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Economic Commission for Europe

Inland Transport Committee

Global Forum for Road Traffic Safety

**Group of Experts on drafting a new legal instrument
on the use of automated vehicles in traffic**

Third session

Geneva, 16 May 2022

Item 4 of the provisional agenda

Substantive Activities

Summary report of the Group of Experts on drafting a new Legal Instrument on the use of Automated Vehicles in traffic (LIAV) informal meetings hosted by Canada and Sweden on 31 January 2022 and 31 March 2022

Submitted by the experts from Canada and Sweden

The text below was prepared by the experts from Canada and Sweden. It contained a summary report related to two informal meetings organized by Sweden and by Canada following the discussions and decisions during the second session of the Group of Experts on drafting a new legal instrument on the use of automated vehicles in traffic (LIAV). The document contains an annex with an analysis of responses provided by the experts of the group to a survey. The authors of the document note that the results shown are based on an analysis conducted by the delegation from Canada and that some linguistic interpretations of the survey questions/answers could result in modestly different interpretations of the data trends.

I. Background

1. On 6 December, 2021, at the second session of the Group of Experts (GoE) on drafting a new legal instrument on the use of automated vehicles in traffic (LIAV), the Secretariat presented the outcomes of the initial survey “Safe Deployment of Automated Vehicles in International Traffic”. The survey included questions developed by the Secretariat as well as a number of questions adapted from *Informal Document No. 2 (GE.3-02-02)*, submitted by Canada.
2. It was concluded at the second session that the survey would be recirculated with multiple choice options to allow for a simple and quantitative analysis of survey results and to allow countries more time to respond.
3. The need to analyse and discuss the survey results prompted the idea to host two informal meetings to advance GoE programme of work item 1(a), to conduct an assessment of road safety challenges posed by automated vehicles that a legal instrument could potentially address. The Swedish and Canadian delegation volunteered to host two informal meetings in January and March 2022 to help advance this work. It was also agreed that Canada and Sweden would prepare a summary report of the informal meetings that would be later presented at the next formal GoE on LIAV meeting on 16 May, 2022.

II. Highlights of the 31 January 2022 Informal Meeting

4. On January 31, 2022, Canada and Sweden co-chaired the first Informal Meeting of the GoE LIAV to discuss some preliminary results of the survey circulated by the Secretariat. This discussion focused on the survey question 3 regarding road safety risks associated with automated driving (*see Annex B, slide 4*). In the meeting, contracting parties were also invited to share additional input on what they perceived as priority risks and to discuss their domestic efforts in those areas. The survey included responses from 22 contracting parties.
5. Sweden provided an overview of the survey question 3 findings, noting the following:
 - (a) The top three road safety risks identified by contracting parties included:
 - (i) Risks related to the lack of clarity on roles and responsibilities (18 responses);
 - (ii) Risks related to take over requests, fallback user expectations during transition demands (15 responses); and
 - (iii) risks related to technical performance and skill of the vehicle automation, risks related to mode awareness, and risks related to data protection and hacking (14 responses each).
 - (b) In general, few contracting parties agreed that ethical aspects related to automated vehicles were relevant in a road safety context.
 - (c) Additional safety risks posed by automated vehicles were identified, which may require intervention by road safety authorities e.g., competency/capability of the driver/user/operator/ADS; manufacture responsibilities; infrastructure to support ADS; ADS vs. driver/user interaction, etc.
6. Following the overview of survey question 3, contracting parties were invited to share perspectives and additional context on perceived safety risks associated with automated vehicles and the top priorities they see moving forward.
7. During the discussion, driver awareness of system capabilities and limitations was identified as a key concern for many contracting parties. Some underscored the importance of ensuring drivers have a clear understanding of their responsibilities when using AVs, and that it’s also important to prevent inappropriate misuse and inappropriate modifications of these vehicles. Some contracting parties noted they are in the process of developing new driver training curriculum and consumer awareness programming to address the safe use of driver assistance technologies. The goal behind these activities is to ensure that drivers understand the capabilities/limitations of these systems and on how to operate them properly. Similarly, some contracting parties also expressed concerns regarding information sharing

from vehicle manufacturers and other entities such as rental companies before a vehicle is used by a consumer.

8. Additional perceived safety risks mentioned by some contracting parties included the progressive loss of human driver skills, particularly when transition demands are initiated by the automated driving system as well as ensuring that AVs can communicate appropriately with other road users.

9. Some contracting parties noted that in their survey responses they did not identify risks associated with system capabilities, cybersecurity, or vehicle standards because in their view, these fall outside of WP.1's mandate and are most appropriately addressed by WP.29. Similarly, some contracting parties expressed that risks associated with infrastructure and data protection were of lesser priority for WP.1 consideration.

10. As part of the discussion, contracting parties were also asked to comment on the potential scope of a legal instrument, and whether the GE.3 should focus on the safety of automated driving systems, or driving automation more broadly, including driver assistance technologies. Although there was a recognition that many of the novel safety risks would pertain to automated driving systems, (L3 to L5), and would need to be a strong focus for a legal instrument, a number of contracting parties felt that the new legal instrument should apply to all levels of automation, and that focusing on specific levels, would be too narrow in scope.

III. Highlights of the 31 March 2022 Informal Meeting

11. On March 31, 2022, Canada and Sweden co-chaired the second Informal Meeting of the GoE LIAV to continue the discussion on the results of the GoE survey, providing a more in-depth analysis of key survey results.¹ The meeting also opened a discussion on proposed next steps to advance the GoE programme of work item 1(a), to conduct an assessment of road safety challenges posed by automated vehicles that a legal instrument could potentially address. Contracting parties were also invited to participate in the discussion and to share their perspectives concerning the proposed way forward.

12. At the meeting the analysis of survey findings by Canada and Sweden was presented (*see Annex B for details*). Some key takeaways included the following:

(a) Building on the findings discussed at the first informal meeting, a common pattern emerged in the other survey questions, where priority safety risks appear to be those associated with: take over requests, fall-back user expectations during transition demands; risks related to mode awareness (understanding of the real capability of the function); and risks related to the lack of clarity on roles and responsibilities. Many respondents felt that these same risks were most likely to manifest themselves, together with risks related to technical performance, mode awareness and risks related to overreliance (on automation). Other safety risks considered of lesser priority included risks associated with telecommunications and ethical aspects related to vehicle automation, following a similar response pattern in other survey questions.

(b) Notably, majority of survey respondents (52 per cent) still do not believe they have sufficient information at this time to appropriately define these problems and identify safety expectations to be included in a legal instrument.

(c) Additionally, there was no consensus among respondents regarding the instrument type that the GoE should develop - 70% of respondents did not select a new convention as their first choice of instrument.

¹ The discussion of survey results largely focused on survey questions pertaining to safety risks (given the focus of item 1(a) in the programme of work). Other survey questions prepared by the Secretariate on instrument choice etc., are also summarized in the Annex of Canada's presentation and may help to inform subsequent parts of the GoE programme of work moving forward. also invited to participate in the discussion and to share their perspectives concerning the proposed way forward.

(d) There was also a clear consensus around the need to engage/consult other relevant stakeholders on road safety risks as part of GoE's analysis.

13. Taking these findings into account, Canada and Sweden proposed a way forward for completing the needs assessment to ensure a clear and common understanding of the scope and rationale for a new legal instrument and the safety issues it would address. The first activity would include defining a core list of road safety risks that should be considered for inclusion in a legal instrument, building upon and further refining the key issues that were raised in the survey findings. The second activity would involve developing a series of brief scoping papers on each of the core safety risks (or themes of risks) to ensure a common understanding and to help define the safety outcomes that a legal instrument would seek to achieve. A final key activity would involve developing an engagement plan to validate the road safety risks and outcomes identified with external experts and WP.29² colleagues to ensure that there are no gaps, and to ensure that there is consistency and compatibility with the work done by WP.29.

14. A number of contracting parties expressed doubts about Canada and Sweden's proposed way forward, suggesting that further analysis of safety risks should not be a mandatory first step to develop a legal instrument. Although all members generally agree that addressing safety issues is a top of mind concern, some members feel an urgency to move forward with the drafting of a new legal instrument to bridge the gap between the two existing conventions and to ensure harmonization of road traffic rules as some contracting parties begin to develop traffic laws for automated vehicles. This would allow for a seamless cross-border approach for ADS-equipped vehicles once they become fully deployed.

15. To provide further rationale behind the Canada-Sweden proposal, Canada noted that in order for a legal instrument to provide meaningful direction on how to harmonize road traffic rules in the context of automated vehicles, the GoE will inevitably have to have a substantive discussion of the safety issues these very road traffic rules would address and that such an analysis should take place *before* trying to develop the legal instrument architecture and content. Canada and Sweden both underscored that if GoE does not have a basic, common understanding of these safety issues and the safety objectives we want to achieve, it will be very difficult to effectively and efficiently move forward with the development of meaningful content for a new legal instrument and to reach consensus on this content.

16. A number of contracting parties appeared to be supportive of the idea of further analysis of road safety risks associated with automated vehicles but noted the need to respect the programme of work calendar. The idea of working in a parallel track on AV road safety risks was proposed by some participants though no definitive proposals for how a parallel track might be facilitated were put forward.

17. To close the discussion, the Canadian co-chair of the informal meeting, urged those members who would like to see a parallel track of work undertaken to consider how this might be facilitated under the GoE workplan and to consider sharing their views at the May formal meeting.

IV. Conclusion

18. The GoE survey and the informal meetings held in January and March 2022, provided an effective starting point to advance item 1(a) of the programme of work and to identify some general road safety concerns associated with AVs that are commonly shared amongst the contracting parties. However, there appear to be divergent views on how to proceed with workplan item 1(a) or whether to move forward with subsequent items in the GoE workplan.

19. It is recommended that the GoE co-chairs allocate time for discussion on how to proceed at the formal meeting in May 2022.

² World Forum for Harmonization of Vehicle Regulations (WP.29)

Annex A

Survey: "Safe Deployment of Automated vehicles in International Traffic" – an initial analysis to facilitate discussions and creativity

Hans Berg

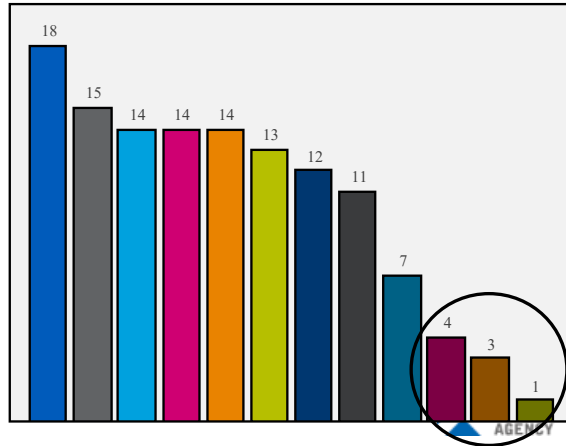


- Aim: Initial analysis of survey findings to facilitate a creative discussion of automated vehicles safety risks.
- Focus on question 3 - What are the additional road safety risks posed by automated vehicles in comparison with traditional ones that you believe may require intervention by road safety authorities?
- 22 responses



3. What are the additional road safety risks posed by automated vehicles in comparison to traditional ones that you believe require intervention by road safety authorities?

- Risks related to the lack of clarity on roles and responsibilities
- Risks related to take over requests, fall-back user expectations during transitions demands
- Risks related to technical performance and skill of the vehicle automation
- Risks related to mode awareness (understanding of the real capability of the function)
- Risks related to data protection and hacking
- Risks related to poor infrastructure (bad roads)
- Risks related to overreliance (on automation)
- Risks related to telecommunications (e.g., internet coverage)
- Risks induced by ethical aspects relevant to vehicle automation
- Some new risks may not require intervention of Road Safety Authorities
- Other (answered Yes)
- Not relevant. Automated Driving Systems performs better than human drivers



Analysis of written answers in Question 3 "other"

The additional road safety risks identified by survey respondents in Question 3 are diverse. Some focused on issues pertaining to the individual (driver/user roles etc.) while others apply to the road transportation and ADS-systems more broadly (e.g. infrastructure, minimum technical requirements etc.).

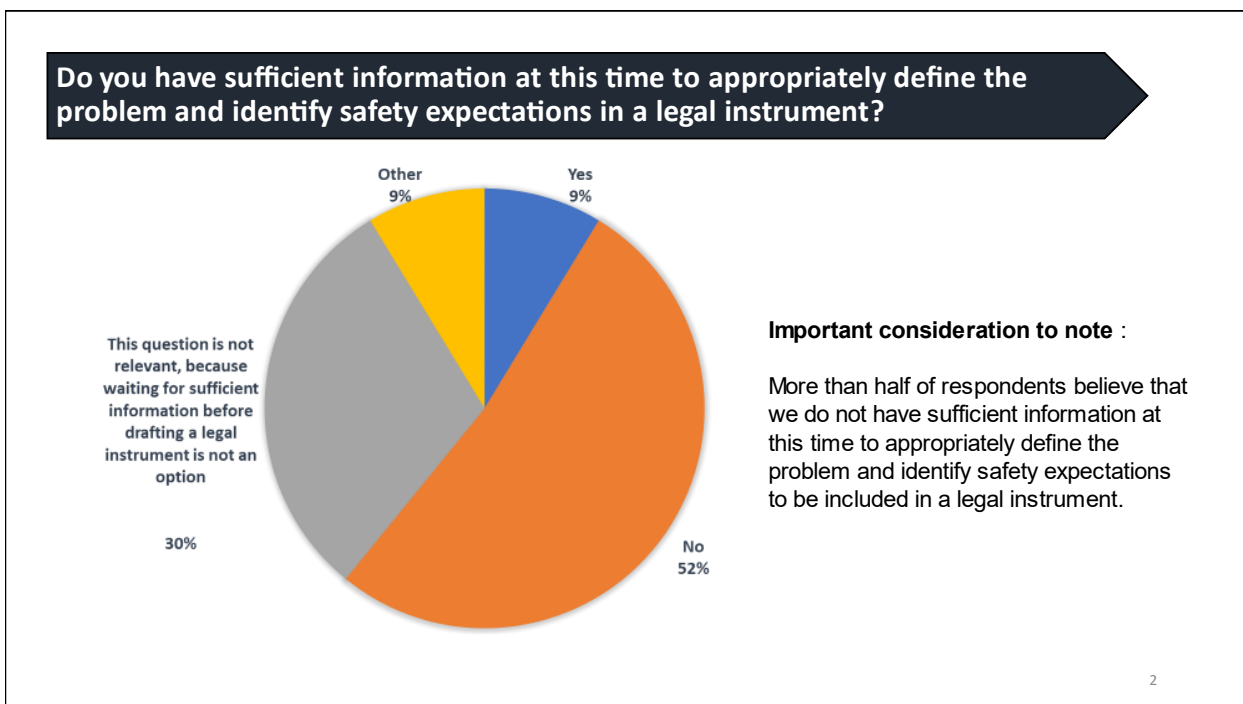
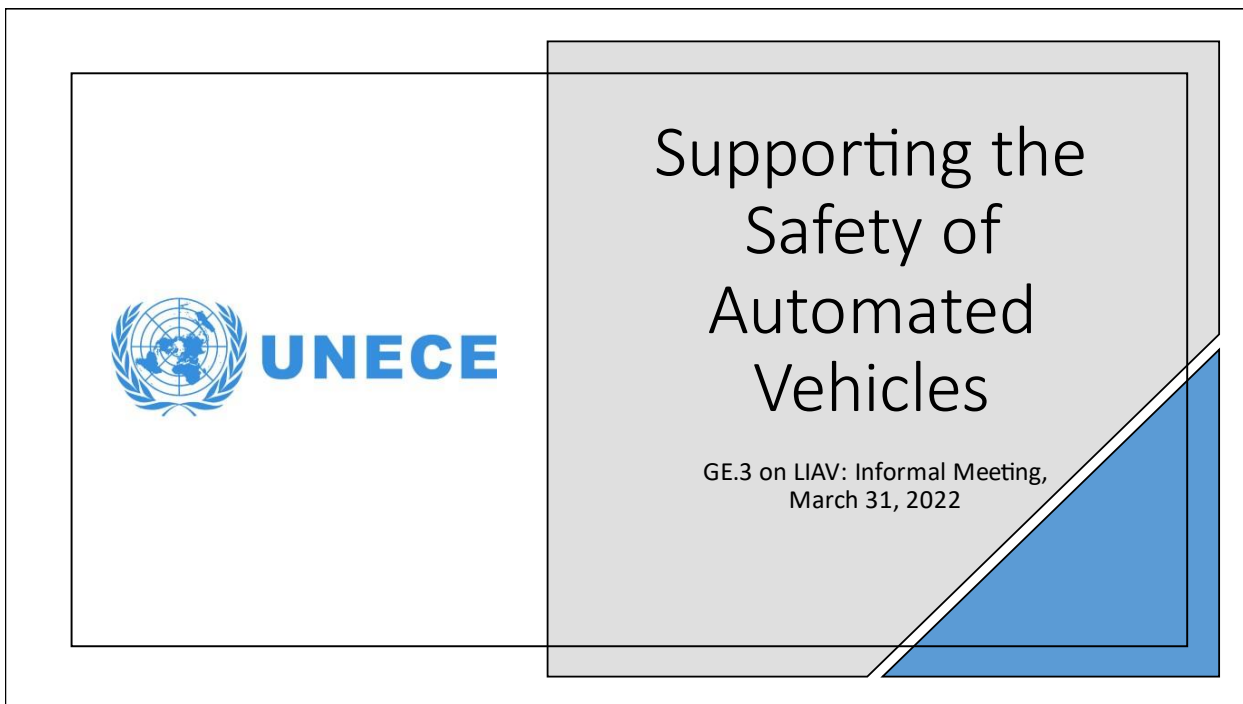
- Road environment (eg. infrastructure to support ADS)
- Competence/capability (eg. driver/user/operator/ADS)
- The ADS-systems (eg. changing over time, minimum technical requirements, system management, update, sensors, maintenance, data quality/protection/security)
- Manufacturers (eg. responsible innovation)
- Legislation (eg. liability, no legislation, not correct legislation)
- Interaction (eg. ADS vs. driver/user, other road users, insurance systems)



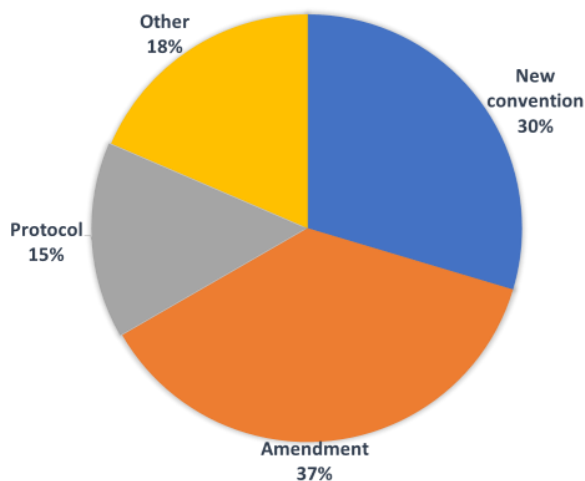
Conclusion

- Overall, an agreement that there are additional safety risks posed by AVs, in comparison with conventional vehicles, which may require intervention by road safety authorities .
- Generally, fewer agree that ethical aspects related to AVs are relevant in a road safety context .
- A broad perspective from a system level to individuals
- Many of these risks/issues will evolve over time, and we will need to consider how we "future -proof" our work.
- The answers can be used as an input for discussions on how to proceed.

Annex B



According to your opinion, what type of legal instrument is best suited to complement the existing 1949 and 1968 Conventions, without restricting the current margin of manoeuvre of Contracting Parties?



Approximately one third of respondents seem to believe that an amendment may best complement the existing conventions.

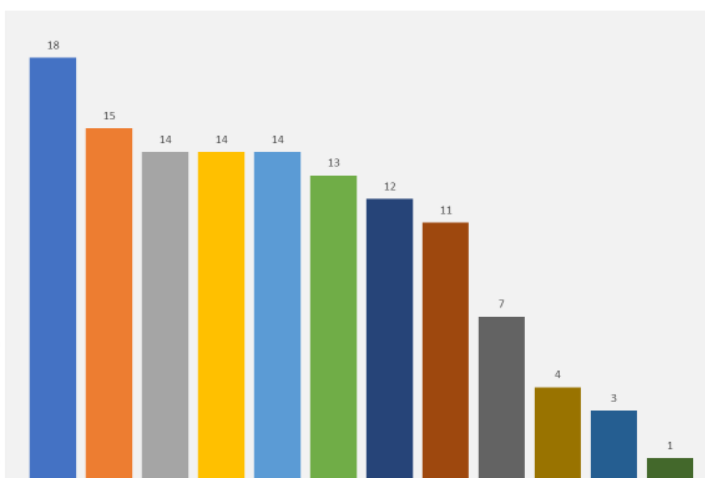
In contrast, about one third of respondents firmly stand by the need for a new convention dedicated to AVs.

Another option could be to develop a protocol.

3

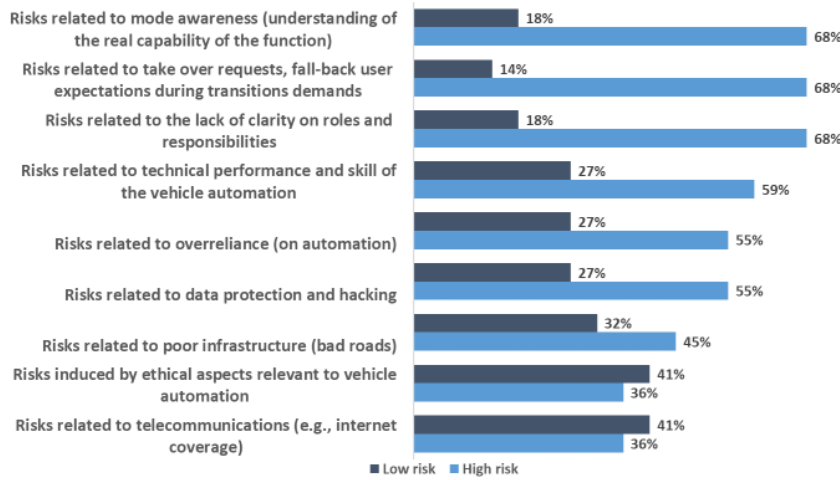
What are the additional road safety risks posed by automated vehicles in comparison to traditional ones that you believe require intervention by road safety authorities?

- Risks related to the lack of clarity on roles and responsibilities
- Risks related to take over requests, fall-back user expectations during transitions demands
- Risks related to technical performance and skill of the vehicle automation
- Risks related to mode awareness (understanding of the real capability of the function)
- Risks related to data protection and hacking
- Risks related to poor infrastructure (bad roads)
- Risks related to overreliance (on automation)
- Risks related to telecommunications (e.g., internet coverage)
- Risks induced by ethical aspects relevant to vehicle automation
- Some new risks may not require intervention of Road Safety Authorities
- Other (answered Yes)
- Not relevant. Automated Driving Systems performs better than human drivers



4

What do you know about the potential scope/nature of these risks at this early stage in AV development? (i.e., are they high or low risk?)

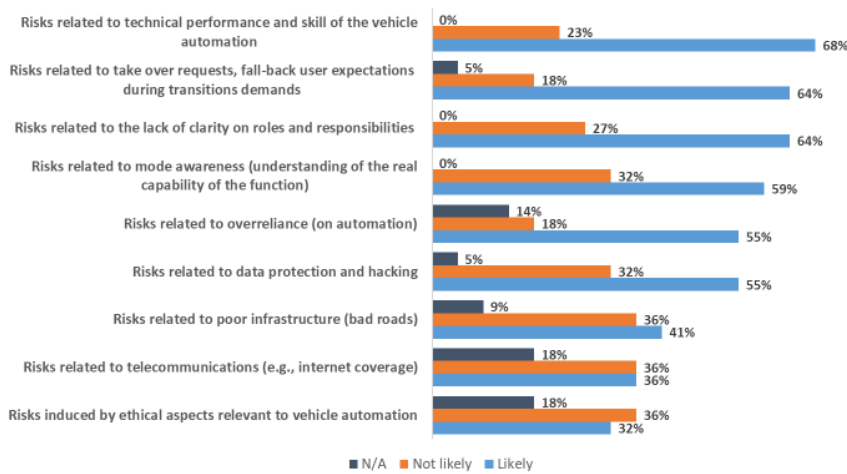


Respondents ranked the highest risks as:

1. Takeover requests
2. Mode awareness
3. Lack of clarity on roles and responsibilities

5

At this early stage of AV development, how likely do you estimate these risks are to manifest themselves?

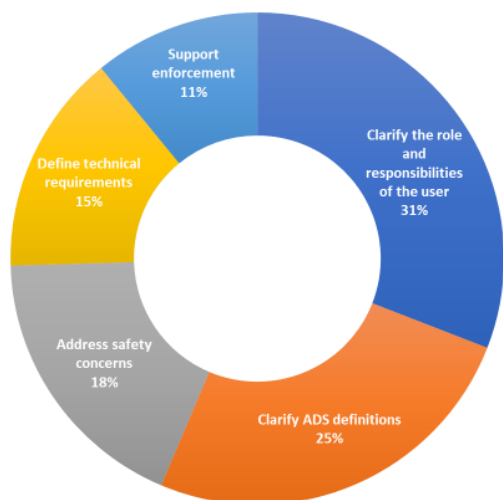


Respondents felt that risks associated with the following issues were most likely to manifest themselves:

1. Technical performance and skill of vehicle automation
2. Take over requests
3. Lack of clarity on roles and responsibilities
4. Overreliance

6

What is/are the priority aspect(s) that a new legal instrument on the use of automated vehicles in traffic should address?



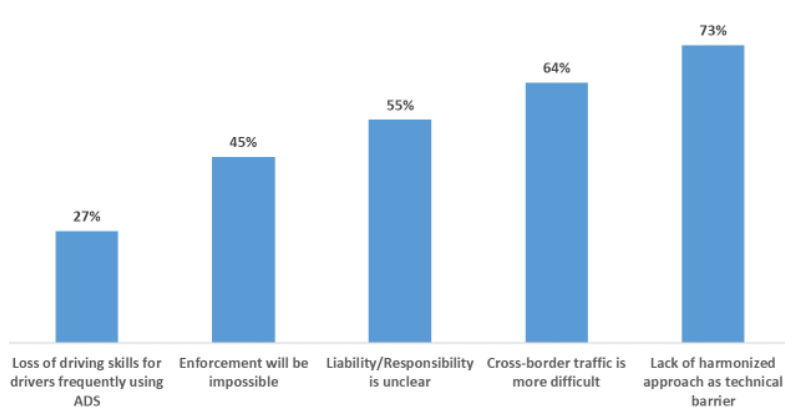
Top three priority aspects rated by respondents:

1. Clarify the user's role and responsibilities
2. Clarify ADS definitions
3. Address safety concerns

Note: This is a multiple-choice question, as such responses are limited to the pre-populated answers. Issues other than those listed here may merit the group's attention.

7

What are the potential risks faced by you as a contracting party if a new/existing legal instrument is not developed/adapted to address these issues?



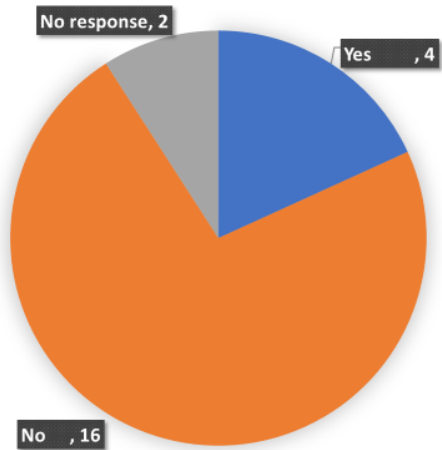
Most respondents are concerned that the lack of a legal instrument will be a technical barrier to a harmonized approach.

International traffic (crossing borders) might be more difficult to regulate without a new legal instrument

It seems that respondents are less concerned with the potential loss of driving skills for drivers frequently using ADS.

8

On the national level, have you previously conducted an analysis of one or both of the Conventions in order to determine its/their shortcomings in relation to automated vehicles?



Of 22 respondents, only 4 have conducted an analysis of the Conventions on Road Traffic.

9

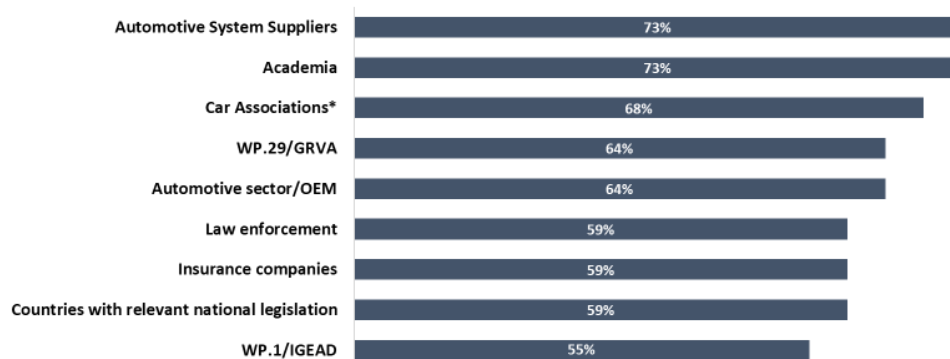
Key takeaways – Safety risks

- Diverse safety risks identified, however greater consensus around the following as being high risks:
 - Risk related to takeover requests, fall-back user expectations during transition demands;
 - Risks related to the lack of clarity on roles and responsibilities; and
 - Risks related to mode awareness (understanding of real capability of the function).
- Other safety risks identified for consideration include: safe AV interaction with users, non-AVs and other roads users; gradual loss of human driving skills; and risks associated with vehicle/system maintenance.
- Contracting parties share lesser concern over risks associated with cybersecurity, ethical aspects, poor infrastructure and telecommunications, as it pertains to road safety in an international instrument.

10

Key takeaways – Engagement

- Clear consensus around the need to engage/consult other relevant stakeholders on road safety risks as part of GE.3's analysis.
- Key groups identified include:

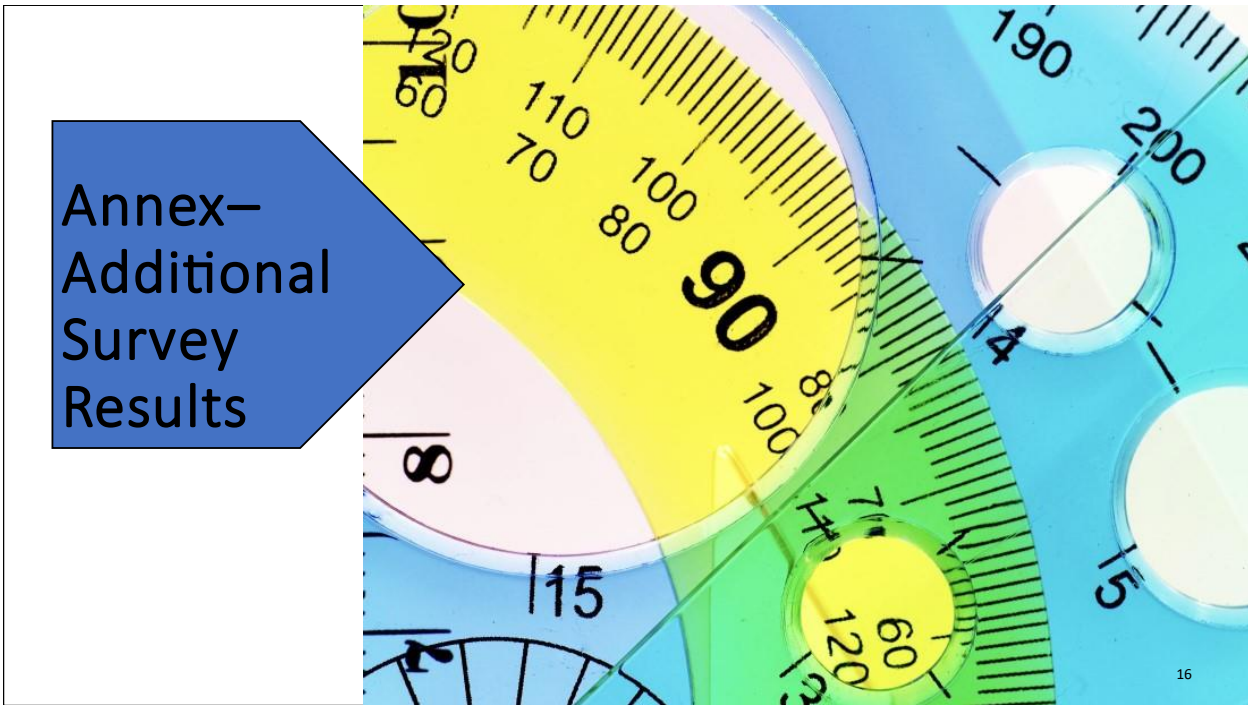


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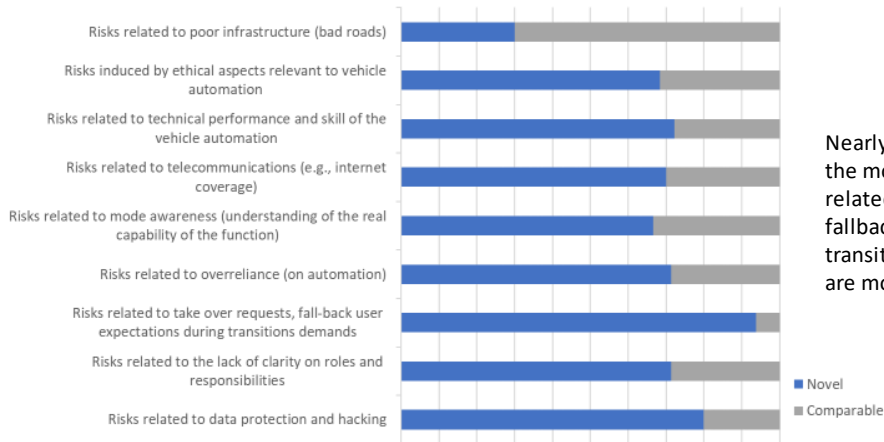
Key considerations moving forward

- As discussed in slide 2, a majority of GE.3 members (52%) do not believe we have sufficient information at this time to appropriately define the problem and identify safety expectations to be included in a legal instrument.
- As discussed in slide 3, there was no consensus among respondents regarding the instrument type that GE.3 should develop
 - 70% of respondents did not select a new convention as their first choice of instrument.
- **CONCLUSION:** To move forward and ensure the success of the GE.3 workplan, we need to first have a clear, common understanding of the scope and rationale for a new legal instrument.

12

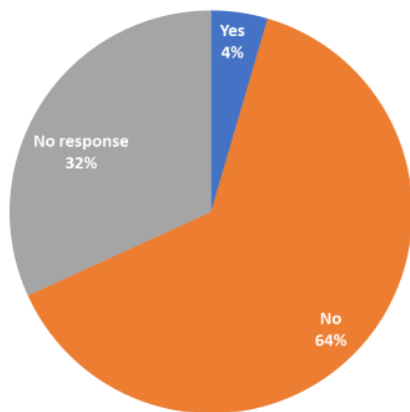


**Are these challenges completely novel and/or unique to automated vehicles?
How do they differ from conventional road safety issues with human drivers
that may already be addressed by international legal instruments?**



Nearly all respondents agree that the most novel risk for AVs is related to take over requests and fallback user expectations during transition demands. / these risks are mostly novel

According to your opinion, do the existing conventions adequately address the topic of automated vehicles in international traffic?

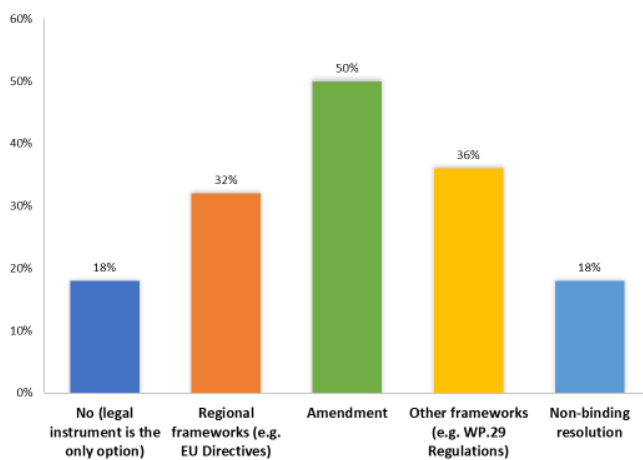


64% of respondents agree that the existing conventions do not adequately address the topic of AVs in international traffic.

Note that 32% of respondents did not respond to this question

18

Are there other tools (meaning other than a "new legal instrument") that might be more appropriate to address certain risks/provide direction to you as a contracting party at this early juncture?

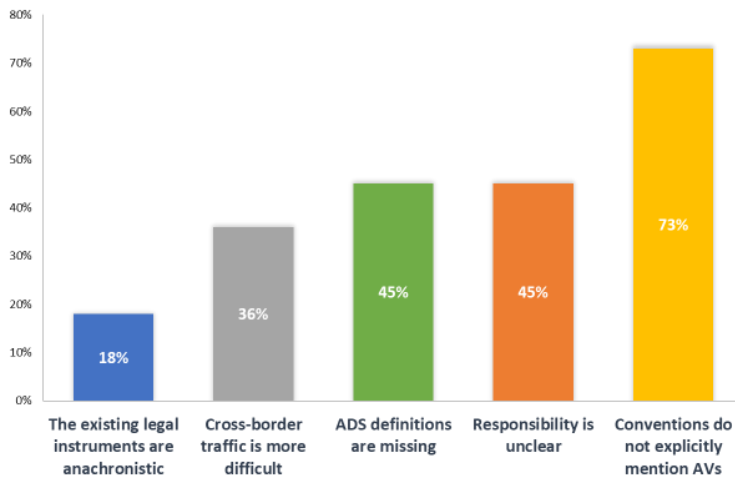


50% of respondents believe that amending an existing legal instrument may also be an appropriate tool, while approximately one quarter would respectively be open to other frameworks such as reliance on WP.29 regulations or regional frameworks e.g., EU directives.

18% of respondents believe that moving forward with the drafting of a new legal instrument is the only appropriate option.

18% of respondents also believe that a non-binding resolution can be a useful tool at this time.

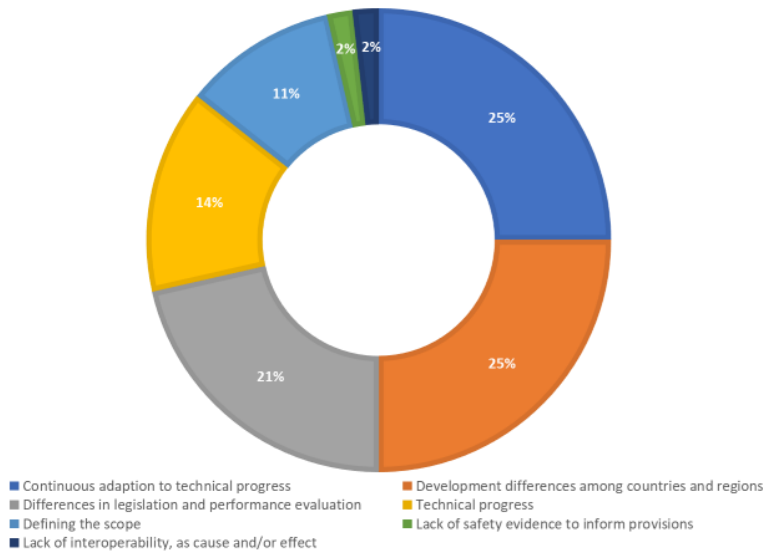
Please briefly explain the reason(s) for your answer to the previous question



73% of respondents attribute this to the fact that AVs are not explicitly mentioned in existing Conventions.

Nearly half of respondents agree that responsibility is unclear, and that ADS definitions are missing from the existing conventions.

What are the main obstacles that may arise in the foreseeable future for the development of a new legal instrument on the use of automated vehicles in traffic?

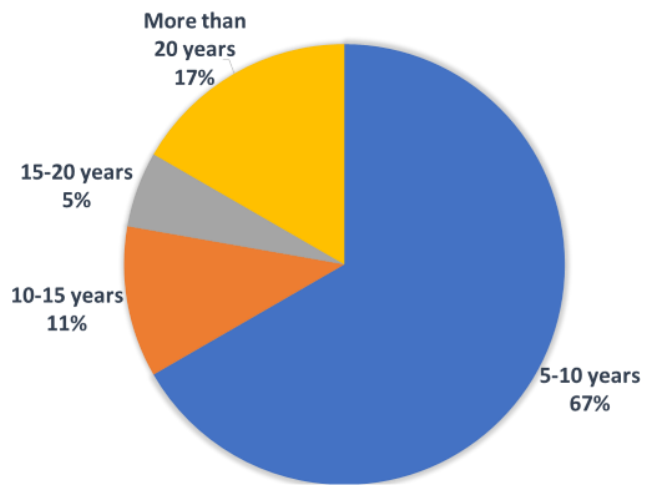


Three out of four respondents agree that the main obstacles will be:

1. Continuous adaptation to technical progress
2. Development differences among countries and regions
3. Differences in legislation and performance evaluation

Respondents do not seem to be particularly concerned with the lack of interoperability or the lack of safety evidence at this time.

What may be the expected validity period of this instrument or the timing until it needs revision?



Two thirds of respondents agree that the instrument should be valid for a period of at least 5 to 10 years.