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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations****Working Party on Automated/Autonomous and Connected Vehicles\*****Fifth session**

Geneva, 10-14 February 2020

Item 5 (a) of the provisional agenda

**Connected vehicles:****Cyber security and data protection as well as software updates****Report on the test phase for Software Updates of the Task Force on Cyber Security and Over-the-air issues****Submitted by the Task Force on Cyber Security and Over-the-Air issues \*\***

This report was prepared by the Co-Chairs of the Task Force on Cyber Security and Over-The-Air Software issues. This report provides an overview of the outcome of the test phase for the proposed UN Regulations on cyber security and over the air updates. It provides a description of the aims of the test phase, the approach adopted and the outcomes from the test phase.

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\* Formerly: **Working Party on Brakes and Running Gear (GRRF)**.

\*\* In accordance with the programme of work of the Inland Transport Committee for 2020 as outlined in proposed programme budget for 2020 (A/74/6 (part V sect. 20) para 20.37), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



## 1. Introduction

### 1.1. Preamble

- 1.1.1. A Task Force was established as a subgroup of the Informal Working Group on Intelligent Transport Systems / Automated Driving (IWG on ITS/AD) of WP.29 to address Cyber Security and Over-the-air issues. The Task Force consisted of representatives from Contracting Parties (including France, Germany, Japan, the Netherlands, United Kingdom of Great Britain and Northern Ireland and the Republic of Korea as regular participants) and non-governmental organizations, e.g. the European Association of Automotive Suppliers (CLEPA), the International Motor Vehicle Inspection Committee (CITA), la Fédération Internationale de l'Automobile (FIA), the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) and the International Organization of Motor Vehicle Manufacturers (OICA). Following the reform of the World Forum for Harmonization of Vehicle Regulations (WP.29), the Task Force is reporting to the Working Party on Automated/Autonomous and Connected Vehicles (GRVA).
- 1.1.2. The remit of the Task Force is to produce provisions in the form of a recommendation or resolution, provisions suitable for the 1998 Agreement as well as a draft UN Regulation addressing cyber security issues and a UN Regulation addressing over the air update issues.
- 1.1.3. The Task Force commenced on 21 December 2016 and produced draft Regulations on cyber security and software update processes in 2018, reference ECE/TRANS/WP.29/GRVA/2019/3 and ECE/TRANS/WP.29/GRVA/2019/2.
- 1.1.4. The task force recommended that the regulations undergo testing to ensure that the requirements can be evidenced, and that technical services or approval authorities can appraise them. The recommendation was adopted.
- 1.1.5. The test phase involved a number of countries' authorities and technical services together with vehicle manufacturers who volunteered to undergo this test phase. The Task Force did not impose any requirement or pre-requisite in terms of knowledge or certification, but the participants to the test phase included cyber approval authorities, national cyber security agencies, ISO/IEC 17020 and ISO/IEC 17025 accredited technical services involving vehicle approval, auditing and cyber security professionals.
- 1.1.6. This report describes the test phase, its outputs and conclusions. This also addresses the work priority stated in the Framework document on automated/autonomous vehicles, ECE/TRANS/WP.29/2019/34/Rev.1, to provide a report for that body on the test phase.

## 2. Test phase

### 2.1. Aims of the test phase

- 2.1.1. The aims of the test phase were to verify the effectiveness/robustness of both proposed Regulation(s) and to verify that approval authorities/technical services are able to assess the information and, if provided the same information, reach the same conclusions (referred to below as round robin testing).
- 2.1.2. To aid future implementation of the regulation the test phase also aimed to capture the experiences of its participants and provide guidance on how to assess the regulatory requirements and documentation required. This was captured in a document called an "interpretation document".

- 2.1.3. The aim of the test phase was not to approve or evaluate vehicle types or the management systems of vehicle manufacturers.

## 2.2. Overview of the test phase

- 2.2.1. The test phase commenced in February 2019 and ended in August 2019.
- 2.2.2. A meeting of potential test phase participants was held in February 2019 to agree how the test phase would proceed and how confidentiality requirements of manufacturers would be addressed. It was agreed that the names of participants would not be made public and the detailed information exchanged between manufacturers and technical services/approval authorities would remain confidential to those parties. Information fed back would refer to the regulations rather than the information assessed. More detail can be found in the test phase terms of reference “TFCS-TPCM1-02rev1 (Chair) Provisional terms of reference”.
- 2.2.3. The test phase proceeded as follows. Participating manufacturers paired up with technical services or approval authorities. Once arrangements were in place, time was provided for manufacturers to gather the necessary information. Meetings were held between parties to agree how to assess the regulations and provide more structure to information gathering. Finally, the assessment was made. Feedback to the Task Force was provided by Contracting Parties and industry bodies.
- 2.2.4. The test phase was well supported. Seven Contracting Parties (France, Germany, Japan, the Netherlands, the Republic of Korea, the United Kingdom of Great Britain and Northern Ireland, and Spain) participated and over fifteen manufacturers (from categories M and N). One manufacturer was able to work with two technical services to provide for a joint assessment of the same information.
- 2.2.5. Support to the test phase was provided by the International Standard Organization (ISO) and SAE International who shared a draft copy of their standard ISO/SAE 21434. This standard is designed to support the cyber security regulation.

## 2.3. Outcome of the test phase

- 2.3.1. Contracting Parties reported their experiences of the test phase during a UNECE Task Force meeting in Leiden on 17-18 July 2019 and then confirmed their opinions at a Task Force meeting in Geneva on 27-28 August 2019.
- 2.3.2. Reports were provided by representatives from contracting parties (France, Germany, Japan, the Netherlands, the Republic of Korea, the United Kingdom of Great Britain and Northern Ireland, and Spain) and by industry. The presentations made are provided on the Task Force wiki page. The reports detailed areas where further guidance may improve the interpretation of the regulations and, where possible, their overall impression. An overview of the test phase findings is available as “TFCS-TPCM2-14 (Sec) Overview on the initial findings during the test phase”.
- 2.3.3. In accordance with these findings:
- The initial assessment is positive
  - The general concept works as intended
- 2.3.4. The approach adopted by participants for assessing the regulations and the experience gained by them was captured in “Interpretation Documents”. These elaborate what the technical services or approval authorities required to

- demonstrate that the requirements are met and further captured the opinion of manufacturers and suppliers.
- 2.3.5. Refinements and additions to the regulatory text were suggested. These are based on the learning from the test phase and will be considered further by the Task Force. It was suggested that some information from the interpretation document could be included in the Regulations to improve legal certainty.
- 2.3.6. The outcome of the round robin testing was provided by the participating manufacturer. They concluded that:
- The different technical services/approval authorities demonstrated the same understanding of the regulations
  - The different technical services/approval authorities demonstrated the same understanding of the documentation they required.
  - The draft ISO/SAE 21434 provided a useful aid to the assessment and harmonising approaches
- 2.3.7. The round robin testing provided an indicative positive result that a similar conclusion might be reached if a full information package were available.
- 2.3.8. The overall conclusion of the Task Force is that the regulations works as intended and will provide value.
- 2.3.9. The test phase was ended as a Task Force activity on 30 August 2019.

### 3. Next steps

#### 3.1. How points raised are being addressed

- 3.1.1. Points raised by test phase participants and suggested amendments from the test phase were collated and presented to the Task Force. These were first discussed in TFCS-15 and subsequent meetings. Future meetings will take place in Japan (16th TFCS meeting in November 2019) and the United States of America (17th TFCS meeting in January 2020) and finalise discussions on them.

#### 3.2. Specific points raised to be addressed by the Task Force

- 3.2.1. **Introduction of the legislation** – the output from the test phase has resulted in suggested amendments to the requirements. The Task Force will complete their review of these, and other comments subsequently received, in their next meeting in November. This will allow GRVA to progress the work and potentially adopt the legislation in February 2020.
- 3.2.2. **Competencies of Technical Services** – as the regulations are new the question of what skills authorities would need was raised. Whilst it was noted that the competencies of Approval Authorities and Technical Services is a matter for Contracting Parties under the 1958 Agreement (according to the provisions of Schedule 2 of the Agreement), participants were able to provide advice and the Task Force will consider this further. Experience from the test phase shows that an assessment could be conducted through having a lead auditor (to verify that all items are addressed) and dedicated experts (to look at specific items). It was noted that there are organisations, such as the European Network and Information Security Agency (ENISA) in Europe, who can help identify such experts. The Task Force will continue to consider this ahead of the next meeting of the GRVA.
- 3.2.3. **Software updates for vehicles “definitely discontinued”** – the topic of updates for vehicle types which are “definitely discontinued” was raised as

there is no precedence for this within the confines of the 1958 Agreement. The Task Force has provided guidance for handling software updates post-production to help national/regional bodies.

- 3.2.4. **Pass-fail criteria for the requirements** – the regulations define processes that should be in place and require that manufacturers evidence that they have them, they work and they have been applied to vehicle types. This provides for an evidence-based assessment and audit of whether the requirements are met. The interpretation documents provide guidance on what is needed to demonstrate specific requirements are being met. Additional requirements and specifications may also be added in the Regulatory text to improve legal certainty. This will complete in the January meeting ahead of the next GRVA meeting.
- 3.2.5. **Risk management approach** – it was noted that the approach adopted for cyber security is to manage the risk through both the design of vehicles and requiring manufacturers to have a response plan should further action be needed. This is in line with best practice and could be recommended to the sectoral initiative on cybersecurity under the UNECE Working Party on Regulatory Cooperation and Standardization Policies (WP.6).
- 3.2.6. **How harmonisation of assessments by different Technical Services will be achieved** – the output of the round robin testing indicated that different technical services would reach the same conclusions on the basis of the same documentation. Additional support to harmonisation is being provided through development of the interpretation documents and the ISO/SAE 21434 standard. The work on the interpretation documents and the regulatory text will continue in the January meeting.
- 3.2.7. **Vehicle type** – the topic of which vehicles the regulations should initially be applied to was raised. This has subsequently been discussed and resolved in GRVA.
- 3.2.8. **Alternative methods of identifying software on a vehicle** – an alternative method of implementing the *Software Identification Number relevant for UN Regulation No. X (RXSWIN)* concept was adopted, alongside the existing proposal. This gives greater flexibility to how software on a vehicle, relevant to a given regulation, may be identified. The Task Force will look to adopt this suggestion in their next meeting in November.

### 3.3. Outcome of Test Phase

- 3.3.1 The work of the test phase has improved the legislative proposal and shown they will function as intended. Amendments to the regulation and work on the interpretation document will address concerns raised during the test phase regarding specific aspects of the implementation of the proposed legislation.