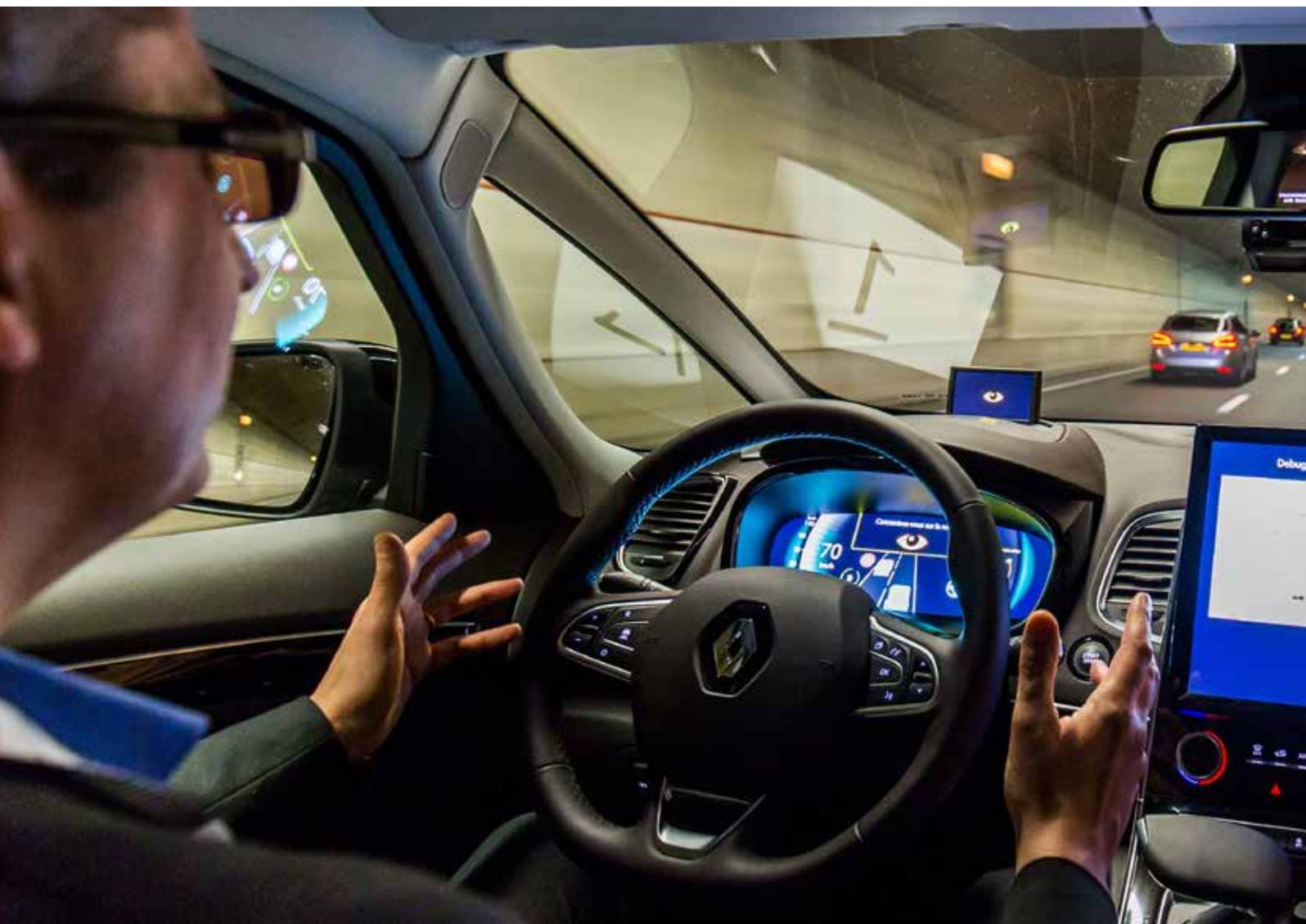




On our way towards connected and automated driving in Europe

Outcome of the first High Level Meeting

Amsterdam, 15 February 2017



A High Level Meeting was held in the Netherlands on 15 February 2017. It was attended by representatives from 24 EU Member States, Norway and Switzerland. Transport and Telecom ministers, the European Commission and parties from the automotive and telecom industries were also present.

The results of this High Level Meeting are set out in this booklet. Subsequent meetings will be organised by Germany, Sweden, Austria, Spain and Finland, in that order.

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Joint European agenda

14 April 2016 was a remarkable day in the history of European mobility. All of Europe's transport ministers drove through Amsterdam in one of the self-driving cars supplied by Europe's automotive industry. There was a clear signal here: marking the start of a new era in mobility. The technology is in place, what matters now is that we jointly enable a smooth introduction of connected and automated driving on Europe's roads.

This signal and the ambition were translated into action, the very same day. On the initiative of the Dutch EU Presidency, all EU Member States endorsed the *Declaration of Amsterdam*. Jointly with the European automotive industry the European Union will move to clear the way for connected and automated driving in 2019.

In the meantime, a year down the line, we have launched multiple actions. An increasing number of Member States are active at home. A range of tests has been carried out on public highways, preparations are underway for various new tests, and we are seeing new national legislation to enable experiments.

But arguably more important than all the national initiatives is the new joint European agenda. The European Commission has launched a strategy on Cooperative Intelligent Transport Systems, and the automotive industry and automotive suppliers have set up the European Automotive and Telecom Alliance (EATA). Currently we are reviewing international treaties, including the Vienna Convention and the Geneva Conventions.

And these are just a few examples.

Much has already been done, and much more will need to be done to be properly prepared for connected and automated driving in 2019. The pace will need to be accelerated. This will include the exchange of data and organisation of large-scale cross border testing.

To this end, I am glad to see the launch of a structural dialogue. The first High Level Meeting was held in the Netherlands in February 2017. There were representatives from 24 Member States, Norway and Switzerland, the European Commission and the automotive and telecom industries.

The objective here is to share experiences and take action together. As an example, the first meeting has already led to a taskforce for sharing data between the automotive industry and government. That is certainly a promising start. And it speaks volumes that five countries were right away willing to organise a follow-up High Level Meeting.

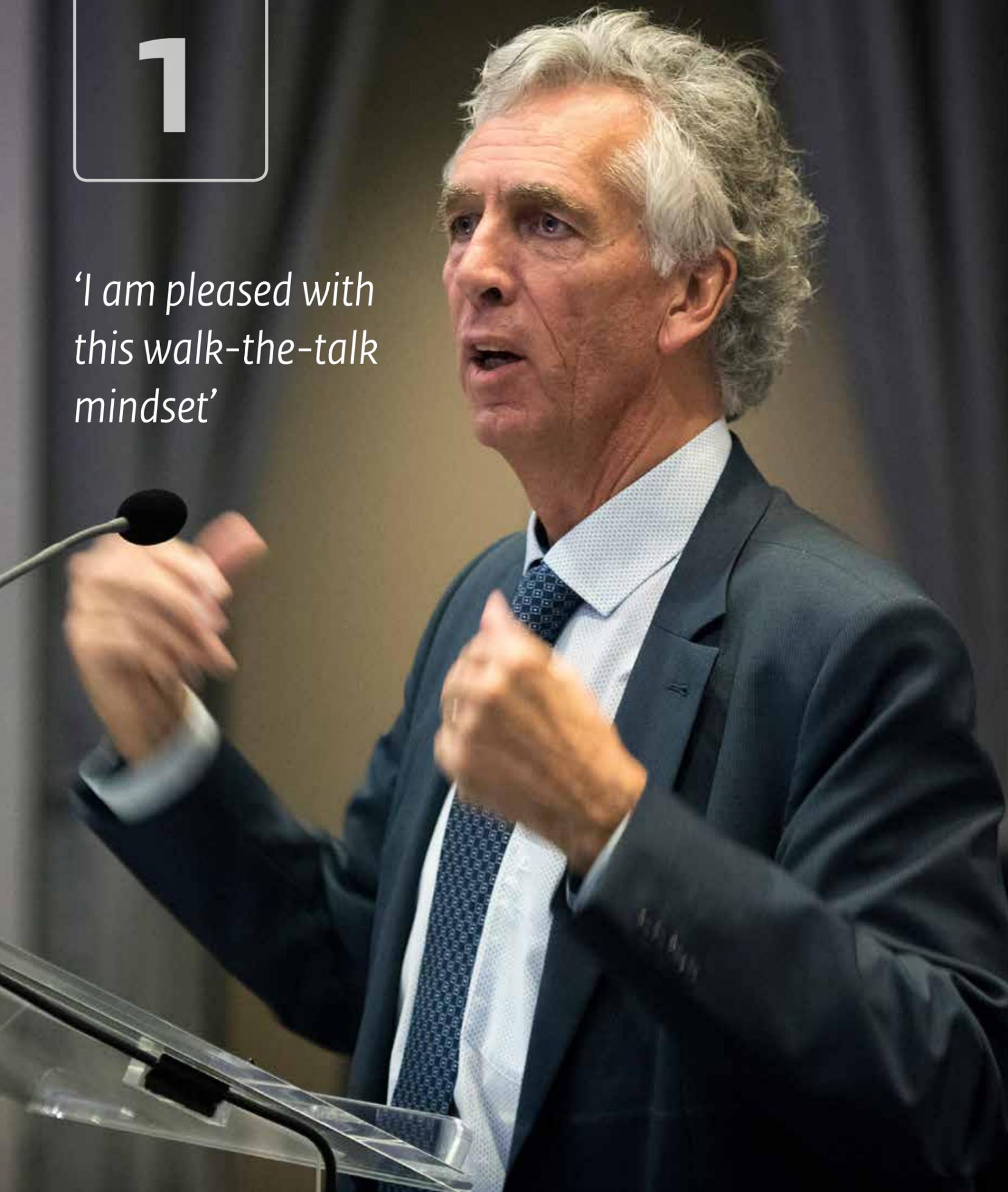
Obviously, what counts are the results we achieve and progress. We need to give these a high profile. Hence, this brochure, which I present to you with great pleasure. As you will see, it contains the results of the first High Level Meeting.

Wishing you maximum inspiration!

Melanie Schultz van Haegen
Minister of Infrastructure and the Environment

1

‘I am pleased with this walk-the-talk mindset’



Believers and doers

According to Mark Frequin, Chair of the High Level Meeting in Amsterdam, the most notable aspect of this first High Level Meeting was the atmosphere. ‘The group of people gathered here all had a shared purpose in mind.’

‘Representatives from the European Commission, Member States, the business community, public bodies, the automotive and telecom industries were all present. They were *believers* in the development of connected and automated driving. And they were *doers*. Because it went further than merely believing, and concrete steps forward were taken.

The fact that together, working from a quite complex setting, we jointly reached a decision on what we wanted to do - in less than a day - is impressive. Indeed, as chair of this first High Level Meeting I can look back on the results with some pride. Conclusions and clear agreements were reached and these will enable us to keep going forward. What we are doing is not completely new. A year ago, 28 EU Ministers of Transport endorsed the *Declaration of Amsterdam*; this initiative has been put on the agenda mainly by the Member States. It has been followed up, as evidenced by the fact that connected and automated driving is now high on the political agenda at various European locations.

However, the next phase will certainly need to be proceeded by large-scale, cross border testing. We will need to link public and private data, while taking an innovative approach to international regulation. This is something you have to do together, at a European level. This was the approach taken by the High Level Meeting in Amsterdam. All parties present invested massive energy in the dialogue.

And then it becomes apparent that even in a somewhat rigid EU environment, there is indeed room to take rapid steps together.

For example, agreements were made on a shared European approach and for the set-up of a public-private Data Task Force, to operationalise the sharing of safety-related data from the car. We will also jointly start on the reinterpretation of the Geneva and Vienna Treaties; among other things this will involve the role of the driver, which will accelerate the introduction of connected and automated driving – across borders. Implementation has already taken place in regard to one conclusion of the High Level Meeting. On Digital Day (23 March 2017), as part of the 60th birthday of the Treaty of Rome, some 20 Member States signed a **Letter of Intent**, committing themselves to large-scale testing of connected and automated driving in Europe.

I’m pleased with this result - this ‘walk-the-talk’ mindset which so many of the parties involved demonstrated in the past period towards a new era in automated driving. The Netherlands took the lead for a while. I have every confidence in the leaders who have now taken over the baton from us.’

Mark Frequin
DG Mobility and Transport - Ministry of Infrastructure and the Environment, the Netherlands
Chair High Level Meeting Amsterdam



High Level Meeting

On 14 April 2016 at the Informal Transport and Environment Council in Amsterdam, 28 EU Ministers of Transport endorsed the *Declaration of Amsterdam* to work towards a more coordinated approach enabling the introduction of connected and automated driving.

Close cooperation between Member States, the European Commission and industry partners is seen as an important prerequisite for the widespread introduction of innovative and interoperable connected and automated driving technologies in Europe. The *Declaration of Amsterdam on Connected and Automated Driving*, was an important first step towards a common European strategy in this field and includes a joint agenda for further action to support the shared objectives. Key action points for Member States mainly involve the need to address legal and practical barriers to the testing and deployment of connected and automated vehicles. The *Declaration of Amsterdam* also called for the establishment of a high level structural dialogue for Member States to exchange views and best practices regarding the development of connected and automated driving and to monitor progress.

The first **High Level Meeting**, organized by the Netherlands, was held in Amsterdam on 15 February 2017. It was attended by no less than 24 Member States, the Directorate-General Grow, Connect, Move and Research of the European Commission and six industry partners. The open and informal discussion made it possible to identify concrete steps to enable further progress in the introduction of connected and automated driving on the Europe's roads. Together with all participating parties, we agreed on the next steps required, as shown in the conclusions below.

Declaration of Amsterdam

The Declaration of Amsterdam was endorsed by the transport ministers of all 28 EU Member States during the informal meeting of the Transport Council on 14 April 2016 in Amsterdam. The Declaration lays down a foundation for the next steps necessary for the development of connected and automated driving technology in the EU. In this document the



Netherlands, the European Commission, EU Member States and the transport industry pledge to draw up rules and regulations allowing autonomous vehicles to be used on the roads.

Declaration of Amsterdam: working agenda

Since the endorsement in April 2016, the declaration has gained many more followers. These include European automotive suppliers and OEMs (Original Equipment Manufacturers), telecom industries and national authorities which have initiated policies and activities to make connected and automated driving a reality.



'Interoperable connected and automated driving should be available, if possible, by 2019'

The overall goal of all actors involved is to work towards a coherent European framework for the deployment of interoperable connected and automated driving which, if possible, should be available by 2019. The goal here is to harvest the great potential offered by connected and automated vehicle technologies in improving road safety, traffic flows and the overall efficiency and environmental performance of the transport system. There are also great long-term opportunities for social inclusion and increased mobility in remote areas, as well as linkage with other developments such as the shared economy, smart cities, the transition towards zero-emission mobility and the circular economy. Lastly, it is very important to strengthen the position of Europe as a world leader in innovative mobility and create new global market opportunities for industry.

A considerable amount of work has already been carried out. In addition to technology research and development the European Commission also supports large-scale cross border trials of automated vehicles with dedicated calls on automated road transport and Internet of Things in Horizon 2020.

Progress in platforms

On 30 November 2016, the European Commission presented its European strategy on Cooperative Intelligent Transport Systems (C-ITS). This is a milestone towards cooperative, connected and automated mobility. In 2017, the Commission will continue work on the regulatory environment, ecosystem-building, resource efficiency and standardization to facilitate the market introduction of increasingly efficient cooperative, connected and automated vehicles. Progress is also being realized in platforms like the **C-ITS Platform**, **C-Roads**, **GEAR 2030** and the **Round Table on connected and automated driving**.

New initiative: EATA

On 30 September 2016, vehicle manufacturers and automotive suppliers jointly with the telecom industries formally announced the creation of the **European Automotive-Telecom Alliance (EATA)**.

Conclusions

During the High Level Meeting in Amsterdam on 15 February 2017 the participating Member States, the European Commission and industry concluded that developments in connected and automated driving have further accelerated since the *Declaration of Amsterdam*. In order to be ready for the deployment of connected and automated driving in 2019 the execution of the actions in the declaration should also be accelerated. Member States should cooperate more intensively on actions that need to be executed on a national level.

Therefore, the participating Member States, the European Commission and the automotive and telecom industry in this High Level Meeting arrived at the following eight conclusions:

2.1 Informal High Level Meeting

- They agreed to continue the High Level Meeting on connected and automated driving that will:
 - be Member State driven in close cooperation with the European Commission and industry and will focus on preparing the deployment of connected and automated driving (CAD), supporting existing initiatives and building on work already done;
 - be open for the transport, telecom and industry policy representatives, to create a broad focus on connectivity and automation;
 - be organized bi-annually as an informal meeting, by organizing Member States on rotation, if possible combined with the EU presidency;
 - report the results informally to the successive Transport Council and inform the Competitiveness and Telecom Council;
 - prioritize topics in a working agenda for Member States;
 - lead to a single point of contact per Member State.
- They have agreed to accept offers by Germany, Sweden, Austria, Spain and Finland respectively to host and prepare the following meetings;
- The high-level coherence of policies and projects could provide the 'glue' between all the initiatives, aimed at harvesting the benefits for traffic safety, congestion reduction, decarbonisation and strengthening the position of EU industry;
- To this end, the participants of the High Level Meeting have agreed on a working agenda aligned with an EC roadmap, giving top priority to the following topics:
 - data sharing;
 - large scale (cross border) testing focusing on the most promising use cases and sharing experiences on these tests;

- coherence with V2X¹ communication technologies and necessary digital transport infrastructures;
- Coherent international, European and national regulation.

2.2 Joint European approach

- They have expressed support for the C-ITS strategy of the Commission. The High Level Meeting looks forward to the report of GEAR 2030 on connected and automated driving and the results of ongoing work in the European Commission, notably within Horizon 2020;
- They have expressed the importance of having a clear view on how the activities within the Commission relate to the joint working agenda of the High Level Meeting;
- The participating Member States and the industry call on the Commission to make further steps towards the integration of connected and automated vehicles in the transport system of the future;
- They have agreed that the EC roadmap on the deployment of connected and automated driving will be provided in time for the next High Level Meeting. The focus of this roadmap will include the process and milestones for the next several years.

2.3 Use of data

Considering:

- that the industry is willing to share vehicle data contributing to traffic safety and congestion reduction;
- that data should be shared in a non-discriminatory way;
- the importance of citizens controlling access to, and secondary use of their data, as well as respect for privacy. Secure connections are a prerequisite for safe data sharing;
- that this is a highly complex challenge with multiple (global) stakeholders and technical issues, practical first steps are the way forward;
- that on 10 January 2017 the Commission put forward the 'Building a European Data Economy' communication which is now open for public consultation. The European Commission will report on this consultation at the next High Level Meeting;
- that within the C-ITS platform the Commission discussed the possible conditions for access to such vehicle data, but did not reach consensus, and launched a follow-up study to help understand possible EU actions in this domain;
- that the telecom industry will put forward its view on data sharing.

¹ V2X is both V2V and V2I.

Therefore:

- The participating Member States and the industry will start a dedicated public-private task force to set initial steps for deployment of data-sharing for traffic safety related data in real life situations (local hazard warnings, incident management, infrastructure maintenance and traffic management). The Netherlands, France, Spain and Germany will take the initiative together with the European Commission and the industry. The task force will look into the role of road operators and the possibilities of data sharing in a reciprocal manner;
- The aim is to realize this category of data sharing for large-scale deployment in these areas by 2019, in the participating Member States. This group is to report back during the subsequent meetings, providing the High Level Meeting with concrete proposals for the first steps towards integrating data and data-sharing into the effective development of automated driving functions, including eHorizon, and a further reduction of road traffic fatalities.

2.4 Vehicle to Vehicle and Vehicle to Infrastructure Communication

- They have followed recent developments in the US and Japan. The Member States remain positive that the current voluntary commitment of the industry to include connectivity in new vehicles from 2019 onwards will be sufficient to ensure rapid deployment of V2V and V2I². The Member States recognise and appreciate that the European industry is actively striving towards that goal. Therefore, no mandatory V2V and V2I regulation is currently needed in the EU. This should only be considered in close dialogue with industry, if by 2019 it becomes clear that this goal will not be met. Progress will be re-assessed at the start of 2018 and discussed in the High Level Meetings.

2.5 Cross Border testing

Considering that:

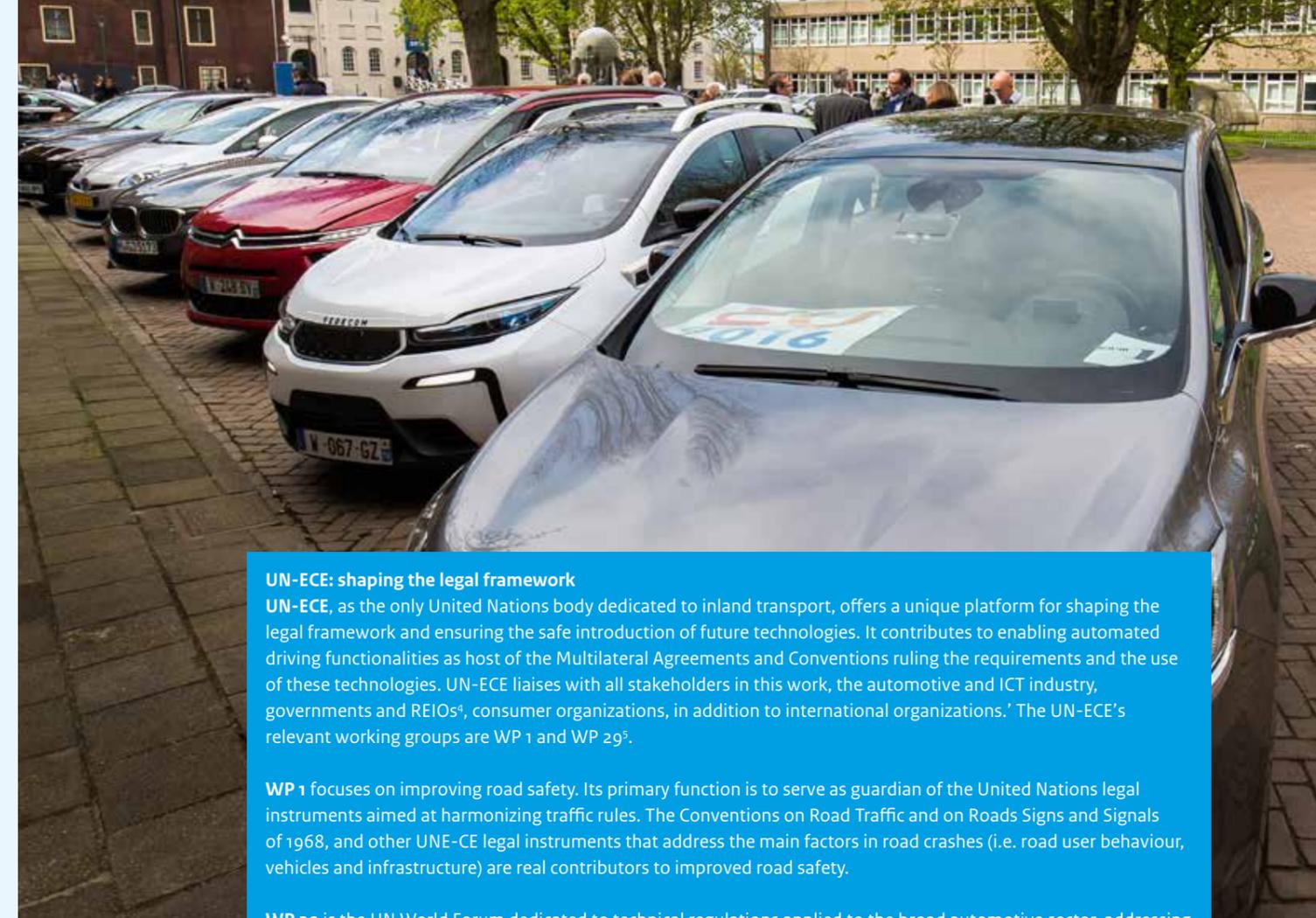
- it is necessary to organize large-scale cross border testing of innovative connected and automated driving systems to further the technological advancement, demonstrate their performance, prove their positive impact on safety for all road users, and assess socio-economic impact;
- there is a need to develop a joint vision on the digital infrastructure needed to support connected and automated driving;
- not all Member States are moving at the same pace and that the front runners can and should move forward, to the benefit of all;

² Vehicle to Vehicle and Vehicle to Infrastructure communication

- the European Commission has initiated a **Letter of Intent** on the testing and large-scale demonstrations of connected and automated driving which has been signed by interested Member States at the occasion of celebrations marking the 60th anniversary of the Treaty of Rome in March 2017;
- testing in general is important, on a national level as well as cross border;
- cross border interoperability involves EU and non-EU Member States;
- intermodality is also a key issue to be taken into account, in particular the connection and integration of connected and automated vehicles with other modes of transport.

Therefore:

- They have agreed to a common approach on evaluating projects and exchanging project results, both on a technical level and in terms of societal impact and benefits;
- They have agreed that testing should be truly cross-border to ensure interoperability, and so they should make clever use of existing projects and the TEN-T corridors;
- They have agreed that interoperability and standardization are a combined public and private responsibility. The European Commission invites the industry to actively participate in the C-roads platform whereby industry, on their side, will try to include more Member States;
- They call on the European Commission and the Member States to make cost-benefit analyses, building on the work already done, and to share the results and underlying data. For that purpose, the participating Member States call on the European Commission to provide a proposal for a platform to facilitate the exchange of data, experience and knowledge for comparison and deployment of results from European and national pilots and to foster a common evaluation framework across the pilots;
- The participating Member States will develop ongoing (cross border) test projects, jointly with the industry, for example:
 - highway autopilot;
 - shared and fully automated transport services (people movers or pods) as part of or added to public transport solutions;
 - EU truck platooning;
 - valet parking.
- They endorse the voluntary use of common building blocks (including items to be documented) for cross border testing projects as an aid to facilitate cross border testing. The experiences in the several Member States can serve as input for possible mutual recognition and as a learning point for the development of future type approval at European level.



UN-ECE: shaping the legal framework

UN-ECE, as the only United Nations body dedicated to inland transport, offers a unique platform for shaping the legal framework and ensuring the safe introduction of future technologies. It contributes to enabling automated driving functionalities as host of the Multilateral Agreements and Conventions ruling the requirements and the use of these technologies. UN-ECE liaises with all stakeholders in this work, the automotive and ICT industry, governments and REIOs³, consumer organizations, in addition to international organizations.⁴ The UN-ECE's relevant working groups are WP 1 and WP 29⁵.

WP 1 focuses on improving road safety. Its primary function is to serve as guardian of the United Nations legal instruments aimed at harmonizing traffic rules. The Conventions on Road Traffic and on Roads Signs and Signals of 1968, and other UNE-CE legal instruments that address the main factors in road crashes (i.e. road user behaviour, vehicles and infrastructure) are real contributors to improved road safety.

WP 29 is the UN World Forum dedicated to technical regulations applied to the broad automotive sector, addressing the safety and environmental performance of wheeled vehicles, their subsystems and parts. It defines safety and environmental performance requirements for cars, vans, trucks, coaches, buses, powered two-wheelers, agricultural vehicles and non-road mobile machinery.

2.6 Close cooperation in UN-ECE³⁴

- They emphasize the need for short term analysis and possible solutions in the context of the Geneva and Vienna conventions and the related (vehicle) regulations. A fast solution is necessary to provide a basis for all levels of automation. Therefore, the High Level Meeting supports the route of UN-ECE WP1 in considering common interpretation of the Vienna and Geneva conventions and of UN-ECE WP29 in revising existing UN regulations and developing new ones in order to cover new automated technologies. The High Level Meeting looks forward to discussing the first results at the next High Level Meeting in Germany on the 14th and 15th of September 2017. A shared European interpretation is very important to go forward in adapting national legislation and vehicle regulations. All with the aim of allowing a fast and safe introduction of automated vehicles;
- They strive for a coherent solution for both conventions, in order to ensure that both in shorter and longer terms, this will not hinder innovations in the field of connected and automated driving. The participating Member States in the High Level Meeting will discuss how to utilize the

³ Regional Economic Integration Organisation

⁴ Source: www.unece.org

work at UN-ECE level and will actively translate the shared interpretation of the Geneva and Vienna conventions into national traffic legislation, in such a way that it does not hinder cross border transportation.

2.7 Coherent international, European and national regulation

- The participating Member States agree to work together and keep each other informed on the development of national legislation affecting consistent EU-wide deployment of connected and automated driving focusing both on horizontal and vertical dimensions. With the aim of enabling consistency, the focus needs to be on the role of the driver, the transfer of control and traffic behaviour. Member States invite the European Commission to examine the potential of Event Data Recorder in relation to vehicle regulation. The participating Member States will also work together on defining the digital infrastructure and connectivity to support connected and automated driving. Experiences, legislations efforts and lessons learnt should be shared between the Member States.

2.8 Starting work with the shared Agenda

- They have agreed to elaborate the working agenda as described above, taking into account these additional topics:
 - **Impact on road operators, transport operators and traffic management**
Recognize that connected and automated driving will have a significant impact on cities, road operators and traffic management. With this in mind the participating Member States ask CEDR⁵ to jointly assess this impact and to provide the High Level Meetings with scenarios and concrete suggestions to maximize the benefits and mitigate negative impact. Particular attention must be given to possible critical issues as well as potential to achieve overall climate and transport policy objectives;

- **Public Awareness**
Pay attention to societal expectations and concerns as well as issues related to driver education and training;
- **Cyber Security**
In the light of the increase in cyber threats and serious vulnerabilities, it is essential to ensure the security and reliability of connected and automated vehicle communications and systems. Common trust models and certification policies should be developed to prevent risks and support cyber security, while ensuring safe and interoperable deployment. This also relates to data privacy which is a key issue for the implementation of connected automation;
- **Managed test environments**
See that multiple Member States are currently working on developing large managed test environments for automated and connected driving. To maximize their added value an exchange between the various test environments is extremely useful and welcome.

At the High Level Meeting held in Amsterdam on 15 February 2017 the participating Member States, the European Commission and the automotive and telecom industry:

- | | | |
|---|--|--|
| 1 agreed to continue the High Level Meeting on connected and automated driving; | 4 the European industry is actively striving towards rapid development of V2V and V2I; | 7 agreed to work together on coherent national, international and European regulation; |
| 2 expressed support for a joint European approach; | 5 considered the need for cross border testing; | 8 agreed to elaborate this working agenda of connected and automated driving. |
| 3 considered willingness to share vehicle data contributing to traffic safety and congestion reduction and the set-up a public-private data task force; | 6 emphasized the need for close cooperation in UN-ECE; | |

⁵ Platform for cooperation between National Road Authorities



‘It is important to strengthen the position of Europe as a world leader in innovative mobility’



‘The High Level Meeting has been an important event presenting the initiatives undertaken at European and national level on connected and automated driving. This event proved particularly useful to provide guidance on the most important issues and further support a coherent development on connected and automated driving across Europe.’

Antti Peltomäki
DG Grow



‘This event was yet another proof of what positive impact Europe can achieve by joining forces in highly strategic fields. CAD is a reality we live in and its potential needs to be fully exploited for our benefit and best interest. Thanks to the drive of the former Dutch EU presidency and to the support of the European Commission, CAD stays high in the political agenda.’

Clara de la Torre
DG Research and Innovation



‘It was great to see such a strong spirit of cooperation in Schiphol. This is vital not only to make real and swift progress in this key area, but also to show that when Europe works together, we can take the lead, move forward together and maintain our global competitiveness.’

Henrik Hololei
Director General of DG Move



‘I am very grateful to the Netherlands, Mark Frequin and his team for their pivotal role in fostering EU-level cooperation on CAD, which helped us prepare the ground for the signature of the Letter of Intent on cross-border CAD experimentation that was signed in Rome on 23 March by 27 EU Member States, Norway and Switzerland. I look forward to continue our cooperation and to implement jointly the follow-up of the Letter of Intent.’

Roberto Viola
Director General of DG Connect

3



Smart mobility projects in Europe

Cross border testing: overview European connected and automated Field Operational Tests.



Truck platooning

Truck Platooning comprises a number of trucks equipped driving support systems – one closely following the other. This forms a platoon with the trucks driven by smart technology, and mutually communicating.



Pods / people movers

Shared and fully automated transport services (people movers or pods) as part of or added to public transport solutions.



Highway pilot

A system that is able to navigate on the highway without any help from the driver. It uses sensors to observe its surroundings.



Urban driving / valet parking

Automated driving and parking in urban surroundings.



Other

Such as connected vehicle services, cellular tests etc.



Policy initiatives

Relevant developments regarding policy and legislation on CAD e.g. adopting legislation, code of practice, type approval and technical inspection etc.

Legend

- = C-ITS corridor Rotterdam - Vienna
- = NordicWay
- = Auto C-ITS
- = C-ITS for Trucks (CITRUS)
- = C-Roads
- = SCOOP@F Part 2
- = InterCor



As the Connected and Automated Driving field is a dynamic and lively environment, please find an up-to-date overview of all initiatives and projects on the site: [Connected and Automated Driving website of the European Commission](#), via the [QR code](#).

'Sweden developed the 'Zero' vision for road safety'



4

One hundred self-driving cars on our roads

As Swedish Minister for Infrastructure, Anna Johansson is fully aware of the importance of connected and automated driving in Europe. Why does she feel this way? And what can she tell about the Swedish status on testing and the importance of cooperation between Member States, industry and knowledge institutes?

Why do you think connected and automated driving is so important?

As I see it, the fast development of connected and automated driving (CAD) has clear benefits for society. Sweden developed the 'Zero' vision for road safety. No fatalities or life-changing injuries on Swedish roads. Self-driving vehicles will increase road safety and contribute to vision 'Zero'.

Self-driving vehicles can also help reduce emissions from the transport sector. Sweden's ambition is to become one of the world's first fossil free welfare nations. We are active in many areas to reach this objective. Incentives for low emission vehicles, increased taxation for fossil fuels, better railway maintenance, improved public transport in cities, and a governmental financial support for charging stations for electric vehicles are just some examples.

How about testing?

Sweden supports large-scale testing as an aspect of implementing new technology in transport. Testing is there to analyze both the technology and issues relating to vehicle and traffic regulations, human-machine interaction and road infrastructure.

One example here is the Swedish **DriveMe pilot project**. This is a joint effort between industry, academia and governmentals. The project will have one hundred self-driving cars on roads around Gothenburg in 2017. They won't be driven by engineers from the industry but by regular daily commuters.

Why is it important to cooperate?

Not to use existing technology in order to reach our goals for safe and sustainable transport is just not an option. To make it happen countries must cooperate, use examples from elsewhere, and help each other. Both the EU and the UN are important arenas for the development of harmonized international standards.

I really look forward to continuing cooperation with other Member States on self-driving vehicles for safer and more efficient road transport. The meetings between the Dutch and the Swedish governments on self-driving cars have been very successful. We are both forerunners on connected and automated transport and together we can achieve a lot for the future of sustainable transport.

Anna Johansson
Minister for Infrastructure, Sweden

Photo credits: Kristian Pohl/Swedish governmental offices

5

Initiatives European Commission

In November 2016, the European Commission presented its European strategy on Cooperative Intelligent Transport Systems (C-ITS). This was a milestone towards cooperative, connected and automated driving. In 2017, the Commission will continue working on the regulatory environment, ecosystem-building, resource efficiency and standardization to facilitate the market introduction of increasingly efficient cooperative, connected and automated vehicles. An overview of initiatives and platforms from the European Commission is set out below.



5.1 GEAR 2030: developing a long-term EU strategy

In order to ensure a coherent EU policy on vehicles, in January 2016 the European Commission launched the GEAR 2030 High Level Group gathering the relevant Commissioners, Member States and stakeholders representing various industries: automotive, telecom, IT, insurance. The High Level Group will in particular assist the Commission in developing a long-term EU strategy for highly automated and connected vehicles by the end of 2017. The Group will build on complementary EU initiatives and, in particular, will make recommendations to ensure that relevant policy, legal frameworks and public support are in place for the roll-out of highly automated and connected vehicles by 2030.

The first conclusions of the GEAR 2030 working group on connected and automated vehicles (covering liability, road safety large scale trials and connectivity for automation) are that, at the current stage of development of technology, no major legal obstacle stands in the way of the roll-out of mass market (partially) automated vehicles expected by 2020 (all still require drivers). However, the vehicle legislation will have to cover event data recorders to clarify liability, and clarification of the interaction between the car and the driver should be finalized as soon as possible in the traffic rules/vehicle legislation. For more advanced technologies (e.g. driverless) trials in real life conditions will be an important tool and are already underway in several Member States, supported via its financing instruments (Horizon2020 and CEF mainly). By the end of summer 2017 the Group will deliver its final recommendations, including recommendations on automated and connected vehicles expected by 2030.

The vehicle approval legislation for mass market products is an EU competence. EU legislation uses UN-ECE regulations to support the international development of the EU automotive industry. The Commission together with Member States and international partners (e.g. Japan) has developed (in the framework of UN-ECE) a first set of international rules for vehicles and traffic law for upcoming partially automated systems, and will continue working towards harmonized rules for higher levels of automation. The future general approach for vehicle certification of automated and connected vehicles is being addressed in GEAR 2030.

5.2 Round Table on Connected and Automated Driving (CAD)

As from 2015, the Round Table on Connected and Automated Driving (CAD) has been gathering high level representatives from public, societal and industry stakeholders in order to advance cooperative, connected and automated mobility in Europe. Among concrete results of the Round Table is the establishment of the 'European Automotive-Telecom Alliance (EATA) to promote the wider deployment of connected and automated driving'. Around 40 industry partners cooperate in the Alliance and have prepared a cross border pre-deployment project for connected and automated driving. The pre-deployment project follows a three-stage approach progressively integrating additional use cases and technologies.

During the latest Round Table edition in Barcelona on 27 February 2017 at the Mobile World Congress, participants agreed to continue their work on the deployment project(s), aligned industry roadmaps and emerging digital issues such as access to data, liability and connectivity.

'GEAR 2030 partners will continue working towards harmonized rules for higher levels of automation'



‘The emphasis is on large-scale demonstration pilots to test reliability and safety of automation technologies’

5.3 Research and innovation actions in connected and automated driving (CAD) in EU Framework Programmes

Connected and automated driving (CAD) is one of the main strands for the Commission’s research, development and innovation (RD&I) policy in the field of transport.

In recent years, there have been significant research efforts to develop technologies for vehicles and infrastructure that enable automated driving functions. The European Union has funded a large number of RD&I projects within previous Framework Programmes (FP) contributing to the development of automated driving. The Commission cooperates with the US and Japan in this area. Until 2014, within FP6 and FP7, 37 projects in the area of Advanced Driver Assistance Systems, Connectivity and Automated Driving have been supported with total EU-funding of around € 240 million. Many of these projects developed and successfully demonstrated various automated functions in a range of driving scenarios.

Within Horizon 2020, ‘Automated Road Transport’ is a key priority for the Transport Research Work Programme. For the first time, a specific call in this area has been included in the 2016/17 Work Programme, with a budget of € 114 million in order to support the short-term introduction of automated driving systems for road transport. The deployment of automated driving systems is key to advance connected and automated driving, in order to meet societal objectives and tackle international competition. The call on Automated Road Transport includes actions in the area of ICT infrastructure to attain advanced levels of road vehicle automation, safe human-machine interface, road infrastructure to facilitate automated transport, or aspects of driver and road user behaviour. The emphasis of this call is on large-scale demonstration pilots to test reliability and safety of automation technologies.

One of these important demonstration pilots is the **L3PILOT** project which will start in summer 2017. This will focus on large-scale piloting of a wide range of automated driving functions for passenger cars (including parking, overtaking, urban intersection driving) which will be tested in 11 European countries on around 100 vehicles involving some 1,000 test drivers. A large number of car manufacturers and other stakeholders from the entire value chain will join forces in pilot testing in this project and evaluation of automated driving systems in real traffic conditions with real users. Other important large-scale pilots are planned for 2018, focusing on the demonstration of multi-brand truck platooning and fully automated urban transport systems.

SCOUT and CARTRE

SCOUT and CARTRE are Key Horizon 2020 projects to support Automated Road Transport, both of which started in 2016.

SCOUT (Safe and COnnected aUtOMation in road Transport) works on developing use cases and sustainable business models and will develop cross-sectorial roadmaps for the development and accelerated implementation of safe and connected and automated driving in Europe.

CARTRE (Coordination of Automated Road Transport Deployment for Europe) will facilitate the exchange of data, experience and knowledge for comparing and deploying results from pilots and foster a common evaluation framework across the demonstrations. This project is establishing a joint stakeholder forum and will support the international collaboration activities in the area of road automation, especially with the US and Japan.

With the support of CARTRE, the Commission organised a workshop in December 2016 with a number of Member States currently undertaking, or planning, larger scale public road tests with automated vehicles. The presentations and exchange of lessons learnt show that larger scale testing is in an initial phase, which will be accelerated in 2017 and 2018. The workshop also identified commonalities and joint concerns on leveraging pilots towards deployment.

5.4 C-ROADS platform

On 12 December **MOVE** launched the C-ROADS platform, which gathers real-life deployment projects in eight core Member States (and three associated Member States). This platform has the ambition to link *all* deployment initiatives and is thus *not* limited to projects receiving CEF co-funding! The mission of the platform is simple: deploy a first list of mature C-ITS services using a hybrid communication strategy and make sure everything is fully interoperable, cross-border and cross-brand. This will be realized by agreeing on standards and developing technical specifications beforehand, and cross-site testing after deployment.

This list contains 23 so-called Day 1 (fully mature) and Day 1.5 (almost mature) services and focuses on increasing both road safety and traffic efficiency. They are all enabled by connecting vehicles directly (vehicle-to-vehicle) or with (transport) infrastructure (vehicle-to-infrastructure). Some services require low latency direct communication, whilst others are less time-critical but require network coverage for a connection to traffic management centres and other service providers. In both cases communication is two-way and allows real cooperation between actors. These different requirements require different, complementary and mature communication technologies so the hybrid approach currently combines ITS-G5 (802.11p, a variant of WiFi optimized for safety related transport applications) with existing cellular networks (3G, 4G, for its wide coverage).

With the 2016 call now closed and evaluations to start soon, more investment projects and Member States are expected to join the C-ROADS platform. With the widening of scope this time around and bearing in mind recent evolutions, proposals are now encouraged not just to deploy the first set of C-ITS services but also to look for synergies with automation services. On the one hand this increases the benefits of C-ITS services without increasing costs (offering ever more services using the same communication equipment) whilst on the other hand cooperative systems can support the safe integration of automation services in real traffic.

5.5 Letter of Intent on cooperative connected and automated mobility

A highly critical element for Cooperative Connected and Automated Mobility (CCAM) to be further developed and deployed successfully is to fully take on board the developments under the Digital Single Market (DSM including its Mid Term Review) - including 5G, Data Economy, Internet of Things (IoT)- and to establish, in the same context, a European enabling digital framework for commercially sound deployment of CCAM that operates across EU borders.

As an important step, under this setting of the DSM, the Commission communication COM (2017) 9 Final 'Building a European data economy' announces the intention of the European Commission to work with a group of interested Member States to create a testing framework for conducting experiments, addressing rules on data access and liability. To allow for access to a sufficiently high volume of data, the trials should be based on 5G. This Commission initiative has been supported by Member States in their High Level Meeting on connected and automated driving in Amsterdam dated 15 February 2017. Member State commitment has been codified by the signature of a Letter of Intent by 27 Member States plus Norway and Switzerland on 23 March 2017 in Rome, during the Digital Day, which is the digital part of the official celebrations marking the 60th anniversary of the Treaty of Rome.



'Around 20 interested Member States signed the Letter of Intent aiming to create a legal testing framework'

‘Objective of the platform is to identify and agree on how to ensure interoperability of C-ITS across borders’

5.6 European Conference on connected and automated driving (CAD)

The European Commission organized its first European Conference on connected and automated driving in Brussels on 3 and 4 April 2017. Major stakeholders – automotive and telecom industries, users, road operators, public transport operators, regulators, cities, research centres, universities and representatives of both the European Commission and Member States were invited. This event was a unique opportunity for all participants to network and discuss how to boost the development of CAD technologies from a fourfold perspective:

1. transport policy issues;
2. technological challenges;
3. legal and regulatory frame;
4. digital transformation.

The Commission services will continue developing initiatives in the area of connected and automated driving which will also be at the heart of the foreseen Strategic Transport Research and Innovation Agenda (STRIA).

5.7 C-ITS Platform

As from October 2014 the objective of this platform has been to identify and agree on how to ensure interoperability of C-ITS across borders, while allowing road users and traffic managers to share information and deploy it in coordinating their actions. The platform is an operational instrument for a dialogue, exchange of technical knowledge and cooperation on technical, legal, organizational, administrative, and governing aspects. Around 120 experts representing more than 80 public and private organizations meet on a regular basis in monthly working groups and plenary meetings.

The C-ITS Platform Final Report on the first phase was endorsed unanimously on 21 January 2016. This is a major achievement in the deployment of C-ITS, which laid the groundwork for the European Strategy on C-ITS, adopted by the Commission on 30 November 2016. The main conclusions and recommendations were:

- To ensure interoperability and maximise benefits, it is vital to base deployment throughout the EU on an agreed list of Day 1 applications;
- Technology and industry are both ready to deploy in the EU by 2019;
- We need a common C-ITS trust model and certificate policy for communication in the EU, based on a Public Key Infrastructure (PKI);
- C-ITS messages have been considered as ‘personal data’ and rules on the application of the General Data Protection Regulation need to be defined;
- Agreement was reached on five guiding principles as a permanent basis for access to in-vehicle data.

The work programme for the second phase of the C-ITS platform continues important work on topics such as *Security* and *Data Protection* while adding new elements, mainly focusing on synergies with automation. These are explored in new working groups on Road Safety, Advanced Traffic Management, Physical and Digital Road Infrastructure, Compliance Assessment and the connection with Public Transport and the Urban Environment.



ACEA and GSMA Europe: 'We share a single aim'

The development of connected and automated driving in Europe stands or falls with linkage between Member States, the European Commission and the industrial players behind technological development. This linkage is supported by the High Level Meetings.

The automotive (ACEA) and telecom (GSMA Europe) branches were brought together thanks to the mediation of Commissioner Günther Oettinger. In September 2016, together with four other associations, they jointly founded the European Automotive-Telecom Alliance (EATA). The aim here was to launch connected and automated vehicles on European highways in 2020.

Erik Jonnaert (EJ), Secretary General of ACEA and **Afke Schaart (AS)**, VP and Head of GSMA Europe, shed light on their plans.

How does an event like the High Level Meeting contribute to the development of connected and automated driving?

AS: 'For a start, it was good to see so many parties involved in connected and automated driving come together at this High Level Meeting. This was a remarkable shift away from the agenda being set by the European Commission. Now Member States and industry could also meet and make plans to get connected cars on Europe's roads. We passed the 'Brussels bubble' and now we can actually move in the right direction – with all parties involved. We share a single aim: to make things happen in the field of connected and automated driving. Being part of this movement is a good feeling.'

EJ: 'The High Level Meeting in Amsterdam was a success in any language. It gave us a unique European forum on how to progress with connected and automated driving in the community. This Dutch initiative was bringing together all

relevant players from both industry and all Member States plus all relevant EC services. At last, exactly one year after the endorsement of the *Declaration of Amsterdam*, we had a joint platform to review progress. And that's just what we did. The High Level Meeting was certainly action oriented. We have passed the stage of open discussions. This was a working session with a single question: 'What else needs to be done to realize connected and automated driving?'

What needs to be done?

EJ: 'We urgently need to realize cross border test sites. Every single member state is elated at the idea of moving connected and automated driving one step further in their home country. But cross border showcases are crucial for success, that means first setting up international test sites. And this has to be backed by network coverage for seamless cross border flows. Hence, we need to focus on getting commitment from all member states. This means clarification on the relevant ministries for each member state - where do we, the industry, go to get things done?'

AS: 'What has to happen is that Member States create a legal testing framework for conducting cross border experiments. These need to be based on harmonized rules around data access and liability and roaming handover. As a basis for these experiments preferred testing is with LTE and, at a later stage, 5G technologies. As an example, this would look at how networks function with massive volumes of vehicle-generated data that basically need transmission and processing in real time.'

ACEA represents Europe's car, van, truck and bus manufacturers, and works with a variety of institutional, non-governmental, research and civil society partners - as well as with a number of industry associations to ensure the economic environmental and social sustainability of the automobile industry. www.acea.be

GSMA Europe represents the interests of more than 160 mobile network operators as well as companies in the broader mobile ecosystem such as handset and device makers, software companies, equipment providers and internet companies. It reaches out to organizations in fields such as innovative transport, utilities and automotive. www.gsma.com/gsmaeurope

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How would you describe the EU's efforts in the field of connected and automated driving?

AS: 'I am pleased with the **Letter of Intent**, introduced by the European Commission at Digital Day in Rome. Back at the High Level Meeting they had already said that they intended to work on creating a legal cross border testing framework; this would be together with a group of interested Member States. Almost all Member States endorsed the **Letter of Intent** at Digital Day. In so doing they committed themselves to large-scale testing of connected and automated driving in Europe. This is a huge step forward, whereby full backing from Member States is critical.'

EJ: 'For the first time ever we have a single political agenda for connected and automated driving in Europe. Four DGs (MOVE, Connect, Growth and Research) are involved. Meanwhile, all Member States are positioned around the table. So, all national level initiatives in, for example the Netherlands, Sweden, Germany, Belgium, France and Spain can be fully coordinated at EU level. Industry embraces this. The Commission backs an ambitious European agenda for connected and automated driving and we welcome the various initiatives across all services. Thanks to Günther Oettinger, the former European Commissioner for Digital Economy and Society, we now have a smooth operating dialogue between the automotive and the telecom sectors. Mr Oettinger believes in cross sectoral initiatives to accelerate Europe's digital agenda.'

How will ACEA and GSMA Europe cooperate in connected and automated driving?

AS: 'Initial contacts were made two years ago. In September 2016, this evolved into the formal start of the European Automotive-Telecom Alliance (EATA). The Alliance includes six leading sector associations and 38 companies, including telecom operators, vendors, automobile manufacturers and car and truck suppliers. Our main goal is to promote the wider deployment of connected and automated driving in Europe.'

EJ: 'EATA is currently working on a pre-deployment project aimed at rolling out some of the latest automation technologies focusing on three major use cases: highway driving, high density platooning and valet parking. These applications will boost traffic safety, enabling improved traffic management and more effective logistics. To this end we have set up a dedicated task force involving experts from both the automotive and telecom sectors to execute pilot projects; this will happen in close collaboration with local authorities.'

What hurdles do you foresee in the near future?

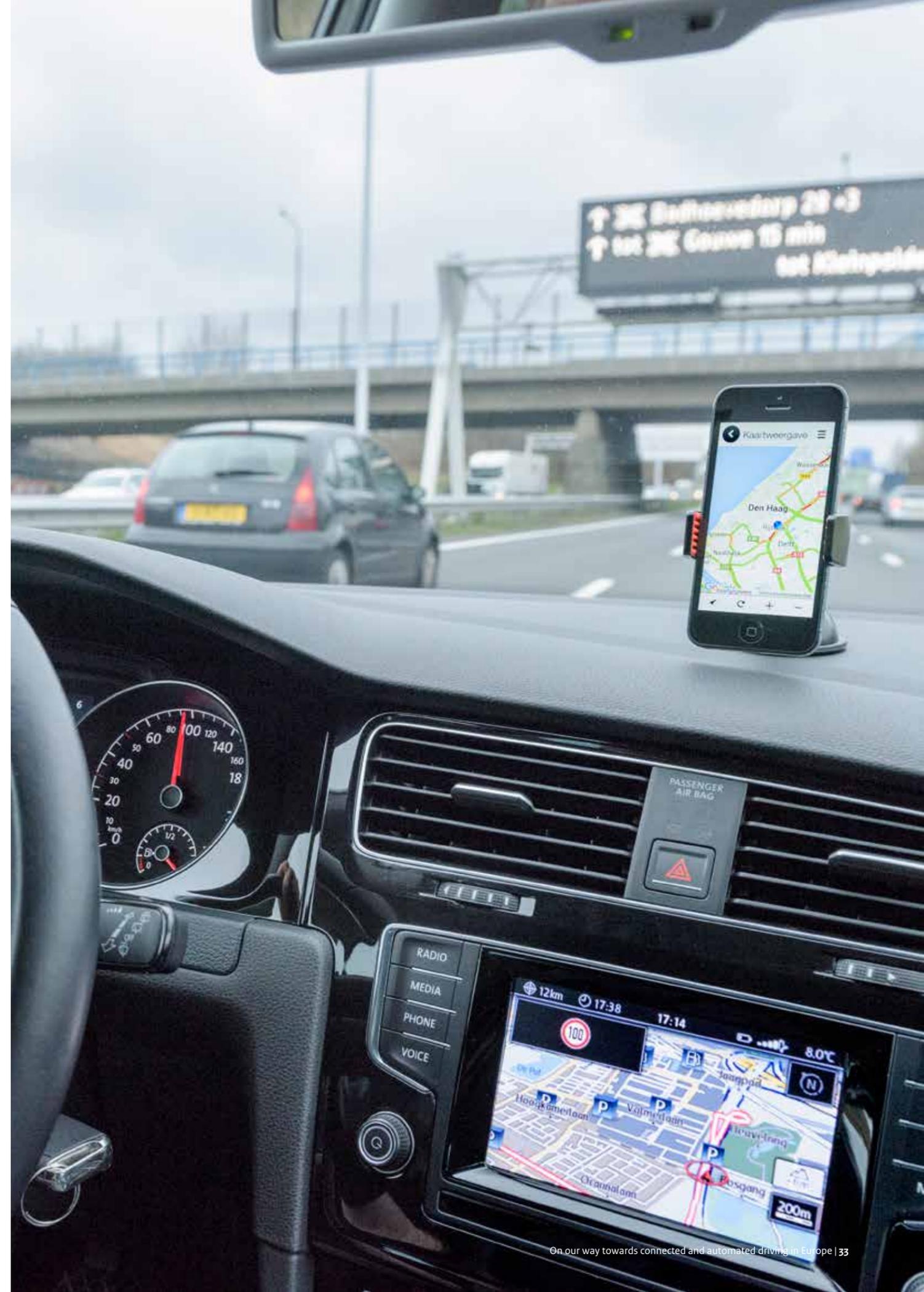
AS: 'Our industries operate differing business models. The telecom sector invariably deals with major revolutions. We have to reinvent ourselves every five to ten years. We are in constant change mode. Meanwhile business cycles in the automotive sector are quite different with only incremental change. They differ in terms of history, challenges, products and culture. A smartphone stays up-to-date for a few years, a car for at least seven. We need to search for a common business model where we have a good product for a good vehicle with all necessary dynamics inbuilt, including features like embedded SIM-cards. Other challenges are: the need for major investment to enable proper data sharing, to introduce 5G, to come up with privacy rules, and to ensure traffic safety. We still have plenty to do, but realizing cross border experiments will start the search for real life answers.'

EJ: 'The automotive sector has a very harmonized regulatory framework across Europe, and we follow EU-standards. Telecom standards fluctuate and still differ between Member States. If we want to ensure a common safe network coverage across Europe with full reliability for our automotive manufacturers, we also need greater harmonization, for example in the EU spectrum. A strong, single market for connected and automated driving would be enabled by a strong, single telecom market. The automotive sector has the technology, but we need the right infrastructure and the right telecoms to actually move forward.'

What do you both expect from the newly initiated EATA?

EJ: 'We believe that our pre-deployment project will identify and address some major technological and regulatory issues. So, how do we regulate data protection in the new spectrum? How do we make 5G happen? And if not, what can we do with 4G in the meantime? The project will also tackle interoperability issues and infrastructure requirements to address connectivity needs. Safety and security will also be checked out. At the same time, our experiments will help elaborate basic business models which the two sectors can deploy when investing in these technologies. This EATA-partnership embraces the idea of converging two sectors into a single innovative new sector. Our common goals will drive the necessary progress.'

AS: 'Talking together is an eye-opener. In this sort of project, you need to check out regulations other than your own. ACEA and GSMA are mutually reinforcing. Our shared objective is a legal testing framework allowing connected and automated automobiles on European highways in 2020, while ensuring the highest standards for our industries and their global competitive status.'



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‘Germany and France will establish the first cross border digital test bed’



We will bring automated driving onto the roads

‘Today, we are on the threshold of the greatest mobility revolution since the invention of the automobile – automated driving and connected vehicles. For the first time, technological advances are changing not just the car but also the driver and thus mobility as a whole,’ says Alexander Dobrindt, Federal Minister of Transport in Germany.

‘The potential inherent in this is enormous: connected and automated driving will enhance capacity on our roads, reduce the time spent in traffic jams and the number of vehicles searching for a parking space, and lower the number of accidents; it will also massively boost wealth creation.

This explains why the car is at the centre of renewed competition between states. In the USA and Asia, there is hardly any other field in which start-ups and internet giants are engaged in intensive research and development to match the situation around connected and automated driving.

As the second largest automotive manufacturing site in the world, it must be Europe’s ambition to hold an absolute leading position. We also clearly expressed this in the conclusions of the first High Level Meeting in Amsterdam. As the ministers responsible, it is our job to create the infrastructure and regulatory conditions to bring connected and automated driving out of the laboratory and onto the roads. While we shoulder joint responsibility for the creation of a single market, it is also up to every Member State to ensure that it has an optimum regulatory framework in place.

To this end, in Germany we have launched a clear three-pronged strategy:

1. Testing under real-life conditions

We have established the Digital Motorway Test Bed on the A9 motorway between Munich and Nuremberg. This is the first intelligent and fully digitalized highway. Today, the automotive industry and the digital technology sector are already using this facility to trial and develop connected and automated driving in real life traffic. We will shortly be launching further test beds in German cities and in our highly complex urban environment.

2. Creating the regulatory framework

We have introduced a bill that will enshrine connected and automated driving in German road traffic law – placing humans and computers on an equal footing. This means that, in the future, highly and fully automated systems will be able to perform the task of driving. If, despite proper use, an accident occurs, it is not the driver that will be liable but the manufacturer by way of recourse.

3. Developing ethical guidelines

We have established a commission of experts to address the ethical issues surrounding automated driving and to develop principles for the algorithms and on-board computers. This includes stating emphatically that damage to property is always preferable to personal injury.

Photo credits: Bundesregierung / Kugler

If we are to deploy connected and automated driving on a genuine area-wide basis, we now need international initiatives that will make it possible for these vehicles to cross national borders.

To this end, we are working continuously on opening up the international regulatory framework. For example, as part of these activities, we have updated the Vienna Convention. In addition, Germany and France have agreed to establish the first cross border digital test bed, which will be between Merzig and Metz. Here, manufacturers will very soon be able to test their systems under real life conditions and, in particular, trial cross border automated driving with real time data communications.

With the High Level dialogue, we have now created a new forum at the European level to exchange, deepen and jointly evolve our experience and best practice in connected and automated driving. This will make a major contribution towards remaining a lead provider and becoming a lead market in this field, and enabling us to be the first to introduce regular operation.

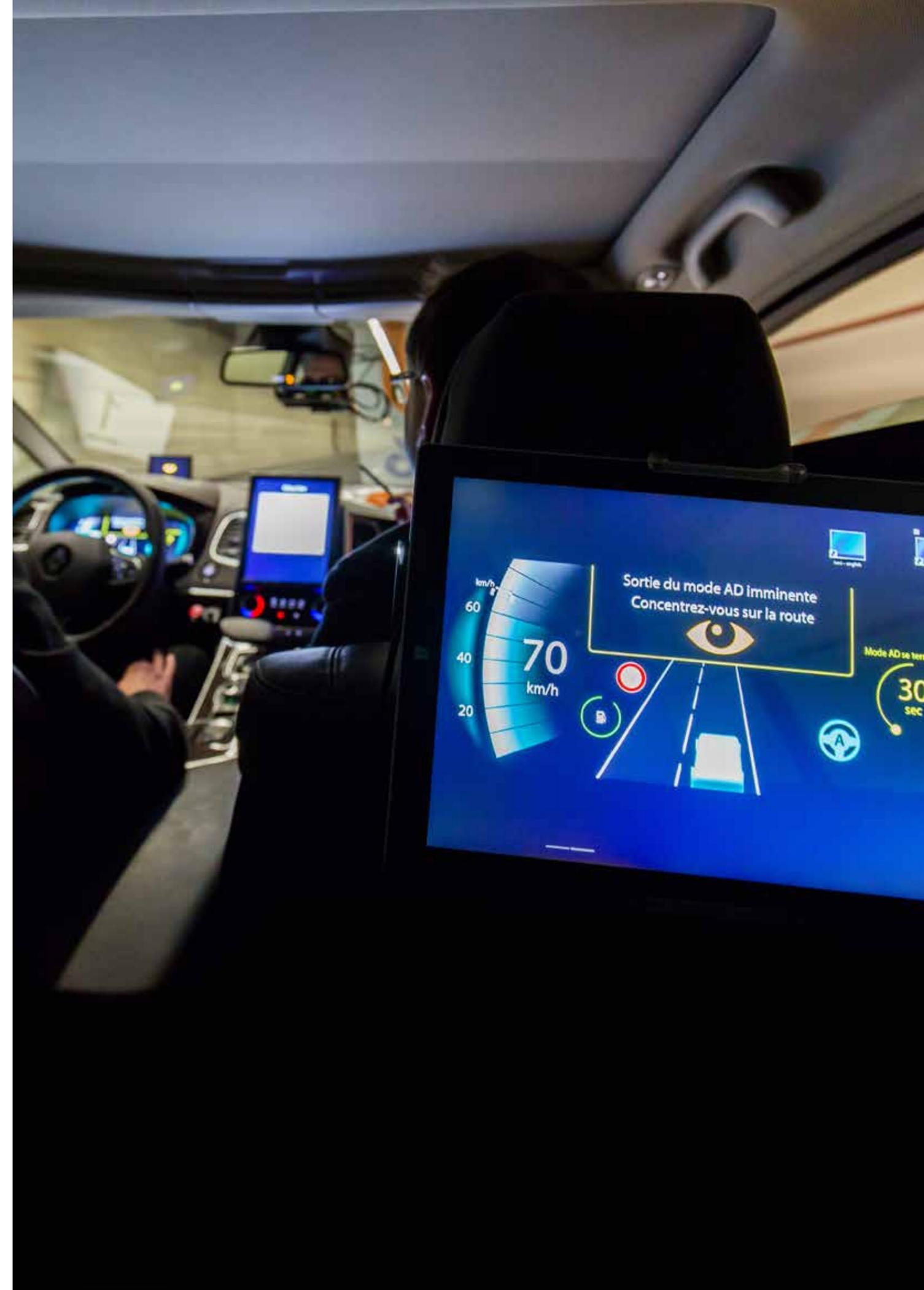
Against this background, I would like to thank the Government of the Netherlands for its initiative in launching this dialogue. I also look forward to seeing you soon in Germany for a continuation of the discussions.'

Alexander Dobrindt

*Member of the German Bundestag,
Federal Minister of Transport and Digital Infrastructure, Germany*

Next High Level Meeting in Germany

The next HLM is scheduled on 14 and 15 September 2017 in Germany. Among other issues, we will also discuss the progress made since the February 2017 meeting in Amsterdam.



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