



INIT's AI solutions for public transport

**Driven by Smart Intelligence**

**init**  
The Future of Mobility

# Driven by Smart Intelligence

Artificial intelligence and other data-driven technologies offer significant potential to optimise services and processes, improve quality and reduce costs. INIT leverages these technologies within its comprehensive solutions to help advance public transport.

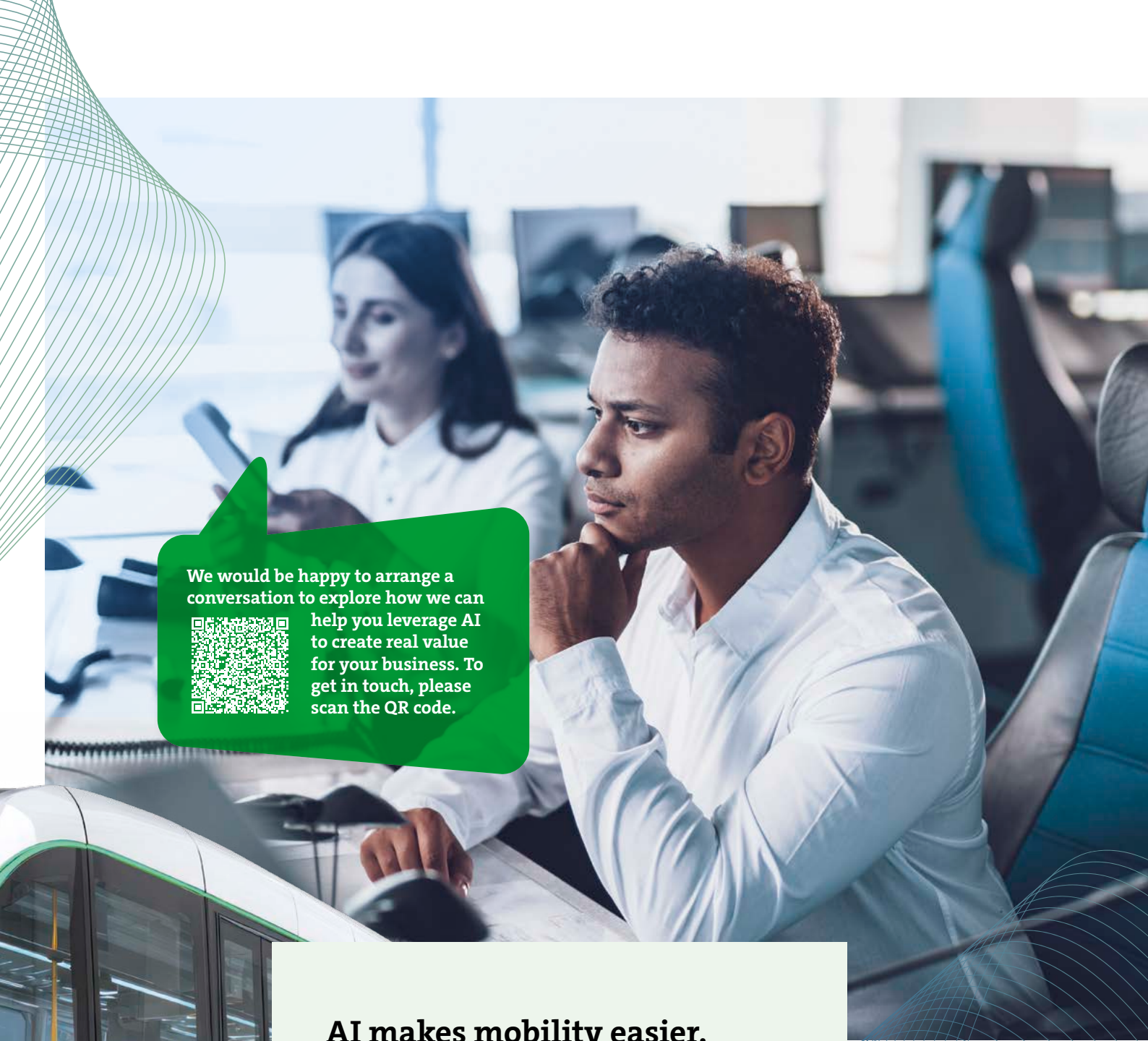
The environment in which transport companies operate is becoming increasingly complex. Expectations for service offerings and quality continue to rise. As a result, operational IT systems are becoming more interconnected, which increases system complexity and the requirements for cyber security. All of this is happening against the backdrop of tightening budgets, growing cost pressures, and a shortage of skilled staff.

Fortunately, AI and other smart technologies can provide valuable support. Drawing on its extensive experience and deep understanding of data flows in public transport, INIT integrates these technologies into solutions that unlock their full potential in areas such as:

- analysing passenger behaviour and usage patterns
- predicting demand, occupancy levels and arrival times
- optimising the use of resources, timetables and routes
- supporting dispatchers with intelligent decision support
- overcoming language barriers

The result: better-informed decisions, more efficient processes, reduced workload for employees and improved service quality.





We would be happy to arrange a conversation to explore how we can help you leverage AI to create real value for your business. To get in touch, please scan the QR code.



## **AI makes mobility easier. For passengers and for transport companies alike.**

AI is a true game changer for public transport. Its greatest value lies in analysing large volumes of data from multiple sources, reliably and in real time. This enables applications such as predicting departure times and occupancy levels, supporting dispatchers in control centres, enabling dynamic route planning and generating reliable insights into transport demand as well as many other use cases.

# Intelligent support for staff

Public transport operators are under growing pressure to deliver reliable services with limited resources. Smart systems offer effective relief: intelligent AI support and flexible duty rostering improve working conditions for drivers. Routine tasks in the control centre are streamlined, while complex decision-making is reliably supported. At the same time, autonomous shuttles open up new service opportunities and help address the growing shortage of skilled staff.

AI for clear communication and fair duty rosters.

## Smart duty rostering for a better work-life balance

Changing shift models make it increasingly difficult for drivers to balance work and private life — particularly for employees with significant childcare and family responsibilities. Addressing this challenge requires intelligent, flexible solutions.

INIT's duty rostering system allows employees' needs to be taken into account far more effectively. Drivers can easily submit their preferred working hours via PC or mobile device. An intelligent algorithm then evaluates all preferences alongside legal requirements and staffing constraints to automatically create optimal and fair duty schedules which are efficient, compliant, and tailored to individual employees.

A dedicated duty exchange module also allows shifts to be adjusted or swapped at short notice. The result is increased employee satisfaction, improved work-life balance and a reduction in absenteeism.

## Breaking down language barriers

AI can make life easier for new drivers who face language challenges. AI-powered translations of control centre messages on the on-board computer help with this, complemented by menus that can be switched to different languages. Turn-by-turn navigation guides drivers along unfamiliar routes, allowing them to hit the ground running more quickly.

## Smart control, autonomous shuttles

Autonomous shuttles and buses have the potential to significantly enhance public transport in the years ahead. They can be used to expand services while helping to mitigate the shortage of qualified staff. INIT has been actively researching this field for several years and is currently involved in the ABSOLUT II project, which examines the technical, organisational and legal requirements for deploying automated shuttles.

At the heart of the project is the development of an intelligent system architecture based on a broker architecture in line with the internationally renowned German standard VDV 435. This enables standardised, manufacturer-independent integration of all relevant components – from the public transport control centre and technical supervision through to the vehicle itself.

The goal is to enhance the operations control system so that the safety driver currently required under European legislation can be replaced by technical supervision from the control centre. In doing so, INIT is moving public transport one step closer to a scalable, safe, and autonomous future.

## AI assistants for the control centre

Work in the control centre is highly complex and demands extensive operational experience – expertise which not all staff members possess. To address this, INIT is developing AI- and rules-based tools that compensate for gaps in experience and provide targeted support in day-to-day operations.

The KARL project, which we are advancing together with renowned partners, demonstrates how AI can deliver tangible relief in the control centre. Its core component is an AI-based assistant tool that recommends appropriate dispatching measures during disruptions, based on previous comparable situations. This reduces staff workload and helps stabilise operations more quickly.

Another key tool is RESPONSEassist, INIT's system for incident management and multi-channel communication. It supports dispatchers with structured action guidelines for handling disruptions and provides predefined templates that allow to automatically generate passenger information and distribute it across all relevant channels – from websites and apps, to loudspeaker announcements.

Building on this foundation, additional assistance functions within the operations control system further support control centre staff. A new incident management module significantly simplifies the setup of diversions – traditionally a time-consuming and error-prone process, especially at major transport hubs. Dispatchers simply mark the affected area on the ITCS map display; the system then identifies the impacted lines and proposes suitable diversion routes.





AI for better  
passenger experience:  
reliable predictions  
and enhanced safety.

## AI applications enhance public transport services

Service quality in public transport has many dimensions. Accurate predictions, rapid disruption management and demand-oriented services are just a few examples. By deploying AI applications and other data-driven technologies, INIT continues to make public transport more comfortable and attractive.



**Since 2012**

**INIT has been incorporating AI**

into its solutions and has also been actively  
participating in numerous research projects.

## More reliable departure predictions with AI

Knowing exactly when buses and trains will arrive makes public transport easier to use and more appealing. Reliable departure predictions significantly increase passenger satisfaction and AI can play a decisive role in achieving this.

By analysing historical data alongside real-time operational information, AI dramatically improves forecast accuracy. AI-based departure predictions are an integral part of MOBILE-ITCS nextGen operations control system. The algorithm automatically identifies patterns, selects the most suitable prediction method for each situation and initiates self-learning processes whenever the quality of the prediction method reduces.

## Predictable occupancy with AI

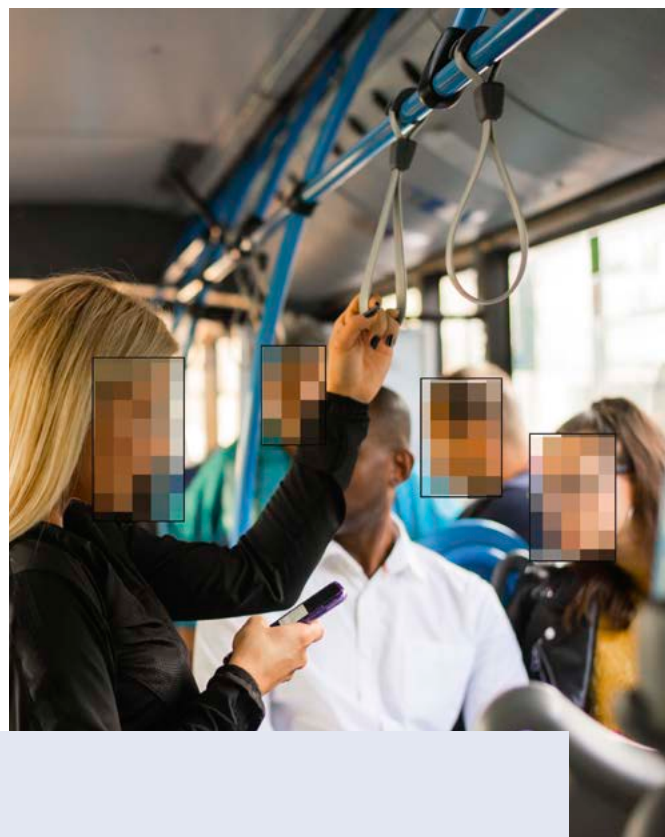
Knowing how full a bus or train will be before starting a journey means greater comfort, less crowding and a noticeable improvement in service quality for all passengers. MOBILEguide provides AI-based occupancy predictions that combine real-time data with historical passenger counting data. The system also takes into account how many passengers are expected to alight at the next stop, enabling more precise predictions.

Passengers benefit from a more relaxed travel experience, targeted boarding and the ability to choose the best possible connection. MOBILEguide makes public transport more reliable, comfortable and attractive.

## Smart operations management through real-time traffic data

Early detection of potential disruptions is essential for smooth operations. By importing real-time traffic data directly into the Intermodal Transport Control System, MOBILE-ITCS, current road conditions are immediately visible to dispatchers.

Congestion, roadworks, accidents and high traffic volumes are displayed in real time with precise georeferencing on the ITCS map display. This enables dispatchers to implement diversions earlier, communicate delays more effectively and closely monitor critical route sections. For passengers, this translates into shorter journey times, fewer disruptions and smoother transfers.



## AI-powered security with privacy at its core

Passenger expectations around safety in public transport are rising. AI-based video analysis systems can automatically detect assaults or aggressive behaviour, enabling faster and more targeted responses, whilst fully respecting personal privacy.

INIT's video analysis system enables AI-based pseudonymisation that protects sensitive image areas directly on board the vehicle. Video footage can be analysed without identifying individuals. When required, authorised parties can perform targeted de-anonymisation, while uninvolved persons remain anonymous.

This creates a balanced approach to security and data protection: In critical situations, law enforcement personnel are granted access to any required information, affected individuals are protected and legal data protection regulations are adhered to.

# Intelligently driving the mobility transition

In a push to transform mobility, policymakers are placing high expectations on public transport. A key element is the shift to zero-emission vehicles.

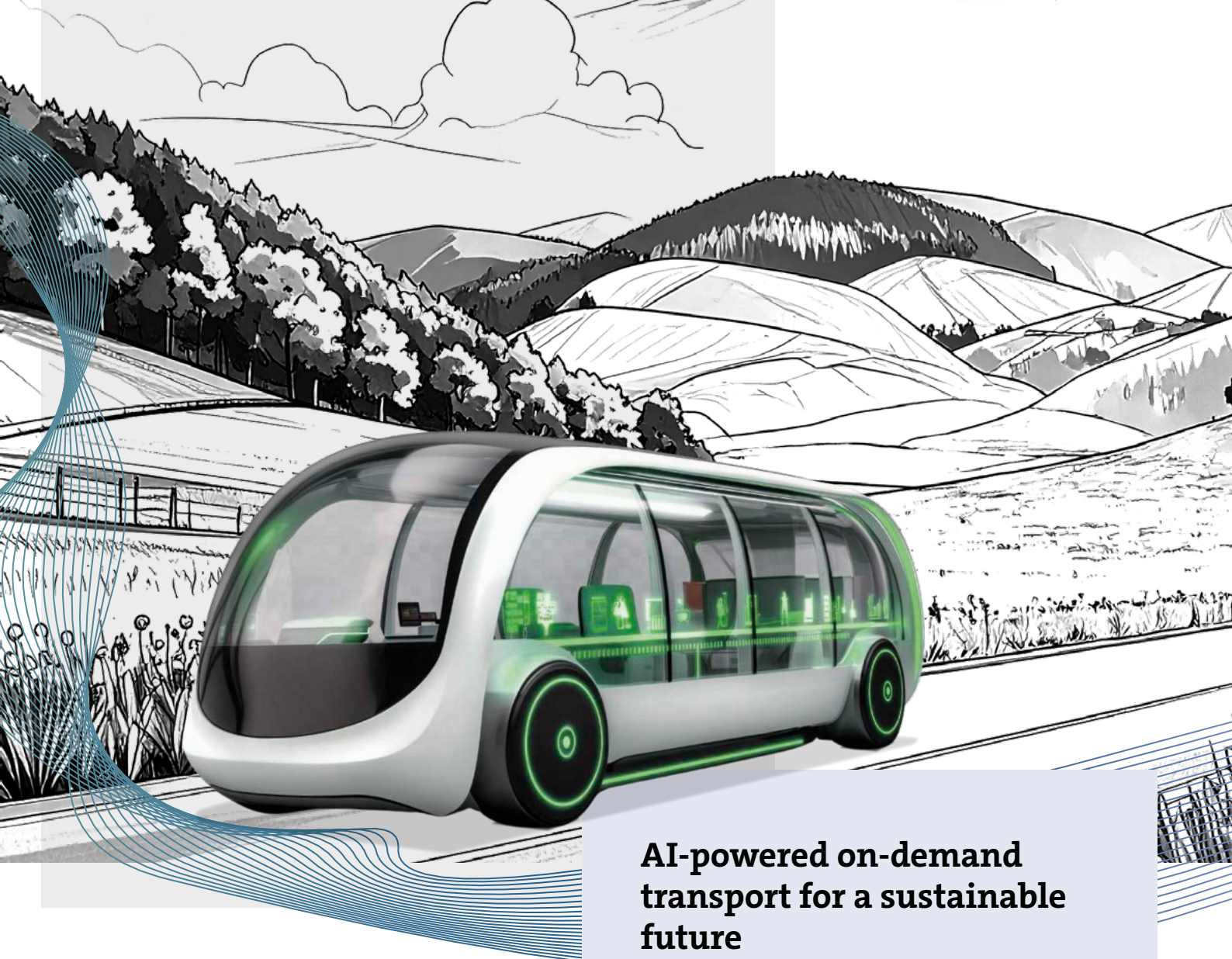
INIT's intelligent solutions make it possible to introduce e-mobility safely and efficiently, while ensuring electric bus fleets run smoothly. For the mobility transition to succeed, public transport must provide a reliable alternative to cars, including in rural areas. MOBILE-FLEX enables demand-responsive transport (DRT) that complements traditional fixed-route services in a flexible and cost-effective way.

The smart way to e-mobility: eMOBILE.

## Smart planning, efficient operations

The transition to e-mobility requires significant investment. The eMOBILE-PLAN planning system enables transport companies to test deployment strategies in advance, assessing operational impacts — from blocks and charging strategies to staffing requirements — before a single e-bus is purchased.

Once vehicles are in service, the eMOBILE-ITCS operations control system provides real-time monitoring of electric buses. It supports control centres by tracking battery levels, issuing alerts when critical thresholds are reached. It also verifies whether current charge levels are sufficient for longer trips resulting from dispatching measures. Operating electric buses increases the complexity of vehicle allocation, especially in mixed fleets of diesel and electric vehicles. eMOBILE-DMS, INIT's depot management system, integrates with the ITCS and charge management systems to consolidate operational data and embed it into depot processes, enabling smooth, transparent, and efficient depot operations.



## AI turbocharges intelligent charging

Charging issues can lead to missed trips and dissatisfied passengers. The MOBILEcharge charge management system uses artificial intelligence to reliably charge electric buses and ensure they are ready for operation. AI-driven fault analysis explains complex issues in clear terms, allowing even less-experienced staff to identify and resolve problems quickly. The system sets charging targets for each bus and monitors their performance, automatically proposing adjustments if risks to service delivery are identified. It can also schedule charging during periods of lower electricity tariffs, supporting cost management while maintaining operational readiness.

## AI-powered on-demand transport for a sustainable future

With MOBILE-FLEX, INIT brings artificial intelligence to on-demand transport, opening new opportunities for sustainable public transport. The integrated solution manages booking, dispatching, and optimisation across all common operating modes — from on-demand routes to fully flexible area operations with ride pooling — and adapts to local requirements.

At its core is an AI-based optimiser that bundles ride requests in real time and dispatches them in a passenger-friendly way. By considering current vehicle positions, it enables short booking times and the use of virtual stops, making on-demand transport both economical and attractive — particularly in rural areas. MOBILE-FLEX strengthens public transport as a genuine alternative to private cars, supporting the mobility transition across the board.

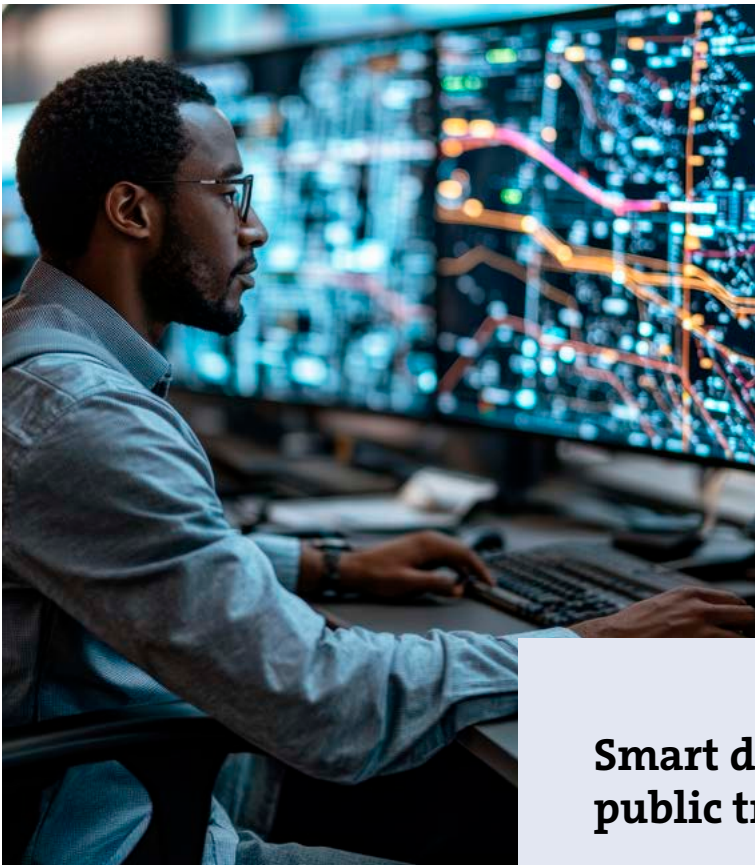
Meet your passengers' needs while using resources efficiently – with INIT.

# Greater efficiency with **intelligent planning**

Many public transport providers face a tough financial situation and have to reduce costs wherever possible, which even may lead to service cuts. At the same time, there is often a lack of funding for urgently required investment in service quality. Technological solutions provided by INIT help transport companies improve efficiency, free up financial and human resources, and ultimately deliver an improved service.

## Intelligent algorithms for optimal planning

Planning timetables, blocks and duties is a complex task which is often handled separately — and does not always deliver optimal results. INIT's triple optimisation approach combines these three steps into a single process, taking legal, contractual, and operational requirements into account. Intelligent background algorithms generate coordinated timetables, blocks and duties in a fraction of the usual time. The result is a more efficient use of resources, lower costs, and improved service quality.



## Intelligent data analysis for demand-driven planning

New infrastructure takes years to be developed — but improved services are needed today. Public transport therefore needs to respond quickly and effectively to changing mobility patterns, which requires accurate, reliable data. This is where the Mobile Data Fusion research project, which INIT is carrying out in collaboration with other leading partners, comes in. It provides an intelligent data foundation to be able to plan services based on actual demand and making optimal use of existing networks and resources.

## Smart data driving the future of public transport

Punctuality and occupancy levels are key indicators for efficient public transport operations. DILAX Citisense® combines vehicle data with additional sources of information such as timetable and location data, as well as information on stops, ticketing, calendar entries, and local events. This provides a sound basis for demand-driven service planning, enabling targeted capacity management and early identification of over- or underuse. The result is greater cost efficiency, better resource utilisation, improved service quality, and a reliable basis for both strategic and operational decision-making.

## Leading the way in container technology

INIT on-board computers use container technology, allowing vehicles to be equipped with the required hardware and software more efficiently. Software components are provided in separate containers, enabling modular operation, flexible updates, and seamless integration — even when software comes from third-party providers. This reduces the number of devices that are required in the vehicle and lowers both maintenance and operating costs. Open standards and smart system architecture also make it easy to integrate new services. The result is future-proof vehicle IT that streamlines operations and improves both efficiency and service quality.

## AI-supported customer service with less effort

Service centres work hard to respond to customer enquiries quickly and reliably. With the targeted use of AI, this process becomes even faster and more effective. Customer management systems like that offered by INIT automatically consolidate and assign messages from various channels such as email, chat, and telephone. The AI uses existing information to generate appropriate responses and, when necessary, forwards requests directly to the appropriate contact person. This results in fewer errors, greater efficiency, and more satisfied customers.



*If you would like to know more about the comprehensive solutions  
from INIT, please contact us at [sales@initse.com](mailto:sales@initse.com).  
We look forward to hearing from you.*

INIT is the worldwide leading supplier of integrated planning, dispatching, telematics and ticketing systems for buses and trains. For more than 40 years, we have been assisting transport companies in making public transport more attractive, reliable and more efficient.

**INIT Group**



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