Federal Ministry
for Transport,
Innovation and Technology

ITS Action Plan Austria – Executive Summary

Strategy for the **Implementation** of
an **Intelligent Transport System in Austria**

Legal Notice

- **Owner and Publisher:**
  Federal Ministry for Transport, Innovation and Technology
  Radetzkystraße 2, 1030 Vienna
- **Design and Editing:**
  jost.con.sult Kommunikationsbüro,
  Dr. Johannes Steiner
  1010 Vienna

  This text is based on the unabridged version of the ITS Action Plan Austria drawn up by experts from the BMVIT and AustriaTech – Federal Agency for Technological Measures Ltd. in consultation with all relevant stakeholders. The unabridged version of the ITS Action Plan Austria is published on the website www.bmvit.gv.at/ivsaktionsplan
- **Graphic Design and Production:**
  Grafikbüro Mag. Alexander Schatek
  2700 Wiener Neustadt
- **Photo Credits:**
  iStockphoto (©: Cameron Whitman, Pei Ling Hoo, Nikada, pixac, George Clerk), lianem/Shotshop.com, Peter Rigaud, iStockphoto (©: millionhope, 4x6, seraficus, diego cervo, samxmeg, Mlenny Photography, ollo, Eric Hood, querbeet, Joshua Hodge Photography)

Content

Preface

Intelligent Mobility for Tomorrow: Sustainable, Environmentally Friendly, Socially Just

Mobility is a basic societal need and is crucially important for the development of the economy, our standing as an industrial location and for society as a whole. Mobility needs are increasing dynamically and it is essential that the rapidly growing volume of traffic is managed in a way that is sustainable, green and socially just.

Expanding public transport systems is an important step in this direction, and we are pushing ahead with this expansion. However, the transport systems of the future must also become smarter with the use of new technologies playing a greater role. I see great potential here for alternative propulsion systems such as electromobility, and in particular for intelligent transport systems (ITS), which enable improved traffic management and which should in future provide all transport users with the best possible support in making their mobility decisions.

After many years of research and development the necessary technologies have now matured to the point where their widespread use is both possible and indeed makes sense. In the last ten years my ministry has invested over 100 million euros in relevant research and development in Austria, stimulating the economy and enabling us to build a strong ITS industry in the country.

The challenge now is to deploy these intelligent transport systems in real traffic. To do so, we need optimal interaction between people and technologies, a leveraging of synergies between modes of transport to offer mobility in a way that is environmentally friendly, safe and efficient. ITS services, ranging from information to booking and standardised billing systems across different forms of mobility, make an important contribution to achieving this goal.

The European Union also attaches great importance to intelligent transport systems, presenting its ITS Action Plan in 2008 and issuing an ITS directive in August 2010.

This ITS Action Plan lays out the strategy for implementing an intelligent transport system that is consistent with European guidelines for Austria, defining priority areas of action and emphasising the main points for a viable mobility system.

Doris Bures
Minister for Transport, Innovation and Technology

The Challenge

Mobility for All - in Harmony with the Environment and Society

Mobility continues to grow at a dynamic pace and is beginning to reach capacity limits. At the same time, climate change and the need to shift to alternative sources of energy call for urgent new solutions. Transport policy must succeed in balancing mobility and sustainability.

Mobility is a basic human need. It allows people to participate in the life of the community whilst broadening perspectives and improving chances in life. Yet mobility is also a key prerequisite for the social and economic development of our societies. It brings people and their ideas together, enables supply to meet demand and establishes the basis for the spatial division of labour.

The ongoing transition from an industrial economy into a services-based economy and then further into today's modern knowledge-based economies has fundamentally changed the need for mobility in qualitative terms, while at the same time steadily increasing the need for this mobility. Attempts to meet this need by developing new mobility technologies and providing the necessary infrastructure have in fact generated even increasing demand.

The Dynamics of Mobility

All forecasts assume that this dynamic growth in mobility will be sustained, especially in urban and suburban areas - and there are a variety of factors supporting this view:

- The demographic trend with rising life expectancies and improved standards of health are raising the mobility expectations of older generations.
- The prevailing trends in the way work is organised demand greater flexibility, which can only be ensured with greater mobility.
- The spatial and settlement structures in urban hinterlands and personal preferences result in longer distances between the places where people live, work, shop and enjoy recreational activities.
- Income growth in (sub)urban areas permits more sophisticated lifestyles with a more leisure-intensive use of time, which in turn requires greater mobility.

Impetus from the European Union

EU ITS Action Plan

In December 2008 the European Commission published the EU Action Plan for the Deployment of Intelligent Transport Systems (ITS) in Europe.

EU ITS Directive

To implement the goals defined in the EU ITS Action Plan a directive was published in August 2010 which should provide a basis for the harmonised and coordinated deployment of ITS for the road.

EU White Paper on Transport

In March 2011 the "European White Paper – Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System" was published. The key challenges addressed are:

- Completion of the internal market for transport
- Switch to non-fossil energy sources
- The need to drastically reduce greenhouse emissions
- Provision of an adequate infrastructure network and more intelligence in using it
- Establishment of a sustainable transport system

The **TEN-T Guidelines** of the European Commission for implementing the Trans-European Transport Network also highlight the importance of intelligent transport systems for safety and the protection of the environment, and define clear priorities.

Social Challenges

A transport policy that responds to these developments must also focus on the grand social challenges of the century, which in some cases are causally linked to the development of mobility.

- Our society is becoming increasingly complex as a result of integration and interdependencies. Policies seeking to steer these developments must demonstrate a high level of sensitivity to the needs of the different players and networked thinking.
- Migration into urban centres is increasing. Our cities are becoming denser, as is the traffic within them. The quality of life in cities depends on how we deal with this.
- Our mobility still largely relies on reserves of fossil fuels, but they will run out in the foreseeable future.
- To stop climate change, nations have committed themselves to reducing their emissions of greenhouse gases. The transport sector has a major role to play in these efforts.

ITS in Austria

Austria's early entry into the emerging market for intelligent transport systems (ITS) manifested itself in the "Telematics Master Plan Austria – Telematics Applications for Traffic and Transport" published in 2004. The stated aim of the Telematics Master Plan was to define a set of measures for the prioritised application of telematics with a view to optimising the use of transport networks, improving the efficiency and safety of Austria's transport system, and thus contributing to meeting the economic, socio-economic and ecological demands made on the transport system. The plan also reflects the economic importance of this emerging market, as Austria is home to a number of leading companies in this field.

In 2005 the Austrian agendas for intelligent transport systems were concentrated at the federal agency created for this purpose, AustriaTech – Federal Agency for Technological Measures Ltd.

Mobility and Sustainability

The challenge facing transport policy today is therefore to strike a balance between "safeguarding mobility" for our citizens and essential goods on the one hand, and "ensuring the sustainability" of the transport system in the face of scarce resources and emission limits on the other.

In this dynamic relationship between mobility and sustainability, the importance of intelligent transport systems becomes all too clear.

The goal must therefore be to optimise the interaction of all users in all transport modes by using modern mobility technologies and the system knowledge provided by information and communication technologies. With new concepts of traffic guidance and intermodal traffic management, the transport system will become an intelligent system that can respond flexibly to changing traffic volumes and make optimal use of the available infrastructure.

The Vision

High-Quality Services - for Efficient Mobility

By linking and sharing information among all ITS users and modes of transport, an intelligent transport system (ITS) provides the information needed for high-quality services that optimise individual mobility decisions.

The following definition of a vision for an intelligent transport system underlies a strategic framework for the use of intelligent transport technologies.

Vision

An intelligent transport system provides organisational and technical support to connect all modes of transport with the aim of providing users of the system with accurate information and decision support in real time.

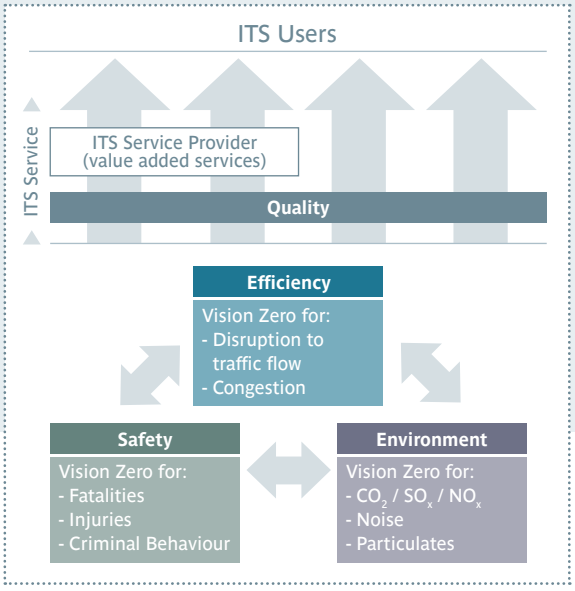
In this way and by providing high-quality services to all users of the intelligent transport system – based on this real-time information – the capacity utilisation of infrastructure is optimised and an important contribution is made to improving efficiency and safety and protecting the environment.

This vision of an intelligent transport system thus revolves around the ITS users who benefit from the system's services and applications (ITS services). They include all those who use the road – to go to work, in their leisure time or to run errands –, business enterprises involved in the production and transport of goods, and infrastructure operators, fleet managers and providers of emergency services.

An intelligent transport system supplies all these users with relevant information in real time – while strictly maintaining data protection and their anonymity – and offers them ITS services geared to their needs, such as information about the route, incidents along the route or about the weather. Services important for the transport industry include exact routing, safe HGV parking facilities or information about interfaces to other modes of transport along the logistics chain. Including all modes of transport in the system and networking their data ensures that these services can also be offered on an intermodal basis.

This will provide Austria with an intelligent transport system that is able to respond flexibly to traffic demands and will facilitate efficient mobility planning for people and goods.

Abb. 1: ITS Strategy Priority Areas



Vision Zero

The vision of an intelligent transport system unfolds in the three priority areas of safety, efficiency and the environment. The quality of the services offered in the transport system should guarantee the optimal achievement of goals in these areas, which is defined as Vision Zero.

Safety

Road safety is the most urgent priority area at both European and national levels. Vision Zero commits all key participants (administrators, lawmakers, political decision-makers, infrastructure operators, transport operators, vehicle manufacturers and users of transport) to make their own specific contribution to reducing the number of fatalities, serious injuries and incidents of criminal conduct in Austrian road traffic to zero.

Efficiency

The steady rise in the number of vehicles is pushing traffic systems to the limits of their capacity and leading to congestion. Ensuring efficient traffic management and traffic guidance is therefore another key area of priority. The Vision Zero for efficiency is the smooth, uninterrupted flow of traffic even in extremely dense traffic, and a task-sharing interaction of modes of transport.

Environment

We need to achieve climate protection targets to maintain our quality of life. This means strengthening the role of green modes of transport and technologies and increasing their availability in public transport services – whilst ensuring a high level of comfort and service for users. Vision Zero for the environment therefore implies reducing emissions of air pollutants, greenhouse gases and other emissions such as noise to zero.

The Strategy

From Many Actors - to an Integrated, Intelligent System

Transport involves a large number of actors with specific interests, needs and competencies. The strategy for an intelligent transport system must therefore focus the interaction of these players on the joint vision, in an integrative process.

The main target functions of an intelligent transport system are:

- to increase the individual mobility benefits of transport users by providing high-quality services that help to satisfy the various needs in an adequate manner
- to help overcome social challenges such as climate change and resource scarcity by conserving natural resources
- to safeguard Austria's competitiveness by developing efficient, safe and affordable mobility

The achievement of these goals depends on the quality of the technologies and services developed in the transport system. These cover a wide spectrum, ranging from information processing and information diffusion to efficient booking methods, standardised invoicing systems and exact routing.

What is essential is that these intelligent transport technologies and ITS services are designed in a seamless way: they must function across city, regional and national borders and must encompass all transport modes. The establishment of common standards at the European and national levels plays a crucial role here. The diversity of the systems must not be allowed to lead to proprietary solutions.

Complex System

The wide spectrum of technologies and services and the need for them to be valid across borders also implies the involvement of a large number of actors and a highly complex system. Political responsibility ranges from the level of the EU to that of individual cities. Rail and road modes of transport along with public and individual traffic all play a part. Infrastructure operators and service providers alike must be integrated.

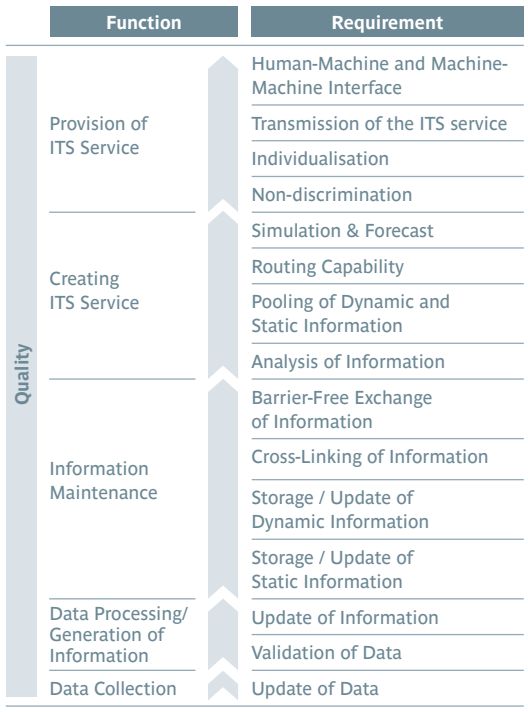
This requires a sensitive, integrative process to establish a system architecture in which all actors can contribute as partners, focusing on the shared vision of an intelligent transport system. Efficient integration, a transparent flow of data and information, clear definitions of profiles and roles as well as coordinated steering are essential for this. AustriaTech as the responsible federal agency plays a key role as a point of integration.

A Clear Functional Framework

It is crucial for the development of an architecture for intelligent transport systems that the interoperability of the ITS services can be guaranteed nationally and internationally. To this end, all services must be described using a single, functional framework upon which basis the need for technological standards and interfaces can be defined.

This functional framework defines harmonised, structured and modular functions with defined interfaces, tasks and responsibilities across all modes of traffic in terms of a system architecture.

Abb. 2: Functional Framework to Describe ITS Services



Within this framework, five modular functions that fulfil the specific requirements can be defined.

Data Collection

The most basic function is data collection. This encompasses the collection of all statistical data (such as timetables and departure times) as well as dynamic raw data (e.g. traffic or weather data measured using sensors). This is done in strict compliance with data protection laws.

Data Processing

The collected data must be processed. Information is obtained from the "raw data" which then forms the basis for the ITS services.

Information Maintenance

Access to all information that is generated and required for the ITS services must be ensured by appropriate forms of maintenance at the information providers.

Creating ITS Service

The information is analysed, pooled and interpreted to generate a wide range of ITS services for ITS users. The demands made on this function vary according to the complexity of the services.

Provision of ITS Service

Each service must be transmitted to ITS users in a suitable form (Human-Machine or Machine-Machine Interface).

The Implementation

A Broad Range of Instruments - in Six Areas of Action

To implement the strategy, a stakeholder process identified six areas of action for which specific measures for achieving the goals are defined.

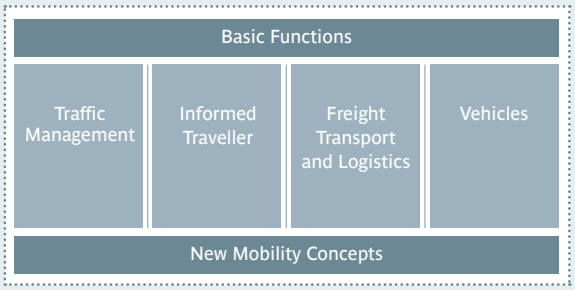
Basic Functions

This area outlines all the prerequisites for intermodal, harmonised services in the intelligent transport system, such as the creation of legal frameworks or the laying down of standards.

Traffic Management

This area comprises all the traffic management tasks to be carried out by the infrastructure operator with a view to optimising traffic flows in the existing infrastructure.

Abb. 3: Areas of Action



Informed Travellers

This area comprises all services and measures that supply traffic information to the individual travellers and offer booking and invoice services.

Freight Transport and Logistics

This area covers the services offered to providers of transport logistics and freight transport, which range from route information to booking and payment systems and to logistics systems and services, in the form of freight monitoring for example.

Vehicles

This area focuses on measures to improve vehicle systems, which offer road users increased safety or comfort or which enable a reduction in emissions.

New Mobility Concepts

This area comprises new concepts which in the long term can have a positive impact on user mobility, such as cooperative systems based on vehicle-to-vehicle communication or new, alternative propulsion systems.

From Standards to Procurement

Due to the early entry into the emerging field of intelligent transport systems, the technologies for an intelligent transport system in Austria are already at a very advanced stage. In the past ten years, the Ministry for Transport, Innovation and Technology (BMVIT) has invested some 100 million euros in relevant fields of research and development. The activities supported to date have focused above all on traffic management and traffic information, the development of systems and services for freight traffic and logistics, and new mobility concepts. This provides a good foundation for implementing the ITS Action Plan Austria.

While the national ITS law provides the legal basis for defining standards and norms, the ITS Action Plan Austria itself constitutes a framework with which future strategies must be aligned.

All available instruments must now be used to implement the ITS Action Plan Austria successfully: From standardisation bodies and funding instruments to procurement and the coordination of quality requirements for the various ITS services.

The support measures for research and development must then be followed up by further instruments which transcend these, which is where procurement plays an important role. New instruments such as pre-commercial procurement are particularly important. The public sector can also facilitate implementation by taking requirements and minimum standards into account when drawing up performance agreements. Awareness-raising activities along with education and training programmes must also be employed to secure long-term effects.

The diversity of these instruments should create a basis not just for implementing intelligent transport systems, but also for ensuring that they are included in the future as integrative elements of planning and development. This will enable best-practice examples to be developed in Austria which will guarantee the competitiveness of the Austrian economy in a growing area of application, and open up new market opportunities.

Glossary

Areas of Action
The Areas of Action describe the framework in which measures to achieve the ITS vision will be taken. They are broken down into different topics.

Priority Areas
The Priority Areas describe the three main areas in which the ITS services should have a positive impact: safety, efficiency and the environment

Intelligent Transport Systems (ITS)
ITS means systems in which information and communication technologies are applied in traffic, including traffic infrastructures, vehicles and users, and in traffic management and mobility management, as well as for interfaces between modes of transport.

Interoperability
Interoperability means the capacity of systems and the underlying business processes to exchange data and to share information and knowledge.

ITS Application
ITS application means an operational instrument for the application of ITS.

ITS Service
ITS service means the provision of an ITS application through a well-defined organisational and operational framework with the aim of contributing to user safety, efficiency, comfort and environmental protection, and/or to facilitate or support transport and travel operations.

ITS Service Provider
An ITS service provider means any provider of an ITS service, whether public of private.

ITS User
ITS users means any users of ITS applications or services, including travellers, vulnerable road users, fleet managers, users and operators of transport infrastructure and the operators of emergency services.

ITS Vision
The ITS vision formulates the core elements and objectives of an Intelligent Transport System in Austria.

Cooperative Systems
Cooperative systems are ITS services that are based upon networked communication between vehicles and the infrastructure (autonomous driver assistance systems, vehicle-to-vehicle communication, infrastructure-to-vehicle communication and infrastructure-to-infrastructure communication)

Telematics
Telematics is an artificial word derived from the terms telecommunication, automation and informatics and, in the context of traffic and transport denotes the integration of these components in a system or product with traffic-relevant functions.

Modes of Transport
Modes of transport are elements or platforms where transport takes place – water, air, rail and road.

bmvit

Federal Ministry
for Transport,
Innovation and Technology

Status 2011