The Intelligent Transportation System (ITS), is defined as information and communication technologies applied to vehicles and transport infrastructures. This communication system aims to acquire the information required to operate an intelligent management system of transport. It focuses on the improvement of road safety, increased mobility, ensuring environmental preservation, the rationalisation of energy, economic efficiency and greater interactions of users. ITS presents some benefits:

- Reduced environmental impact of transport sector problems by reducing pollution.
- Increased road safety by preventing conflicts and congestions.
- Increased comfort of users and transportation efficiency.
- Maximising the capacity of transport infrastructure by optimising the management of this infrastructure.
- Detecting anomalies and incidents on the road and preventing congestion and traffic.

A wide range of strategies have been proposed by many researchers and implemented in many places, though mainly in cities in recent years. Some of the most important ones are included in this table:

<table>
<thead>
<tr>
<th>CATEGORIES OF SMART TRANSPORT TECHNOLOGY</th>
<th>SMART TECHNOLOGIES</th>
<th>POTENTIAL INFLUENCES ON SUSTAINABILITY</th>
</tr>
</thead>
</table>
| Control Systems (manage traffic flow and safety at intersections) | Traffic signal system  
Transit priority signal  
Pedestrian signal  
Elderly pedestrian signal  
Intelligent road studs | Higher system efficiency  
Reduced fuel consumption and emission (less congestion)  
Enhanced safety of motorists and pedestrians  
Increased choice of modes (promoting public transport) |
| Monitoring and Enforcement Systems (monitor traffic flow continuously to ensure proper enforcement of rules) | Intersection surveillance system  
Speed cameras  
Red light cameras  
Incident detection and management system  
Bus lane enforcement system | Enhanced safety (smart surveillance)  
Smoother traffic flow (less violation of rules, less incidents, less clearance time after incidents)  
Greater choice of modes (promoting bus services) |
| Information and planning system (present transport information dynamically and provision of interactive tool for managing transport activity) | Traffic news broadcasting  
Traffic flow and travel time  
Accidents and incidents  
Parking guidance  
Dynamic information (signs, motorist’s speed)  
Public transport information sharing  
Interactive service map (next-bus arrival time)  
Travel planner  
On-board passenger services  
Taxi booking system | Reduction of fuel consumption and emissions (less congestion, less travel time)  
Increases accessibility (smart taxi booking, public transport information availability)  
Higher efficiency (availability of advisory information on travel planning and parking) and fostered economy |
| Revenue Management Systems (processes fast and accurate transactions) | Integrated public transport fare payment system  
Parking charge payment system  
Electronic toll collection system | Smoother traffic flow (fast transaction)  
Integrated and affordable public transport  
Less waste (no paper-based ticketing) |

This briefing note from the BATTERIE partnership looks at smart technologies that are currently implemented in the Atlantic Area, including conclusions and recommendations.
The majority of smart technologies developed are related to **ticketing**. In this sense there are single tickets to be used in some regions or cities for multiple lines of the same type or different types of transport.

- **Route planners** are commonly used for one mode of transport only (road, train, and plane), there is limited availability of planners with the ability to combine different transports modes.
- Most of the Smart technologies applied into the transport sector are implemented in cities and in fewer cases, in regions.
- Smart cities are also introducing **new mobility services** for citizens, such as car sharing, transport management systems, electric vehicle charging points or public bicycle use.
- Intelligent Transport Systems are maturing and creating **benefits** in terms of transport efficiency, sustainability, safety and security, while contributing to economic growth and competitiveness.

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**CONCLUSIONS**

- Effective coordination is required between the different territories and modes of transport. This lack of coordination has not ensured geographical continuity of the services provided by the Smart technologies. Cooperation can promote the implementation of Smart Technologies in the entire territory of the European Union. Governments and stakeholders have to be involved in this coordination. This can be achieved through triple-helix collaboration.

- **Standardisation and interoperability** between the different systems of intelligent transport are detected as a key element. While regulatory actions have been made at European level and in Member States, they are not advanced enough in practical terms.

- **Innovation** plays an important role in the development of Smart Technologies. Local administrations have to promote the introduction and implementation of these Smart Technologies through efficient public-private cooperation.

In order to achieve the development of ITS in Europe, **private and public stakeholders** – automotive and telecom industries, service providers, users, transport operators, public authorities – need to cooperate and share a joint commitment on deployment of harmonized, interoperable ITS services. This will seamlessly benefit the whole of Europe and all users.

Interregional network role, network performance, return on investments and minimizing congestion effects on productivity should be **priority performance measures**.

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**Smart Technologies – 2014**

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