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Consolidated Resolution on Road Traffic (R.E.1):

A Safe System Approach

Multi-Disciplinary Crash Investigation (MDCI) in Finland

Submitted by Finland

This document proposes changes to Chapter 17 of RE.1 on Multi-Disciplinary Accident Investigation (originally adopted as part of Annexes to ECE/TRANS/WP.1/157 and ECE/TRANS/WP.1/159). WP.1 is invited to consider the changes (strikethrough text is proposed to be deleted while bold text is proposed to be added).

Annex VIII BIS

Multi-Disciplinary Crash Investigation (MDCI) in Finland (see Chapter 17, Recommendation 17.6.1 (c))

I. Road accident investigation

1. Road accident investigation teams carry out the investigation of all fatal road and cross-country **off-road** accidents in Finland) ~~(since 1970)~~. Accidents resulting in serious injuries or only in material damages are also investigated. Other than fatal accidents are usually studied with a limitation based on time or region or, for example, to clarify a particular issue.

2. Investigation is regulated by legislation on the investigation of road and cross-country traffic accidents (~~151224/201604~~). The investigation is steered and supervised by the Road Accident Investigation Delegation set up by the Ministry of Transport and Communications. ~~The Road Accident Investigation Delegation comprises representatives of e.g. the Ministry of Transport and Communications, Ministry of the Interior, Ministry of Justice, Ministry of Education, Ministry of Social Affairs and Health, Finnish Road Administration, Vehicle Administration, National Authority for Medicolegal Affairs, Accident Investigation Board Finland, Central Association of Motor Traffic, Finnish Transport Workers' Union and Liikenneturva, the Central Organisation for Traffic Safety in Finland. The Finnish Motor Insurers' Centre. Finnish Crash Data Institute (OTI) as an independent unit within Finnish Motor Insurers' Centre (FMIC) takes care of the maintenance of road accident investigation, the use of the investigation results and the information service is responsible for the maintenance, general organization, planning and training of road accident investigation activities. A cross-administrative co-operation group of parties participating in the activities can assist OTI in general guidelines.~~

3. In Finland the Safety Investigation Authority (SIAF) ~~(former Accident Investigation Board)~~ www.turvallisuustutkinta.fi/en/ investigates all major accidents regardless of their nature. ~~Safety Investigation Authority~~ If SIAF decides on the commencement of investigation, the investigation under act ~~241512/201604~~ shall discontinue **immediately, unless another timing is agreed upon with the SIAF**. Nevertheless, the information on the investigation shall also be available to the investigation scheme operating under act 1512/2016.

II. The road accident investigation teams

4. Investigation of road and cross-country accidents is performed by the road accident investigation teams (20 in all). A road accident investigation team shall comprise a Chair, a Vice Chair and a sufficient number of members who shall represent expertise sufficient from the standpoint of accident investigation. The team members are:

- a police member, Chair;
- a vehicle specialist member;
- a road specialist member;
- a physician member;
- a psychologist member;

other experts, for example railway expert, depending on the accident in which special expertise is needed.

5. While carrying out their investigation work, the road accident investigation team shall be independent bodies to ensure neutrality and impartiality of the investigation. The investigation teams do not take a stand on issues of liability or compensation.

III. Investigation method: VALT METHOD 2003 (revised)

6. Considering the VALT METHOD 2003 the important points are analysis of the origin of the accident and production of countermeasures (Risk Accumulation Model, VALT). The latest VALT METHOD was composed in Turku University under guidance of professor Esko Keskinen.

A. The origin of the accident

7. The starting point for this accident investigation method is analysis of risk factors that had an immediate effect and those in the background. The examination of risk factors is extended to touch upon how serious consequences also materialize. In this way the risk factors are divided into those which affected the origin of accident and those that had affected to serious consequences.

B. Production of countermeasures and proposals for safety improvement

8. The foundation for the creation of safety proposals is the concept that, firstly, all those types of factors that could have possibly prevented the crash, and secondly, those factors that could have prevented death or lessened injuries are sought.

9. The starting point for the proposals for safety improvement is an attempt to find the inhibiting or preventive possibilities in each immediate risk factor and those in the background which have had an effect. The safety recommendations are in turn formed from the preventative possibilities. The safety recommendations are systematically analyzed in connection with every accident.

Important concepts:

- The key event (what took place);
- Risk factors (why it happened):
- Immediate risk factors;
- Background risk factors.
- Damages and factors which have affected the consequences (why serious consequences);
- Injuries, causes of injuries and safety devices (why serious consequences);
- Possible preventive measures in accidents, improvement proposals and safety recommendations (how to prevent the incident, how to prevent the consequences).

IV. Operation at the scene of the accident and the members cooperation

10. The accident investigation teams receive information about accidents either from the Emergency Response Centre or from the local senior police officer. According to the law members of the investigation teams are entitled to have access to the place of accident and carry out investigations, inspect the vehicles and obtain information, for example, from official register to establish the reasons for the accident.

11. The investigation team begins the investigation together at the accident scene if this is possible. With police and rescue staff on the scene of accident, the crash place, the directions of travel of those involved, together with other people, the marks found, and the general characteristics of the incident are clarified. After this the investigation team agrees on the investigation sequence, such as, for example, interviews with those involved, the

checking of vehicles, the need for special investigations, assistance in moving or lifting, etc. After this the members begin their own investigation at the scene.

12. Having arrived at the site, the investigation team examines and records the points where those involved stopped and the marks that remain. On the basis of the findings the road specialist or possibly another member of the team draws a sketch of the scene, including sequences of the events before the impact, the places and positions of vehicles at the moment of impact and final position. In addition, the location of those involved is marked on the sketch at, for example, one second intervals, before the crash and after it. In the sketch the dimensions are shown with, at least, the path of displacement, together with the braking or skidding tracks and stopping points, and the sketch is made as far as possible to scale. The drawing is attached as an annex to the investigation folder.

13. The member specializing in reconstruction makes the calculated reconstruction of the movement of the vehicles before and after the crash. From this calculation one can obtain the information required about speed before the key event and at the moment of impact, for processing of the incident and for recording on the forms.

Data to collect:

- Information about the driver by interviewing the driver/pedestrian or their relative
- or eyewitness;
- Examining the vehicle on scene, information from Vehicle Traffic Information
- System (Finnish Transport ~~Safety~~ **Safety and Communications Agency**);
- Examining the road, weather and environment on scene;
- Autopsy and other forensic medical documentation, medical case summary;
- Records of preliminary police investigation, information of warnings, offences and driving bans;
- Event marks and drawings for reconstructions and crash severity.

14. Accidents are investigated and data is collected using a standardized VALT Method (2003) and standard forms under legislation. Standardization of the method increases the quality and usability of the information obtained.

V. Objectives

15. The objective is to produce information and safety suggestions to improve road safety through studying road and cross-country traffic accidents. In practice, files are collected in the field investigation and they are available to the traffic safety work as laid down in the data protection legislation.

- In the field investigation, information from accidents is collected on the investigation forms and concerns those parties involved, the events and circumstances. These form the basis for the event description and analyses, and from them an accident database is created;
- In the reconstruction of the accident, the course of the event and calculations to avoid the incident are examined. Reconstruction gives essential information for analysis and for the computer-based accident records;
- In the analysis of the accident, explanations for the accident, the factors that increased the probability of the accident and suggestions for safety measures are all examined thoroughly;
- On the basis of the process described above, an investigation report is written, an investigation folder is compiled from the documents collected, and filed with the Finnish Motor Insurers' Centre. The investigation report includes, for example, a description of the course of the accident, the factors resulting in the accident, the

results of the accidents, and safety improvement proposals made by the investigation team. After completion, the investigation report is a public document. Other documents gathered in connection with the investigation are confidential. The investigation material gathered in connection with the investigation constitutes the accident information register. The data in the accident information register may be handed over without charge to be used in scientific and statistical research and in road safety work by the authorities;

- During the investigation or after, the investigation team makes recommendations for local improvements. The collected information and results of analyses are used in research, training, reporting and in another practical traffic safety work, and for the development of investigation and research-based traffic safety work. Furthermore, information is important part of Finnish national road safety work.

VI. Findings and recommendations implemented

16. According to the law after conclusion of the investigation, a report shall be prepared on the findings. The investigation report shall contain a report on the course of the accident, the factors that led to the accident and the consequences of the accident as well as the Road Accident Investigation Team's recommendations for road safety action.

17. The Road Accident Investigation Teams **and OTI** may submit proposals to authorities for road safety action to be taken on the basis of the recommendations. The Road Accident Investigation ~~Delegation~~ **Co-operation group** ~~also decide on the submission~~ may **help OTI in drafting the proposals** prompted by the investigation.

18. In years ~~2012~~ **2018-2022** road accident investigation teams **have** submitted over 52,000 recommendations for road safety action. Also during the investigation or after, the investigation team makes recommendations for local **road infrastructure** improvements. Furthermore, the investigation team makes a service advice to **Traficom** (Finnish Transport **Safety and Communications** Agency) about defects or malfunction in a vehicle's structure, equipment or safety equipment that threatens safety and demands immediate interfere with the problem.

19. In a law there is nothing written about implementation. However, ~~FMIC~~ **OTI** has followed the implementation and negotiated with authorities of implementation of safety proposals.

VII. Accidents investigated

- Years 2018 - ~~2022~~, a total of **1631** ~~400~~ accidents investigated, of which:
 - ~~1072~~~~255~~ fatal road accidents, of which:
 - ~~862~~~~207~~ motor vehicle accidents;
 - ~~210~~~~28~~ pedestrian **or cyclist** accidents;
 - ~~20~~ cyclist accidents
 - ~~559~~~~145~~ other accidents (Accidents resulting in serious injuries or only in material damages or fatal cross-country accidents) **of which**;
 - ~~485~~ fatal cross-country accidents;
 - ~~24~~ motorcycle and moped accidents with injured persons;
 - ~~86~~~~42~~ heavy vehicle road accidents with injured occupants or with major property damages;
 - ~~24~~~~46~~ all terrain vehicle or snow mobile accidents with injured occupants;
 - ~~379~~~~43~~ other accidents resulting in serious **or slight** injuries or only in material damages.

VIII. The history of road accident investigation

- First accident was investigated 8.3.1968;
- Computer database since 1970;
- Legislation in 2001; **revised in 2016**
- VALT Method, last revision in 2003;
- Investigation forms in web since 2009.

IX. Financing

20. The operations of road accident investigation are financed ~~with~~ **from general grants which are based on** the road safety charge collected in connection with motor liability insurance premiums. ~~The size of the charge is confirmed annually by a decree issued by the Ministry of Social Affairs and Health.~~ **Finnish Transport and Communications Agency acts as the granting authority.**

X. Regular statistical publications from the accident information register

- ~~VALT~~ **OTI** Annual Report: A summary report on fatal accidents investigated during the year;
- ~~VALT~~ **OTI** Preliminary Report: A ~~quarterly~~ preliminary review of fatal accidents;
- ~~OTI Preliminary data review on alcohol-related~~ **substance use related road accidents in the previous year**; ~~A preliminary review of fatal alcohol-related road accidents in the previous year.~~
- **OTI Thematic reports**
- **OTI Fact Sheets**
- **www.oti.fi**

XI. International cooperation

21. Cooperation has been done with European MDCI projects such as SafetyNet and Dakota. In SafetyNet project the requirements for conducting and promote the creation of transparent and independent road accident investigations in all Member States according to a common European investigation methodology http://erso.swov.nl/safetynet/fixe/WP4/sn_wp4_d4p5_final.pdf were established.
