



DIGITISING **TRANSPORT**

**Hamburg's ITS-strategy:
Providing Future Urban Mobility and Logistics Solutions**

TRANSPORT DIGITISATION SUPPORTS THE MOBILITY TRANSITION

After the coronavirus pandemic, people want to be mobile again – but probably in a different way than they were before. In Hamburg, as a growing metropolis and one of the biggest transit hubs in Northern Europe, we are responsible for how we shape the mobility of an entire region and its roughly five million inhabitants. The mobility transition set out by the Hamburg Senate aims to increase the combined share of bus and train transport as well as cycle and foot traffic to eighty percent. To reduce climate damage and to make our city even more liveable.

We are investing more than ever in expanding the cycling infrastructure and turning Hamburg into a cycling city. By 2030, we will create the so called „Hamburg-Takt“, which will provide people access to a mobility service that is less than five-minutes away. To do so, we are massively expanding the networks and capacities of our buses as well as subways and trains. We are supporting electromobility, ride-sharing and vehicle-sharing for cars, motorscooters, scooters and bicycles just as much as new on-demand services that complement public transport on the last mile. All of this will make transport more sustainable and significantly improve the quality of life

for Hamburg’s residents. Mobility should be simple, quickly accessible, healthy, safe and comfortable for everyone – and intelligent transportation systems are an important contribution to this.

We are further developing the ITS-strategy and our goals for 2030, and we want to take advantage of the opportunities offered by digitalisation to protect the climate and contribute to the mobility transition. This is how we will make Hamburg a model city for the smart mobility of the future. This is already proving true in many successful ITS-projects in our City, which we would like to present to our citizens and the guests of the ITS World Congress in Hamburg. This brochure will give you an overview of what we are working on in terms of digitising transport and its infrastructure. We also want to learn from other cities. Because one thing is clear after this pandemic: we will need more cooperation and more inter-regional and international exchange about the best solutions to overcome the immense challenges of the future. I hope you enjoy reading this brochure.

Yours,



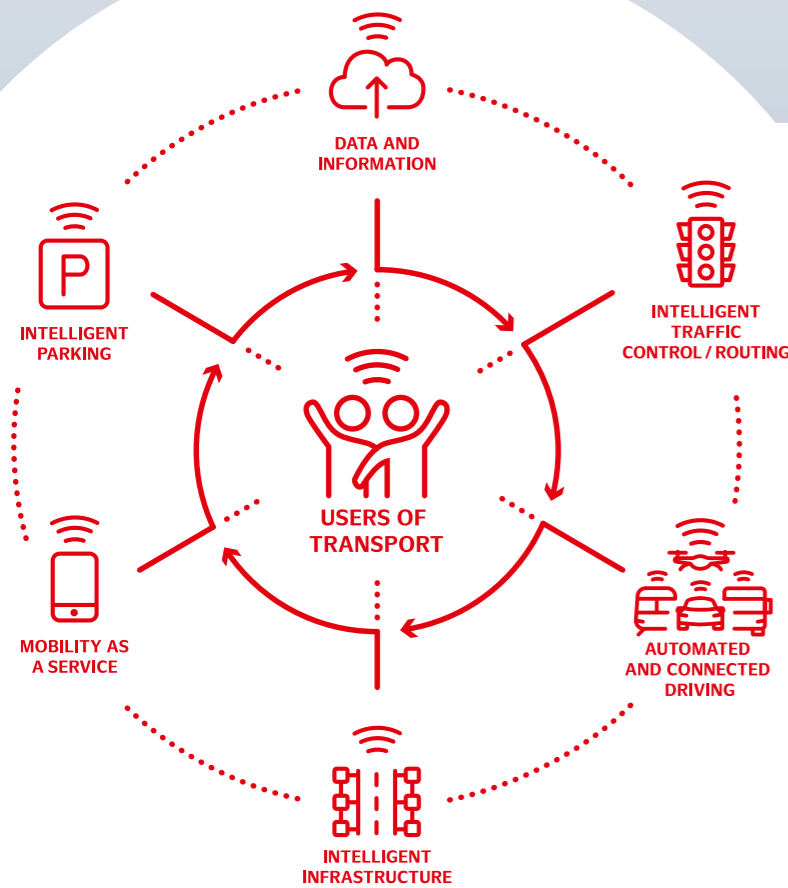
Dr. Anjes Tjarks

Senator for Transport and
Mobility Transition



ITS MAKES MOBILITY SMART – HAMBURG’S STRATEGY SETS THE STANDARD

As a German and European metropolis, Hamburg is on the best path setting new standards for smart mobility. This is possible because the city recognised early the opportunities that digitalisation provides for transport: as part of the “Digital City” strategy and based on the goals laid out by the Senate in their transport development planning in April 2016, Hamburg was one of the first European cities to approve an ITS-strategy, which lays out an ambitious roadmap for six fields of action. Data security and data protection are very important – they are a fundamental principle to gain the acceptance of people who are on the move in our city.



SAFER, MORE EFFICIENT, MORE CONVENIENT AND MORE ENVIRONMENTALLY FRIENDLY TRANSPORT

The municipal authorities, state enterprises and companies as well as science and research institutions are working together on the set goals as ITS in Hamburg is an inter-agency project.

The mobility of tomorrow should be safer, more efficient, more comfortable and more environmentally friendly – and the innovations being developed are finding a great test field in Hamburg. The city has established partnerships and collaborations with companies like Volkswagen, BMW, Daimler, Deutsche Bahn, Continental and Siemens.

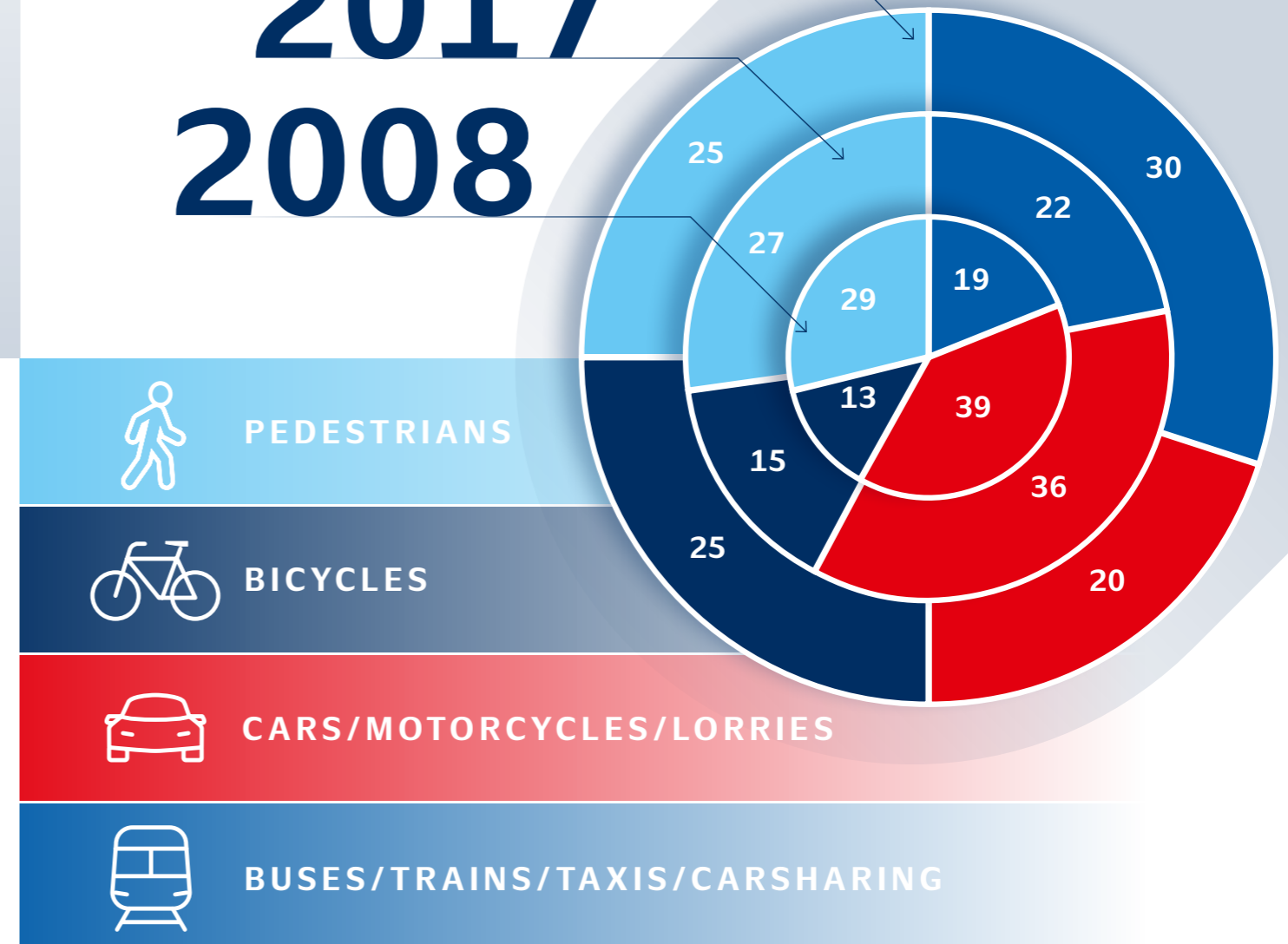
THE GERMAN FEDERATION AND EU SUPPORT ITS-PROJECTS IN HAMBURG

63 ITS-projects in Hamburg have already been successfully completed; 95 projects are currently ongoing (as of July 2021). For many of these, the Senate (for BVM, BWI) has been able to apply for funding from the German Federal Government and the European Union – adding up to around € 60 million so far (until 2024).

Hamburg is the host of the 27th World Congress for Intelligent Transportation Systems from 11–15 October 2021. And the work will continue after that – we have defined goals in our strategy for all fields of action up until 2030.

SHARE OF ALL ROUTES BY HAMBURG’S RESIDENTS PER DAY, IN %
Source MID (2008 and 2017)

Goal of the Senate
2030
2017
2008



“We use digitalisation to strengthen the mobility transition and to make mobility more efficient, smoother and safer.”

Martin Huber
Director-General for Transport, Ministry of Transport and Mobility Transition



Our streets, bridges and tunnels are becoming increasingly smarter and safer thanks to digitalisation and interconnectivity: we are fitting them out to communicate with road users and send information on their current state with the help of sensors.

HUNDREDS OF TRAFFIC LIGHTS IN OUR METROPOLIS ARE ALREADY CARRYING HIGHTECH

Traffic lights permanently count vehicles and cyclists, make automated and connected driving possible on the inner-city test route and the HafenCity, provide information by radio about when and how long green phases will last, and themselves receive data about the vehicles on the road. This all helps to improve the flow of traffic, reduce emissions, make driving more comfortable and create plans for the future in a more exact way according to specific needs. Traffic lights will ensure even better road safety in the future – for example, by communicating information on possible collision warnings via radio. This protects pedestrians or cyclists in particular.

Infrastructure is also becoming smarter in other areas, for example with apps that use sensors to show how many free parking spots or charging stations there are. Or bridges that can communicate to vehicles via radio whether they are passable or not. Or if train stations could be used for something else – picking up packages or working on your laptop.

In addition to sensor technology, the city is also using new technologies to keep a better eye on the condition of urban infrastructure, for example the use of drones, artificial intelligence and 3D technology facilitates more detailed and cost-effective inspections of the many bridges or quay walls in the port. This increases safety and lowers maintenance costs.

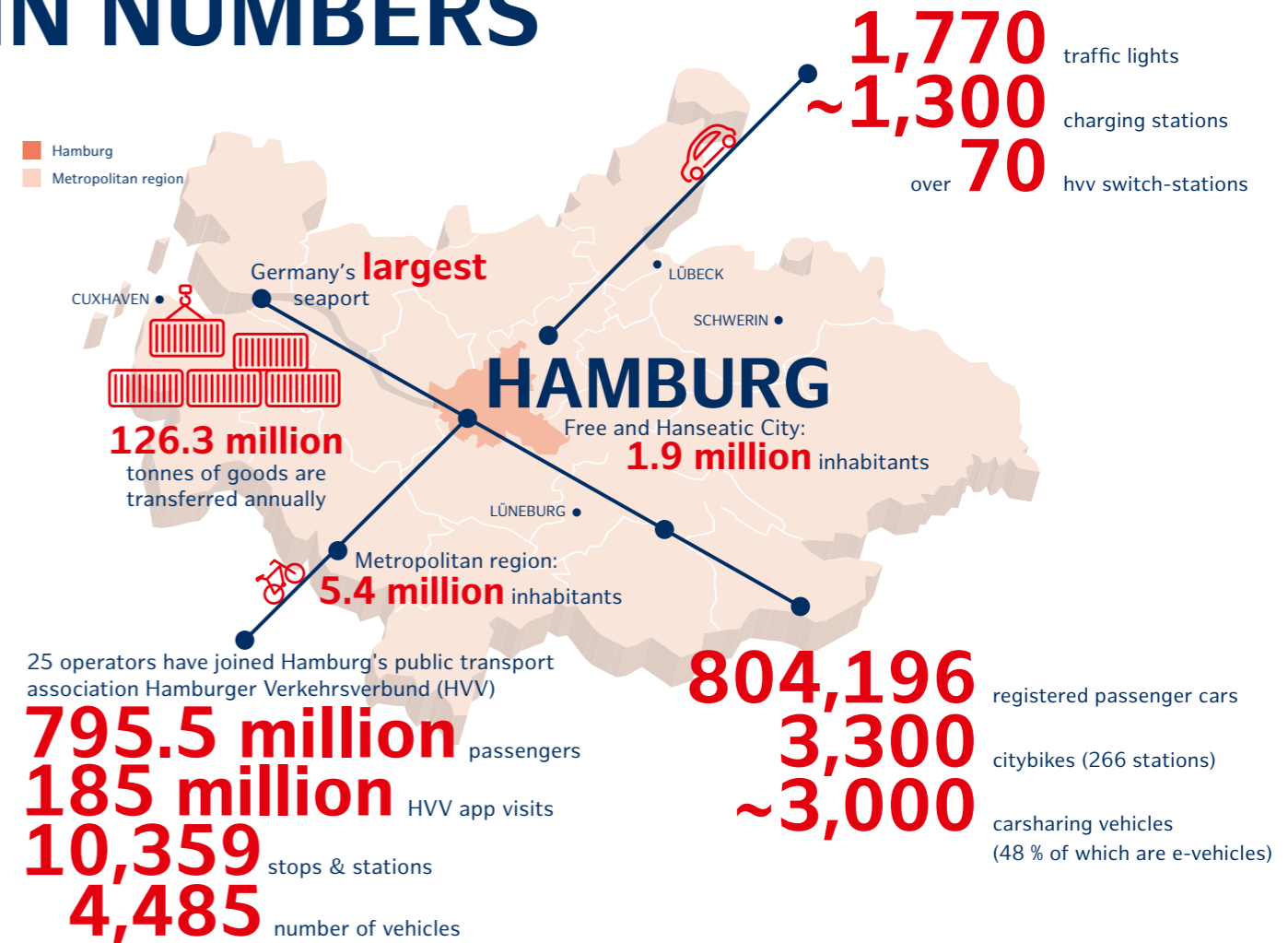
“The trend of urbanisation continues: cities are growing and the need for mobility is increasing – but the available public space remains limited. In this area of tension, smart infrastructure is needed to maintain Hamburg as a liveable city.”

Henning David

Intelligent Traffic Control, ITS-Projects



HAMBURG & TRANSPORT IN NUMBERS



SMART URBAN INFRASTRUCTURE



WHAT DOES "ITS" MEAN?

Intelligent Transport Systems (ITS) refers to all information systems and communications technologies combined that make transport and logistics processes safer, cleaner and more efficient.



173 ITS-PROJECTS IN SIX FIELDS OF ACTION

ITS-projects in Hamburg are diverse – many different players representing the city as well as the worlds of business and science are working to turn Hamburg into the poster city for urban mobility and logistics solutions. For the implementation of the ITS-strategy, the ITS World Congress 2021 represents an important milestone on the road to reaching the goals set for the fields of action by 2030.

All **173 ITS-relevant projects** (of which **95 are active, 63 finalised and 15 in preparation as at 16/7/2021**) involving the participation of at least one urban partner institution are combined by the ITS-Projectmanagement-Office using the "ITS-Dashboard" monitoring tool.

AIM OF THE ITS-STRATEGY

- Increase traffic safety
- Reduce impact on the environment
- Increase efficiency of the entire system
- Safe and effective distribution of information
- Driving innovation forward

THE 6 ITS-STRATEGY FIELDS OF ACTION



DATA AND INFORMATION



INTELLIGENT TRAFFIC CONTROL / ROUTING



INTELLIGENT INFRASTRUCTURE



INTELLIGENT PARKING

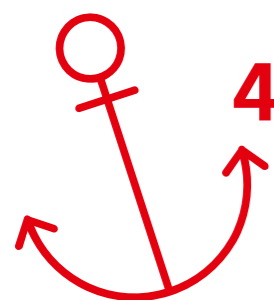


MOBILITY AS A SERVICE



AUTOMATED AND CONNECTED DRIVING

Further criteria are innovative strength, potential for improvement of mobility options for people, optimisation of goods transport, scalability/transferability, presentable aspects for the ITS World Congress 2021, relevance for the range of subjects at the World Congress as well as utilisation prospects after the project has been finalised.



42 ANCHOR PROJECTS

95 ACTIVE AND 63 FINALISED PROJECTS
15 in preparation

Sascha Westermann
ITS-Projektmanagement-Office



"We see the transparency and cooperation happening in Hamburg as an essential part of the success of the ITS-strategy and we are delighted that we can make a contribution through the moderation of stakeholders and the initiation of new projects."

11-15 OCTOBER 2021

ITS WORLD CONGRESS 2021 IN HAMBURG

EXPERIENCE FUTURE MOBILITY NOW

Alongside the Federal Ministry of Transport and Digital Infrastructure, Hamburg will be the host of the largest congress in the world in this topic area. From 11-15 October 2021, the 27th ITS World Congress will make the mobility of tomorrow liveable in the Congress Center Hamburg (CCH), the adjoining exposition halls and on designated test and presentation areas in the city.



Federal Ministry of Transport and Digital Infrastructure

PUBLIC DAY ON 14 OCTOBER 2021

Hamburg invites all interested citizens from the metropolitan region to the ITS World Congress 2021 on 14 October 2021 to experience future mobility live at the Public Day. Visitors can look forward to a top-class programme: from moderated tours to the top ITS-projects of the city to live presentations, lots of interesting lectures, workshops and other opportunities to get involved.

A GLIMPSE OF THE FUTURE

With up to 15,000 visitors, an extensive conference programme, a trade exhibition and live presentations, the congress is an important meeting place for the mobility, logistics and digitalisation industry. Experts from the fields of mobility, logistics, digitalisation, innovation and sustainability are invited to present and discuss the latest trends, technologies and solutions on the following key topics at the congress:

- Automated, cooperative and networked mobility
- Mobility services (mobility as a service and mobility on demand)
- Digital port and logistics solutions
- Intelligent infrastructure
- New services from new technologies
- Sustainable solutions for cities and citizens



www.itsworldcongress.com

MOBILITY TRANSITION TOURS

EXPERIENCE THE ANCHOR PROJECTS LIVE

The ITS-anchor projects will be presented in four demonstration tours at the ITS World Congress 2021. These will lead participants with e-buses, e-shuttles, trains, port buses and ferries through the bustling inner city, the innovative HafenCity, residential areas like Eimsbüttel and the third-largest container port in Europe.

Further information at <https://www.hamburg.com/business/its/15079064/about-its-world-congress/>



- **DIGITISING URBAN TRAFFIC**
BETTER FLOW | LESS DISTURBANCE | MORE SAFETY
- **LOGISTICS-EXPERIENCE**
MOVING GOODS WITH MODERN DIGITAL SERVICES
- **HAMBURG SETS THE PACE**
MULTIMODAL | RELIABLE | CUSTOMER-CENTRIC
- **FUTURE RAIL EXPERIENCE**
INTELLIGENT | SMART | COMFORTABLE



THE MOBILITY TRANSITION: HOW IT WILL BE ORGANISED IN HAMBURG

For the Senate, the goal of the mobility transition is to increase the share of walking, cycling and public transport to a total of 80 percent of all routes travelled by 2030. Two essential fields of action are central here: first, the consistent expansion of zero-emission bus, rail or on-demand services available to users in "Hamburg-Takt" within five minutes throughout the city from the year 2030. Second, all expansion and service measures for more space and comfort for foot and cycle traffic. This protects not only the climate, but also makes city living healthier and more pleasant with better air, less noise and fewer traffic jams.

COORDINATION OFFICE

The diverse activities for the mobility transition are coordinated by a staff unit at the Ministry of Transport and Mobility Transition. It includes the areas of pedestrian and bicycle traffic, traffic optimisation and the agency's office for the Senate Commission for Climate Protection and Mobility Transition, which began its work in November 2020.

The staff unit orchestrates the city-wide promotion of walking and cycling in terms of infrastructure, service and communication. This includes, among other things, the continuation of the alliance for pedestrian and bicycle traffic, concepts for bike route networks, Bike+Ride and StadtRAD, feasibility studies for bicycle express lanes and coordination in infrastructure development.



Kirsten Pfaue
Mobility transition coordinator

"With our new realignment foot and cycle mobility are getting more priority than ever before. We are delighted to be making optimised infrastructure and new technologies available to Hamburg's residents to make cycling in our city even safer and more comfortable."

CYCLE POLICY WITHIN THE ITS-STRATEGY IN HAMBURG

To achieve the goals of the mobility transition, the Hamburg Senate wants to strengthen the means of transport that benefit the environment. Cycle traffic, which is especially cost- and space-efficient, plays an important role here. The share of all journeys made by bike should increase by 25–30 percent within the decade.

In 2020, cycle traffic saw an unprecedented increase of 33% compared to 2019, partially due to the COVID-19 pandemic. The Senate reacted by building what are known as pop-up bike lanes: temporary bike lanes to provide the increasing bicycle traffic with a safe infrastructure option without lengthy planning procedures or major construction measures.

BIKES ARE ONE OF THE MOST PREFERRED MEANS OF TRANSPORT FOR SHORT AND MEDIUM-LENGTH TRIPS

Thanks to electronic support and the expansion of bike routes, bicycles are becoming a more and more attractive option for longer distances. Digitalisation and the increasing use of mobility applications, navigation apps and multi-modal route planners offer the opportunity to make cycling in Hamburg even more comfortable, attractive and safe to manage. This is how the Ministry of Transport and Mobility Transition develops and promotes existing and new projects with a focus on cycle traffic within the framework of the ITS-strategy.

Along with an increase in comfort and attractiveness, like with the PrioBike-HH project

and its efforts to minimise travel times (page 14, 22), there is a special focus on protecting cyclists and pedestrians (vulnerable road users/VRU).

The development of a fully automated and anonymised bicycle traffic counting network (HaRaZäN, page 21) provides traffic planners with continuous data that helps provide reliable statements about the development of city-wide bicycle traffic, seasonal fluctuations and the effectiveness of planning measures.

In the course of the test route for automated and networked driving (TAVF-HH, page 16), the networking of cyclists with the infrastructure and other road users is being tested, among other things. For example, a pilot of a V2X-capable cargo pedelec was developed which is able to receive the current traffic light phase as well as its forecast and display it to the cyclist.

Together with Hamburg partners, Deutsche Bahn is developing the app Rad+ in the districts of Harburg and Bergedorf, which will create incentives for cycling via a reward system and provide insights into the interconnectedness of cycling across state borders.



Olaf Böhm
BVM, Promotion of cycling

"The bicycle has fully matured in a technical sense as a mode of transportation and has remained essentially unchanged for decades. Now it's emerging that with smartphones on handlebars, artificial intelligence in traffic light planners' computers, and sensor technology in the street, we can once again fundamentally rethink cycling in the city."



ITS IN DAILY LIFE: HOW USERS PROFIT FROM PROJECTS



Many of the ITS-projects make transport safer and more efficient while also increasing climate protection in our city – all without citizens noticing. For example: better traffic planning through precise data on transport modes and their use, or highly automated future subways and trains. We would like to present some of the activities through which people will soon be able to experience the benefits directly.

SAFETY AND SUPPORT FOR CYCLE TRAFFIC

In addition to testing a hazard warning for bus drivers, Hamburg's Hochbahn buses and municipal fleet trucks, including those of municipal waste collection and fire departments, will gradually be outfitted with intelligent turning assistants to warn against collisions. These are concrete steps Hamburg is taking to better protect cyclists against traffic accidents. With the "PrioBike-HH" project, cyclists will not just get priority at selected stoplights, they will be noticed and seen more quickly by other road users, who will be notified of them via corresponding signals. A new cycling app will also make it possible to display the remaining green light time at certain crossings during the journey and make cycling more convenient and safer.



DIGITAL PARKING

To also make driving a car more time-efficient and less stressful, parking areas in Hamburg will be fitted with ground sensors. The goal is to pass on information not just about free parking spaces in parking garages, but on streets as well. This will alleviate drivers of the additional time and stress it takes to look for a parking space.



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MORE TRANSPORT SHARING SERVICES, A MOBILITY APP TO COVER THE ENTIRE JOURNEY AND AN AUTOMATED PAYMENT SYSTEM

Transferring from the underground to car sharing or hopping on a city bike after parking the car? With "hvv switch", there are almost 80 "switch points", where car- and bike-sharing services can be used. The new app for this makes the city's ever more relevant mobility services available digitally in a single app. The future app for the „Hamburg-Takt“ will combine classic public transport with private sharing services like SIXT share and MOIA – in the future adding others like TIER, Miles, StadRAD and Hansa Taxi. It makes the needs-based

choice between modes of transport more convenient than ever, and it makes having a personal car even less necessary. The future automated HVV payment system "hvv Any" will make it more pleasant to use the bus and train, as personal smartphones recognise embarking and disembarking, and hvv Any calculates the best rate for passengers based on this. This means I can move around the city more flexibly without having a car, and soon I won't have to think about fares at all.

© iStock

HAMBURG-TAKT

NEIGHBOURHOOD MOBILITY: EMISSION-FREE AND DIGITALLY BOOKABLE

Since mid-2018, over 400,000 passengers in Lurup, Osdorf and Billbrook have used the unique shuttle service ioki. The predominantly electric shuttles can be booked via app and take people to the next bus stop or regional train station in their district – and back again. Emission-free neighbourhood mobility should also be made possible in the eastern part of HafenCity: in the new buildings, 30 percent of the significantly reduced car spaces have been reserved for electric car sharing. These can be booked via an app and are available to residents in the neighbourhood's underground car parks.



© Hamburger Hochbahn AG

EXPERIENCE AUTOMATED NETWORKED DRIVING NOW

Will it become an everyday occurrence? Can I imagine it for myself? And do I feel safe doing that? Citizens can already test the automated networked minibuses as part of two research projects and provide feedback to get involved in designing the future of mobility: in HafenCity at "HEAT", in Hamburg Bergedorf and in Lauenburg at "TaBuLa". This helps the project partners collect important feedback for the development and acceptance of new driverless services – also for the use of parcel deliveries.



© DLR, Sophie Schüller

SELECTED ITS ANCHOR PROJECTS



HEAT (HAMBURG ELECTRIC AUTONOMOUS TRANSPORTATION)

- A research and development project of HOCHBAHN and other partners in the HafenCity
- 1.8 km test route for Hamburg's first automated minibus in public transport network at speeds of up to 25 km/h
- Step-by-step approach: Launch of tests without passengers in 2019, pick-up of passengers in 2020 in a small circular route. Autonomous operation (level 4) with passengers on the final route
- HEAT operates in concert with vehicle, road infrastructure and the HOCHBAHN emergency control

Further information at <https://www.hochbahn.de/en/projects/the-heat-project>



TEST ROUTE IN HAMBURG CITY

- Installation of an approx. 12 km test route for automated and interconnected driving in the public urban traffic area
- Provider-independent and user-open testing of real-time operation of innovative mobility solutions
- Fitting out over 50 traffic lights and a bridge with infrastructure vehicle communication technology
- Implementation and harmonisation of global standards for communication between vehicles and infrastructure
- Increase in traffic safety and traffic efficiency for all road users
- Coordination of test runs and user requests by test route office



Further information at <https://tavf.hamburg/en/>



DIGITAL COMMUTER TRAIN OPERATION

- Highly automated ride with passengers and train driver between Berliner Tor and Aumühle
- Fully automated shunting movement in Bergedorf station without train driver and passengers
- Fitting out four Hamburg commuter train vehicles
- Use of technology ATO (Automatic Train Operation) over ETCS (European Train Control System) Level 2
- Long-term roll-out of the "Hamburg Digital Regional Train" throughout the Hamburg commuter train network
- Advantage: frequent connections, increased operating quality, lower energy consumption

Further information at <https://digitale-schiene-deutschland.de/en>



MEDIFLY HAMBURG

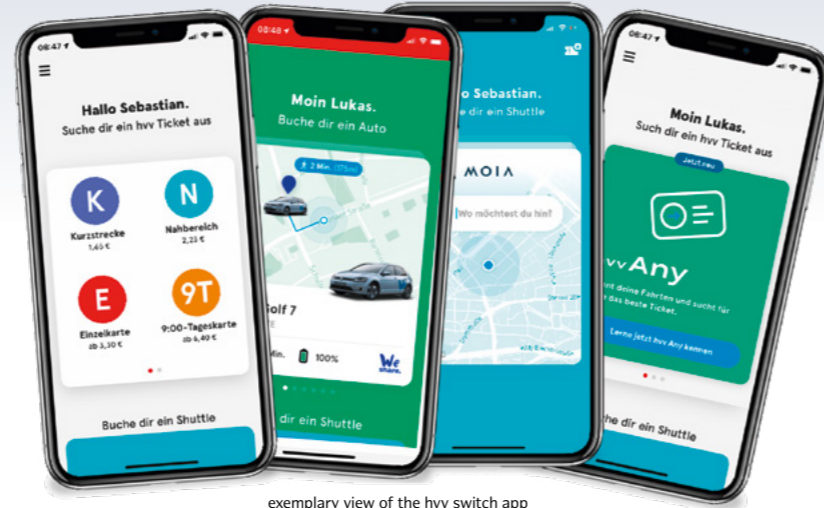
- Use of unmanned aircraft to transport medical goods in cities
- Launch of urban drone traffic
- Safe integration into urban airspace
- Reduction of transport times to improve medical care and relieve road congestion
- Phase 2: project duration: 9/2020 – 9/2022
- Supported by the Federal Ministry of Transport and Digital Infrastructure (BMVI)

Further information at <https://medifly.hamburg/en/start/>



HVV SWITCH

- The app hvv switch marks the start of the next stage in the goal of providing mobility from a single source
- New application is the core of the "Hamburg-Takt" because it aims to make all relevant mobility services in the city available digitally in one app
- Connection of classic public transport with other sharing options in the city
- Simple booking of rides with StadtRAD, SIXT share, MOIA, MILES mobility, Cambio and ioki, (WeShare and Hansa-Taxi to come) alongside tickets for bus and rail
- As part of the further expansion, 20 hvv switch points have now been established at subways and train stations in Hamburg
- Mobility options and some charging stations at further 60 hvv switch points across the city



exemplary view of the hvv switch app



Further information at <https://www.hvv-switch.de/en/>



SMART MOBILITY HAFENCITY

- Goal: Transformation of the car-based mobility system (in addition to cyclability and walkability)
- Implementation of a cross-district innovation project for physical carsharing with a maximum of 0.4 car spaces per household (30% of the housing-related car spaces for carsharing) and electric mobility in the underground car parks of the eastern part of Hafencity (approx. 3,800 RU, 13,000 jobs)
- Creation of a "virtual underground car park" by integrating an underground car park access system interlinking buildings
- All bookings and the provision of vehicles are to be done digitally via mobile applications
- Sustainable benefits: More efficient use of land, promotion of e-mobility, sharing strategy, supporting all low-CO2 forms of mobility
- A project of Hafencity Hamburg GmbH

Further information at <https://www.hafencity.com/en/urban-development/smart-mobility>



DIGITAL PARKING MANAGEMENT

- Providing the state transport authority with (geo) data required for parking space management
- Developing the specialised procedure VIATO P for data-driven resource management and management of parking ticket machines
- Using smartphones (plus owi21togo) to record regulatory offences
- Automatic control of the enforcement staff and parking space detection
- Investigating digitisation options for more efficient general management and specifically of disabled and loading bays, delivery/loading zones
- Testing whether added value can be generated by equipping disabled parking spaces with occupancy sensors
- Identifying the impact of dynamic parking fees for supporting traffic control and the mobility transition



Further information at <https://www.viato-suite.de/>



SMART LOADING AND DELIVERY ZONES (SMALA)

- Goal: the establishment of smart loading zones and creating a platform (including app), with which registered users can reserve a delivery zone in advance
- Reducing traffic looking for parking, double parking and environmental pollution (NOx and CO2)
- Increasing quality of stay and traffic safety
- Connection to the Urban Data Portal Hamburg (UDP-HH)
- A project of the Ministry of Economy and Innovation
- Supported by the 4th call of the BMVI funding guideline, "Digitalisation of municipal transport systems"

Further information at <https://www.hamburg.de/bwi/smart-ladezonen/>





smart BRIDGE
Hamburg

SMART BRIDGE HAMBURG


- Digital twin of the "Large-Scale demonstrator Köhlbrand Bridge" consolidates all data flows of existing and yet to be installed surveillance systems as well as the results of the structural test
- Connects all data with each other in terms of temporal, spatial and technical dimensions
- Optimisation of the HPA maintenance strategy
- Tests the scope for integral, cyclical, constructional surveillance and road condition assessment across a broad spectrum
- Utilises the associated technological opportunities and the potential of digitisation for infrastructure operation and maintenance

Further information at  <https://www.homeport.hamburg/portfolio/smartbridge>



GEONETBAKE

- Use of sensor-based beacons to cordon off road works
- Live information about road works: location, position, direction of traffic, area, lanes, start and end times
- Display of the road works as an area on digital maps
- Avoiding traffic disruptions by setting up detours or opening lanes through exact localisation of the area of the construction measure closed to traffic
- Uploading the data to the "Urban Data Platform Hamburg" for developers of other applications and portal solutions
- Supported by the Federal Ministry of Transport and Digital Infrastructure

Further information at  <https://lsbg.hamburg.de/lsbg-digital/12144506/its-projekte-lsbg/>

HYPERPORT CARGO SOLUTIONS

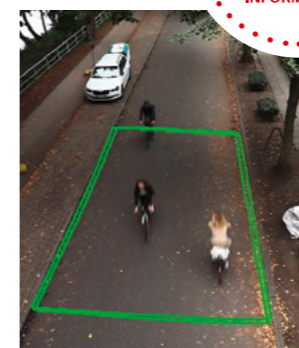
- Development and marketing of a hyperport transport system for standard ship containers to relieve the strain on the traffic infrastructure
- Hamburger Hafen und Logistik AG (HHLA) and Hyperloop Transportation Technologies (HTT) are working together to put the concept of transporting containers through a tube at high speed into practice.
- The technical concept for the transport capsule and the HyperPort is ready
- A virtual demonstrator of the HyperPort concept will be shown at the ITS World Congress for the first time



Further information at  <https://hlla.de/en/company/innovation/pioneering-and-digital/hyperloop-cargo-solutions>



mormedi Mormedi © 2021 Proprietary information.



Further information at  <https://www.hamburg.de/bvm/projekte-its/12323778/radverkehrszaehnetz/>

CYCLE TRAFFIC COUNTING NETWORK FOR HAMBURG (HARAZÄN)

- 55 permanent counting stations in Hamburg record cyclists using thermal imaging cameras
- Counting stations installed across the city on main roads or district roads, cycle routes and secondary roads
- In the mid-term there should be around 100 across the entire city
- Counting stations provide publicly available data that can potentially be used for attractive software offerings for cyclists as well
- The data form the basis for developing bicycle traffic and for an appropriate and efficient subdivision of traffic areas in the sense of the mobility transition
- Publication of the data via the Urban Data Platform Hamburg and the traffic portal of the City of Hamburg

URBAN DRONE TRAFFIC ORGANISED EFFICIENTLY (UDVEO)

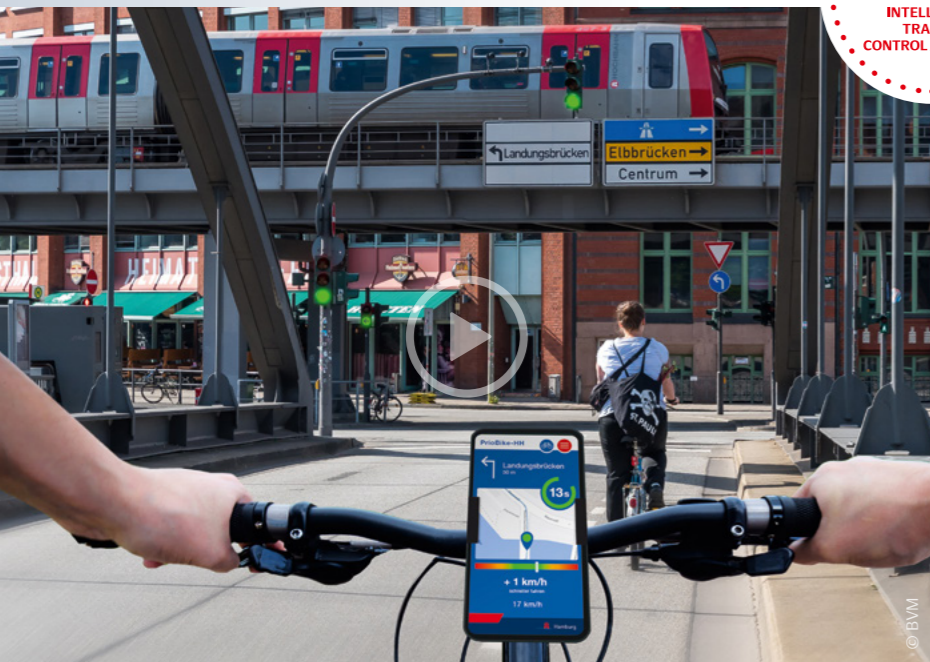
- Overall legal and technical concept for drone traffic management taking into account the European U-Space Regulation
- Implementation of essential processes (flight approval, monitoring, conflict resolution, identification) in a prototype control centre
- Further development of drones and communication infrastructure for urban implementation
- Demonstrations using real drones in the Hamburg city area
- Project partners: HSU, BWI, DLR, WPS GmbH, NXP, HHLA Sky GmbH, Third Element Aviation GmbH, consider it GmbH



Further information at <https://udveo.eu/en/landing-page-2/>



Federal Ministry of Transport and Digital Infrastructure



Federal Ministry of Transport and Digital Infrastructure



Further information at <https://www.hamburg.de/bvm/projekte-its/priobike>

PRIOBIKE-HH

- Goals: increase safety for cycle traffic, accelerate cycle traffic, reduce waiting times, intelligent information dissemination and control
- Implementation of a bicycle traffic information app to provide a speed recommendation and a routing service
- Adjustment of the traffic light control system at junctions to accelerate cycle traffic
- Dynamic adjustment of the control system along specific routes through the use of AI
- Visualisation of speed recommendations or remaining green times in the infrastructure
- Warning the drivers of heavy vehicles about cyclists in the junction area
- Enrichment of the systems to be implemented with dynamic data relevant to cycle traffic
- Joint project: City of Hamburg (BVM/LSBG/LGV/HHVA), TU Dresden, INAVET GmbH



TRAFFIC INFORMATION MANAGEMENT SYSTEM (TIMS) – DEMONSTRATOR

- Digital linking of urban operational and control centres of different transport modes
- Common data basis and point of reference through data synthesis and visualisation on a digital map of Hamburg featuring a comment function
- Automated communication and information transfer
- Display of the traffic situation in real time as well as planned events and unplanned disruptions
- Enhancing public transport through real-time information and integration of multiple mobility stakeholders across transport modes
- Improvement in the traffic flow, urban mobility and traffic safety
- Project partners: City of Hamburg (VLZ, VHH, Hochbahn, HPA), Yunex Traffic GmbH



Further information at <https://www.hamburg.de/bvm/weltkongress-2021/14525648/tims/>



MOZART

- Use of quantum technology for real-time control of the traffic light system in the port
- “Digital Annealer” serves as a bridge between traditional configurations and quantum computers for greater reduction in computing time in the case of large-scale optimisation tasks
- Smooth traffic flow increases transport performance and reduces resource consumption
- Vehicle information, cameras, induction loops via 5G masts
- Port network highly suitable: a lot of heavy traffic, fewer cyclists and pedestrians
- Project partners: HPA, Fujitsu



Further information at <https://www.homeport.hamburg/interview-mit-dem-verkehrsprojekt-mozart>

Companies

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