INTELLIGENT **TRANSPORTATION** SOLUTION

Explore Transportation Solution for engaging with connected intelligent urban mobility that delivers safety, trust and security.

New Era of Transportation

Due to the booming urbanization and climate change of the world, the challenge for efficiency, sustainability, security, and innovative technology of cities have increased years by years. Digitalization of transportation helps reduce congestion and human error incidents that can lead to injury.

The good news is that innovations in Internet of Things (IoT), Artificial Intelligence (AI), 5G network connectivity, and edge to cloud computing are giving Avalue the ability to support the customer to improve transportation safety, efficiency, reliability, and profitability.

Innovative industrial computing solutions with quality manufacturing designed for public transportation, public service, and logistic applications.

BCM is known as one of the top global suppliers of industrial motherboards and embedded computing systems in the industry. We offer a wide range of rugged computing and touch PC products as well as flexible custom design OEM/ODM services for ITS customers. R&D engineering based in Irvine, California, providing fast and dedicated sales/PM and tech support. Products manufactured at our TS 16949 (Automotive Electronics) certified factories in Taiwan, Tariff Free. BCM is an Avalue company.

Essential Professional Capabilities

Wide Range of Product Series Selection	Domain Know-How in Transportation Market	Solution-Build Thinking	Dedicated Teams to Support	Win/ Linux/ Android OS Support

Transportation Product Highlights

Application Layer					
Computing platform	Ruggedized Box PC	Transportation System	Panel PC	industrial-grade Monitor	E Ink	Ruggedized Tablet
Software layer	Remote Management Device	Positioning System	Vehicle Power Management	OS Build (Win/Linux/Android)	API/ SDK	Ignition Control

"**Our intelligent transportation solution, is to find out the pain-point from customers and solve it in a suitable, professional and efficient way. And we hope one day in the future, you will realize our ITS solution is all around you in your daily life.** „

- Jason Liu
Director of Product Division

01 | **Terminal display wall**
- EGS-MX1

02 | **Fare collection system & entrance management**
- ERS-BYTE-10COM

03 | **Roadside law enforcement**
- EMS-TGL-PSE

04 | **AI traffic flow detection and TOD adjustment**
- EMS-SKLU
- EPC-APL
- AIB-IMX8M

05 | **Smart waste management**
- VMS-BYT
- ARC 10W00

06 | **Communication system for emergency vehicles (V2X)**
- RISC SBC

07 | **Parking entrance management with ANPR**
- EMS-TGL-PSE
- ARC-1509/ ARC-1732

08 | **Enforcement with edge computing**
- VMS-CFS-PSE

Raw Materials Management

09 | **Fatigue system & fleet management**
- VMS-APL
- ARC-1200

10 | **Precision agriculture**
- VMS-BYT
- ARC 10W00

Public Transport

11 | **School bus positioning & children location confirming**
- UWB Anchor
- UWB Tag
- VMS-APL

12 | **Electrical autonomous bus**
- VMS-CFS-PSE
- OFM-15W00/21W00

13 Outdoor drive thru ordering system
• OFT-15W33
• OFT-21W33

14 Emergency traffic light influence system (DSRC)
• ARC series monitor
• VMS-APL

Public Transport

15 Smart public transit in bus
• VMS-APL + ARC 10W00
• ARC-1232
• OFT-07WR1

16 Travel information display at stop
• EPD-42T
• EPD-3133

17 Wifi router & entertainment system
• VMS-BYT
• ARC series monitor
• OFT-07WR1

18 Smart public transit in rail
• VMS-EHLR

19 Advertisement/ Travel information/ Bulletin
• EPD-42T
• EPD-3133

20 Bridge control system
• EMS-SKLU-Marine
• EMS-TGL-Marine

Logistic

21 Collision-avoidance system w/autonomous mobile robot
• VMS-CFS-PSE
• EMS-TGL-PSE
• AIB-NW01

22 Forklift & pallet maneuver
• ARC-1033
• CAXA0

23 Smart port management
• EPS-CFS + ARC 1500
• ARC-1509/ ARC-1209
• CAXA0

Ensuring the safety and efficiency with autonomous garbage truck in the community

- OBC is equipped on a autonomous garbage truck to collect the on-board information, furthermore, to assist to complete the self-driving behavior in the community.

05

Preventing the possible danger occurred during the school bus trip.

- By using this solution to make sure children are in the school bus after leaving home and later, get off the school bus while arriving in school. Furthermore, to confirm the school bus is well arrived and punctually at school parking area as well.

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ARTEMIS Solution
(Anchor+Tag/ Wristband) provides the real-time location information of children & school buses, while children get into bus and buses arrive in school parking lot.

Product Highlights

VMS-BYT
Intel® Atom™ Processor E3845 Fanless Vehicle Telematics System

ARC-10W00
10.1" WXGA Rugged PCAP Multi-Touch Monitor

Vehicle Power Management

Ignition Control

Product Highlights

VMS-APL
Intel® Pentium®/ Celeron®/ Atom™ Processor Fanless Vehicle Telematics System

ARC Series
Fanless Rugged Touch Panel PC with IET Expansion

RENITY ARTEMIS

Vehicle Power Management

Ignition Control

Benefit & Advantage

• Driver can send the OBC`s setting by themselves via vehicle power management AP in Win/ Android OS

• One cable solution for touch monitor through HDMI w/RS232 interface

• Easy installation with customized chassis attached on to vehicle.

• Communication with 4G/Wifi/GPS for fleet management.

• Multi-IO to connect with sensors for object/obstacle detection, RFID to container identification for billing.

Benefit & Advantage

• Fatigue system to make sure the driver is not falling asleep while driving.

• To ensure the school is on track via GPS, furthermore to send the school bus location to parents during the while trip.

• Children can stay at home until the school bus is approaching by APP to decrease the danger while waiting outside for bus.

• By Radar/ Lidar/ Sensor to detect the obstacle on the street and prevent from car accident. (V2I/V2P/V2V)

• OBU connecting with cameras for video surveillance, PA system, stop sign, TPMS module…etc.
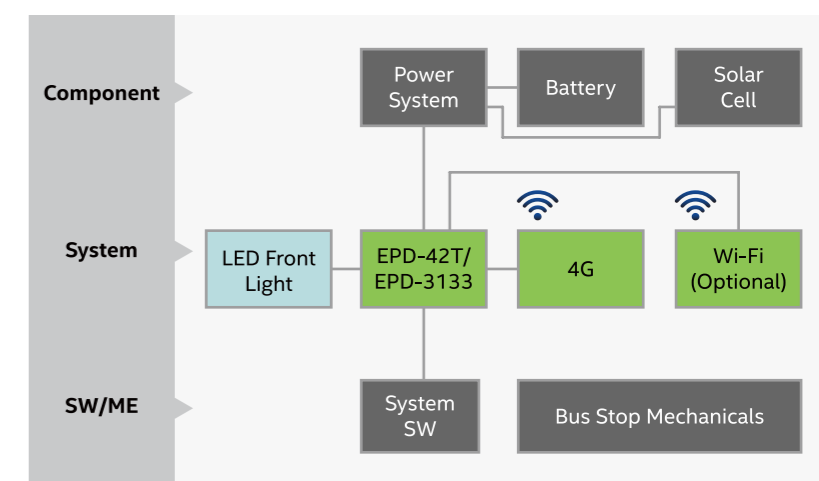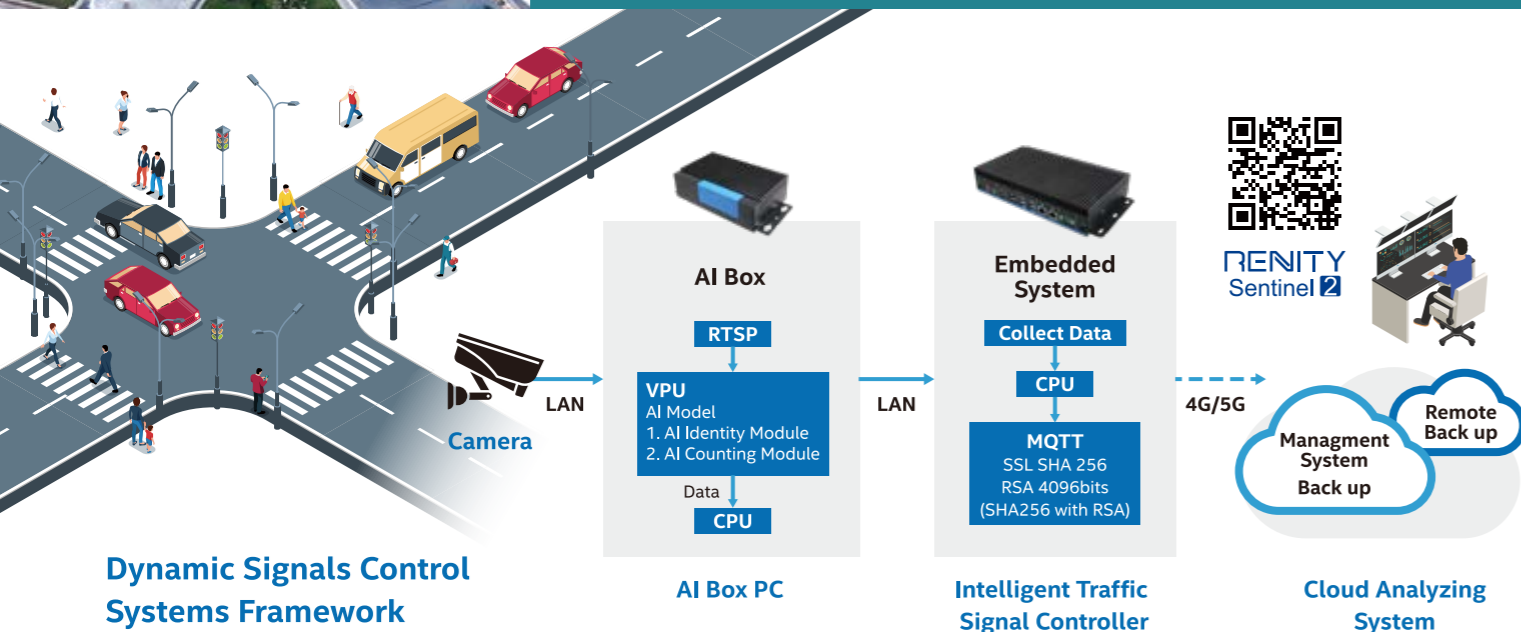
Resolving the traffic jam during the peak hour in the smart city, and providing with OOB solution for system maintenance.

- Using AI recognition technology and Big Data Analysis to generate Time-of-Day (TOD) and provide this generated TOD to Traffic Controller (local) in the roadside that can control the traffic light to dissipate traffic congestion.

04

Improving the user experience for passenger, easy maintenance for system integrator and Eco-friendly to the world.

- Vehicle communicate with RSU (EPD) via 4G/5G and update the in-time travel information on EPD series, at the same time to satisfy the user experience for passenger, easy maintenance demand for system integrator and Eco-friendly to the world

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Dynamic Signals Control Systems Framework

Camera

LAN

AI Box

RTSP

VPU
AI Model
1. AI Identity Module
2. AI Counting Module

Data

CPU

AI Box PC

LAN

Embedded System

Collect Data

CPU

MQTT
SSL SHA 256
RSA 4096bits
(SHA256 with RSA)

Intelligent Traffic Signal Controller

RENITY Sentinel 2

4G/5G

Managment System Back up

Remote Back up

Cloud Analyzing System

Component

System

SW/ME

Power System — Battery — Solar Cell

LED Front Light — EPD-42T/ EPD-3133 — 4G — Wi-Fi (Optional)

System SW — Bus Stop Mechanicals

Software Highlights

Remote Control

Real-time Monitoring

Prevent Traffic Violation

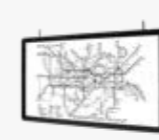**Make efficient Law Enforcement**

Reduce Traffic Congestion

Product Highlights

EPD-42T
Public Information Display
(Digital Signage)

EPD-3133
Public Information Display
(Digital Signage)

Sunlight Readable

Eco- friendly

Benefit & Advantage

• Reducing traffic accidents and congestion, and improve road safety and compliance with traffic.

• Reminding drivers to reduce speed when approaching the junction, reducing chances of traffic accidents, and keeping the records (hard brake, ideal, etc.) helps to identify patterns of driving behavior.

• RS2 remote monitoring and management software to enhance the performance of the systems and to adjust control functions in real-time, improving traffic flow and increasing convenience and safety.

Benefit & Advantage

• Sunlight readable, paper-like and eye-friendly digital signage solution

• E Ink bi-stable feature, no power needed to hold an image, which makes ultra low power consumption

• System is suitable to operate with solar cell and batteries, easy to complete infrastructure installation

• Green and eco-friendly solution with minimum total cost of ownership for outdoor signage display

Vehicle Telematic System

VMS-BYT
Intel Atom® Processor E3845 Fanless Vehicle Telematics System

VMS-APL
Intel® Pentium®/ Celeron®/ Atom™ Processor Fanless Vehicle Telematics System

VMS-CFS
Intel® 8th/9th Coffee Lake Rugged Fanless Vehicle Telematics System

VMS-CFS-PSE
Intel® 8th/9th Coffee Lake Rugged Fanless Vehicle Telematics System w/RJ45 PoE

VMS-EHLR
Intel® Atom™ SoC X6425E Railway Computer w/ Elkhart lake

EMS-TGL
11th Gen Intel® Core™ Processor i7/i5/i3 Fanless Rugged Embedded System

AI System

EGS-MX1
Embedded GPU System w/MXM Graphic Card

AIB-NW01
AI BOX PC System w/ NVIDIA Nano or NX Carrier Board

AIB-IMX8M
NXP IMX8M Embedded Computer AI BOX PC

Panel PC

ARC-1033
10.4" Intel® Apollo Lake Fanless Rugged Touch Panel PC with IET Expansion

ARC-1232/ 1732
12.1"/ 17" 6th Gen Intel® ULT Core™ Processor i7/i5/i3 Fanless Rugged Touch Panel PC with IET Expansion

ARC-1209/ 1509
12.1" /15" Intel® Atom™ SoC Processor E3845 Fanless Rugged Touch Panel PC with IET Expansion

ARC-10W33
10.1" WXGA LCD with P-cap Intel® Celeron® N3350 Rugged Touch Panel PC with IET Expansion

OFT-15W33/ 21W33
15.6"/ 21.5" Full-HD PCAP Multi-Touch Fanless Open Frame Panel PC with Intel® Celeron® J3455 Processor

Industrial-grade Monitor

ARC-10W00/ 15W00/ 21W00
Rugged PCAP Multi-Touch Monitor

ARC-1200/ 1500/ 1700
Rugged PCAP Multi-Touch Monitor

OFM-15W00/ 21W00
15.6"/ 21.5" Full-HD PCAP Multi-Touch Fanless Open Frame Monitor

E Ink

EPD-42T
Communication Board

EPD-3133
Public Information Display (Digital Signage)

Ruggedized Tablet

CAXA0
10.1" Semi-Rugged Tablet with Intel® Celeron® Processor N3350

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