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# Speed lock: permanently within the speed

**Speeding is a thing of the past with the Speed Lock. The Speed Lock is being tested to see if it can keep habitual speeders within the speed limit. The system monitors vehicle speed and intervenes if the speed limit is broken by limiting the vehicle's speed to the legal maximum. A variety of the Speed Lock is the Speed Monitor, that simply advises drivers of the correct speed.**

## **Dutch government testing of the Speed Lock**

The Dutch government is currently looking for a way to address the problem of habitual speeders. The Speed Lock can play a useful role in this matter. The Ministry of Infrastructure and the Environment is currently testing the Speed Lock and the Speed Monitor to find out whether or not they can change the behaviour of habitual speeders by legally obliging them to drive with this device for a period of time. Participants in the trials have been divided into two groups. One group will drive with the Speed Lock, which prevents the car from breaking the speed limit. The other group will use the Speed Monitor. These cars can go faster than the speed limit, but frequent speeding will result in the lock function being deployed.

## **Operation via in-car platform**

The system is based on the MobiBoxx. This is a computer platform for automotive applications with a wide range of interfaces, sensors, free programmability and communication facilities. The MobiBoxx software determines the functionality. In this case, it measures the speed and intervenes if necessary. Via a separate touch screen, the speed limit is displayed for the driver to see.

Whether or not the system intervenes is governed by configurable algorithms prescribed by the Directorate-General for Public Works and Water Management and implemented into the software by Technolution.

## **Intervention at the accelerator**

The speed limit is determined by establishing the car's GPS position on the integrated maps. The speed of the car is read by the CAN-bus – the car's communication network. The messages transmitted are part standardised and part car-specific. In order to decipher the latter type, a CAN tool has been developed that can determine what data the speed displays for every type of car. Intervention via the accelerator then takes place via a built-in speed limiter device. The speed limiter is installed between the accelerator and the engine and limits the speed by maintaining a fixed pressure. This pressure corresponds to the local speed limit.

## **Maps**

In order for the Speed Lock to work properly, the machine must know what the local speed limit is. However, good quality maps that feature speed limits for all Dutch roads did not exist. The material that was available was used as a basis to develop our speed limit map. The developers then conducted test drives to check and refine the application. A method was also developed to allow users to give feedback regarding incorrectly designated speed limits. The result of these efforts was a new and adjusted speed-limit map that was forwarded to all participants. Gradually, the speed-limit map built up an accuracy level of at least 95% of all kilometres driven. The first month of the trials also allowed us to gather a baseline measurement for driving behaviour. We then conducted another

series of measurements upon completion of the trials. The difference between these two measurements will indicate whether or not the system has caused users to change their behaviour.

## Emergency button

Following this adjustment period, the lock will be activated and no more GPS data will be gathered. In emergencies, or if the speed limit is incorrect, the user can press the emergency button. The GPS route just before and just after the moment that the button is pushed will then – and only then – be sent for analysis. At the end of the journey, the driver will indicate why he/she pressed the emergency button. Sometimes, the problem can be solved simply by checking Google Maps. There is also a help desk that can contact the user and ask why it was necessary to press the emergency button. You can then indicate that the speed limit entered for the route in question is too low, causing you problems when you try to accelerate.

## Speed lock or speed monitor?

It is still too early to report results of the trials. Results from earlier trials in London indicate that the speed monitor has a positive effect on driving behaviour. It helps you to keep an eye on your speed, which is helpful due to the many different speed limits and types of road in the Netherlands. For example, there are A-roads with speed limits of 80km/h, and other roads with speed limits of 60 or 70. A speed monitor can accurately remind you of the local speed limit, ensuring optimal safety.

## ISA London

Technolution has already carried out trials with Intelligent Speed Adaption (ISA) in London. The MobiBoxx was also used as a basis for this system. The English trials provided knowledge and experience that can also be used in the Dutch trials. The experiment with ISA in London showed that users' reactions to the speed advice system were positive; so much so that the majority would be in favour of wide-scale implementation. One reason for this could be that in England, a penalty-points driving licence is used. If you accumulate more than 12 points within 3 years, your driving licence is suspended for 6 months. Minor speeding offences result in 3 penalty points, and more serious offences can even result in an immediate ban.

## MobiBoxx as platform

The back-office server that processes the maps is an essential component of the MobiBoxx platform. It is a generic environment that can be adapted for each project in order to collect and process data, share software, communicate etc. It is for this reason that the entire incident-management system of the Dutch Directorate-General of Public Works and Water Management runs on the MobiBoxx platform. The system is integrated into 500 service vehicles. The driver can log on via a screen in the vehicle so that the system knows who is driving the vehicle. If there is an incident on the motorway, the system can therefore determine which vehicle is closest to the incident. This vehicle will then be instructed by MobiBoxx to attend the incident. Via the same screen, the driver can also operate the flashing lights and the warning sign in the pick-up bed. The MobiBoxx therefore acts as the spider in the web.

