Benefits of IoT for Transportation

Some wider benefits that apply to the use of IoT technology within the transportation sector include:

1.Enhance Customer Experience

IoT technologies help to provide customers with more accurate, up-to-date, real-time data to better plan journeys and improve communication.

2.Improved Safety

The ability to track things such as train speeds, aircraft part conditions, roadway temperatures and the number of vehicles at an intersection using IoT enabled technology can all help to improve the safety of our transit systems worldwide.

3.Operational Performance

Transport Agencies adopting IoT technologies are already starting to see benefits in terms of operational performance. Cities can better monitor critical infrastructures and develop efficient processes to minimise operating costs and improve system capacity.

4.Environmental Improvements

By better monitoring congestion, IoT enabled systems can react quickly to evolving traffic patterns and return real-time data to help people to plan their journeys better. Reducing congestion and energy usage have a positive impact on the environment.

applications of IoT technology in transportation

These benefits of IoT technology in transportation can be applied through a number of applications within the sector. Here are five of the most common applications:

Traffic Management

Roading is by far the biggest segment within transportation when it comes to the adoption of IoT technologies and this is expected to grow as we head towards 2023. Within cities, data can be collected from CCTV feeds which transmit vehicle-related data to traffic management centres. Applications using IoT technology include:

- Smart parking
- Traffic lights
- Smart accident assistance

Toll and Ticketing

Conventional toll systems are becoming rapidly outdated. With the increase in vehicles on the roads, queues at toll booths have become a common sight, not to mention the manpower needed to operate toll booths on busy highways. Whilst automated tolls, using a RFID tag, have improved the flow of traffic, further improvements have been made possible by the use of IoT technology.

Many of today's modern vehicles are equipped with IoT connectivity. A vehicle can be detected up to a kilometre away from a tolling station, correctly identified and the barrier lifted for the vehicle to pass through. Alternatively, for older vehicles, a registered smartphone could serve the same purpose, taking automatic payment from the digital wallet linked on the phone.

Connected Cars

As mentioned above, cars today rely on connectivity and a key part of that is many new cars are now equipped with internet connectivity, sensors and actuators, all monitoring a wide range of applications from brakes and engine to the control of tyre pressure and exhaust gas composition.

In the future, connected cars will use the in-vehicles networks, radar and cameras to help detect and communicate with one other, prevent collisions and to help promote smooth traffic flow.

Vehicle Tracking Systems

Vehicle tracking systems are typically used within the freight segment to help companies manage their fleets effectively. They also help to monitor driver behaviour and can collect data which informs on idling time and driving style. Examples of IoT-powered functionality include:

- Trip scheduling
- Fleet tracking
- Driving times and driver rest break scheduling
- Alerts for speeding, harsh cornering, acceleration or braking
- Monitoring of vehicle load
- Distance travelled and fuel consumption

Public Transport Management

One key area in which NEC has been operating is smart transportation, with a focus on the public transport segment. IoT technologies are already in wide use in this segment and our solutions, including integrated ticketing and automated fare collection, passenger information systems, passenger information display systems and advanced vehicle Logistics solutions, all utilising IoT technology to help solve social and economic issues such as traffic congestion in public transport.

IoT technology for connected public transport systems provides the following benefits:

- **Real-time vehicle tracking**

  This helps public transport agencies better communicate with customers and provide accurate arrival times through both mobile devices and passenger information displays at transit stops and stations

- **Data analysis and real-time management** –

  The technology allows transit agencies to monitor progress in real-time and make adjustments for unpredicted incidents such as accidents, roadworks, emergencies etc., helping to re-route and make journeys more efficient

- **Personalised travel information**

  Transit agencies can track and monitor commuter behaviour and travel patterns and deliver personalised information direct to their smart phone on key changes such as delays, station closures or re-routing

Summary

IoT for Transportation is a rapidly growing sector and the benefits of utilising IoT technology are wide and varied. There are of course potential drawbacks to the use of IoT technology – security is an issue that can't be overlooked, with cyber-criminals targeting IoT devices. Adding more IoT devices to a network can increase the vulnerability of that network so security needs to be at the heart of any decision around the adoption of IoT technology.

Onboarding can also be a stumbling block for many agencies. Large IoT systems use thousands of sensors and devices and it's infeasible to manage all these endpoints manually. That's why it's important to partner with a provider who can deliver an end-to-end solution, including automated onboarding, when you are considering how IoT technology can provide solutions for your business.The future of the transportation industry is an exciting one, embracing new technologies and helping to deliver a vastly improved customer experience. We're excited to be a part of it.