SMART MOBILITY
#SmartTogether

Get to know the Smart Mobility opportunities
in the Netherlands

Holland.

Photo: TNO

The Netherlands: a small country with great potential

Smart Mobility is a theme of global proportions. Half of the world population lives in megacities and this share increases every year. In all densely populated metropolitan areas, mobility, in logical tandem with the quality of life, is one of the most important issues in today's society. Throughout the world, Smart Mobility is the object of turbulent development. In Europe, the topic has been high on the innovation agenda for many years, and the European Commission provides incentives for research and development and application projects. The Netherlands offers (international) entrepreneurs who develop Smart Mobility initiatives a unique business and innovation climate. The Netherlands is a **densely populated transport hub** with an infrastructure and an **innovation climate** that rank among the best of the world. The Netherlands has an extensive, high-quality road system in urban areas.
In addition, the Netherlands is the home turf of a number of prestigious **knowledge clusters** in the **automotive, technology and high-tech** industry. Furthermore, the Netherlands is characterized by a **culture** of **open networks and intensive cooperation**, and has the highest percentage of **mobile Internet users** in the world. The Netherlands means business when it comes to Smart Mobility; not just to promote domestic development, but to take the lead in developing pioneering initiatives.

The Netherlands as a Living Lab:
develop and test in practice!

The Netherlands means business when it comes to Smart Mobility. The Netherlands is a dense populated country with an urgent challenge to use new technologies to solve mobility, environmental and safety issues. At the same time, the Netherlands is a unique laboratory for you to develop and test Smart Mobility solutions and roll them out on a large scale. If you are interested in marketing products and services and taking advantage of everything the Netherlands has to offer, you will find that the Netherlands as a Living Lab provides a wide range of excellent opportunities to develop activities in the field of Smart Mobility. To an important extent, these opportunities are facilitated by the fact that businesses, knowledge institutes and the authorities take a joint approach, pursuing a common objective, and that they are able to align laws and regulations with this objective. Please enjoy this magazine as an introduction to the Netherlands as a Living Lab!

Access to knowledge and experience

The Netherlands has a lot to offer to the international corporate community. The country harbours a wealth of knowledge in the field of traffic management and cooperative systems, for instance, and its infrastructure is of the highest quality. The Dutch regulatory framework allows for the use of the highly extensive and sophisticated public road system as a testing environment. Not only is this allowed, it is actually possible – on motorways, in rural areas, in the Randstad conurbation, and in cities. Furthermore, the Netherlands offers you access to the latest test facilities, up-to-date development centres, as well as access to professionals in the field. The Traffic Innovation Centre in Helmond serves as a prime example. Besides, you have access to open government data sources in the area of traffic information. All traffic data of the National Data Warehouse for Traffic Information (NDW) are freely available. Moreover, the Netherlands offers a mobile 4G network that provides 98% national coverage. A 5G network extending across the entire country is expected soon.
The Netherlands as a Living Lab is an excellent springboard to capitalize on opportunities in the area of Smart Mobility.

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Photo: Tineke Dijkstra

The Netherlands plays a prominent role in the world economy due to its exports, imports, its ability to attract foreign investors, and its investments abroad. Its favourable location in relation to the European hinterland and its world-class infrastructure give the Netherlands a unique position in the world.

98%

The Digital Economy and Society Index ranks the Netherlands 1st for connectivity in view of its high-speed broadband (at least 30 Mbps) available to practically all households (98%) and as many as 62% subscribers. The Netherlands has nationwide 4G coverage and 80% of the Dutch own a smartphone.

R&D tax rate 5%

The corporate income tax rate is 20% on the first 200,000 euros and 25% for taxable profits exceeding 200,000 euros, which is well below the EU national average. Furthermore, companies can benefit from an effective tax rate of only 5% for R&D.

45 billion euros

The export value as listed in the top sector High Tech Systems and Materials (HTSM) was 45 billion euros, and the added value amounted to 42 billion euros.

5th

The Global Innovation Index ranks the Netherlands 5th. Dutch products are 'typically' highly innovative. Apart from solutions for use in the natural environment, the Dutch also have the knowledge and skills to develop products with worldwide appeal.

World leader

The Netherlands' high-tech sector leads the world in the development of new technologies and materials for use in communication systems, aircraft and automobiles, medical devices, energy generation and semiconductor production.

2nd

According to the World Economic Forum, the quality of the Dutch infrastructure is among the best in the world, reflecting excellent facilities for maritime, air, road and railroad transport, ranking 1st, 4th, 2nd and 7th, respectively in 2015.

45,000

Over 300 automotive companies operate in the Netherlands, with a turnover of 17 billion euros. 45,000 people are employed in the automotive sector.

Smart Mobility

The government, research and educational institutes and the business community in the Netherlands work together towards the transition to Smart Mobility (public-private cooperation).

Agenda: Brabant Smart Corridor

The corporate sector, the central government and the provincial authorities combined will invest close to 100 million euros in cooperative, intelligent transport systems in the southern Netherlands region. The project is a large-scale, public-private partnership designed to give tangible substance to the Netherlands' leading position in the field of Smart Mobility. The project is a unique practical Smart Mobility showcase.

Together with all of the parties concerned – authorities, the market and research and educational institutes – the region wants to invest in the large-scale application of innovative concepts in the field of Smart Mobility and ITS, both on the trunk road network and the subsidiary road network. The ambition is to create the most intelligent motorway in Europe, starting from the Brabant corridor, interconnected with a smart regional network. **www.brabant.nl**

Beter Benutten – intelligent junctions

Beter Benutten (Optimising Use) ITS promotes smoothing the traffic flows on the road network. Adding 'intelligence' to mobility will reduce door-to-door travel times. Cars, lorries, public transport vehicles, bicycles and emergency services will communicate with one another as well as with traffic lights and other beacons and sensors.

Cooperative ITS offers various opportunities, including the option of intelligent junction design. This involves a system that provides information to the junction about oncoming traffic, including details about the type of vehicles and their destination. The system may respond by extending the green time if a heavy lorry is heading for the junction to reduce braking and accelerating. This will help to avoid extra emissions and to promote smoother traffic flows.
www.beterbenutten.nl/en/its

Cooperative ITS Corridor: Joint Deployment

Motorists receiving detailed information on roadworks over a secure WiFi connection, and cars serving as mobile sources of traffic information and passing these data on to traffic control centres; these are two concrete examples of the Cooperative ITS Corridor project, a joint initiative of the Netherlands, Germany, and Austria.

The live test environment is formed by the route from Rotterdam to Frankfurt and on to Vienna. One of the advantages of Probe Vehicle Data service is that it allows for improved use of the road network. This will help to reduce tailbacks and traffic jams. The Road Works Warning service involves beacons on the side of the road communicating with passing vehicles. These vehicles receive information on matters including the exact location of roadworks and available traffic lanes.
www.itscorridor.nl

The project Amsterdam Practical Trial

On their way to a football match in the Amsterdam ArenA, or a concert at the Ziggo Dome, visitors receive relevant personalized travel and route recommendations. This advice can be adjusted continually as traffic conditions change. Upon arrival, they are even guided to the nearest available parking space. Amsterdam Practical Trial (APT) facilitates this service.

Amsterdam Practical Trial, a public-private initiative is a large-scale pilot using the latest and most sophisticated car and road innovations. The use of intelligent traffic management technology in a daily traffic test – involving real cars and real road users in a busy district in Amsterdam – on such a large scale is unprecedented in the world. The objective is to proceed towards a future in which cars, traffic lights and road signs are digitally connected and fully interactive.
www.praktijkproefamsterdam.nl

Shockwave jams project on Dutch motorway A58

In the Shockwave jams project on the A58 motorway, private enterprises and road managers are developing and testing advanced technology in combination with new ways of traffic management. Via apps, motorists receive traffic lane and speed recommendations. Adding 'intelligence' to mobility will reduce door-to-door journey times. This project is part of the 'Optimising Use' (Beter Benutten) programme of the Dutch government.

However, the project involves a lot more than just a reduction of shockwave jams. In essence, the aim is to lay the foundation for the large-scale introduction and rollout of cooperative systems in the Netherlands and Europe. The infrastructure is fully compliant with ETSI ITSC; its architecture is service and use case independent and can be used for any party wishing to connect, test and improve their ITS services. **www.spookfiles.nl**

WEpods

Autonomous vehicles on public roads, following a fixed route – the so-called WEpods (without a steering wheel or pedals) travel between Ede-Wageningen railway station and the campus of Wageningen University and Research Centre. The system can be scaled up to other routes and other regions in the Netherlands, enabling it to achieve a quality leap for public transport.

The WEpods consortium provides the vehicles with additional technical appliances, such as cameras, laser, radar and GPS to observe and interpret the environment for safety reasons. Starting from May 2016, the first pilot demonstrations will take place. The pilot phase will be completed by the publication of a plan for operational continuation. **www.wepods.nl**

Truck Platooning

Truck platooning is a great opportunity for Europe. The European truck industry, ICT and telecom sectors are ready for the next step in smart mobility. Together, the EU member states could give European Truck Platooning a boost. The more time we invest in cooperation at the start of this road to innovation, the less time we will have to devote later on to fine-tuning, harmonisation and standardisation. To this end, EU member states are invited, right now, to:
• build corridors for truck platooning (by creating conditions) through their national road authorities
• implement innovations that improve safety, efficiency and the environment
• enable this boost for the position of the European truck industry
• create economic growth in the traffic and transport sector
www.eutruckplatooning.com

FREILOT project

Helmond was one of four European pilot cities to participate in the European FREILOT pilot project. Launched in 2009, this project was designed to promote smoother (freight) traffic flows in urban areas and to reduce CO2 emissions. Smart Mobility played a crucial role in the project, which is still running in view of its success.

Communication between the traffic lights at the busy arterial road and the lorries enabled the system to provide the drivers with speed advice, displaying the remaining time to green. This resulted in fewer starts and stops and, by consequence, substantially less fuel consumption: -13%. CO2 emissions were likewise reduced by 13%. As a follow-up to the FREILOT project, Helmond participated in Compass4D. This project, in which seven European cities participated, succeeded in demonstrating the benefits of C-ITS once again and on a larger scale. **www.compass4d.eu**

'The success of smart mobility depends on international cooperation'

Minister Schultz van Haegen invites the international business community

Smart mobility solutions, such as autonomous cars, can contribute significantly to the enhancement of sustainable mobility, free-flowing traffic and greater traffic safety. During the Dutch Presidency of the European Union in the first half of 2016, Minister Schultz van Haegen places the topic for the first time on the European political agenda in the European Transport Council. Minister Schultz van Haegen stated: 'It is our ambition to lead the way in Europe in the field of smart mobility. At the same time, we want to invite the international business community to develop smart mobility initiatives and activities in the Netherlands.'

Smart mobility contributes towards improved accessibility, safety and sustainability. In addition, mobility and a sound infrastructure are of crucial importance to the Dutch economy, as Minister Schultz emphasized: 'That is why I continue to invest heavily in our infrastructure. But if we are to remain a world leader in logistics in the future, it is equally important that we work on smarter forms of accessibility. The Netherlands has all the right ingredients: a dense, compact road network, an automotive sector, and lots of knowledge institutions. This makes us the ideal testing ground for all kinds of new technologies. The EU Truck Platooning Challenge, Amsterdam Practical Trial, and Cooperative ITS Corridor Rotterdam-Vienna are no isolated events. They illustrate the Netherlands' ambition to lead the field when it comes to innovative mobility.'

International challenge
Minister Schultz is firmly convinced that efforts to develop smart mobility should by no means be a matter of national perspective only. 'I think it is equally important that we get to grips with innovative mobility at an international level as well. We face several challenges. An entirely new technology brings many opportunities, but also raises many questions. The first one that comes to mind is the uniformity of systems behind the smart, self-driving car. When we take our self-driving cars across the border, we will want them to be able to communicate with other vehicles and roadside infrastructure.'

More than just technology
This involves more than just answers to technical questions, as Minister Schultz explained. We will also need to reach international agreements on issues in the field of liability, safety, and privacy. 'It is not just about technology. It is also about pushing boundaries, learning by doing and the need for international cooperation. There are some complex questions to which we do not have the answers yet, but this complexity should not stop us from pushing forward.'

Knowledge exchange, opportunities and mutual cooperation
Responding to the question as to why it would be attractive for foreign companies to work on smart mobility in the Netherlands, Minister Schultz said: 'The Netherlands is, and always has been, a country of knowledge exchange, opportunities, and mutual cooperation. The opportunities that smart mobility presents in the Netherlands are promising in commercial terms. To capitalize fully on the field's strengths and opportunities, I invite you to talk with leading smart mobility companies and institutions. Some of the country's regions, like Helmond and Amsterdam, have considerable smart mobility experience in terms of use, product development, manufacturing, research, new business development, and funding models. Interesting projects are being conducted nationally and internationally, funded by companies, knowledge institutions, national authorities, and the European Union, among others. I hope to welcome you into our community soon!'

Photo: Tineke Dijkstra

Significant presence

Tesla (USA)

"We have a significant presence in the Netherlands (European headquarters in Amsterdam and assemblyplant in Tilburg) because in the Netherlands we can optimize our access to continental Europe."

Digital Gateway

Netflix (USA)

"Now, Amsterdam is just the European Headquarters, but it is a matter of time before this office will serve as the headquarters for Africa and the Middle East as well."

Superior logistics and technology infrastructure

Huawei (China)

"Aside from the great infra-structure and the Netherlands excellent location in Europe, the Netherlands also appeals to us because of developments in the fields of smart cities, smart environments, and smart mobility."

Frontrunners in advanced mobility technology

Nissan (Japan)

"We teamed up with the province Noord-Holland and came up with new means of interactive traffic management, based on the advanced provincial traffic system and the autonomous developments at Nissan."

*'Join the leader
and take a leap forward!'*

Guido Dierick, CEO NXP Netherlands, on the Netherlands as a Living Lab

'No other country in the world is as active in the field of smart mobility as the Netherlands. We truly lead the world, and we should be proud of it,' according to Guido Dierick, CEO NXP Netherlands. This semiconductor and chip manufacturer, headquartered in Eindhoven, the Netherlands, provides the technology that enables communication between vehicles and between vehicles and roadside systems. Dierick explained: 'Smart Mobility is recently primarily associated with the United States of America, but even Google's self-driving car uses radar chips that were developed here in Eindhoven.'

The leading position of the Netherlands doesn't mean that this country is the largest sales market for NXP. 'However, the Netherlands is the country that facilitates the fastest development of Smart Mobility,' Dierick stated. 'Developments are accelerated in the Netherlands. This country is both a model and a fabulous Living Lab.'

High-tech climate as a unique selling point
As world market leader, NXP is important for the further development of the Netherlands' leading position. On the other hand, the Netherlands is important to NXP as well, as Dierick emphasized. 'This country is extremely important to us, not least because of the high-technology climate in the Netherlands, and particularly in the "brainport" region of Brabant. This truly is a unique selling point. The large number of high-tech companies, tech universities, and research and educational institutes actually manage to connect and cooperate. This high-tech climate is, furthermore, extremely conducive to attracting the best talents from around the world. If NXP had been isolated here, that would have been a much tougher nut to crack.'

Well-organized automotive sector
Yet another powerful pillar supporting the Dutch position is the excellent way in which the Dutch automotive sector is organized. AutomotiveNL promotes the sector's interests, focusing on matters including the development of Smart Mobility and innovation. Dierick said: 'The Automotive Campus in Helmond is a unique centre for the automotive sector that brings together high-tech companies, innovation, prototype design, testing and learning. This is of paramount importance to progress.'

Government as a driving force
'The government itself is of crucial importance as a driving force behind the development of Smart Mobility in the Netherlands,' as Dierick stated expressly. 'The government has launched numerous initiatives to push Smart Mobility forward. One example is the creation of enabling conditions. What is very important is the fact that Minister Schultz van Haegen has placed cooperative mobility and automated driving on the European agenda.'

The market, knowledge institutes and the government teaming up
Dierick is firmly convinced that market players, knowledge institutes and the government need to team up in order to push Smart Mobility forward. 'We cannot launch something as new and innovative as this in the market on our own. The support of regional authorities is highly appreciated in this respect. Conversely, a region such as Brabant comes to us in search of an intelligent approach to traffic management. In addition, we need the Minister to amend laws and regulations, as well as – and this is crucial – to provide financial incentives for Smart Mobility pilot projects, also through the Ministry of Economic Affairs' "Top Sectors" policy.'

Join the leader
Dierick is convinced that (international) cooperation will help us to maintain our leading position. 'I invite all foreign market players who are active in the field of Smart Mobility to come over to the Netherlands – not just to take a look in our kitchen but to help us cook as well. We have a wealth to offer. We offer companies the opportunity to join in at the forefront of technological development. Cooperation will benefit us all. Join the leader and take a leap forward!'

A **Living Lab** featuring state-of-the-art test facilities

The Netherlands offers market players access to the latest test facilities, up-to-date development centres and professionals in the field. This Living Lab par excellence has a large number of public-privately operated test facilities for developing and learning by doing.
The facilities consist of hardware in the loop, simulation environments, closed track and open track environments, and control rooms.
The Traffic Innovation Centre holds a prominent place within the Living Lab.

Traffic Innovation Centre

The Traffic Innovation Centre, a development and testing area next to the traffic control centre in Helmond, was founded to facilitate the transition to Smart Mobility. The centre comprises innovation desks and an innovation lab. Unique to the Traffic Innovation Centre is the possibility to test and develop Smart Mobility solutions in a real-life environment: on a public road and, above all, in a real network with real road users. The effects of the solution in practice are revealed immediately. The kinds of mobility solutions that come to mind include new mobility services, systems, data connections, information, work processes, regulation scenarios, traffic guidance, in-car technologies and the like. To sum it up, the Traffic Innovation Centre helps the local, regional and national government with smarter traffic management and assists the market with the fine-tuning of apps. The industry is invited to test their developments here.

Besides test facilities, market players have access to open government data sources in the area of traffic information. All traffic data of the National Data Warehouse for Traffic Information (NDW) – both historical and real-time data – are available to third parties for use in applications. Moreover, the Netherlands has been meticulously mapped out to the square millimeter.

Photo: Fotografie Siebe Swart

1 Closed track

The Test Centre of the Netherlands Vehicle Authority (Rijksdienst voor het Wegverkeer) is an example of a 'controlled, closed environment' without ordinary traffic. This is an independent testing laboratory for automotive engineering, uniting a unique combination of services and products, and able to accommodate the most advanced tests. The Test Centre meets strict requirements and allows for testing in accordance with various regulations. This is the test location where, for instance, Cooperative Adaptive Cruise Control (CACC) systems are tested extensively for reliability and functionality.

Photo: TNO

2 Controlled, open environment

Testing Smart Mobility applications on public roads without disrupting real-life traffic and with the highest degree of control – the A270 between Eindhoven and Helmond is a Dutch motorway that can be closed off temporarily for this specific purpose. This makes this road section pre-eminently suited to test connected and cooperative vehicles in a controlled environment – unprecedented in the world.
In addition, the section allows for real-life traffic tests. Driverless car tests are expected shortly. Obviously, the section's dedicated control room, including its (additional) control facilities, will be available to the developers and testers. Responsible for the management of the test environment and the control room is TASS International.

The 8 km long test track contains both a motorway and urban environments. Equipped with 50 fixed cameras, 20 ITS-G5 CCU (WiFi-p), several dome cameras and controlled intersections, this site provides accurate ground truth information from all traffic and can emulate large penetration rates by generating cooperative messages from regular vehicles.
The control room includes sensor fusion facilities, application platforms and a traffic management centre. The test site is connected to neighbouring urban sections and other information sources via a high-speed Internet connection.

Photo: TNO

3 Simulation environments

Testing in a real-life environment is not always necessary. The use of a virtual test environment may prove a good and less expensive alternative. Smart Mobility solutions developers can choose from several locations in the Netherlands that offer virtual simulation environments to optimize specific traffic management solutions. Usually, these simulation environments also offer opportunities to connect actual sensors to a virtual environment. Vehicle In The Loop' facility from research institute TNO is an unique example.

Activities are currently underway to develop SIM-ITS, an interactive simulation environment that enables road managers to experiment with the possibilities of Smart Mobility. To an increasing extent, virtual test environments use real data and 'lessons learned', increasing the reliability of simulations. Another example is the Delft Integrated Traffic and Travel Laboratory (DiTTlab), where students, researchers and stakeholders from the public and private sector collaborate. DiTTlab is a laboratory that facilitates the combined use of (big) data and open-source simulation tools.

4 Open environment – in the real world

Innovative infrastructure is available at increasing numbers of road sections in the Netherlands for the benefit of Smart Mobility solutions. The motorway A58 serves as an example, equipped with WiFi-p and accommodating tests with in-car speed advice to prevent shockwave jams. In Helmond, the 14 junctions connecting the through road to the subsidiary road network are equipped with intelligent, cooperative traffic lights. The Amsterdam Practical Trial (APT) even has the entire city of Amsterdam at its disposal to conduct trials, introduce smart information services and roll them out on a large scale. Developments in these real-life test environments can be monitored and optimized in the traffic control centre in Helmond, where two innovation desks have been added to the regular traffic control centre to experiment with practical traffic management.

The Dutch road to Intelligent Transport Systems and Smart Mobility

The Netherlands is brimming with activities in the field of Smart Mobility. A large number of partnerships – alliances in which authorities, market players and knowledge institutes cooperate – are developing successful initiatives in the area of ITS and Smart Mobility. What is the secret behind their success?

Road map 'Better informed on the road'

The Netherlands is paving the way for the traffic management of the future, a future in which vehicles communicate with one another and with roadside systems. The Minister of Infrastructure and the Environment has presented the road map 'Better informed on the road' to Parliament. The road map was developed under the supervision of a public-private consultation forum, the members of which (road operators, service providers, industry and research institutes) helped to define a strategic course of action. This so-called 5 November Group was initiated by Connekt ITS Netherlands.

Transition routes

The collaborating partners identified the major changes that are needed and developed six transition routes to bring them about. These are routes that will guide the changes in the fields of traffic management and the provision of information to travellers.
The national Connecting Mobility programme is putting the road map 'Better informed on the road' into practice. By combining the strengths of government, knowledge institutes and market players, the programme encourages innovations in the field of intelligent transport systems, and promotes their services. In line with the road map, public and private partners are also determining how the Netherlands can realize opportunities over the next decade (2012-2023). They are doing this within the context of the Connecting Mobility programme.
www.connectingmobility.nl/en

National ITS Round Tables

The Netherlands hosts national ITS Round Tables. Conditions and guaranties are built up by stakeholders from government, industry and knowledge institutes, to enable the next step towards deployment by working on actual theme's.
The Round Tables are an efficient platform to work out the things that concern us all. How can I prepare on cybercrime? What is the amount of information a automobilist can handle? Which standards are available? How to deal with the big amount of data and privacy issues? What are the effects on safety by scaling up applications and users? These questions are inspired by real live implementation projects in the Netherlands and beyond. The red thread in the different Tables are the use cases we want to roll out in the Netherlands and in Europe at first. These are prioritised together with the stakeholders and related to international scoping, business interests and governmental strategy. For example 'shockwave mitigation' of 'Green Light Optimal Speed Advise': for these usecases we work on security and privacy issues, architectural choices, profiles, methods to measure and optimise human comfort and social and economic effects.
The Round Tables are manned by key-stakeholders with mandate. Results from the Tables are determined by a C-ITS board. This way we optimize our input to the European workforces and are able to react fast, with broad support, on international issues.
www.ditcm.eu/its-round-tables

ITS overview NL

Would you like to learn more about Smart Mobility and ITS in the Netherlands? The interactive ITS overview NL offers insight into and an overview of projects, services and facilities in the area of Intelligent Transport Systems in the Netherlands. The ITS overview offers business intelligence for and by the entire work field. The dashboard gives you a quick insight into the status of the current ITS field, such as the 'progress' on the transition routes and the knowledge or experience gained in the Netherlands. The Connecting Mobility road map mentioned above presents six transition routes to guide the change mission. The ITS overview clarifies how the ITS services and facilities in the Netherlands relate to the transition routes. The aim of this transparency is to enable a more focused discussion and to focus attention on what really matters for the transition.
http://itsoverzicht.connectingmobility.nl

Ready-to-market innovations

The Netherlands' approach to the development of Smart Mobility solutions proves fruitful. Listed below are a few examples of successful and practicable innovations – ready to market.

Superroute app

Amsterdam Onderweg is a large-scale operational field test aimed at improving traffic flow in the Amsterdam area. Innovative techniques are used to prevent congestion. A large number of participants – 35,000 road users – used the Superroute app to help them navigate their commute or to large events in the Amsterdam area. The app guides users to their destination via smart routes.
By disclosing information about road blocks and detours quickly, the Superroute app was able to implement the data accordingly to accommodate its users. In this way, 150 traffic measures were added to the app during SAIL 2015. The operational field test in Amsterdam has shown that road managers sharing upcoming measures with service providers contribute significantly to a congestion-free, uninterrupted flow of traffic.
Based on the achievements accomplished during the operational field tests, ARS T&TT, TNO and the Amsterdam ArenA have decided to extend their scope; the Superroute app will be commercially exploited to support large-scale events in the Amsterdam ArenA. **www.ars-traffic.com**

RoadDNA

A significant piece of the Highly Automated Driving (HAD) challenge is to determine the location of the vehicle in a specific lane accurately and in a robust and trustworthy manner. TomTom has developed RoadDNA, an innovative new product that addresses this challenge.
TomTom RoadDNA's patented technology delivers a highly optimized, 3D lateral and longitudinal view of the roadway. With this, a vehicle can correlate RoadDNA data with data obtained by its own sensors. As this correlation takes place in real time, the vehicle knows exactly where it is located on the road, even while travelling at high speeds.
TomTom RoadDNA, combined with the TomTom HAD Map, represents the most accurate and robust technology on the market to provide real-time information about a vehicle's precise location on a map whilst coping with changes in the environment. This is how TomTom maps the road for automated driving, and ultimately for driverless cars. **www.automotive.tomtom.com**
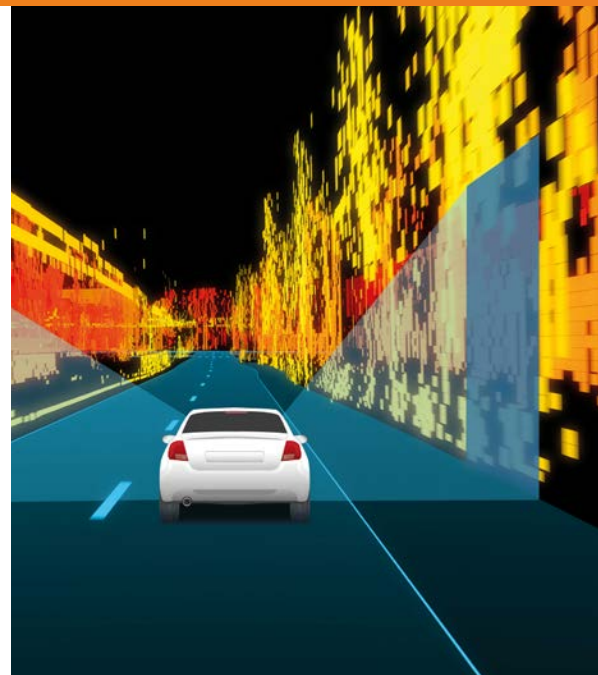
ZOOF app

ZOOF is a new, free app for Android and iOS that provides drivers with advice based on their location and current traffic conditions. The app provides speed recommendations as well as advice on safe distances when changing lanes and safe queueing distance. Furthermore, the app provides information about the location of traffic jams.
As an additional motivation to follow this advice, ZOOF users can collect points; so-called 'ZOOFies'. These can be redeemed for attractive rewards at various participating ZOOF partners. The main goal, however, is to enhance your driving experience, which is achieved by an accessible, easy-to-use interface and useful driving tips and traffic information.
ZOOF is currently active on the A67 and A58 motorways. On these important arterial roads, ZOOF is being tested extensively in a large-scale pilot project. Soon, ZOOF will start a test of cooperative technology as part of the Shockwave jams project on the A58 motorway. This technology will provide road users with even faster and more relevant driving advice. **www.zoof.nu**

Connected Traffic Cloud

Ericsson believes in a Networked Society, where everything that benefits from being connected, will be connected. The developments within intelligent transport systems (ITS) show that the traffic industry is starting to materialize this vision. To enable further development, Ericsson has created the Connected Traffic Cloud.
The Connected Traffic Cloud is a managed cloud platform that enables sharing of real-time traffic and road conditions data between connected vehicles and road traffic authorities. Connected Traffic Cloud gives road authorities the ability to aggregate and analyse diverse, real-time information from participating connected vehicles and devices, expanding their insight and enabling them to respond appropriately. Connected Traffic Cloud combines components of industry applications, service enablement, connectivity management and consulting and systems integration services. Ericsson's platforms, solutions, and mobile technologies are driving rapid change across the transport industry, delivering innovation and efficiency to customers and partners. **www.ericsson.com**

Using the power of connected vehicles

Be-Mobile is a leader in dynamic traffic management, using connected vehicles as a unique asset. Floating Car Data of over 4 million connected vehicles worldwide enables Be-Mobile to offer innovative smart mobility services to the market. Amongst the connected fleet are over 900.000 Flitsmeister app users. Aside from being a valuable data source, the app provides extensive traffic information to drivers. A great example of this is a recently signed contract with the Dutch road authority (Rijkswaterstaat), for specific location based notifications about roadworks (+20 projects). These notifications, starting one week prior to roadworks, are send to Flitsmeister users passing on all major roads in that specific area. This informs drivers about upcoming roadworks, allowing them to consider alternative routes or travel times.
This is just one example of a Be-Mobile smart mobility service. For more services and information visit **www.be-mobile.com**

Hyperloop

The Hyperloop is Elon Musk's answer to the need for fast, sustainable, safe and reliable transport. This revolutionary new concept involves reduced-pressure tubes in which pressurized capsules ride on an air cushion at extremely high speeds. Travelling from Amsterdam to Paris in half an hour will become a matter of course. Through his company, SpaceX, Musk launched a design competition to boost this innovative idea. Student teams and companies from around the world set to work to design, build and test their own Hyperloop capsule. The Delft Hyperloop team of Delft University of Technology represents the Netherlands in the competition and won the first prize for the most innovative design earlier this year. Delft Hyperloop is currently developing the first prototype that will compete in the finals at SpaceX in California in August. **www.delfthyperloop.nl**

Contact

Have we piqued your interest in working with Dutch partners? Feel free to contact any of the organizations at any time; we look forward to speaking with you!

Connecting Mobility
Connecting Mobility is a Dutch national action programme. This programme is an important driver of the transition to Smart Mobility in the Netherlands and creates the necessary conditions and preconditions. The programme coordinates the cooperation between government and industries. Connecting Mobility monitors the developments, and offers overview and insights.
www.connectingmobility.nl/en

Connekt/ITS Netherlands
Connekt is an independent network of companies and authorities that connects market players and encourages them to foster smart and sustainable mobility in the Netherlands. **www.connekt.nl/en**

Doing business with the Dutch
Netherlands Enterprise Agency (RVOnl) is the portal for doing business with the Netherlands. Here, you can find information about the Netherlands, markets, rules and regulations. The information centre will help to match you up with interesting Dutch partners.
www.hollandtradeandinvest.nl

Traffic Innovation Centre
The Innovatiecentrale, the Traffic Innovation Centre, is the premier portal to integrated test facilities in the Netherlands; a one-stop shop for those who are looking for test facilities in the Netherlands.
www.innovatiecentrale.nl

DITCM Innovations
DITCM Innovations is an open innovation organisation in which government, industry and knowledge institutes work together on the successful introduction of cooperative systems to sustainably support mobility and accessibility. DITCM Innovations has about 30 partners who jointly operate a development and test environment for new forms of intelligent vehicles and the associated intelligent roadside systems. **www.ditcm.eu**

NDW (National Data Warehouse for Traffic Information)
NDW is a unique Dutch alliance that unites 19 public authorities. NDW has an enormous database of both real-time and historical traffic data. The goal is to apply the right data to achieve optimal traffic management and to provide road users with the best possible information resulting in less congestion, lower emissions of CO_2 and other pollutants, and improved safety. **www.ndw.nu**

Netherlands Vehicle Authority (RDW)
Gaining practical experience is permitted on public roads in the Netherlands. Since 2015, it has been legal (under certain conditions) to take intelligent transport systems and automated vehicle systems out on the public roads. RDW proactively seeks cooperation with partners who want to develop and test these intelligent technologies in practice.
www.rdw.nl/its

Rijkswaterstaat
Rijkswaterstaat, the Directorate-General for Public Works and Water Management, works hard on a daily basis to ensure that people and products can reach their destination quickly and safely, maintaining and improving the roads and water infrastructure. Rijkswaterstaat operates in a densely populated country where space is scarce. To maintain and improve accessibility and quality of life in the Netherlands in the future, Rijkswaterstaat wants to take advantage of the opportunities that innovative information and communication technology has to offer. New techniques are tested in practice in cooperation with the corporate sector, research and educational institutes, as well as other authorities. **www.rws.nl/smartmobility**

AutomotiveNL
The Netherlands has a healthy automotive industry that has great potential for growth. AutomotiveNL represents the interests of the Dutch automotive industry. Smart Mobility and Green Mobility are the main focus areas. AutomotiveNL focuses on innovation, education and knowledge transfer, validation, manufacturing and internationalization. In addition, AutomotiveNL encourages the introduction of new companies and educational activities through AutomotiveCampus, which is part of AutomotiveNL. **www.automotivenl.com**