



# Intelligent Transportation Systems



What is ITS? Intelligent Transportation Systems (ITS) help in improving safety, efficiency and mobility of ground transportation systems by collectively utilizing the applications of technologies such as electronic devices, sensors, and communications. Below are examples of common types of ITS technologies and typical applications for reference.

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## Traffic Management Centers

These centers are the fundamental component of transportation systems, which obtain information gathered from ITS field components. TMC operators gather information from cameras and detectors to operate and monitor intersections and roadway networks. TMC operators may coordinate with local officials to reduce congestion on roadways and improve incident management.



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## Dynamic Message Sign

Dynamic Message Signs (DMS) are the electronic traffic signs that display traveler information messages related to estimated travel times, reported incidents, work zone information, speed limits, and other pertinent information to travelers.



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## Closed Circuit Television Cameras

Closed Circuit Television (CCTV) Cameras are used for video surveillance at intersections and along roadways. The images and video obtained from CCTV cameras are used by transportation operators to monitor traffic and weather conditions, detect and verify traffic incidents, and coordinate with emergency management agencies by sharing images and video as needed during emergencies.



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## Work Zone Management

Components of ITS such as CCTV cameras, portable dynamic message signs aid in work zone traffic management. The CCTV cameras are used by transportation operators to monitor traffic condition and portable DMS convey appropriate work zone related information such as detours, lane closures, and speed limit reductions to travelers.



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## Emergency Management

Accurate real-time incident detection and emergency vehicle preemption at traffic signals help reduce incident response time and increase safety. Incidents can be relayed to traffic management centers so that travelers can take alternate routes.



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## Transit Management

Transit vehicles are monitored through automatic vehicle location systems, which help operators in route optimization and performance assessment. Transit customers also utilize electronic fare payment systems and web-based information systems to gather real-time transit information on vehicle arrivals and departures.



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## Traffic Signal Systems

Data collected from in-ground traffic detectors help transportation operators to monitor and optimize traffic flow by adjusting traffic signal timings. These systems are key components of coordinated signal systems and integrated corridor management.

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## Road Weather Information Systems (RWIS)

Weather stations located throughout transportation network collect atmospheric data which helps to determine and predict weather conditions for travelers. This data is an important parameter for maintenance and construction operations.

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## Connected and Autonomous Vehicles

Vehicle safety systems enable communication with other vehicles and roadside systems and traffic signals to acquire information about traffic and travel conditions. This type of technology increases safety, minimizes vehicle collisions, and enhances overall efficiency of transportation network.

