Intelligent Transportation Systems

Secure solutions for smart roads and connected highways

Brochure

Alcatel·Lucent Enterprise

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Today's technology is delivering new opportunities for increasing road safety, keeping traffic moving, and improving the travelers' journey. This intelligent transportation system (ITS) is becoming part of what is being called a "smart city." As vehicles become smarter and more autonomous, roads need to become smarter as well. Technology has already led to major changes in the way vehicles operate and the way drivers communicate. And that evolution won't stop as there are many opportunities to improve safety and communications.

It's the right time for smarter roads and connected highways

Road and highway systems around the world are overloaded and are becoming impossible to use and continues to get worse as an increasing number of cars are trying to use the same resources.

At the same time, the Internet of Things (IoT) has created a major transformation in road and highway travel and has opened the doors to innovation. Car sensors give vehicles instant feedback about proximity, unexpected actions by the driver as well as mechanical problems. Brakes can be automatically applied if a dangerous situation is "sensed".

On-board cameras show drivers what's behind them and what's beside them. Autonomous vehicles are already being tested that rely on ever-advancing technology for safe navigation, steering, stopping and parking.

As traffic increases and vehicles become more sophisticated, transportation authorities will need new ways to centralise traffic control centre resources and be able to deliver services 24/7 across all roads and highways.

Transportation authorities that embrace technology and apply it in a way that reflects the way traffic patterns, vehicles and communications are evolving have new opportunities to prevent accidents, keep traffic flowing and always keep drivers connected and informed.

An experienced technology partner reduces risks

Adopting new technologies can seem daunting when replacing trusted systems — especially when lives are at stake. A technology partner with experience providing robust, reliable and secure solutions for smart roads and connected highways can help transportation authorities evolve their operations while keeping risks to a minimum.

ALE has experience supporting transportation authorities and highway agencies around the globe as they deliver intelligent transportation systems. We provide the hardware and software building blocks needed to create secure wired and wireless networks and communication systems that enable smarter roads and connected highways.

Transportation authorities cannot afford to be left behind

As traffic, technologies and expectations evolve, the challenges and the opportunities for transportation authorities will increase. Change is coming quickly.

- By 2050, we anticipate there will be approximately 3 billion light-duty vehicles on the road worldwide.[1]
- It is expected that, by 2030, there will be approximately 20.8 million autonomous vehicles in operation in the U.S.[2]

1 - Fuel Freedom Foundation, February 2022
2 - Statista, August 2021

Increase safety on roads and highways

The number one priority for every transportation authority in the world is to make roads safer. Adopting technology that gives insight into traffic flows, road conditions, road incidents, construction and sudden weather changes, helps authorities to make smarter decisions and avoid emergency braking scenarios.

The key is to quickly get the right information to drivers so they can prepare for the conditions ahead. Today, that might be through video cameras that provide information that is relayed to drivers through overhead digital signs and dedicated radio frequencies. In the future, intelligent transportation systems will use sensors and video cameras along roads and highways as well as ITS–to-vehicle communications to directly connect with smart and autonomous vehicles. Vehicles can then share information with each other and automatically make decisions and take safe actions.

The way updates on road conditions get to the traffic control centre will also evolve. In addition to a continuous stream of information from IoT-enabled monitoring technologies, the traffic control centre will need to support information coming in from:

- Emergency roadside telephones (ERTs)
- Cellular phones
- Mobile applications that use chat, video, and voice
- Connected vehicles

Make it happen

To provide passengers with a better door-to-door experience, ask about our:

- Move to one IP infrastructure that integrates different systems, reaches to the remotest edges of the network, and is easily managed with a single, intuitive graphical user interface
- Deploy ruggedised network switches that can provide power to remote monitoring devices and withstand the harshest environmental conditions
- Deploy a single, intelligent and reliable VoIP communication system that connects multiple facilities and provide emergency call service
- Add an emergency call button to mobile applications for transportation authorities
- Add Artificial Intelligence (AI) in your onboard, hands-free communication for natural language interaction
- Enable events notification to security staff on any device (fixed and mobile) for better coordination and reduce response time
- Provide location maps to accelerate resolution time
- Track events for aftermath treatment to improve operational processes or further investigations.

Take the network right to the vehicle

Extend the network by putting mobile routers in first response vehicles and buses, to create vehicles that can connect to the intelligent transportation system and to each other. Each vehicle has its own Wi-Fi network and a redundant 4G or LTE connection to instantly share:

- GPS location and geo-fencing information
- CCTV and security camera footage
- Voice, video, and data communications

Improve the traveler journey

Today's travelers expect internet access, real-time information updates, and proactive notifications, wherever they are in their journey – on a bus, on a courtesy shuttle, at a bus station, or at a highway rest stop. They want to stream music while they're driving and allow passengers to use web applications or watch online movies to pass the time. And they want up-to-date information about traffic and road conditions so they can make better decisions about how to safely complete their journey with the fewest delays.

To deliver these capabilities, transportation authorities need fast, simple, and secure ways to connect IoT devices to their network. They need to make more efficient and effective use of network bandwidth without increasing the management burden. And they need software that will automatically distribute updates to mobile applications and social media websites in real-time.

Make it happen

Focus on simplicity, automation and flexibility:

- Deploy an intelligent, self-healing network that automates network design, deployment and maintenance tasks
- Use an intuitive management system and smart analytics to gain visibility into how the network is being used so you can prioritise and better manage network traffic based on location, data source and data traffic type
- Add a social media connector to automatically push traffic updates to Twitter and Facebook
- Provide mobile applications through the cloud-based Rainbow platform to enable real-time interactions and improve the decision-making process based on traffic information

Taiwan National Freeway Bureau moves to a high-performance CCTV network

The Taiwan National Freeway Bureau (TANFB), which is responsible for all highways and major roads in Taiwan, partnered with ALE on a high-performance, three-layer network for real-time closed-circuit television (CCTV) applications. The end-to-end CCTV network:

- Offers high bandwidth and low latency at reasonable costs
- Includes an intuitive management interface and integrates smoothly with the existing network
- Provides built-in security and a redundant design for high availability

Flexible business models

To help transportation authorities embrace new technologies while managing their budgets, ALE supports different business models, including:

- Upfront investments
- Pay-per-use
- Monthly leases

Want to learn more?

Learn more about how ALE is helping ITS operators move from connected to smart roads

We are ALE.

We make everything connect by delivering technology that works, for you. With our global reach, and local focus, we deliver networking and communications.

On premises. Hybrid. Cloud.

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