## Framework for assessing impact of automation in road transportation

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European Commission U.S. Department of Transportation

linistry of Land, Infrastructure, Transport and Tourism



### Trilateral activity for building the framework

- Cooperation between Europe, US and Japan in ART WG
- Subgroup for impact assessment
  - Formed in 2015
  - 40 members
- Objective:
  - "Harmonization of the high-level evaluation framework for assessing the impact of automation in road transportation"
- High-level framework intended for FOT designers, policy makers and those making impact assessment of ART



#### **Motivation**

- Potential impacts of automation are far reaching and complex
  - High expectations on what connected and automated vehicles shall be able to contribute to several societal goals
- Field tests are expensive
- International harmonization
  - Design tests and studies to maximize the insight obtained
  - Enable meta-analysis
  - Can arrange complementary evaluation across the world
  - Make better use of each other's findings
  - Exchange best practices



**EU\*US\*JAPAN** 

ITS COOPERATION

### **Impact Assessment Framework Document**

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#### Trilateral Impact Assessment Framework for Automation in Road Transportation

Trilateral Impact Assessment Sub-Group for ART

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DRAFT

Version	Date	Contribution	By whom
0.01	27 Sept 2016	Skeleton with headings, updated in IA SG meeting	Satu Innamaa
0.02	3 Nov 2016	Added material for Chapters 1 and 2	Scott Smith
0.03	4 Nov 2016	Changed the order of sections, added material on Chapter 3	Satu Innamaa
0.04	16 Nov 2016	Elaboration of Chapter 3, some small changes and comments also elsewhere	Satu Innamaa
0.05	6 Dec 2016	Texts for Chapter 4 and 5, not yet complete and editing needed	Yvonne Barnard
0.05	6 Dec 2016	Added material for Chapter 2	Scott Smith and Lydia Rainville
0.07	7 Dec 2016	Comments on Chapters 4 and 5	Satu Innamaa
0.08	9 Dec 2016	New version of Chapter 3	Satu Innamaa
0.09	14 Dec 2016	Added material for Chapter 2; also readability edits	Hannah Rakoff
0.10	15-16 Dec 2016	More significant re-write of Chapter 2; light edits of later chapters	Hannah Rakoff
0.11	19-20 Dec 2016	Elaboration and comments for Chapters 1-5, text for Chapter 6	Satu Innamaa
0.12	20 Dec 2016	Elaboration of Chapters 4.1 and 4.2	Yvonne Barnard
0.13	21 Dec 2016	Text for 4.3	Satu Innamaa
0.14	28 Dec 2016	Editing of graphs in Chapter 3	Satu Innamaa

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#### **System and Impact Classification**

- Direct & indirect impacts
- Definition and KPIs
  - KPIs to be updated based on survey
- System and design domain





#### **Impact Mechanisms**

The potential impact mechanisms defined for ART to ensure that assessment covers systematically

- the intended and unintended
- direct and indirect
- short-term and long-term

impacts of both AV-users and non-users.

It is recommended that these mechanisms be identified for all impact areas, although, not all of them could be assessed.



## Example of elaborating the impact paths from direct impacts to indirect ones



#### **Recommendations for experimental procedure**

- Basics for setting the study design
  - Recommendations in line with the FESTA V
  - Special for ART
    - It will not always be possible to test AVs in a naturalistic environment → Use of controlled testing and simulation discussed
    - Many (first) AD studies will be performed utilising prototype vehicles, whose performance may not be the same as in the planned production vehicle
- Baseline
  - Sometimes comparison with the "old" situation may not be very useful, and studying new emerging patterns may be of more interest
    - If automation is seen as a process that will continue anyhow, a baseline may become less important
  - Several options for a baseline are discussed



#### **Recommendations for Data Sharing**

- Reasons for data sharing discussed
  - References to RDE and FOT-Net's Data Sharing Framework
- Obstacles for data sharing and their solutions
  - Competitive information
  - Privacy-sensitive data
  - Different legal and ethical conditions
  - Not always easily-accessible
  - Storing, maintaining and opening data after a project has a cost
- Common dataset needs to be agreed within 1-2 years





#### Your feedback is needed!

KPI Survey: https://connectedautomateddriving.eu/mediaroo m/participate-survey-kpi-automated-driving/

 Give us your view on most important KPIs!





### Your feedback is needed! (2/2)

Framework draft 1.0 (4 Jan 2017): https://connectedautomateddriving.eu/wpcontent/uploads/2017/05/Trilateral\_IA\_Framew ork\_Draft\_v1.0.pdf

- Give your feedback!
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- Updated version to be published in Jan 2018







# Thank you!

