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Factsheet

Intelligent Transport Systems

Wuppertal Institut

UN HABITAT
FOR A BETTER URBAN FUTURE

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SOLUTIONS

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UEMI

Urban Electric Mobility Initiative (UEMI) was initiated by UN-Habitat and the SOLUTIONS project and launched at the UN Climate Summit in September 2014 in New York.
UEMI aims to help phasing out conventionally fueled vehicles and increase the share of electric vehicles (2-,3- and 4-wheelers) in the total volume of individual motorized transport in cities to at least 30% by 2030. The UEMI is an active partnership that aims to track international action in the area of electric mobility and initiates local actions. The UEMI delivers tools and guidelines, generates synergies between e-mobility programmes and supports local implementation actions in Africa, Asia, Europe and Latin America.

Solutions

SOLUTIONS aims to support the exchange on innovative and green urban mobility solutions between cities from Europe, Africa, Asia and Latin America. The network builds on the SOLUTIONS project and brings together a wealth of experience and technical knowledge from international organisations, consultants, cities, and experts involved in transport issues and solutions.

The overall objective is to make a substantial contribution to the uptake of innovative and green urban mobility solutions across the world by facilitating dialogue and exchange, promoting successful policy, providing guidance and tailored advice to city officials, fostering future cooperation on research, development and innovation.

Aims

SOLUTIONS_UEMI supports urban mobility implementation actions that contribute to the Paris Agreement and the New Urban Agenda.
Sustainable energy and mobility can make positive contributions to a number of policy objectives, nationally and locally. In particular in cities there is a great potential to create synergies between for example safety, air quality, productivity, access and climate change mitigation. A UEMI resource centre will provide opportunities for direct collaboration on projects focusing on sustainable urban mobility and the role e-mobility can play in it. The UEMI will pool expertise, facilitate exchange and initiate implementation oriented actions.
UN-Habitat, the Wuppertal Institute & Climate Action Implementation Facility jointly host the resource centre for the Urban Electric Mobility Initiative, aiming to bridge the gap between urban energy and transport and boosting sustainable transport and urban e-mobility.

In brief

Intelligent Transport Systems (ITS) refer to any information or communications technology that improves the functioning of a transport system. The technology has expanded rapidly over the last 25 years, and today both public transport passengers and private vehicle drivers benefit from ITS on a daily basis – through real time information on metro and bus arrivals; traffic advisories that warn drivers about upcoming delays; and monitoring cameras that help vehicles stay at a safe speed.

Examples

ITS improve the quality of travel and ensure a more seamless journey for vehicle drivers and passengers. Public transport users most commonly experience ITS through real-time information on the arrival of buses and trains. Several of the world's largest transport systems provide information on route configurations, departure times, and possible delays for many years.

The advent of the internet and smartphone technology has also expanded the use of ITS in ways that benefit drivers. Automatic, camera-based tolling systems allow drivers to pass through tolls at highway speeds, saving time. Cities that want to ensure drivers travel at safe speeds for pedestrians and cyclists now have increased tools to accomplish this, through camera sensor technology. In polluted cities such as Mexico City (Mexico) and Beijing (China), ITS have enabled governments to impose driving restrictions based on license plate numbers, creating incentives for cleaner air.

Results

ITS provide many benefits, both mental and physical, to travelers. If used properly, ITS can reduce accidents, decrease pollution, and optimise fuel efficiency. Individual drivers have more access than ever to real-time information about road conditions, traffic congestion, and the environmental impacts of their choices. Public transport passengers experience fewer delays with continuously updated information about their journey. In addition, government agencies can monitor their road and transport systems to see if they are functioning optimally. Air quality programmes such as Mexico City's Hoy No Circula, traffic monitoring applications such as RESCU in Toronto (Canada), and congestion pricing systems found in cities including London (UK) and Singapore all exist because of the technological advances that ITS provide.

In brief

Examples

Results

Technical and financial considerations

Policy/Legislation

Technical and Financial considerations

Developing ITS technology can go hand-in-hand with other research on information technology that governments, NGOs, and private organisations are conducting. According to the U.S. Department of Transportation's history of ITS, "the relationship between industry and the government has progressed into an essential partnership, which has catalyzed the development of new technologies." The ability to pursue large-scale collaboration between public and private entities is essential to the success of ITS.

Many developing countries may lack the information technology infrastructure to carry out ITS innovations on a large scale. The cost of wiring an entire transport system to communicate with operators and vehicles is quite high, and in countries with developing or heavily informal public transport networks, the capital and technological resources may not exist. In general, the high levels of capital, manpower, and coordination needed to successfully implement system- wide ITS technology can be provided by governments or public-private partnerships, and are not as well suited to the private operators or concessionaires that often run public transport systems in Latin America or Asian countries.

Policy/legislation

The United States has been a leader when it comes to coordinating ITS initiatives at a high government level, and providing funding on a regular basis through transport programmes. The Intermodal Surface Transportation Efficiency Act of 1991 established a federal framework to fund, test, and operate ITS initiatives. Support for ITS innovation was also included in routine U.S. transport funding packages, and the U.S. Department of Transportation coordinates the process. The federal ITS program is governed by a board of directors that include professionals in the fields of standards development, capacity building, and program assessment.

In addition to ITS funding that the U.S. Congress specifically earmarks, ITS programs are also eligible for regular federal highway funding.

Institutions

In Europe and the U.S., national and sub-national entities (such as U.S. states) tend to have public transport agencies, each of which has a division dedicated to technological innovation and developing ITS initiatives. There are also coordinating agencies at a super-national level, especially in Europe, where ERTICO-ITS Europe serves as a public- private partnership that connects public authorities, infrastructure operators, vehicle manufacturers, and other key stakeholders across the continent. In the U.S., each state's ITS chapter holds an annual conference to exchange ideas and best practices about the field, and these conferences are attended by state, local, national, and private representatives.

The ITS World Congress is an annual global event coordinated by ITS organisations in Europe, Asia, and the Americas, and alternates between the three continents. Up to 8,000 industry representatives attend each event.

Transferability

Because ITS are largely concerned with information technology, the programmes are often highly transferable between countries provided there is a baseline level of organisational capacity. Camera technology, for example, makes possible congestion pricing by capturing license plate numbers, and sends the bills to drivers at their home addresses. Singapore first pioneered the system, and it has since spread to cities including London and Stockholm (Sweden), and would have implemented in New York (U.S.) were it not for political opposition. The high level of coordination between ITS experts in the public and private sectors also contributes to a culture in which good ideas are able to spread easily across borders, as long as the technical and financial capacity exists.

Case Study: Monza´s Traffic Priority System (Italy)

Context

Monza is a regional administrative centre about 15 km outside of Milan. Despite the city's relatively small population of 123,000, its role as a provincial capital and location at the nexus of several rail lines have led to constant traffic congestion. To tackle this, Monza joined the CIVITAS ARCHIMEDES network, a consortium of several cities in the Czech Republic, Denmark, Romania, Spain and the UK that agreed to implement 83 different transport network improvements to improve traffic flow, promote the wider use of public transport, and increase shared-mobility options such as car-sharing.

Transferability

Case Study: Monza´s Traffic Priority System (Italy)

In action

Monza implemented a traffic priority system for its public bus system, which suffered from the city's increasing levels of traffic congestion. The main bypass road outside the city was equipped with Urban Traffic Control (UTC) technology at several key intersections, and the city rerouted control of those traffic lights to a single command centre that was able to track bus movement in real time. According to CIVITAS, a module first decides which buses need a priority action, depending on several criteria (e.g. a significant delay for a single bus; many buses on the same line being delayed). Then, a decision module weighs the different options for improving traffic flow and chooses the traffic intervention that it deems best suited to the situation. It then directs the traffic signals to give priority to oncoming buses and alters stage timing for several cycles in order to optimise traffic flow.

Buses in Monza's system received new equipment that made them easier to track, including a GPS device coded with a latitude-longitude coordinate system and a GPRS communication system able to send information to the central transport command centre.

Results

After implementing the UTC system and signal priority for buses, the test corridor along the outskirts of Monza experienced a 5% increase in traffic flow and a 20% increase in traffic density. Signal phases for the traffic lights along the corridor changed from 160 to 150 seconds during peak hours and 160 to 125 during off-peak hours, which allowed cyclists and pedestrians to cross more frequently. Buses along the corridor were able to stay on schedule more easily, and arrive and depart more regularly, although the average passenger did not experience a reduction in travel times. Moreover, given the relatively small scale of this project (a handful of intersections along a bypass road in a small city), there was not a lot of public recognition or awareness of the improvements to the transport system.

The redesign of the city's traffic lights and transport-priority system helped lead to a better working relationship between the city government and the technical start of Project Automation SA, the private company contracted to carry out the project. However, because of the city's relatively small size and lack of large-scale technical expertise, local leaders also recognised the need to equip traffic planners and police officers with more advanced skills. Capacity building will be necessary to carry similar projects out at a larger scale.

Results

More Information

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Implementing Partners

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