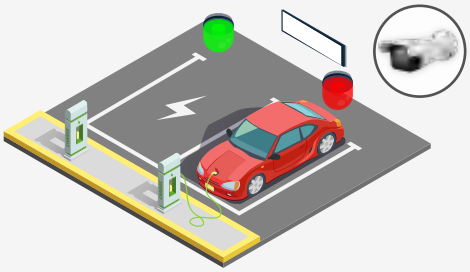
# INTELLIGENT PARKING AND CHARGING SYSTEM


**Electric Vehicle**

Unlock and Offer Charging Service

**Gasoline car**

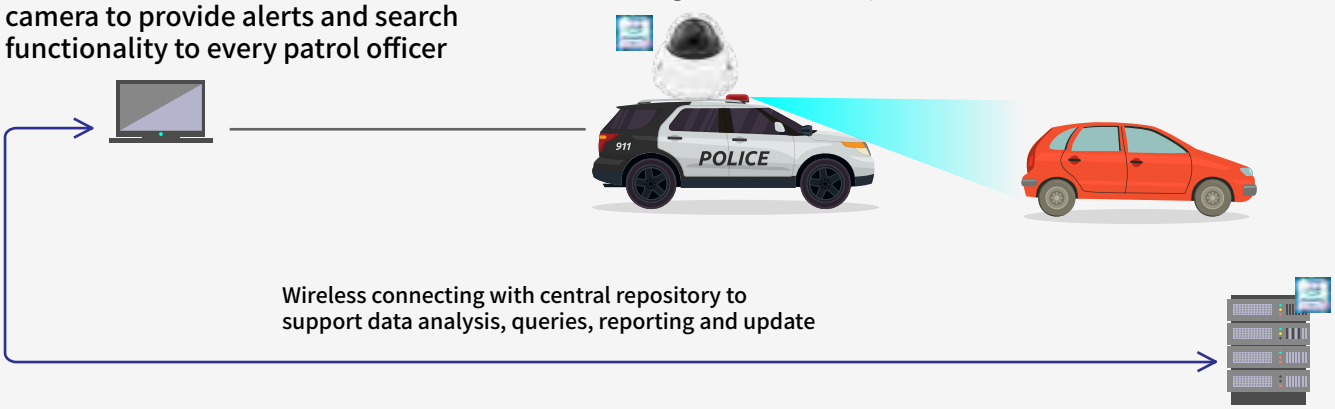
Alarm Trigger



# ALPR MOBILE

Instant backend SW system installed in a notebook in car connected with ANPR camera to provide alerts and search functionality to every patrol officer

Mobile ALPR Camera
Designed specifically for the vehicle environment




Wireless connecting with central repository to support data analysis, queries, reporting and update

# CITY TRAFFIC MANAGEMENT

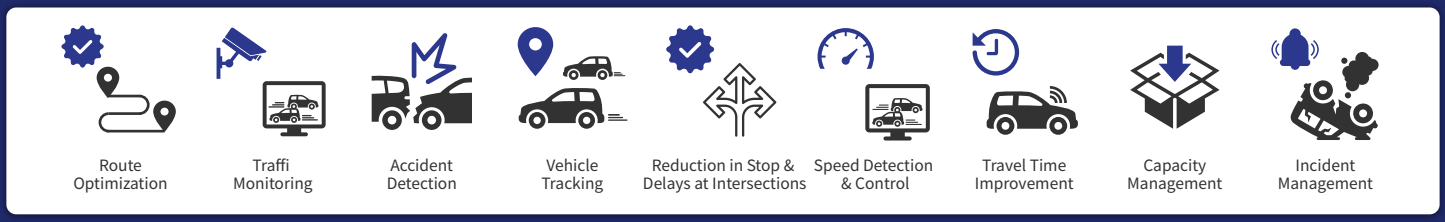
## Intelligent Traffic Management Systems (ITMS)

Intelligent Traffic Management System (ITMS) enables users to be better informed and to make safer, more efficient, coordinated, and smarter use of transport networks. It is defined as an advanced application that aims to provide innovative solutions related to different modes of transportation and traffic management.

### ITMS product portfolio includes:

- Automatic Number Plate Recognition (ANPR)
- Electronic Enforcement Systems (EES)
- Red Light Violation Detection (RLVD)
- Speed Violation Detection (SVD)
- Video Incident Detection System (VIDS)
- Video-based Automatic Traffic Counter and Classifier (ATCC)
- Adaptive Traffic Control System (ATCS)

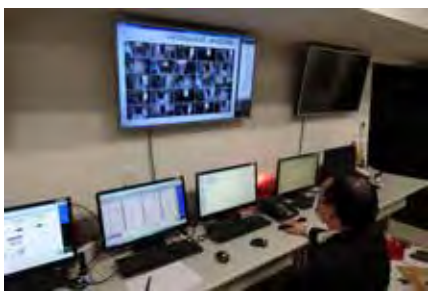
Other systems such as Emergency Call Box (ECB) and Public Address Systems (PAS), City ERP, Integrated Command and Control Center (ICCC), Video Management Systems (VMS), etc. Complement the core solutions outlined above to provide a comprehensive and robust ITMS solution.




## Data Collection & Modelling

Centralized city traffic engineering storage and UI

Local server and / or cloudy based



Web Based Platform

- Automated KPI measurements
- Automatic notification
- Video on demand
- Recording
- Incident detection
- Illegal maneuver detection

## Intelligent Traffic Law Enforcement

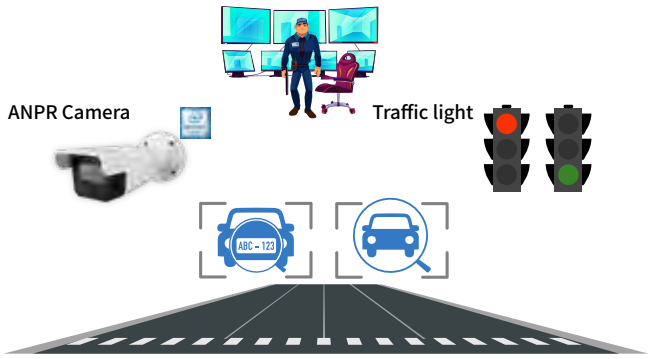
Violation is always the cause in everyday traffic incidents. The violation traffic signals is the most cases. Not only vehicles but also pedestrians violate the traffic rules. The absence of law enforcement causes some unlawful motivation to people without discipline and jeopardize everyone' s life.

The deterrent solutions of Red Light Violation Detection (RLVD) and Speed Violation Detection (SVD) can help save the tragedies. These two solutions can improve compliance and result in a better traffic flows of vehicles and people.

RLVD can detect violations by integrating applications of car identification ( ex. ANPR, models, color, etc.), start time-stamp, location, and direction of vehicles. The vehicle violating traffic rules is captured with an overview image, recognized number plate, and the information is processed by backend system to implement penalty.

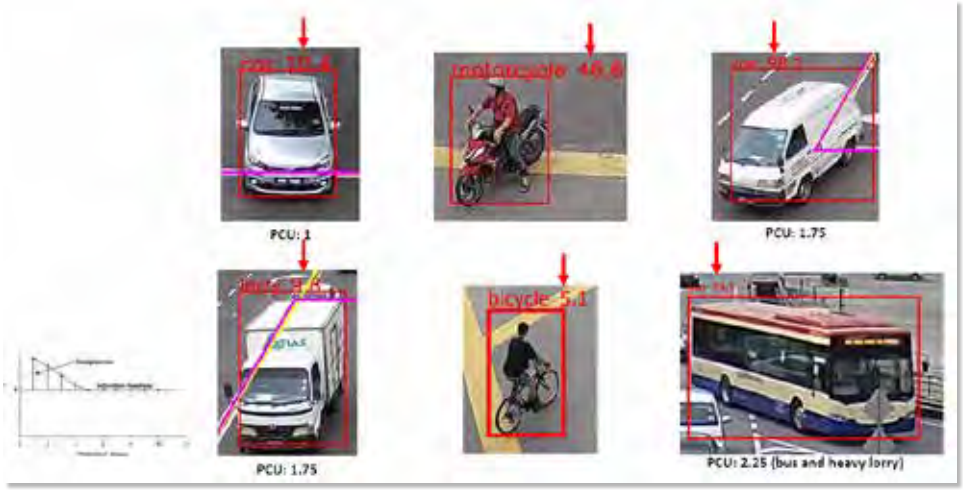
SVD detect the obedience of speed limit in section by time-stamp of entering and leaving the section. Camera will capture the rear image of vehicle with ANPR when entering the section and then capture the rear image again when leaving the section. By dividing the distance with time duration, the speed of vehicle can be detected and compare to speed limit to see if the driver violate the regulation or not.

## Adaptive Traffic Control Systems (ATCS)
## Automatic Traffic Counter and Classifier (ATCC)


**Adaptive Traffic Control System (ATCS) is a solution that automatically adapts the timings of traffic lights based on real-time traffic conditions to optimize the flow of traffic.**

By collecting real-time, reliable, and precise vehicle flow information on roads via Automatic Traffic Counter and Classifier (ATCC) , traffic administrators can maximize the capacity of city roads as well as highways. ATCC can monitor, count, and classify continuous vehicle flows needed by (ATCS) to be carried out to understand seasonal, day-of-the-week, and time-of-the-day traffic volume patterns.




Video-based Automatic Traffic Counter and Classifier (ATCC) could be a standalone ATCC system. The classification of vehicles up to five classes:

- Motorcycles/two-wheelers
- Trucks/buses
- Light Motor Vehicle (LMV)
- Light Commercial Vehicle (LCV)
- Others (MAVs, OSVs, machine equipment vehicles, etc.)

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