

# Automated driving in the EU



**Directorate-General for Internal Market,  
Industry, Entrepreneurship and SMEs**  
**Automotive and Mobility Industries Unit**



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# Who does what in the EU for automated driving?

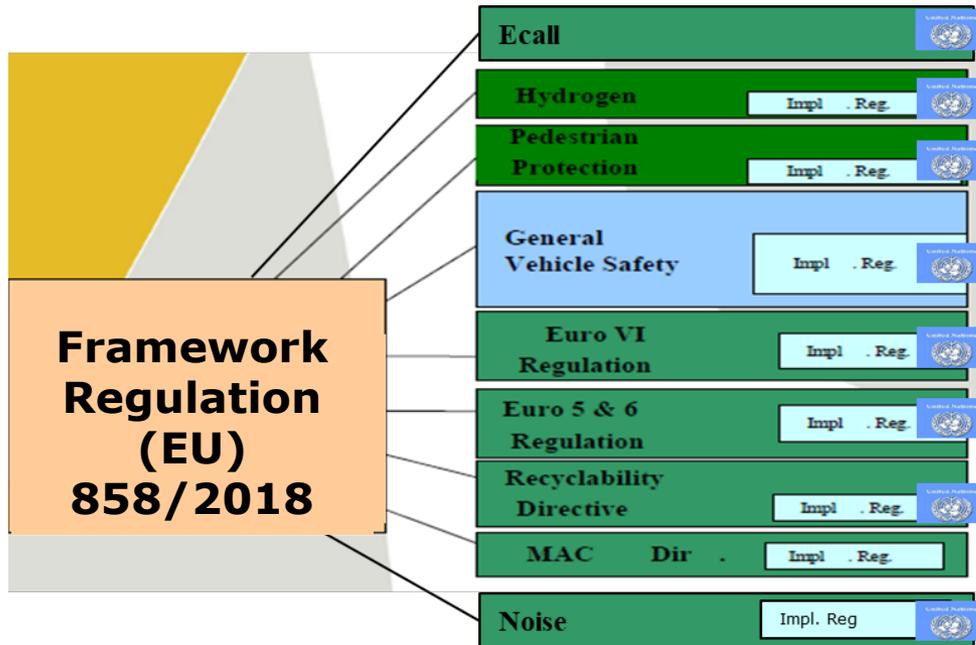


Member States of the European Union (2019)

- Product legislation is mostly developed at **EU level**
  - Vehicle type approval
  - Product liability/General product safety
  - Road worthiness tests
- Liability, traffic rules and infrastructure are mostly developed at **Member State level**
  - Experimentations covered at national level
  - Some traffic rules are harmonized at UN level (Vienna and Geneva conventions).



# EU Type approval legislation



- Mandatory since 1998 for cars
- Fully harmonized requirements: once certified, registration is valid everywhere in the EU.
- Heavily relies on UN regulations for technical rules.
- Third party certification
- Covers also market surveillance

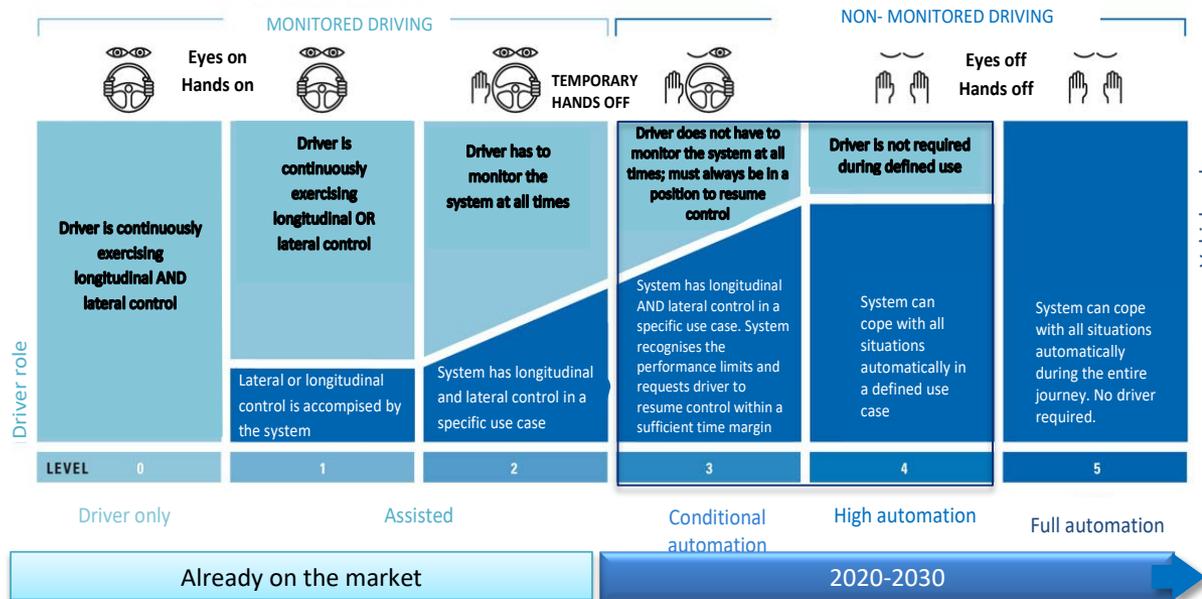




# EU approach on Automated driving

## EU strategy adopted in 2018:

- Common vision
- On road Large scale Testing
- EU Guidelines
- New EU legal framework for AD





# EU vision on Automated driving

Today

2025

2030

2050

Vehicles levels 1-2 (driver assist) available on the EU market

2021-2024: Robot taxis/shuttles (level 4) first commercial services.



Major uptake of Robot taxi/shuttles in cities, level 4

2024-2026 All new vehicles on EU market equipped with level 1 (EU law) or 2.

2030

Zero fatalities  
Mobility services  
Key technologies

2021: First "highway chauffeur" (level 3/4) to go on the EU market



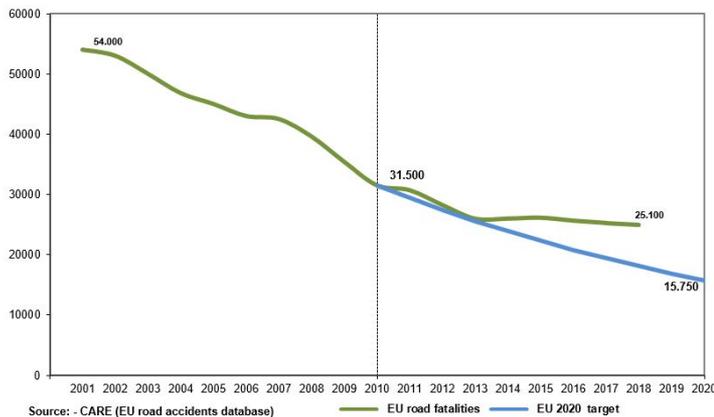
Major uptake of level 4 passenger cars on motorways

First level 3/4 trucks on motorways



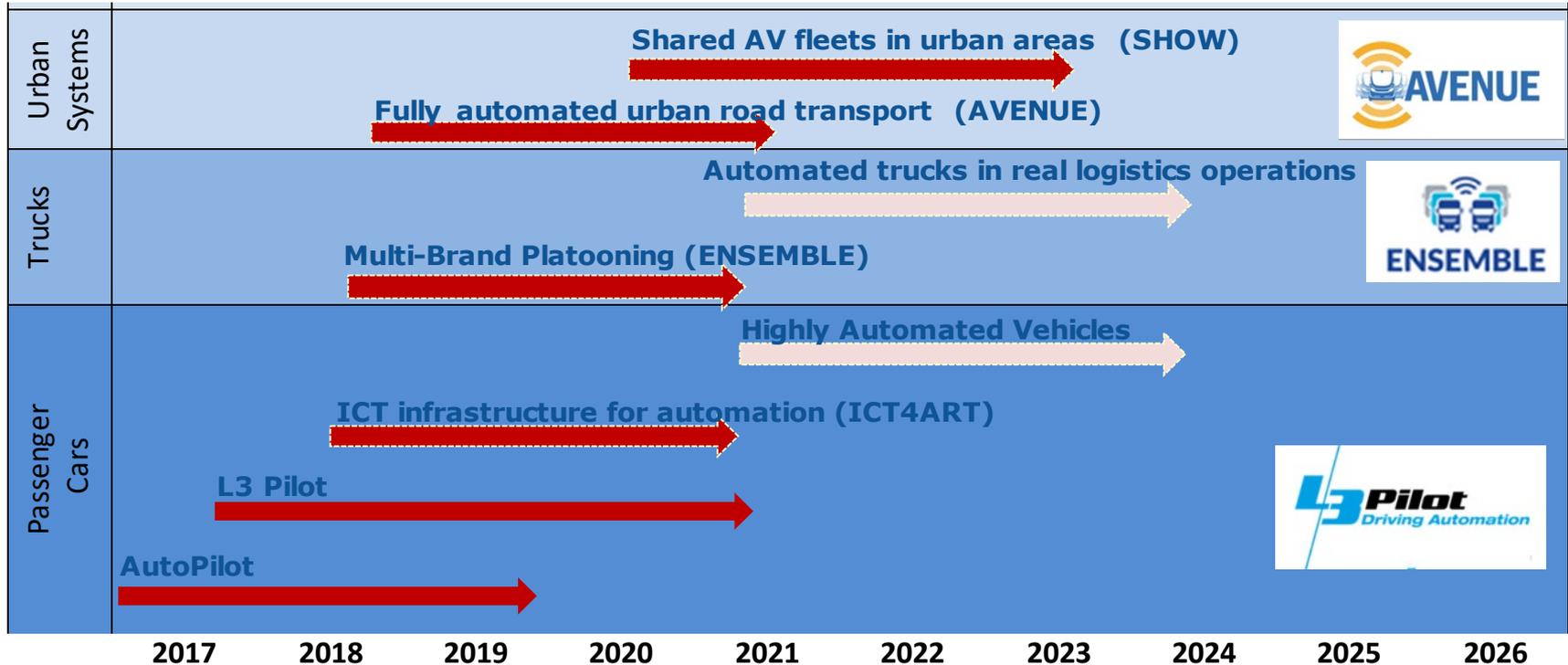
Major uptake of level 4 trucks on motorways

Still too many road fatalities on EU roads.  
90% of accident involve human errors





# On-road large-scale testing



- **Testing is regulated by the EU Member states** but on-going activities to harmonise the practice of Member States at EU level (technical guidelines)



# EU guidelines on automated vehicles

- **Main safety principles:**
  - **1. SYSTEM PERFORMANCE IN THE AUTOMATED DRIVING MODE (Including Duty Of Care Principles)**
  - **2. DRIVER/OPERATOR/PASSENGER INTERACTION**
  - **3. TRANSITION OF THE DRIVING TASKS**
  - **4. MINIMUM RISK MANOEUVRE**
  - **5. INSTALLATION OF EVENT DATA RECORDERS**
  - **6. CYBERSECURITY**
  - **7. SAFETY ASSESMENT AND TESTS**
  - **8. INFORMATION PROVISION TO AUTOMATED VEHICLE USERS**
  - **ANNEX : INFORMATION TO BE PROVIDED FOR TYPE APPROVAL**
- ***Supported by Member States on 12 February 2019***
- **[Publicly available](#)**

**→ No request for exemption of Level 3-4 has been filled until now.**



# New EU Vehicle safety regulation

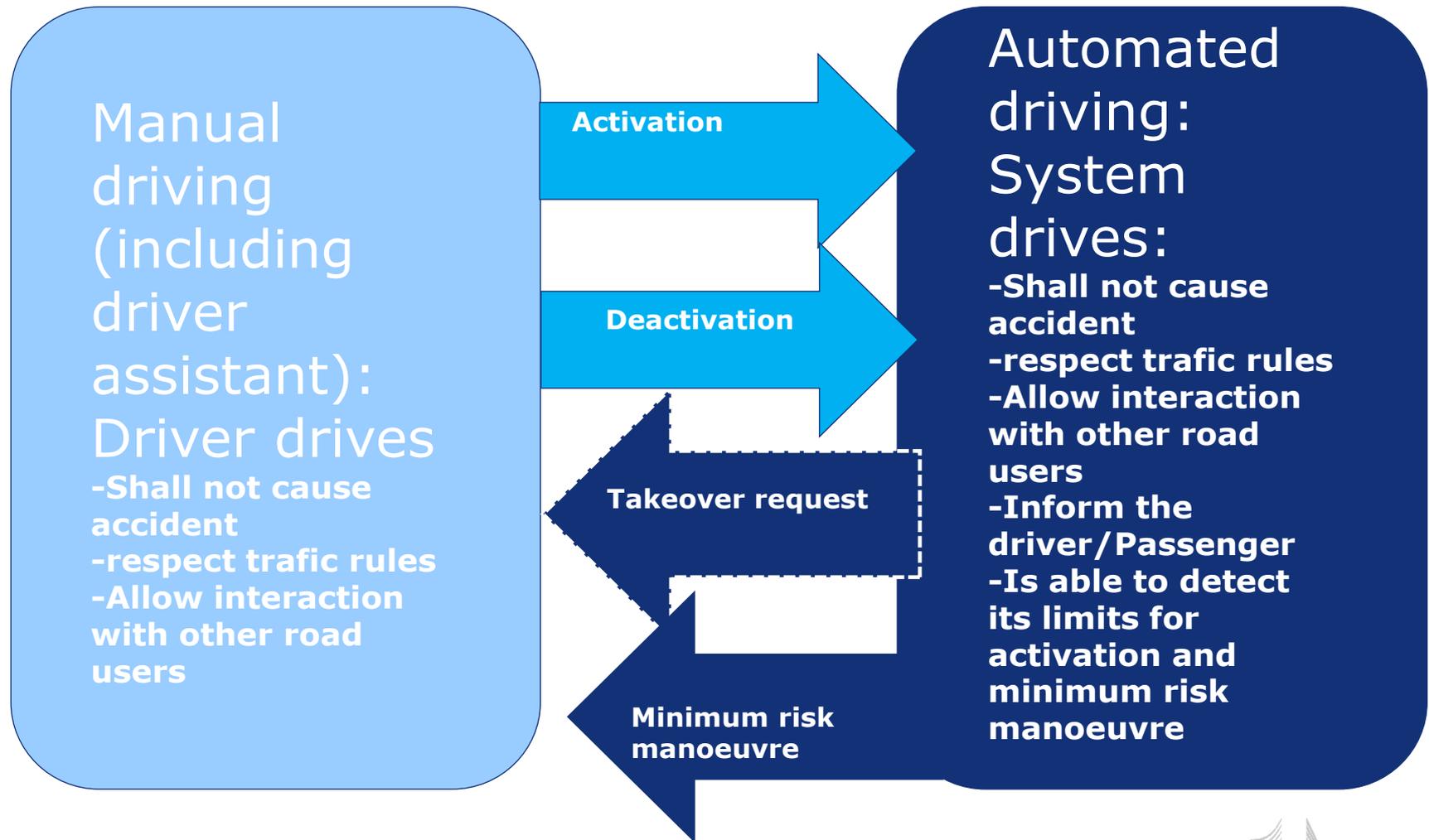
- [Proposed as part of the 3<sup>rd</sup> Mobility Package](#) on 17 May 2018
- Promote **driver assistance systems**
- Provide the legal framework for **Connected and Automated Driving**
- Agreed on 26 March 2019.
- **Applicable from mid-2022**
- [http://www.europarl.europa.eu/oeil/popups/ficheprocedure.do?lang=&reference=2018/0145\(COD\)](http://www.europarl.europa.eu/oeil/popups/ficheprocedure.do?lang=&reference=2018/0145(COD))
- Now developping the technical measures for Q1/2021



# Technical rules for EU Vehicle safety regulation

1 <sup>st</sup> phase of implementation (A/B)		2 <sup>nd</sup> phase of implementation (C)		3 <sup>rd</sup> phase of implementation (D)	
<ul style="list-style-type: none"> <li>✓ Intelligent speed assistance (ISA)* ✓ </li> <li>✓ Emergency lane keeping (cars and vans) ✓ </li> <li>✓ Advanced emergency braking for stationary/moving vehicles (cars and vans) ✓ </li> <li>✓ Event data recorder (cars and vans)* ✓  </li> <li>✓ Driver drowsiness and attention warning* ✓ </li> <li>✓ Alcohol interlock installation facilitation* ✓ </li> <li>✓ Emergency stop signal* ✓ </li> <li>✓ Reversing detection* ✓ </li> <li>✓ Blind spot information system (trucks and buses) ✓ </li> <li>✓ Pedestrians and cyclists collision warning (trucks and buses) ✓ </li> <li>✓ Tyre pressure monitoring system (vans, trucks and buses) ✓ </li> <li>✓ Cybersecurity &amp; software update ✓ </li> </ul>		<ul style="list-style-type: none"> <li>✓ Advanced emergency braking for pedestrians and cyclists (cars and vans) ✓ </li> <li>✓ Advanced driver distraction warning</li> <li>✓ Enlarged head impact zone (cars and vans) ✓ </li> <li>✓ Tyres in worn condition ✓ </li> <li>✓ Event data recorder (for automated vehicles) ✓  </li> <li>✓ Driver availability monitoring (for automated vehicles) ✓ (ALKS) </li> <li>✓ Platooning (for automated trucks)</li> </ul>		<ul style="list-style-type: none"> <li>✓ Direct vision requirements (trucks and buses) ✓ </li> <li>✓ Event data recorder (trucks and buses)*</li> </ul> <p><i>Pedestrian protection for small series:</i></p> <ul style="list-style-type: none"> <li>➤ mid-2028 (new types)</li> <li>➤ mid-2034 (new vehicles)</li> </ul>	
<b>new types</b>	<b>new vehicles/parts</b>	<b>new types</b>	<b>new vehicles/tyres</b>	<b>new types</b>	<b>new vehicles</b>
<b>6 July 2022</b>	<b>7 July 2024</b>	<b>7 July 2024</b>	<b>7 July 2026</b>	<b>7 Jan 2026</b>	<b>7 Jan 2029</b>
Supplementary legislation to be adopted by: <b>6 April 2021</b>		<b>7 April 2023</b>		<b>7 September 2024</b>	
* Detailed technical requirements to be set out in Delegated Acts.					

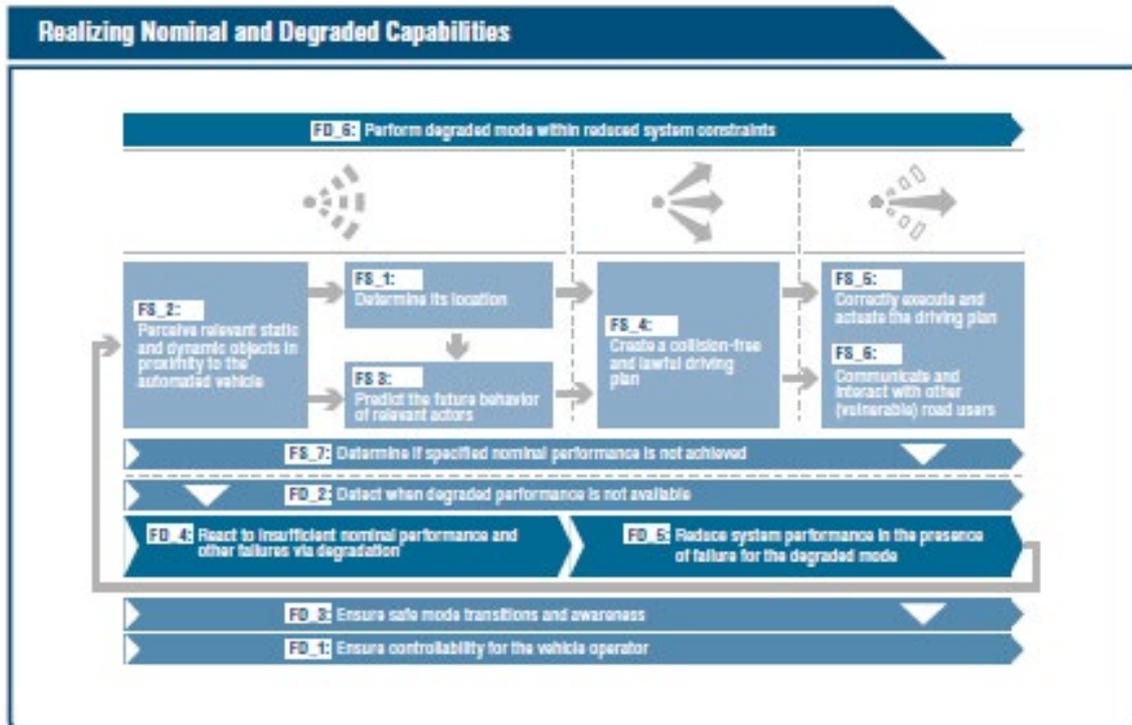
# Automated driving: Simple to regulate?



# Driving is actually a complex task



**More tasks**  
**More sensors**  
**More software**  
**More complexity**  
**More risks**



**→ Need for a new assessment/  
demonstration  
method**

# Which EU approach for AD?

- 1. The design/development/safety processes shall address the relevant risks** linked to traffic scenarios, human factor, perception, cybersecurity, and failures. Safety concept + the residual level of risk should be statistically better than human driving.
- 2. Testing (simulation, track, on road) shall confirm basic driving capabilities** of the vehicles (to drive safely, to avoid crashes)
- 3. Confirmation of the residual risk after market introduction** : reporting

## Associated requirements

- *New competences of the authorities (audit)*
- *Transparency on audits*
- *Less fixed parameters in testing*



# EU involvement in the UN

## Vehicle rules



### Done:

**June 2020 : Automated lane keeping at low speed (below 60 km/h), cyber security and software updates.**

### Next:

- **Functional requirements, New assessment method, EDR.**
- **ALKS extension**

## Traffic rules



### Done:

- **Systems assisting the driver**
- **Recommendations for AD**
- **Sept 2020: Amendment to the Vienna convention to allow automated driving systems as a driver**

### Next:

- **Allowed other activities for levels 3 and 4.**
- **Driver outside the vehicle.**
- **Specific rules for driverless vehicles in a new convention?**

+ Raise awareness on the need to amend national legislation. Consider possible new areas of harmonisation at EU level (e.g. liability, traffic rules)

**European Commission**  
**Directorate-General**  
for  
**Internal Market, Industry, Entrepreneurship and**  
**SMEs**

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***Thanks for your attention***

***[antony.lagrange@ec.europa.eu](mailto:antony.lagrange@ec.europa.eu)***