



Summary reactions market consultation Intelligent Transport Systems

Rijkswaterstaat (RWS), the Dutch Highway Authority, is responsible for the operation and maintenance of the Dutch motorway and trunk road networks.

Road traffic is monitored and influenced using roadside technology that is operated by control rooms in traffic management centres (TMC). RWS needs to update its roadside traffic management systems to a new generation of roadside traffic management systems.

The objective of the market consultation was to enable the market to show how the future strategy and objectives of RWS can be realised according to a wide range of leading suppliers. Round 1 of this market consultation was designed to give RWS an overview of relevant available capabilities in the market. In total thirteen companies participated in round 1 of this market consultation, consisting of companies already active in traffic management, as well as IT companies not yet active in the field of traffic management.

Use cases

By the market, several ITS-services are expected to be introduced on European highways over the next 10 years. Most ITS-services are improvements of current services.

It is noted that the main difference between current and future services is that future services will be more predictive, while current services are real-time. Improvements are in the field of translation of data into decision making information and optimizing transport processes on the basis of such decision making information. ITS-services will be more driving task supporting, like adaptive cruise control, platooning and lane signalling. Completely autonomous vehicles are not expected within 10 years.

Another approach is to differentiate between V2V-services (vehicle to vehicle) and V2I-services (vehicle to infrastructure). V2V-services can be introduced by the market, while V2I-services require cooperation between industry and road authorities. Organization of V2V-services seems to be easier, since it only requires involvement of the industry it may be possible to realize in the near future. On the other hand, the authorities are pushing for the deployment of V2I-services, because there is a lot to gain from them.

If ITS-applications are developed, it must be possible to use in on all Dutch highways. This because it is the only way to end up with a high user adoption. Drivers will not want to take the trouble to activate the applications if they only functions on certain trajectories. If applications are also interesting for urban environment, it is advised to implement these applications in phases, which is also more cost effective. Order of application: motorways, regional roads, city roads and local roads.

In the coming years, more information will be collected by private parties, for example via mobile phones and vehicle sensor information, to create a network overview. But there will also be more cooperation between public and private companies. Like information collected by road side systems, which also can be used by private companies to offer comfort services. This can conceivably result in several private traffic management centres, providing a high level of service at lower costs.

Distance WiFi-P access points

It is not possible to draw a clear conclusion, the recommended distance between the WiFi-P access points differs from 200 till 1000 meters. Remarkably, the capacity and reliability of WiFi-P are seen as a bottleneck and congestion on the WiFi-P radio band is mentioned as a possible issue.

Also discussed is the WiFi-P approach in the 'Spookfiles' project on the A58 motorway. WiFi-P would contain an architectural model that slows down innovation. It limits the possibility to upscale its performance as is normally applied in modern cloud solutions. This could be a reason to do not use WiFi-P at all.

Telecommunication 4G

In the Netherlands, there is no provider with a complete 4G coverage, due to bridges and natural areas like the Veluwe. The reliability of 4G is highly dependent on this coverage. The security of 4G varies with the application used. The performance decreases due to congestion, but it is even possible that the whole network is blocked if the number of users is too high. 4G is a long distance communication technique with associated longer latency, which can be a problem with regard to time-critical messages.

The successor of 4G, LTE, requires further development in the areas of security and safety, expectations are that this development will result in a real 5G network within 5 years. At this moment, it is too early to tell if this will be a good alternative for WiFi-P, but 5G can be used for V2V-services as well as for V2I-services.

By some companies RDS-TMC and TPEG are seen as a fall-back system, but not as a valuable contribution to the 4G technology. While others think DAB/TPEG is a good alternative, since it has the most complete coverage when there is no cellular or WiFi-P coverage. A disadvantage is the expensive license for the service providers that is needed.

Security

The importance of security in WiFi-P services is undisputed, but there is discussion about the best way to achieve it. Several companies mention the Public Key Infrastructure (PKI) certificates as a possible security mechanism. But the organization of PKI needs further attention, since no organization is acknowledged by the cooperative ecosystem as a reliable Certificate Authority. The challenge is to develop measures to ensure not only that messages can only be sent from valid nodes, but also that only valid applications are able to send messages over the WiFi-P interfaces.

The market would like one interface for all messages from different sources. In this case, it has to be possible for the market to trace which messages belong to each other while they are sent by different sources.

Technology

Different answers are given on the questions about technology. Some companies are interested in using the fibre optic communications network of Rijkswaterstaat and some suggest that private parties could pay a fee for using it. But in some cases where Rijkswaterstaat made the fibres available for other parties, they could not use it for a long time period. The companies were forced to use a less secure and stable wireless communication network or to install an own fibre optic communication network.

There are numerous technological options with regard to the replacement of the roadside systems, for example in-car information systems and alternative ways to collect data. Reference is made to the 'Spookfiles' project on the A58, in this project several innovations on Cooperative Intelligent Transport Systems (C-ITS) are tested. In the opinion of some companies, this infrastructure can be expanded to other trajectories of the motorways.

Markets

Also on this subject it is not possible to draw a clear conclusion; it is too early to tell which companies will be relevant for V2I-services. Expectations are that new companies will enter the V2I-services market, but that they will not necessarily have the same goals as the road authorities. Remarkably, not all companies see the automotive industry as an important player in the development of V2I-services. In their opinion the automotive industry is not interested in the development of V2I-services and expect that the hardware industry will be more interested.

The coming years an enormous amount of vehicle data will be collected, an online market place in which these data will be traded is emerged. For example the traffic management centres can serve as a data hub for reliable, accurate, real time data and information. This data should be shared with external service providers to enable business models for the common good.

Other Road Authorities & position Rijkswaterstaat

Smaller countries with competent road authorities and a shortage of Automotive Original Equipment Manufacturers have a preference to first develop V2I-services. While countries with a bigger automotive industry might be more inclined to prefer the development of V2V-services.

Some examples of projects from other Road Authorities are mentioned. Japan introduced WiFi-P successfully in the daily life of citizens. China has developed LTE in collaboration with Huawei instead of developing WiFi-P. Austria has a project 'A Smoother Ride on the Austrian Autobahn', comparable to the Dutch 'Beter Benutten' project, aimed at creating a smart highway on which traffic jams are prevented by using an extensive network of sensors for the collection of data about road, traffic and weather conditions. Germany is working on the nationwide coordinated development of ITS to optimize road capacity, traffic management, traffic information, safety and environment. Also the United Kingdom has several ITS projects.

In general, ensuring, securing and maintaining the reliability, availability and safety of the roads are seen as the most important tasks of the Public Road Authority. Expectations are that other tasks will be taken over by private companies. For example, if the Public Road Authorities make real-time data by the roadside infrastructure accessible, private service providers will be able to develop information services.