Strategic Transport Research and Innovation Agenda

Connected and Automated Transport

STRIA stakeholder workshop on R&I initiatives and actions for connected and automated road transport

Guidance Document for Participants

17 May 2018

European Commission
DG Research & Innovation
Square Frère Orban 8
1049 Brussels
Belgium

Agenda

Room 5/A066

9:00 - 9:30	*Welcome coffee & Registrations*		
9:30 – 10:00	**Introduction** European Commission, DG RTD & Mr Gereon Meyer, VDI/VDE *(rapporteur of the R&I roadmap for connected and automated road transport)*		
	Work in breakout groups – by thematic area		
	5/A066	7/A066	7/A149
10:00-11:30	In-vehicle enablers	Shared and automated mobility services	Physical & digital infrastructure
11:45-13:15	Socio-economic impacts	Human Factors	Vehicle validation
13:15-14:00	*Lunch break (room 5/A066)*		
14:00 – 15:30	Production, industrialisation, deployment	Big data, Artificial Intelligence and their applications	Secure connectivity
15:30 – 16:15	**Wrap up**		
16:15 – 16:30	**Next steps**		

What is STRIA Connected and Automated Transport (CAT)?

The European Commission published in May 2017 the first Mobility Package, which includes legislative and non-legislative initiatives specifically targeting road transport. One of the documents prepared was the Commission Staff Working Document, which focused on the definition of a Strategic Transport Research and Innovation Agenda (STRIA). This document presents a forward-looking agenda for **research and innovation in transport**, where connected and automated transport (CAT) was one of 7 priorities.

The new EC communication on Automated Mobility, which will be part of the third Mobility Package (16 May 2018) proposes to develop a **strategic planning of R&I actions** and to better coordinate national and multinational funding programmes. The need for a **coordinated approach** and **priority setting** for funding research, demonstration and deployment activities was also stated by the EU Member States in the Declaration of Amsterdam and in the recommendations of the GEAR 2030 High Level Group.

With this regard, the European Commission intends to develop, in close cooperation with the Member States and industry stakeholders, **a roadmap** including a concrete **action plan** for short, medium and long-term research and innovation initiatives.

As all individual transport modes (or sectors) have specific R&I needs, their respective roadmaps and actions will be developed separately and an integrated (i.e. road, waterborne, train) roadmap on CAT should be available by the end of 2018.

What is the purpose of this workshop?

The workshop on 17 May will deal with **R&I initiatives** and **actions** for connected and automated **road transport**. [1]

The workshop will open a process of consultation of Member States and industry stakeholders to identify, in concrete terms, specific R&I initiatives and actions that are needed in the short, medium and longer term to fully exploit the benefits from connected and automated road transport. The R&I initiatives are expected to be more tangible and specific than those defined within the STRIA document published in 2017. A key tool will be the concept of "action sheets" which will be introduced at the workshop.

The objectives of the stakeholder workshop on 17 May are to:

- Discuss and agree on a list of thematic areas and main R&I initiatives in the area of connected and automated road transport for the EU and Member States;
- Create specific working groups (i.e. one per thematic area) to work on concrete recommendations and actions to implement the different R&I initiatives ("action sheets"); and
- Nominate a leader for each of the specific working groups.

Who will participate?

Nominated experts from the **Member States** in the field of Connected and Automated Road Transport.

Invited **experts** from different stakeholder organisations with a particular interest in R&I related to connected and automated road transport.

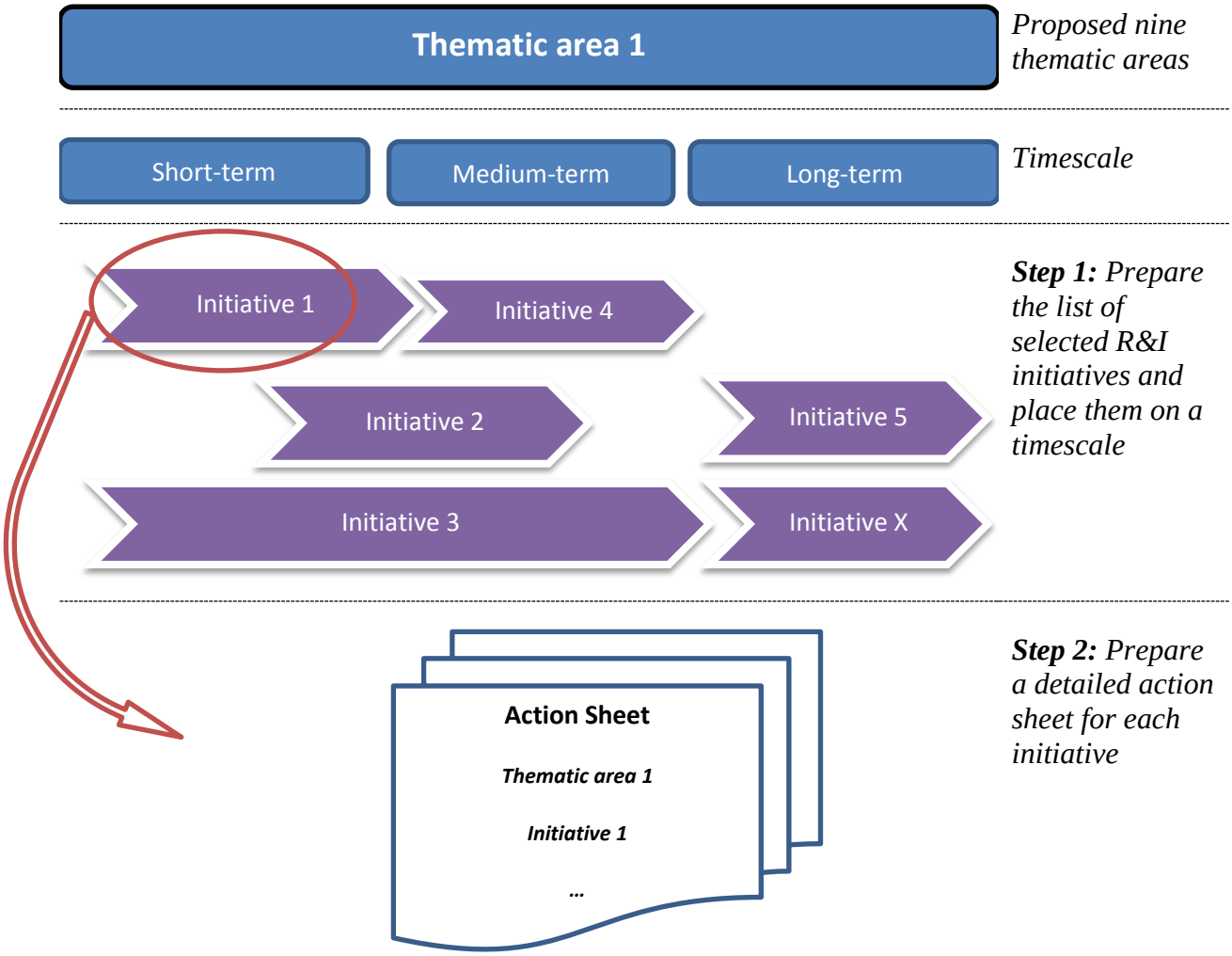
[1] For actions related to connected and automated waterborne and rail transport, other consultations processes and workshop are planned.

Representatives of the different **European Commission** services dealing with Connected and Automated Road Transport (DG MOVE, CNECT, GROW, RTD, JRC).

One **rapporteur** who will be in charge of preparing the resulting roadmap of R&I initiatives and actions.

What are the R&I thematic areas/ actions/action sheets?

- **Thematic areas** are the division of themes for research and innovation in field of connected and automated driving. In total, 9 thematic areas are proposed (see Annex 1). The discussions will be held in break out groups divided by these areas.
  - **R&I initiatives** are concrete activities and undertakings to be implemented by stakeholders in order to achieve fixed objectives. There might be several initiatives per thematic area. There is one leader per initiative, who will coordinate development of action sheets.
    - **Action sheets** describe objectives, challenges and expected impacts for each of the R&I initiatives. They will give details about concrete recommendations to reach the desired outcome of the initiatives, including proposed instruments and actors.



I am joining the workshop – how can I prepare?

- Please register here[2] (please let us know about your availability also if you cannot attend through the registration form).
- All participants are asked to study the attached document in Annex 1, which includes an overview of all thematic areas and an initial list of potential R&I initiatives. **Please check, if important R&I initiatives are missing, and, if possible, give this feedback and proposals to us before 10 May.**
- Look at the example of an "action sheet" (annex 2) which shall be developed for each of the R&I initiatives.
- We count on all participants' active involvement in the workshop discussions and break-out groups.

You can also…

- Take a look at the STRIA document on CAT and factsheet
- Think about your country and

  … your ongoing activities in the field of connected automated road transport. Those might include available national funding programmes for research and innovation; ongoing collaboration activities; higher education programmes related to CAT; ongoing or planned demonstration projects etc.

  … your CAT ecosystem – do you have industrial activities related to CAT; do you have active research organisations, NGOs, SMEs; any relevant innovative business models?

  … in which activities would your country like to join, or like for other countries to join?

  … in which areas would your country be interested to set up new collaborations and knowledge sharing activities?

- Contact colleagues in relevant national departments and organisations for more information.

Participation is free of charge but please note that travel expenses will not be reimbursed.

In case of questions, please contact:

RTD-STRIA-ROAD-AUTOMATION@ec.europa.eu

Commission contact persons:

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[2] https://ec.europa.eu/eusurvey/runner/STRIA_WS_1

Annex 1: R&I for connected and automated road transport - overview of thematic areas and R&I initiatives

Thematic Area: In-vehicle enablers

- Reliable environment perception to identify and predict all hazards in CAD
- Fail-operational and cyber secure electronic control architectures for CAD
- Coordinated development of infrastructure and vehicle intelligence

Thematic Area: Shared and automated mobility services

- Operating models for the multimodal integration of CAD with public transport
- Study on acceptance of shared CAD considering individual and collective perspectives
- Generation of shared and automated services beyond passenger and goods transportation

Thematic Area: Physical and digital infrastructure

- Centralized and open dynamic map of all involved traffic management operators
- Establishment of a collective traffic and incident management system for CAD
- Living labs with physical and digital environments allowing safe early pilots of CAD

Thematic Area: Socio-economic impacts

- Analysis of user expectations regarding the ethics and safety levels provided by CAD
- Comprehensive framework to assess impacts of CAD on energy use, environment, traffic
- Establishment and harmonization of liability rules for CAD

Thematic Area: Human factors

- Better-than-human communication between automated vehicles and other road users
- Determination of opportunities and limits of tele-operation for automated vehicles
- Application of universal design principles on automated vehicles

Thematic Area: Vehicle validation

- Development of validation methodology combing simulations and closed/open field tests
- Agreement on indicators of safety levels achieved by individual automated vehicles
- Adaptation of type approval to CAD

Thematic Area: Production, industrialization, deployment

- Analysis of the public's acceptance of CAD solutions (and failures) in various use cases
- EU-wide pilot campaign for raising awareness of benefits and issues of CAD
- Realistic timing for introduction and market growth of CAD, as well as legal frameworks

Thematic Area: Big data, Artificial Intelligence and their applications

- Establishment of a common library of traffic scene reference data
- Procedures for testing of complex self-learning vehicle control systems
- Standards for effective combinations of vehicle and cloud based intelligence

Thematic Area: Secure connectivity

- Standardization of connectivity performance for different automation levels and use cases
- Compilation of best practices and lessons learned on combining communication means
- Guidelines for tamper-proof and cyber secure CAT vehicle control mechanisms

Annex 2: Example of "Action Sheets"

	1st Step	
Thematic area	*In-vehicle enablers*	
Mode	*Road*	
Initiative	*Reliable environment perception to identify and predict all hazards in CAD*	
Timescale	*Short term (2023)*	
Precondition of	*Permission of testing and operation of level 4/5 automation*	
Dependent on	*Availability of sensor systems providing required performance*	
Priority *(1-high; 3 low)*	*1*	
Feasibility *(1-easy; 5-difficult)*	*3*	
	2nd Step	
Strategic planning	**Objectives**	*What for? List of goals/targets needed to be achieved.* *Functional Safety of Automated Driving*
	State of the art and challenges	*Short description of the main advancements and challenges in the given timescale. Linked to part 3 of the document* *SOA: Proprietary combinations of camera (lateral resolution), radar (spatial resolution), 3D laser scanners for environment detection* *Challenges: Set detection threshold such that every hazard is detected, but conspicuous though harmless targets are ignored*
	Ongoing Activities	*Programmes/initiatives/campaigns carried out by Member States or stakeholders individually/bilaterally/EU-level/International level/ Best Practices* *Automated Driving Proving Regions, e.g. Alp.Lab (Austria)..*
	Who is affected and how it will benefit stakeholders? (Impact)	*Cost/Benefit (environment, economic effects), business models (society, cities, new mobility services), parties affected (citizens, environment), all actors (R&I community, industry etc.), international level/competitiveness* *Cost: Loss of distinction between technology suppliers due to transparency of performance parameters* *Benefit: Acceleration of regulatory process*
	Pre-conditions to be successful (technological and non-technological)	*Are there any pre-conditions before the action can be implemented? Who is responsible for implementation of these pre-conditions?* *Availability of sensor technologies providing the required combination of resolution and contrast*
Implementation	**Description of R&I activities (SCOPE)**	*What has to be done exactly?* *Action 1: Define model sensor suite requirements per use case* *Action 2: Assess performance of existing sensor systems, and derive research needs* *Action 3: Build prototype systems* *Action 4: Test prototypes towards performance parameters for various use cases* *Action 5: Generalize suite description for standardization*
	Instruments	*R&I projects/ Collaboration activities/ Networking/ Knowledge and information sharing/ Conference and workshop organisation/…* *Action 1-3: RIA*

		Action 4: Testing *Action 5: Standardization Mandate*
	Who implements?	*EU level: Action 4*
		Member States: Action 5 (on test grounds)
		Stakeholders: Action 1-3
	Financing	*Action 1-3: 20 Mio. EUR* *Action 4: from test site budgets* *Action 5: n/a*
	KPI to monitor progress	*Number of …* *..Model Sensor Suites for dedicated use cases described in the standard*
	Responsibility	*tba*