ASTRI
C–V2X TECHNOLOGY

Introduction

Using C-V2X technology, cars may communicate with one another, pedestrians, and roadside infrastructure to enhance road safety and deliver a better driving experience. ASTRI pursues R&D in both software and hardware aspects including C-V2X network, applications, management system, algorithms design, and related infrastructure.

ASTRI C-V2X is a licensable technology platform to facilitate R&D and end-to-end system integration.

C-V2X TERMINAL

C-V2X SOFTWARE

MOBILE EDGE COMPUTING

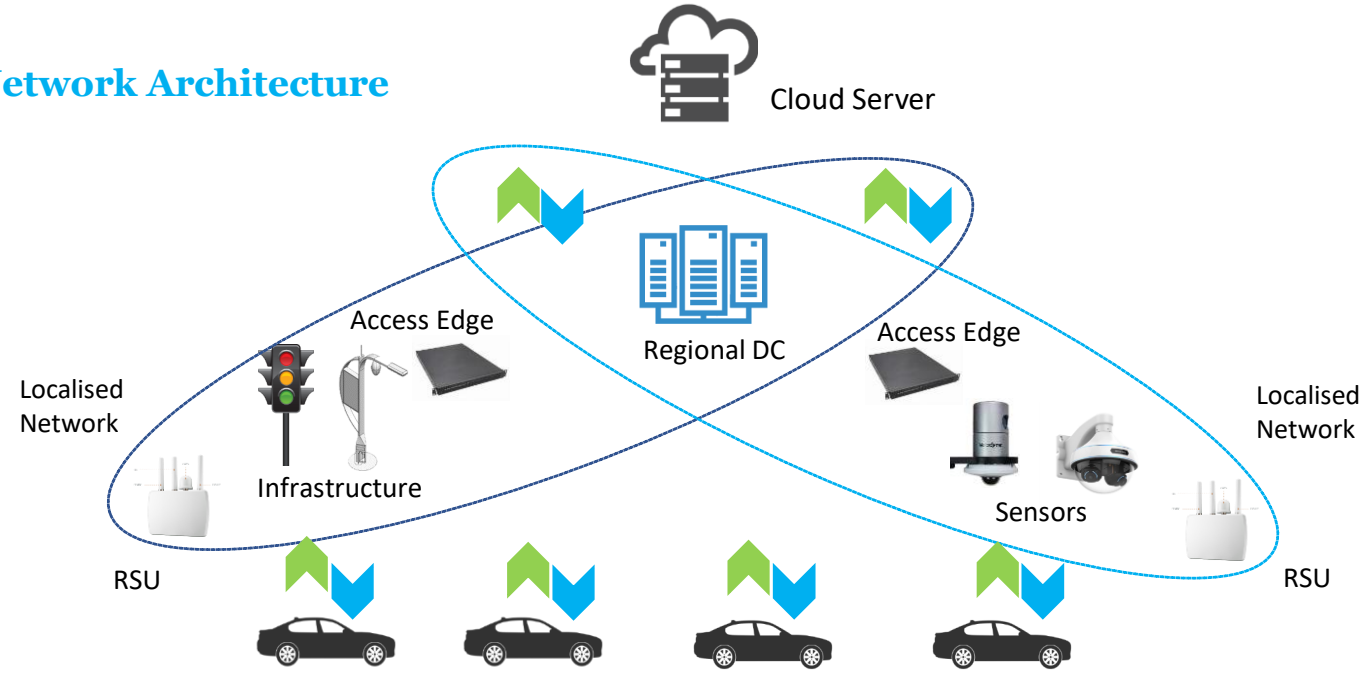
CONNECTED VEHICLE SERVER

COOPERATIVE V2I SYSTEM

ASTRI
5/F, Photonic Center, Hong Kong Science Park
Shatin,
www.astri.org

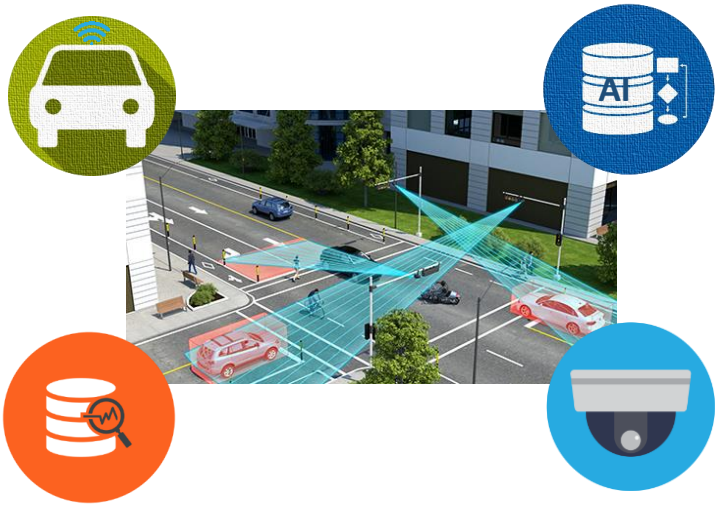
ASTRI
HONG KONG APPLIED SCIENCE AND TECHNOLOGY RESEARCH INSTITUTE COMPANY LIMITED
香港應用科技研究院有限公司

Network Architecture



V2X

- C-V2X Software
- Smart Antenna
- Terminal Design



Intelligent Traffic Management (Edge/Cloud)

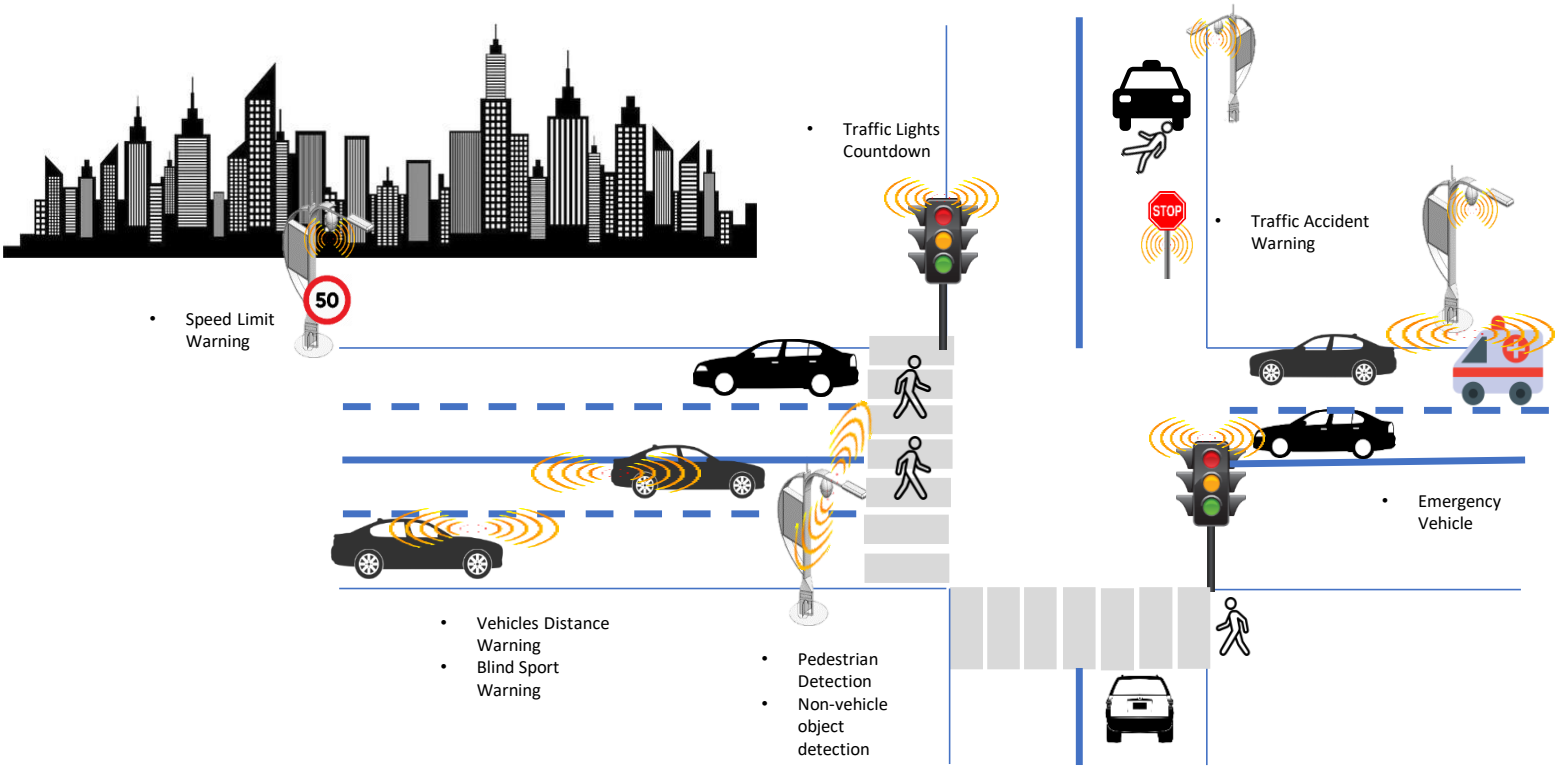
- Vehicle & Traffic Data Mgmt
- Real time Traffic Monitoring
- Traffic Data Modeling & Recommendation
- Alarm Decision & Optimization
- City Traffic Management & Planning

Algorithm Design

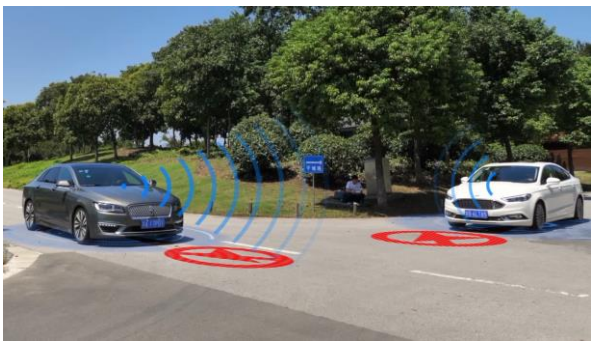
- Road Safety Alarm
- Traffic Planning
- Roadside Sensor Data Integration
- Patent & Core Competence

Roadside Sensing

- Roadside Sensing System Software & Integration with RSU



Service Scenarios



Road Safety

ASTRI's V2X in-car processing unit and algorithms at network edge enhance road safety through intelligent alerts for various unique situations such as: 'V2V Do Not Pass', 'V2P Vulnerable Road User', and 'V2I Intersection Collision' warnings. The system detects threats and alerts vehicle drivers and other individual road users in real time to avoid accidents.

Traffic Efficiency

Through the coordination and policy provisioning of multiple V2X Road Side Units (RSUs), road users can be altered of unexpected traffic conditions (e.g. traffic accident, congestion etc.) in affected areas with promptness. ASTRI's V2X software system is a key technology enabler for assisted driving and 5G autonomous driving in the future.

Cooperative V2I Awareness

ASTRI's Vehicle and Roadside Cooperative System can bring new intelligence for vehicles, roadside systems, sensors and individuals, by creating a universally understood communications "language" allowing vehicles and infrastructure to share information and cooperate in an unlimited range of new applications and services.

Case Study - The world's first city-level C-V2X application demonstration in Wuxi, China

On 15 September 2018, ASTRI and Huawei jointly demonstrated a series of successful Cellular Vehicle-to-Everything (C-V2X) test cases at the World Internet of Things Expo 2018. Sponsored by the Wuxi Municipal Commission of Economy and Information, the Commission of Public Security, and the Jiangsu Provincial Government, the Expo took place in Wuxi, China — the world's first city-level C-V2X application demonstration site. The site spans around 170 km² and covers most part of the city. The project is also supported by the Chinese Academy of Information and Communications Technology, China Mobile, and a number of manufacturers including Audi and FAW.

The test was conducted near the Taihu Expo Centre in Taihu, Wuxi, on about six kilometers of open roads with six open crossings. 17 successful tests of typical application fields based on C-V2X were conducted, including forward collision warning, intersection collision warning, left turn auxiliary, vehicle blind area or lane change warning, road danger risk warning, speed limit warning, speed guidance based on signal lights, warning of congestion ahead, warning of pedestrian crossing in blind areas, and warning of on-ramp vehicles.

ASTRI and Huawei demonstrated the V2X applications using Huawei's world-first dual-mode C-V2X roadside device RSU, supported by ASTRI's C-V2X software system and algorithms. Under the test case, vehicles and the infrastructure leveraged C-V2X Uu and PC5 Communications channel to broadcast vehicular movement and traffic status information to cars made by FAW and other manufacturers.

Source: https://www.astri.org/news-detail/astri-and-huawei-showcase-results-of-joint-technological-endeavours-through-successful-lte-based-v2x-demonstrations-in-wuxi-china/