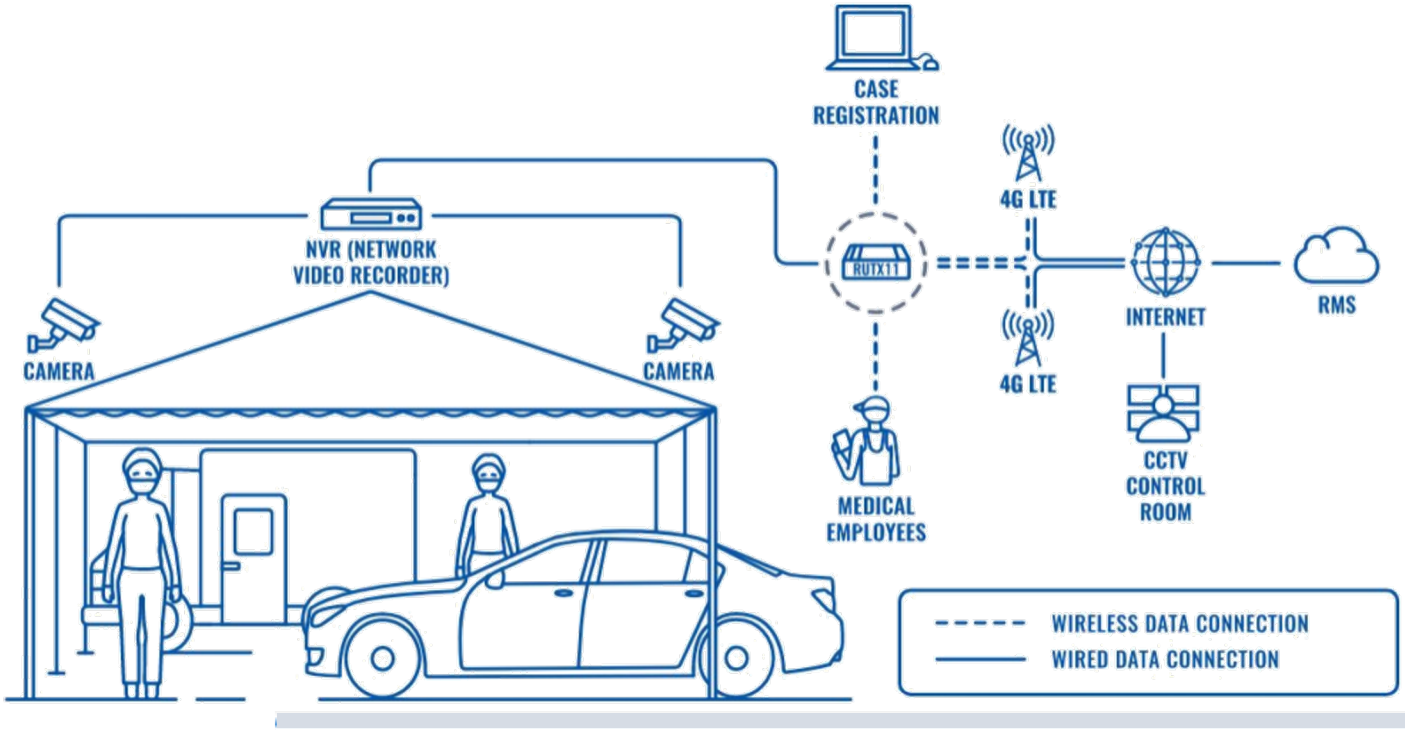
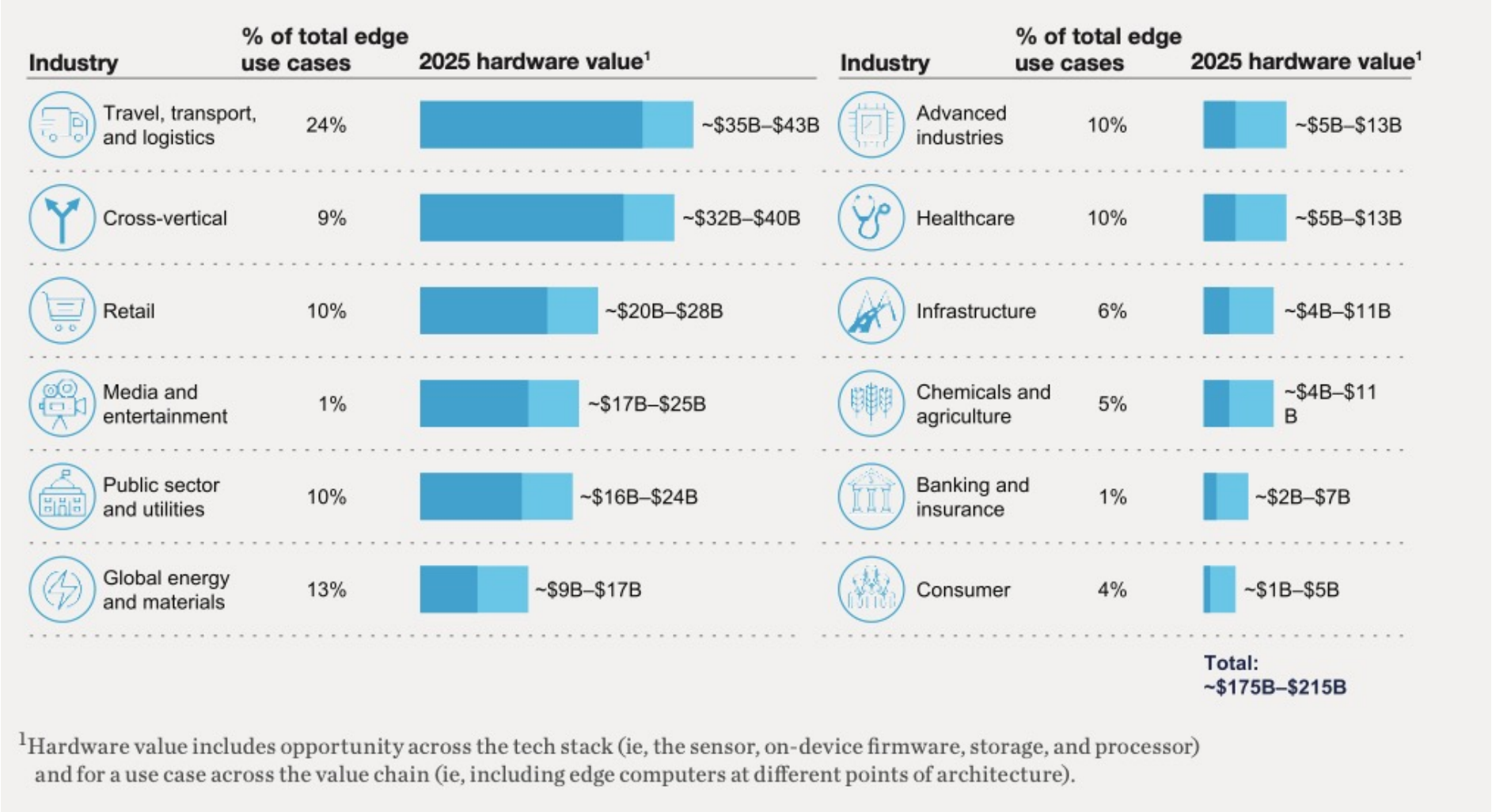
Intelligent Transportation System

April 28th 2021



1 Market Trends & Industry Directions

Market Overview



Industry	% of total edge use cases	2025 hardware value[1]
Travel, transport, and logistics	24%	~$35B–$43B
Cross-vertical	9%	~$32B–$40B
Retail	10%	~$20B–$28B
Media and entertainment	1%	~$17B–$25B
Public sector and utilities	10%	~$16B–$24B
Global energy and materials	13%	~$9B–$17B
Advanced industries	10%	~$5B–$13B
Healthcare	10%	~$5B–$13B
Infrastructure	6%	~$4B–$11B
Chemicals and agriculture	5%	~$4B–$11 B
Banking and insurance	1%	~$2B–$7B
Consumer	4%	~$1B–$5B
		Total: ~$175B–$215B

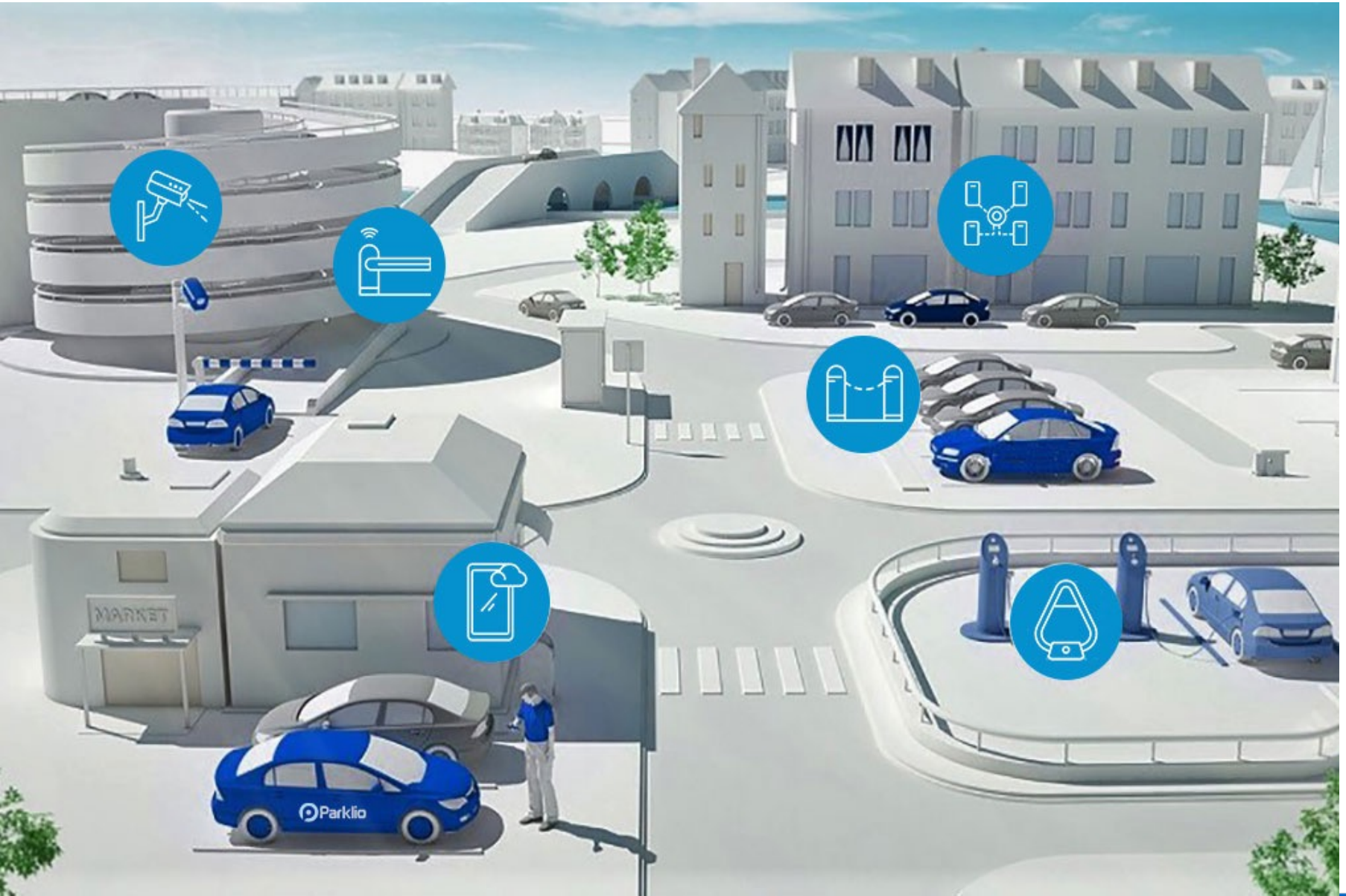
[1]Hardware value includes opportunity across the tech stack (ie, the sensor, on-device firmware, storage, and processor) and for a use case across the value chain (ie, including edge computers at different points of architecture).

Industrial Computing

- Video Analytics
- Data Monitoring
- xIox (AIoT; IIoT; IoV etc)
- Data Cashing
- Advanced Analytics
- Location Services
- Optimized local content

Source: JM Chabas, Chandra Gnanasambandam, Sanchi Gupte, and Mitra Mahdavian |McKinsey & Company

Intelligent Vehicle



V2D – Vehicle to Device

V2V – Vehicle to Vehicle

V2P – Vehicle to Person

V2G – Vehicle to Grid

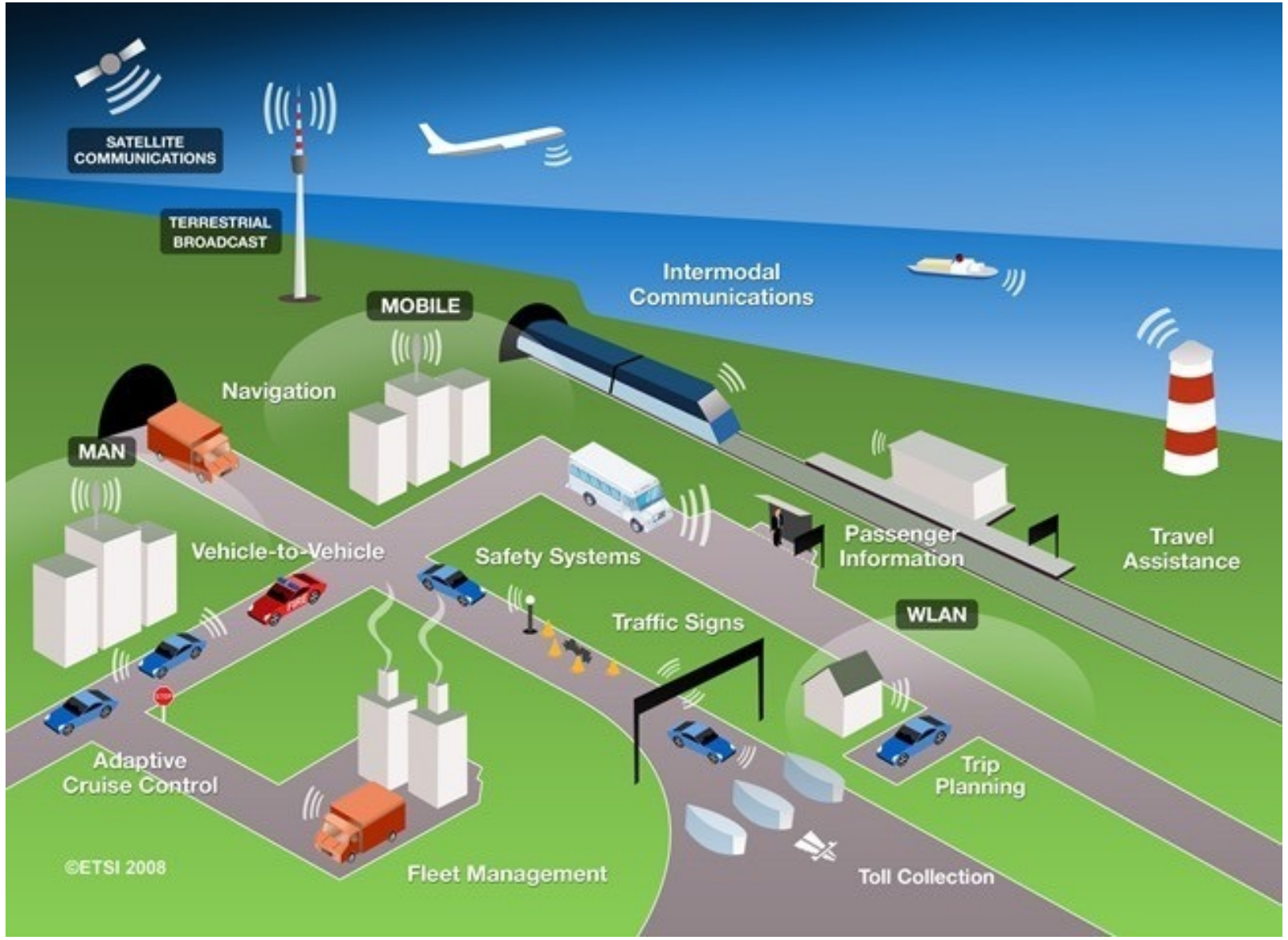
V2I – Vehicle to Infrastructure

V2N – Vehicle to Network

- Collect Data
- Compute Data
- Visualize Data

Image from Parklio.com

Intelligent Transportation System



ETC-Electronic Toll Collection

- ❖ Auto Vehicle Classification
- ❖ MLFF-Multi Lane Free Flow
- ❖ WIM-Weigh in motion
- ❖ Road Safety
- ❖ Mobile Enforcement

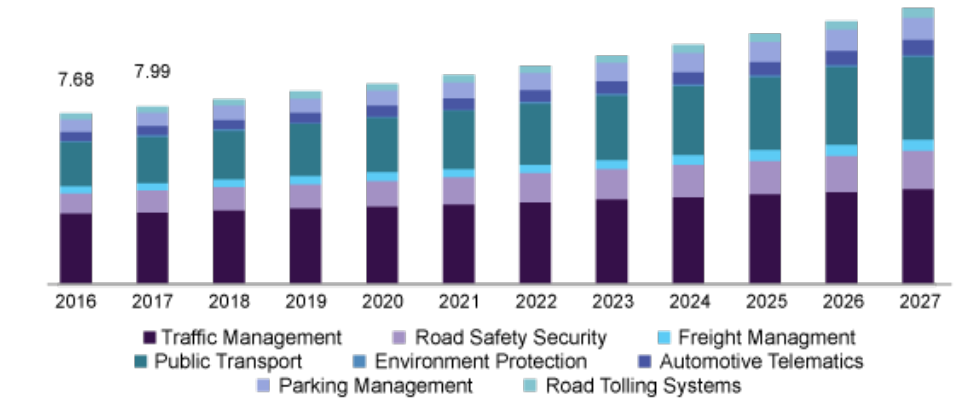
- Collect Data
- Compute Data
- Visualize Data

Image from motorpasion.com

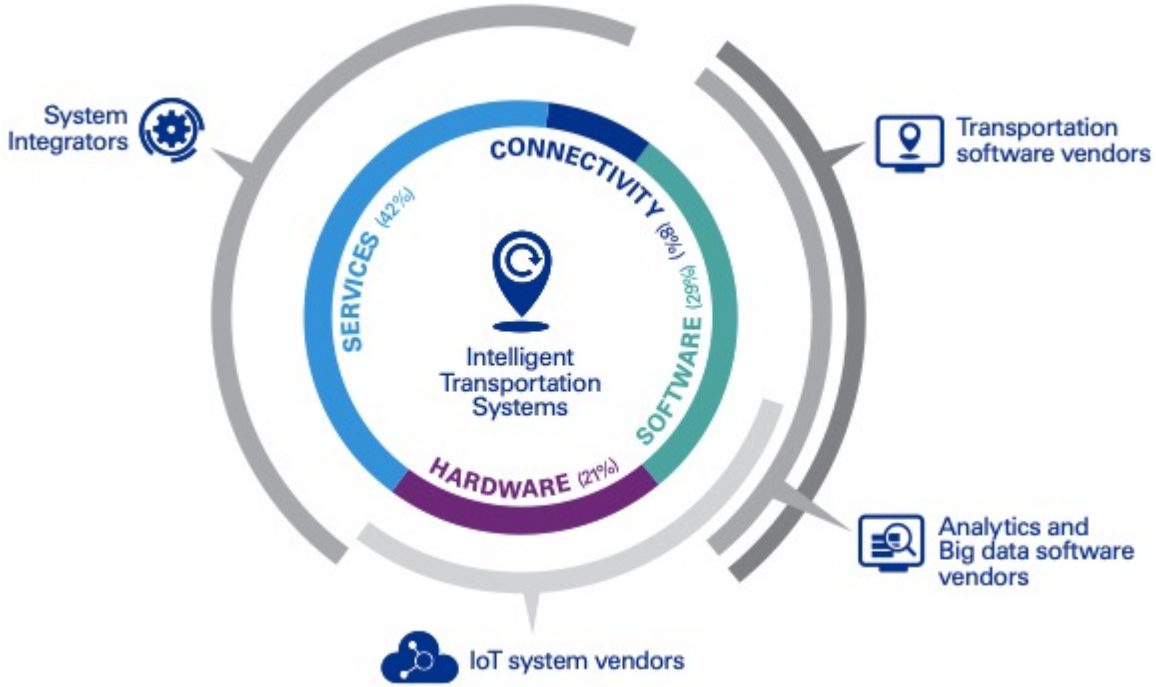
Intelligent Transportation Market

Major Trends

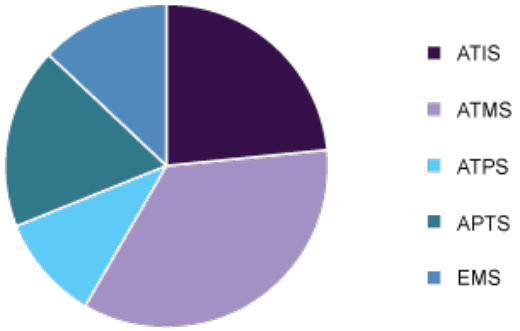
U.S. intelligent transportation system market size, by application, 2016 - 2027 (USD Billion)



Source: www.grandviewresearch.com

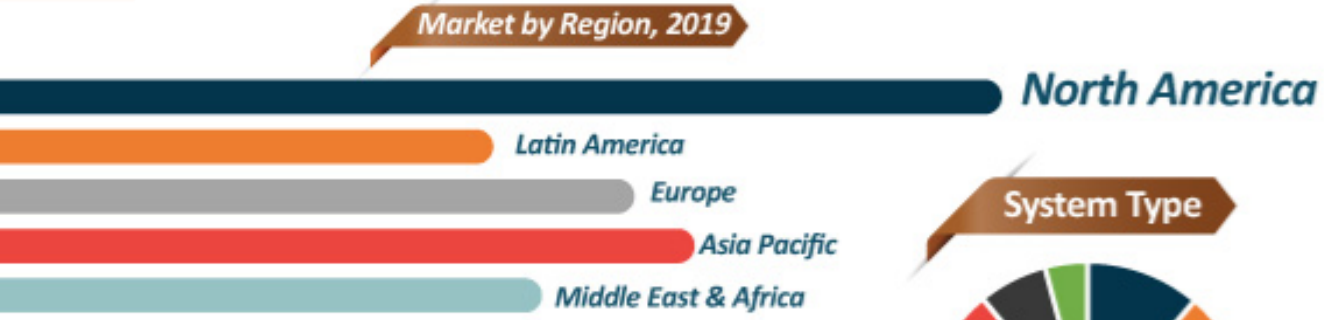


Global intelligent transportation system market share, by type, 2019 (%)

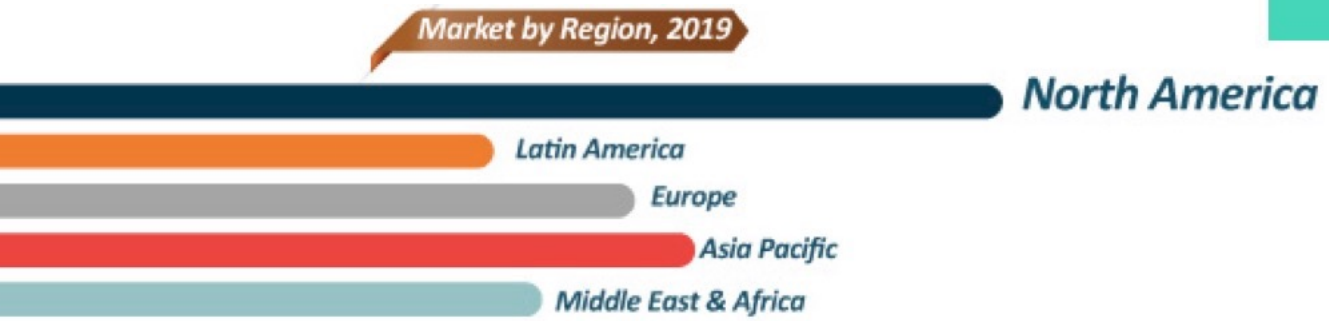


Source: www.grandviewresearch.com

- **Advanced Traveler Information System (ATIS)**
- **Advanced Traffic Management System (ATMS).**
- Advanced Transportation Pricing Systems (ATPS) !
- Advanced Public Transportation System (APTS) !
- Emergency Management System (EMS) !

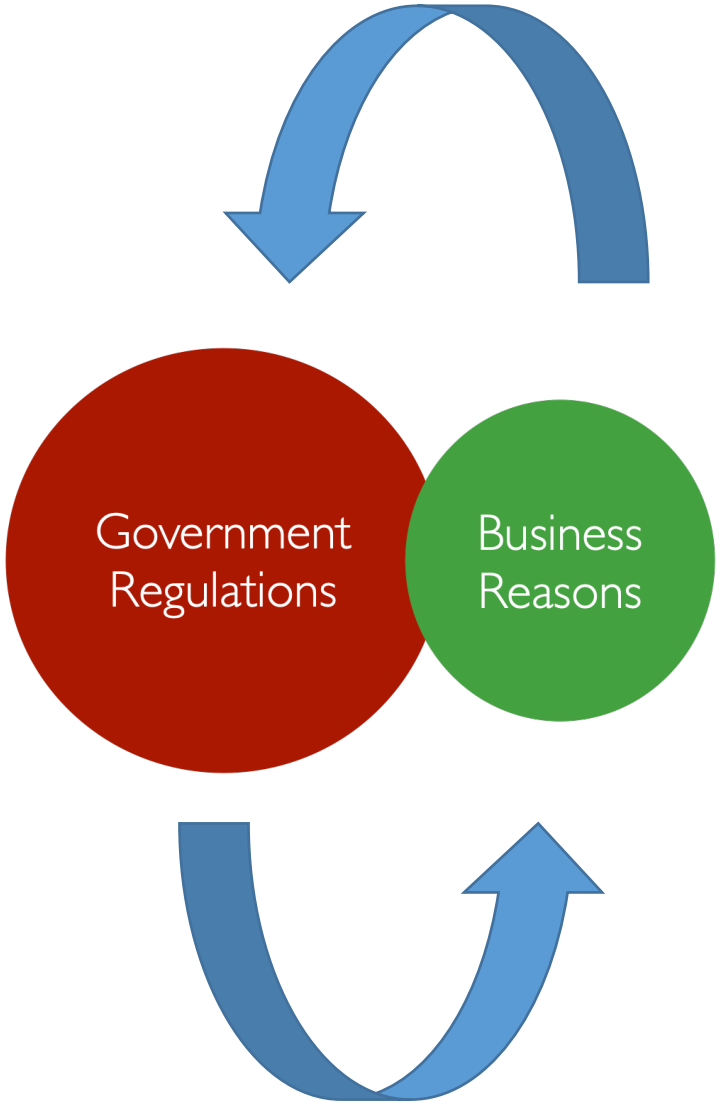


- ETC Daily transactions – Daily everage 16M
- Usage – 100%
- Success Tolling rate – 99.97%



https://www.youtube.com/watch?v=F0-TwDzeXd0

Major Drivers



Public Sector – Safety / Un-manned operations / Transparency / Optimization

- Government investments in smart transportation
- Traffic Monitoring System
- Traffic Signal Control Systems
- Parking Convenience Systems
- Traffic Enforcement Cameras
- Accident-Avoidance Systems

Private - Compliance / Cost Reduction (operations) / Automation for scalability

- Fleet Management
- Asset Monitoring (warehousing)
- Logistics

Barriers - mostly related to legacy projects and systems

- Huge capital requirement
- Big data increases complexity
- Long downtime for replacing the existing system
- Immature market conditions

SPECIAL OFFER

Special price bundle promotion

~Limited promo period : 2021 April 28 - 2021 May 31

BRAV Box PC

+

Cambricon MLU series
computing accelerator card

=

Bundle Promotion

• BRAV- 7302	+	Cambricon MLU220-MXM * Compatible w **NVIDIA GTX**
• BRAV- 7501 • BRAV- 7520 • BRAV- 7521	+	Cambricon MLU270 * compatible w **NVIDIA Tesla T4**
• BRAV- 7201	+	Cambricon MLU220-M.2 * compatible w **NVIDIA Jetson NANO**

=

SPECIAL OFFER

Special discount:
up to 25% off

Pls contact your sales manager for more detail

＊JHCTECH reserves the rights of promo explanation and revision.

2

Product Offering

Main Features

Extremely rugged fanless product

Adaptable to extra harsh conditions

- Aluminum alloy + stainless steel reinforced structure,
- fanless design, wide temperature range -40~70°C.
- Compact Size, compatible with various cabinet size.
- Modularization design, convenient for maintenence.
- Rich IO functions, suitable for differentiated field application requirements.
- Excellent anti-shock performance. TPM 2.0 optional.

Structural Design for Harsh Conditions

Long Term Stability in Operation

Design Flexibility for SI needs

KMDA-3920

RoHS COMPLIANT 2002/95/EC CE FCC

PCIe/PCI Expansion | -20~65℃ | 4K Ultra HD | 4G LTE | RAID | Wide 12-24V DC Power

Key Specification

- Chipset H110/Q170
- Intel®Kabylake-S/Skylake-S Core I3/I5/I7 CPU
- 2*DDR4 2400/2133MHz SODIMM, up to 32GB
- DP+HDMI+VGA, Optional 3 independent displays(Q170)
- 2/4*LAN, 4*USB3.0, 3*USB2.0,4*COM,8-bit DIO
- 1*Mini PCIe(PCIe+USB),1*M.2 2242B-Key
- PCIeX16+PCIeX4 or 2*PCI expansion
- 1*mSATA, 2*2.5" SATA, suppprtRaid0,1(Q170)
- Support Intel® iVpro(Q170)and TPM2.0
- DC 12~24V Wide Power Input
- Desktop Mounting,Wall Mounting

KMDA-3230

Key Specification

- Aluminum chassis,Fanless design
- 8th Intel®Core i3/i5/i7/CeleronU CPU
- 2*DDR4 2400MHz SODIMM,Up to 32GB
- 1*HDMI，1*DP，Support dual 4K display
- 1*Line out&Mic，4*USB 3.1，2*USB 2.0
- 5*GbE LAN，5*COM，8-bit IsoDIO
- 1*mSATA，1*2.5”SATA tray for storage
- 1*M.2，2230 E-Key,1*Mini-PCIe，1*SIM Slot
- DC 9~36V Wide Power Input

KMDA-3202

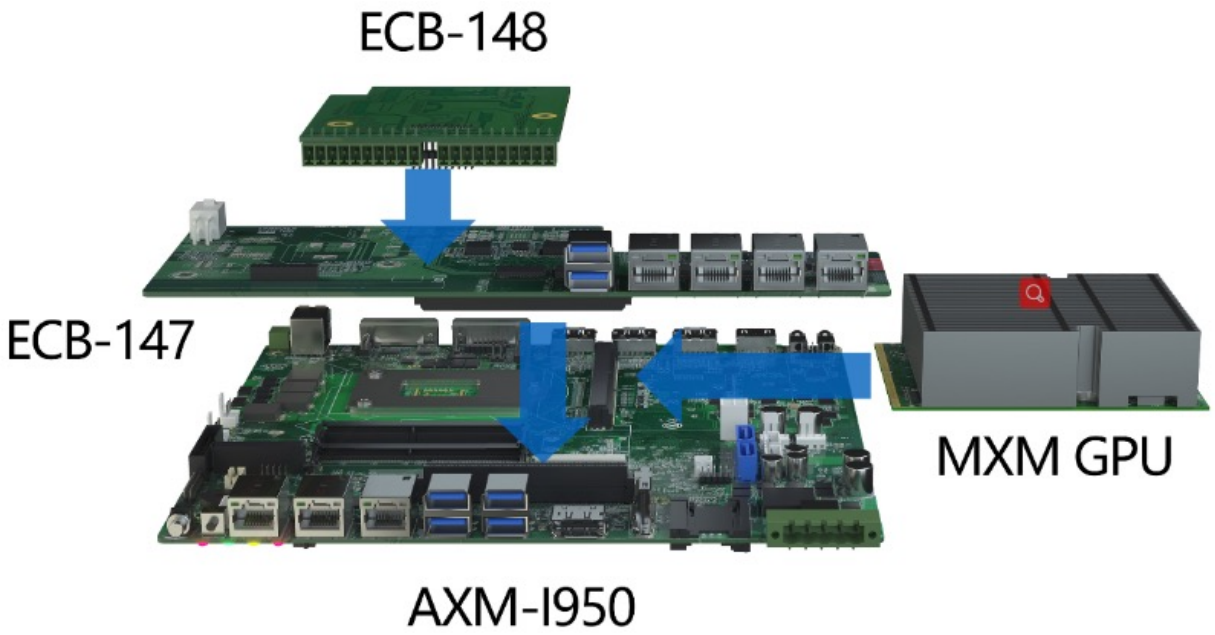
RoHS COMPLIANT 2002/95/EC CE FCC

Fanless -20~70 °C POE Power Over Ethernet 4K Ultra HD DIO ISOLATED 4G LTE

Key Specification

- Intel® Skylake-U/Kabylake-UCPU
- 2*DDR4 2133MHz SODIMM, Up to 32GB
- 1*DP, 1*HDMI, Dual 4K display
- 3*Gig LAN, 4*POE, 4*USB3.0, 5*USB2.0(one inside)
- 6*COM, 1*PS/2, 16bit Iso. DIO, 8bit DIO, Audio out/Mic
- 1*F-Mini PCIe(PCIe+USB),1*M.2 2242 B-Key
- 1*F-mSATA, 1*2.5" SATA HDD/SSD driver bay
- Support Intel iVpro and TPM2.0
- DC 9~30V Wide Power Input
- Desktop Mounting

Skylake/Kabylake-S+MXM GPU(1050Ti,1060,1070)



BRAV-7302

4G Module

WIFI

BRAV 7302

Key Specification

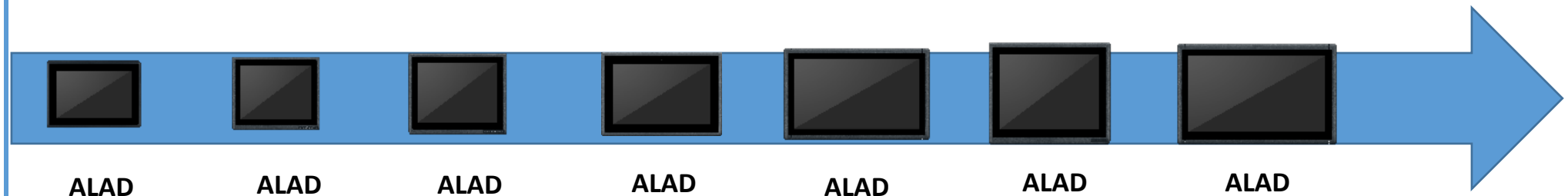
- CPU and GPU fan cooling, independent air passage
- Intel® Kabylake-S/Skylake-S Core I3/I5/I7 CPU
- 2400/2133MHz SODIMM, Up to 32GB
- 1*MXM 3.1 socket, support NVIDIA/AMD GPU Intel
- 1*DP+1*HDMI+1*VGA, GPU 3*DP+1*HDMI
- 3/7*LAN, 6*USB3.0, 3*USB2.0, 4*COM,16DIO,Audio
- 1*Mini PCIe(PCIe+USB),1*M.2 2242 B-Key
- 1*mSATA, 1/2*2.5" SATA, suppprt Raid0,1 Support Intel®
- iVpro and TPM2.0
- DC 6~48V Wide Power Input

RoHS COMPLIANT 2002/95/EC CE FCC

Wide 6~48V DC Power NVIDIA GEFORCE GTX 4K Ultra HD 4G LTE RAID

ALAD Family Member Introduction

ALAD Monitor



ALAD 101T | ALAD 121T | ALAD 151T | ALAD 171T | ALAD 181T | ALAD 191T | ALAD 211T

IP65
F Panel

ALAD K-Series

ALAD K1001T(P) | ALAD K1220T(P) | ALAD K1520T(P) | ALAD K1720T(P) | ALAD K1820T(P) | ALAD K1920T(P) | ALAD K2120T(P)

intel CELERON inside

intel CORE i3 inside | intel CORE i5 inside | intel CORE i7 inside

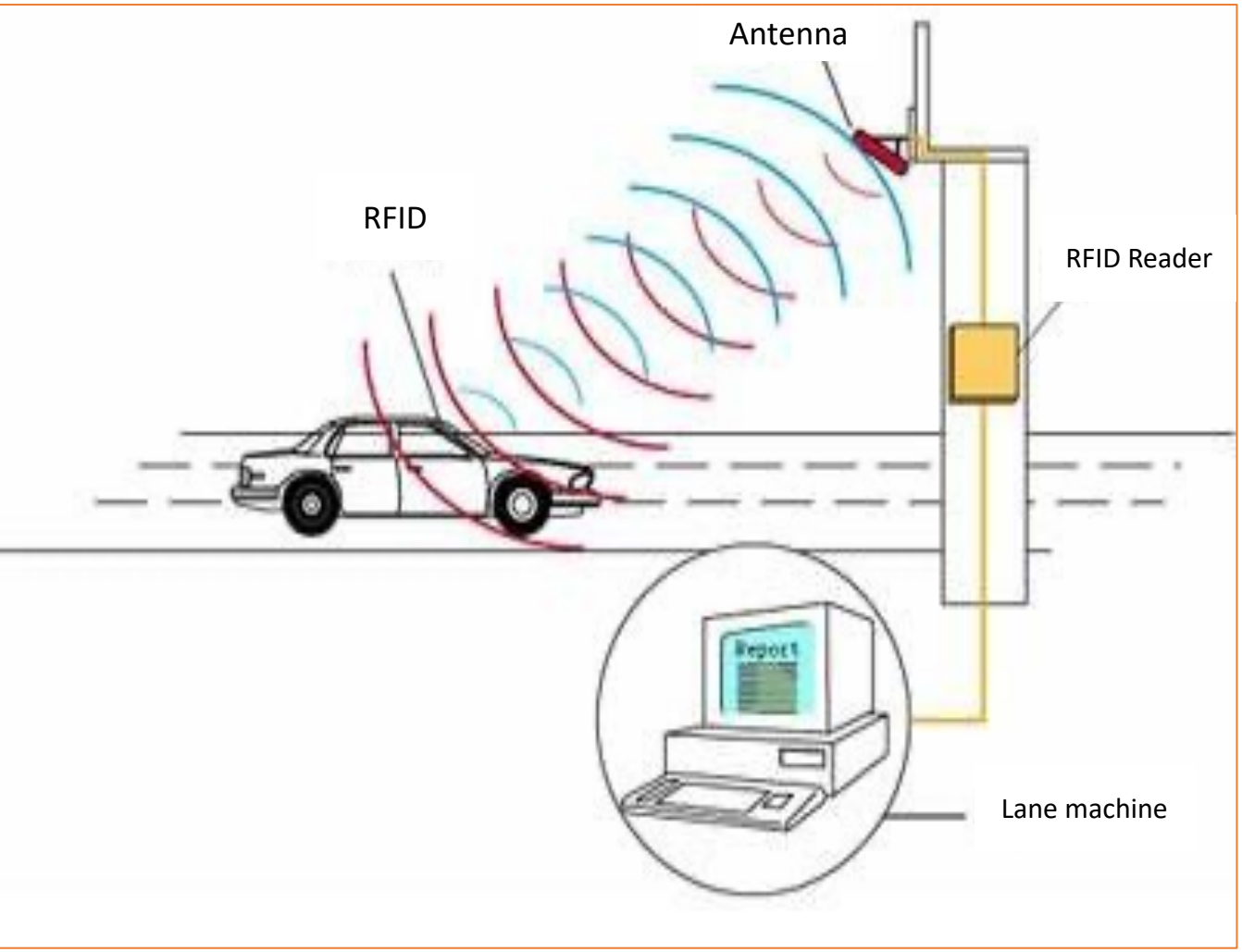
ALAD-A1001T

Key Specification

- Intel® Baytrail Celeron J1900 CPU
- 10.1'' LED TFT LCD, Capacitive/Resistive touch
- 1*DDR3L 1333MHz SODIMM, Max 8GB
- 2*Mini PCIe(PCIe+USB and mSATA)
- 2*COM, 2*LAN, 1*USB3.0, 3*USB2.0
- 1*2.5''HDD Bay, 1*mSATA
- 1*HDMI, 2*2W Speaker
- DC 9~24V Power input

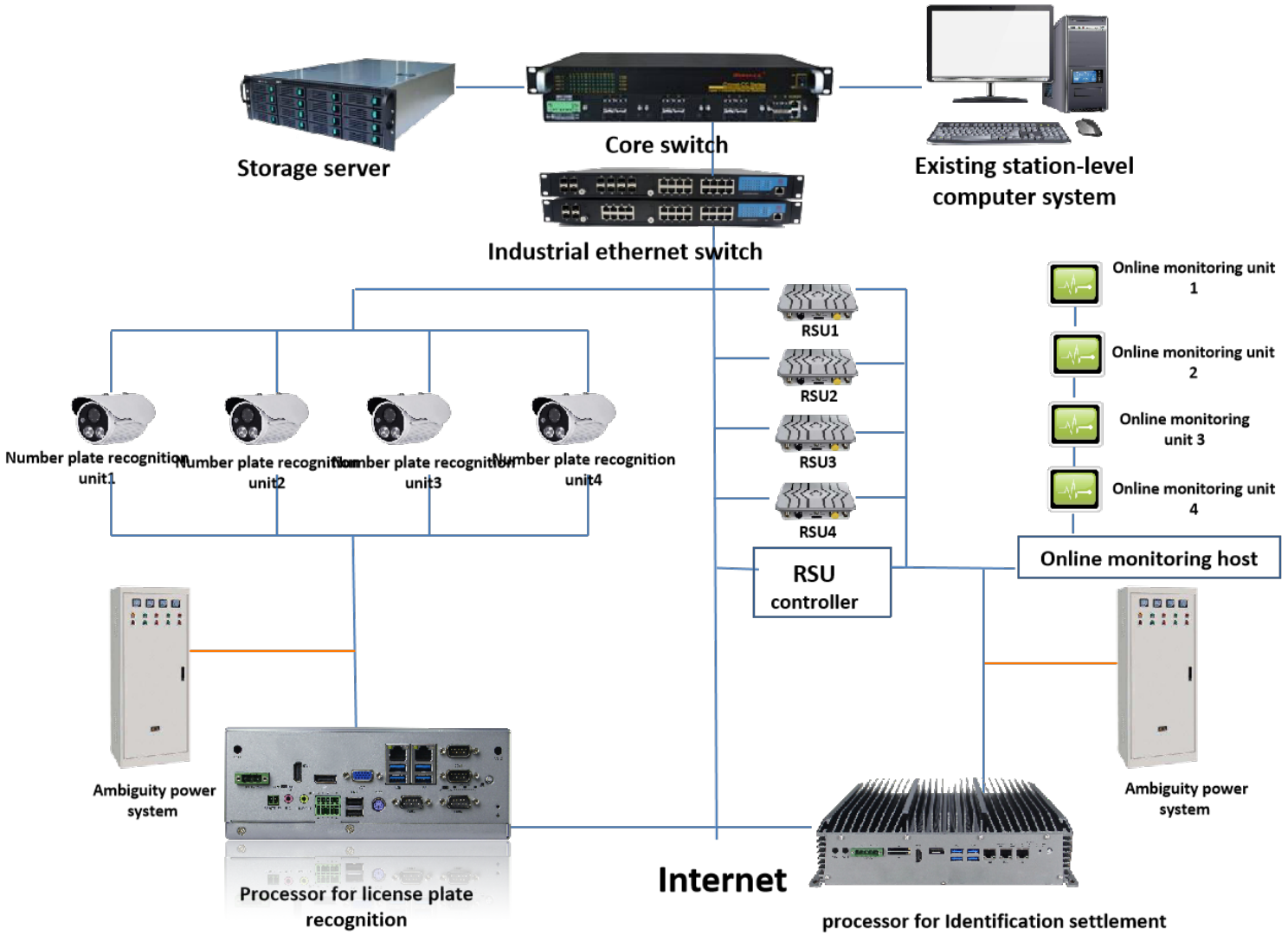
3 Specific Applications

Electrónico Peaje Systems

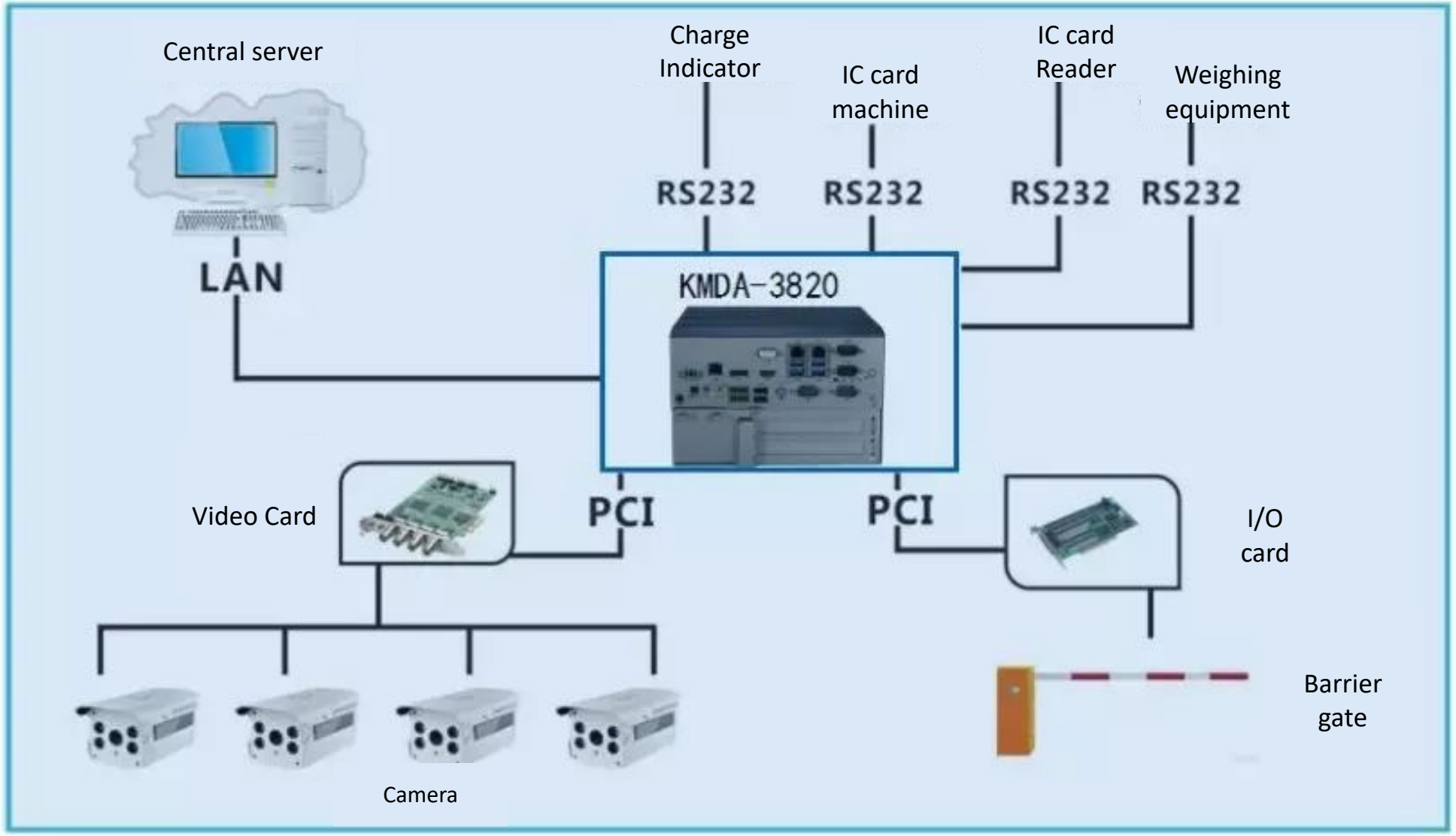


Anti-Shock Moisture-proof Dustproof Wide operatio temperature	7*24 hours non-stop
Multiple OS Easy for maintenance	Extensible PCI slot

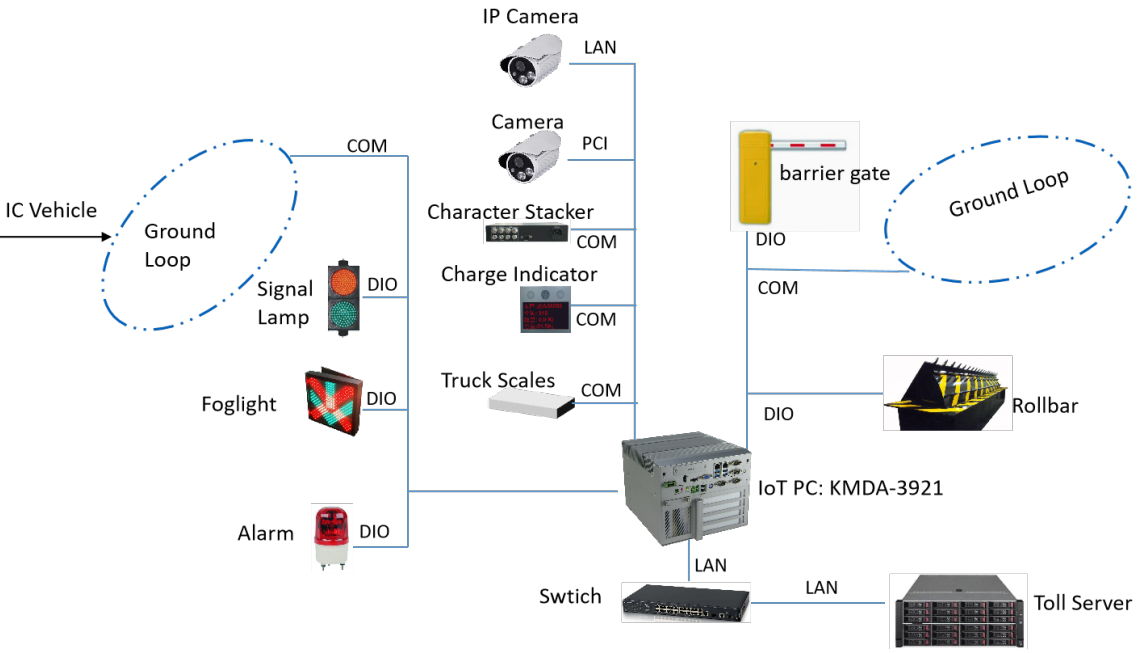
Multi lane Free Flow



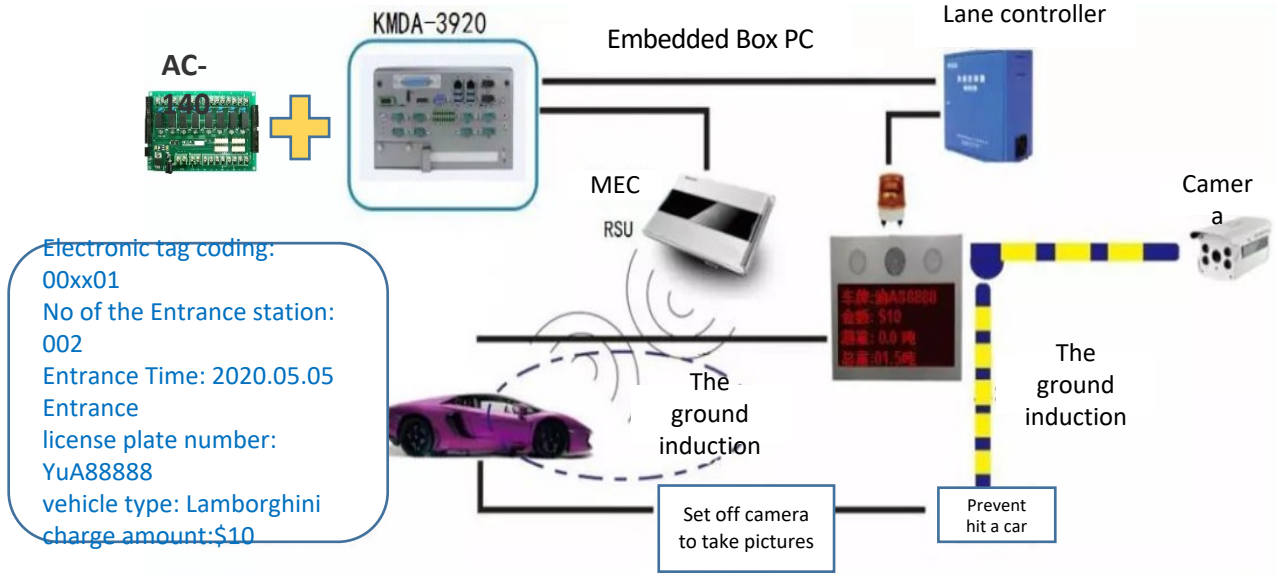
MTC Lane Tolling



ETC/MTC Mixed Lanes



ETC Lane Tolling

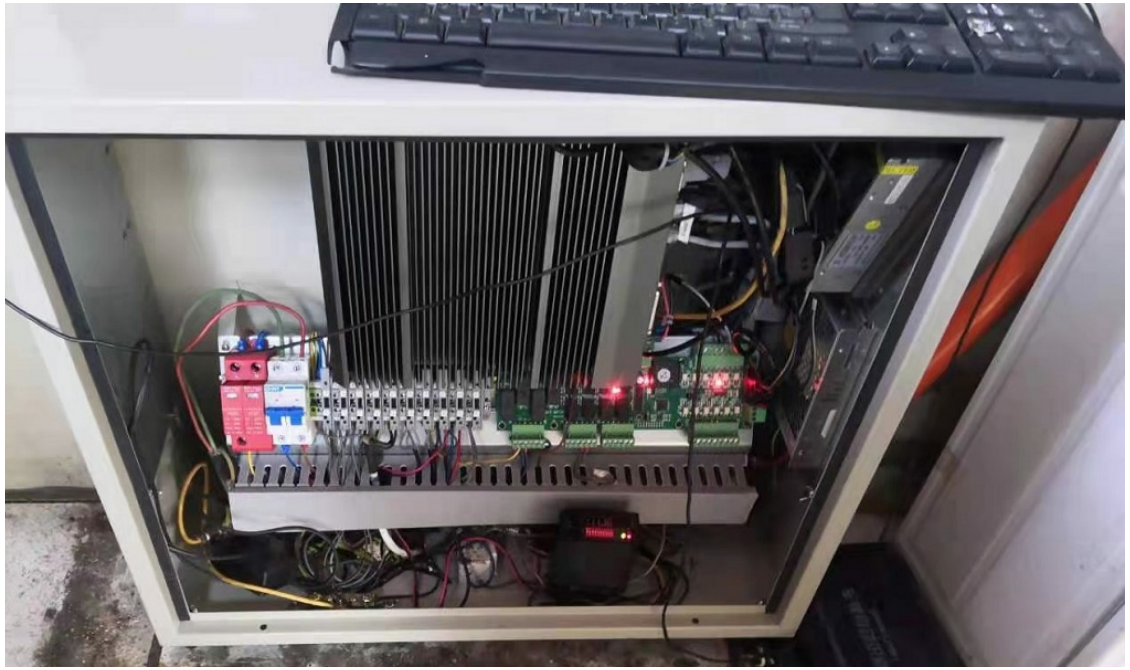


ETC Lane Controller

KMDA-3921/S001

i3-6100 2C/4T 3.7GHz

8G DDR4，128G SSD+1T HDD



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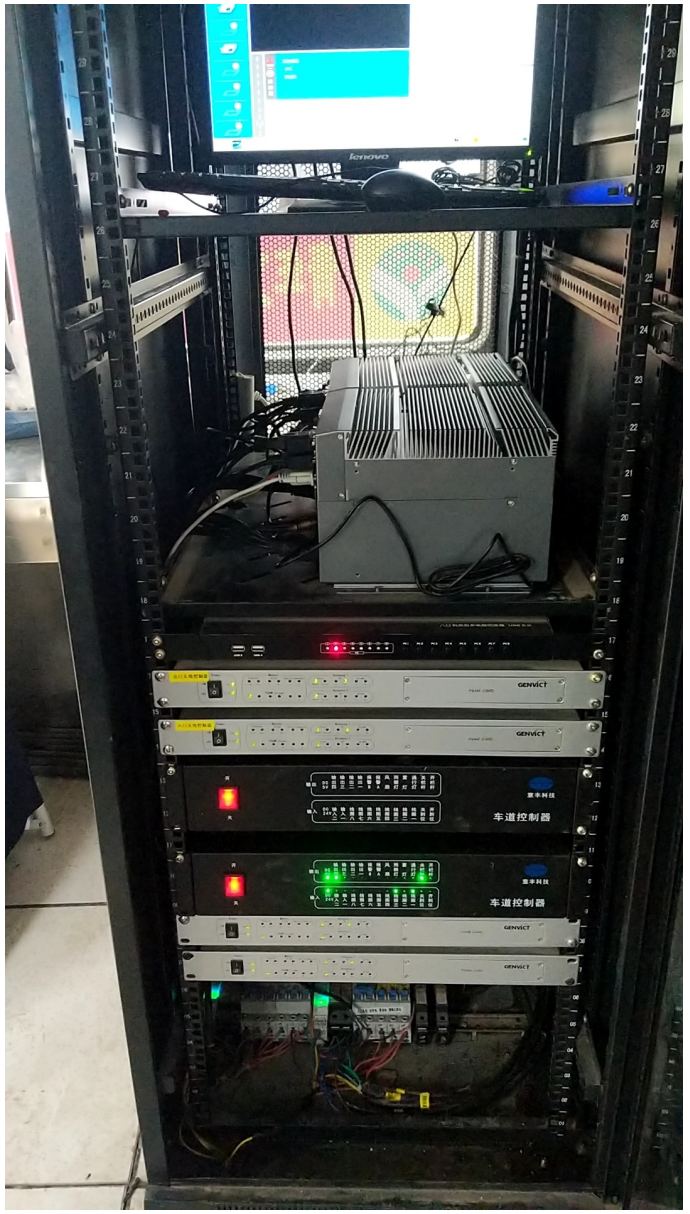
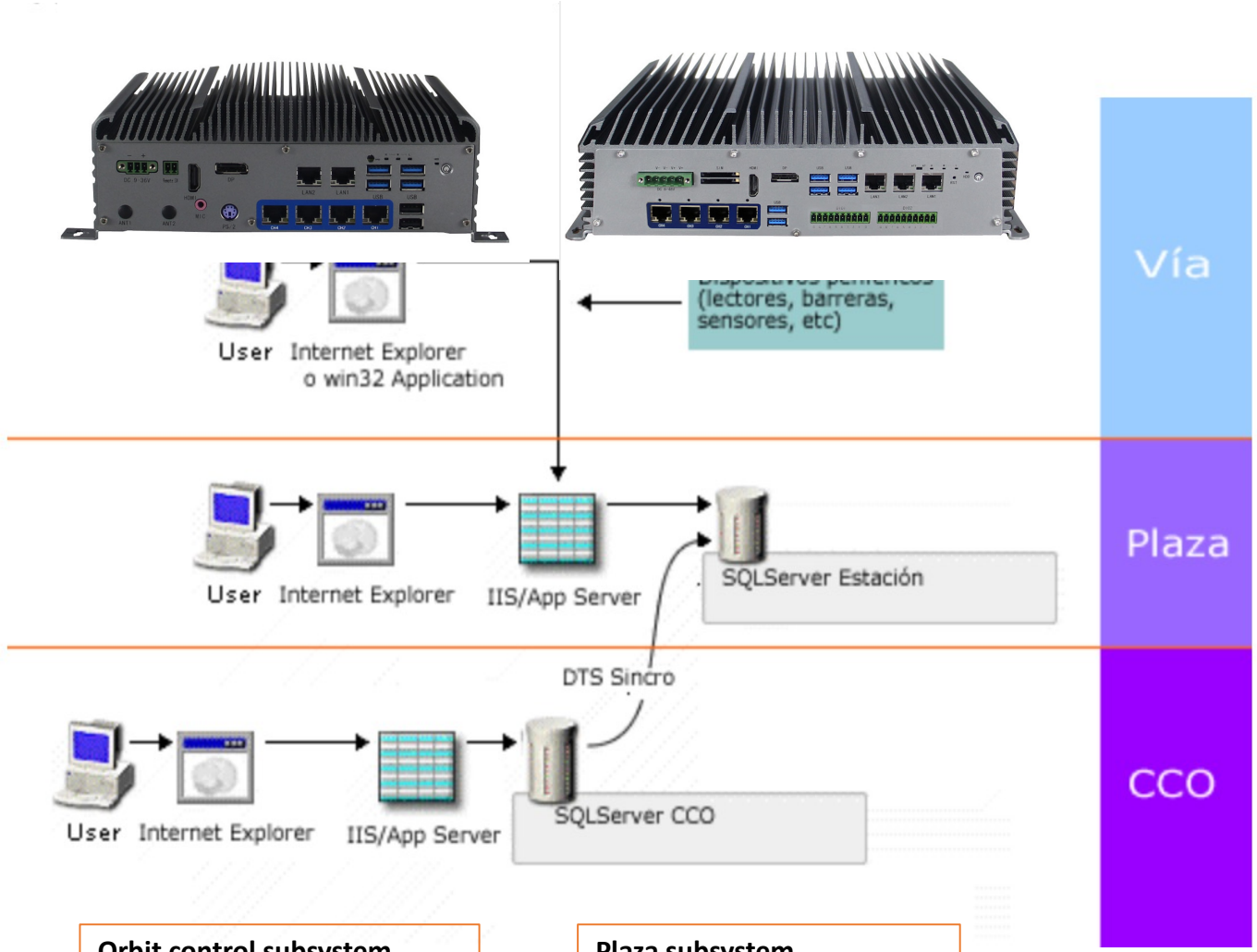


ETC Lane Controller



The sensors placed on the tracks can verified the correct classification of vehicles

Receive cash payment, sensor card, duty-free driving and provide transaction receipt. Indicate the categories and rates of charges to the user

Control traffic lights, sirens and electrical barriers

Check the height, count the number line, check whether it is conrrect

Digitize and record the image of the Lane in the VIA so that the generated exceptions can be reviewed

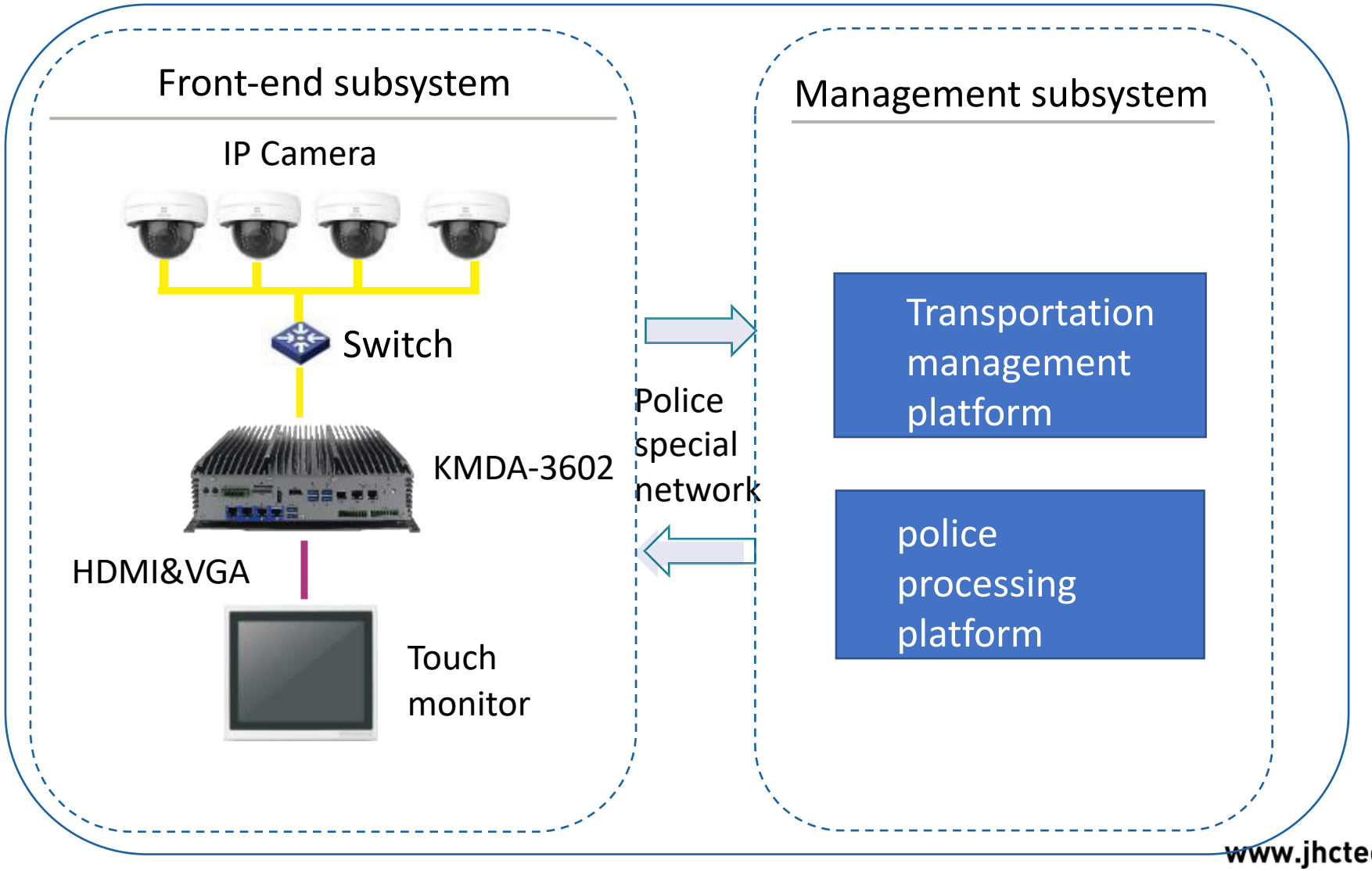
Transmit transaction information, operational data and images to the control room

Provide online maintenance function

Support UPS backup power supply, in the case of power failure, UPS can keep the controller work for 20 minutes

Special
In-Vehicle System

Mobile Enforcement System



Police vehicle/police motorcycle mobile patrol monitoring system

The system uses high-definition camera shooting, computer forensics and computer technology, can be in the process of patrol, easy to road vehicles illegal forensics, once found illegal vehicles, you can capture forensics, easy to follow up processing.

Panorama: KMDA-3602 comes with 4-8 POE network ports, and can be connected with up to 8 cameras, which can realize multi-directional capture.

Mobile: high expansion capability of communication interface, wireless 4G/LTE and GPS communication support, can achieve wireless communication.

Police vehicle/police motorcycle mobile patrol monitoring system

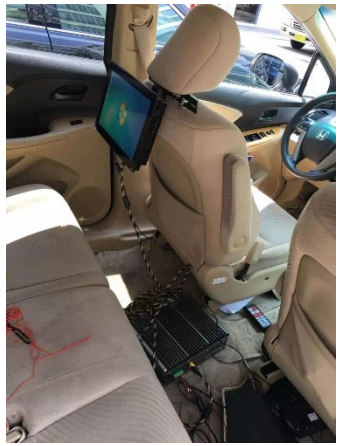
Take photos of illegal parking

- Snap pictures when vehicle line pressure lane change
- Illegal trespass on a bus lane
- snap pictures when motor vehicles do not allow pedestrians
- Snap pictures when driving out of a lane
- Bayonet function (blacklist detection)

System function

- Scene law enforcement video recording function
- Automatic identification of vehicle license plate number
- Snap pictures when Illegal trespass on a non-motorized lane
- Full view page view and video recording function

Police vehicle integrated patrol law enforcement system

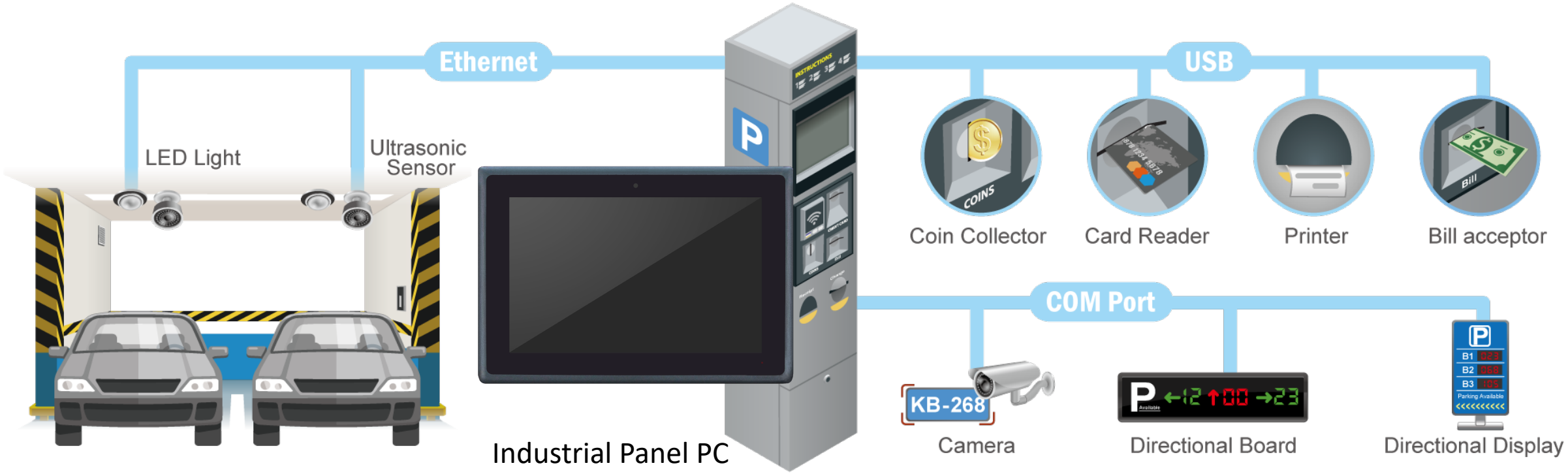


Intelligent Parking System

Main Features

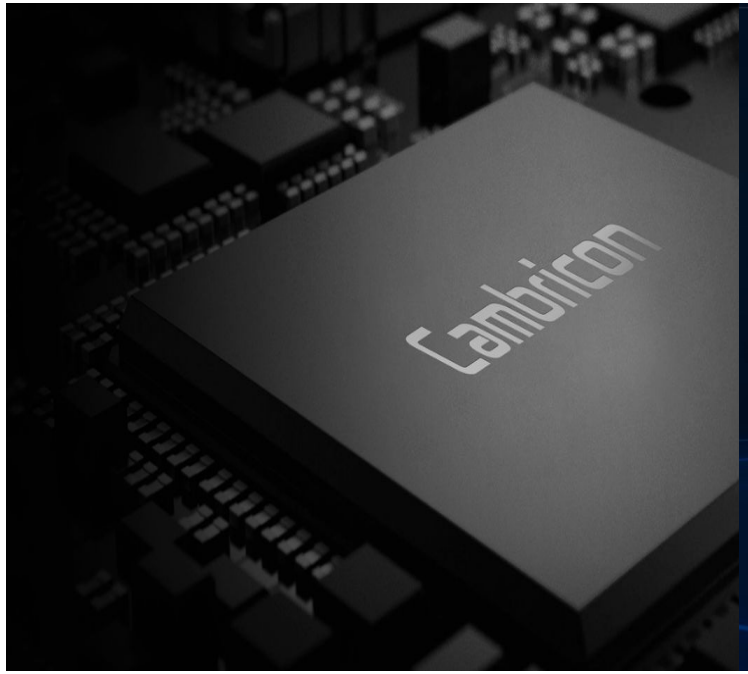
- Compact size, ideal solution for payment kiosk.
- DIO for barrier control.
- Economy cost and flexible installation.

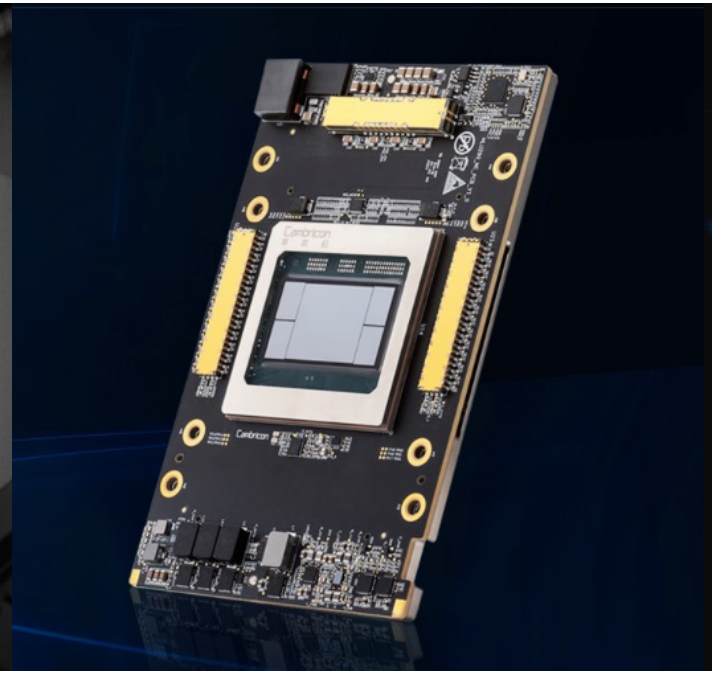
Application Scenarios

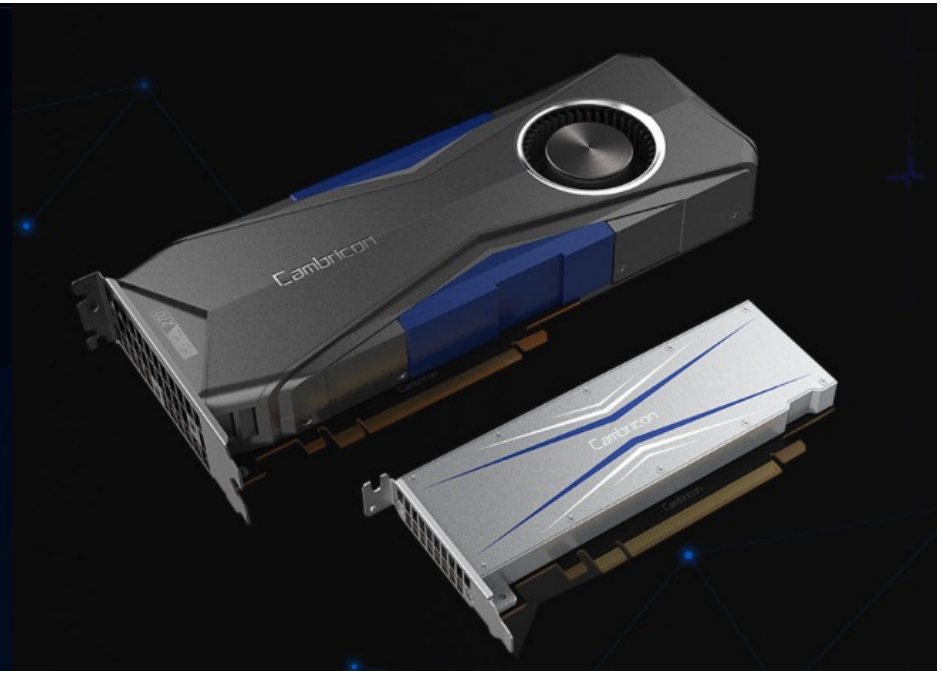


JHC AIoT R&D

Cambricon (www.cambricon.com)

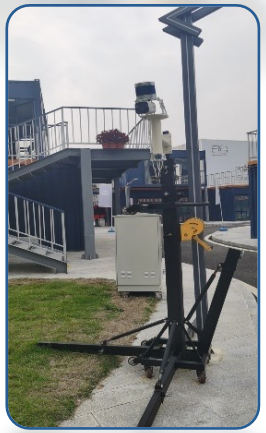






Application Example

Traffic Monitoring and Toll Collecting



Major Applications

Vehicle monitoring and diagnosis system

DMI

PIS

CCTV

Freight train intelligent identification system

SIGM-2650

Harbin Metro Line 1 PIS System

The Harbin Metro PIS passenger information system project uses JHCTECH SIGM-2650/S002 products as the main control of the play control system.

Intelligent Vehicle

Detectors of Passenger Analytics

Датчики и контроллеры автоматизированной системы мониторинга пассажиропотока

Датчик задымления и повышения температуры ИПК-ТУ 212-114А3-10281

Gas/Fire Detectors

VideoSurvailanceMicrophon

Микрофон системы видеонаблюдения

ADs Monitors

Alarm Button

Тревожная кнопка

Outside Information Panel

Бортовой навигационно-связной терминал Гранит-навигатор-2.07

Oil consumption

Датчик уровня топлива ТД-500 «Эскорт»/ Omnicomm LLS 20160

Система видеонаблюдения:
- Видеорегистратор EMV-400/800/1200
- Видеокамеры МВК-0933:
  - переднего вида;
  - наблюдения за водителем
  - салонные (от 4 до 12 в зависимости от вида ТС)
  - заднего вида

Video Survailance
4-12ch

3G-модем Telit 863-3GE

3G modem
Industrial

Бортовая навигационно-связная УКВ-радиостанция ТАКТ-201.23 П45

RadioCommunication

Internal Data Sensors

External Data Sensors

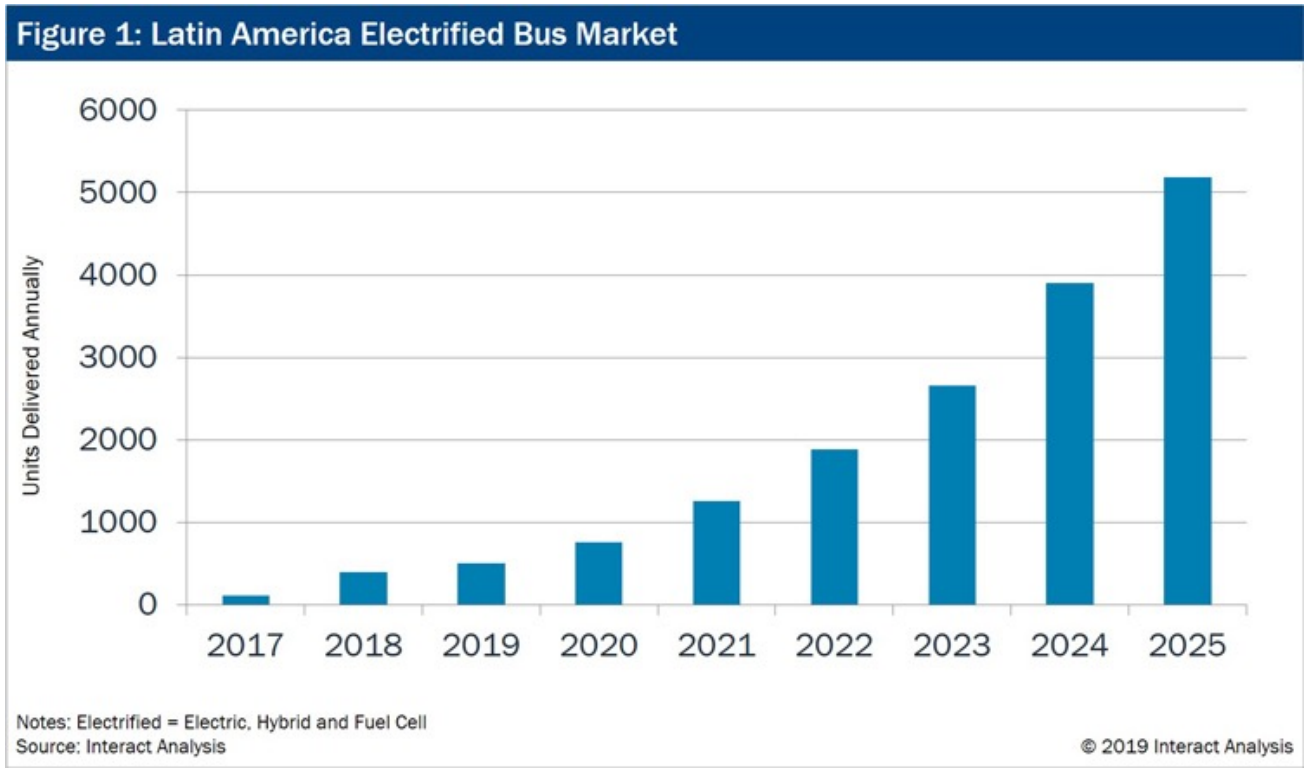
Communication

Data collection & Processing

Data Visualisation

JHCTECH

V2X = V2G - V2V - V2I – V2N – V2D



1.Financial support

The Zero-Emission Bus Rapid Deployment Accelerator (ZEBRA) will help to promote growth. An arm of C40 cities, ZEBRA is working with a number of municipalities in Latin America including Mexico City, Medellín and São Paulo to secure $1 billion for the transition to zero emission buses.

2. Partnering with utilities

3. New business models

Using an OPEX-based operating model whereby the buses are leased on a per kilometre basis eliminates the up-front cost associated with electric buses. This operating model is common place in India which has seen significant growth in its electric bus market over the past 12 months. Alternatively, battery leasing schemes can be used which are often provided in North America and Europe.

Q & A

Dígame,Te ayudamos

Stay in Touch

JHC Technology Development Co.,Ltd.

@ShenzhenJHCTECH

@JHC_Technology

@JHCTECH

CONTACTS

Marketing

marketing@jhctech.com

Product Management

xiongju@jhctech.com.cn