

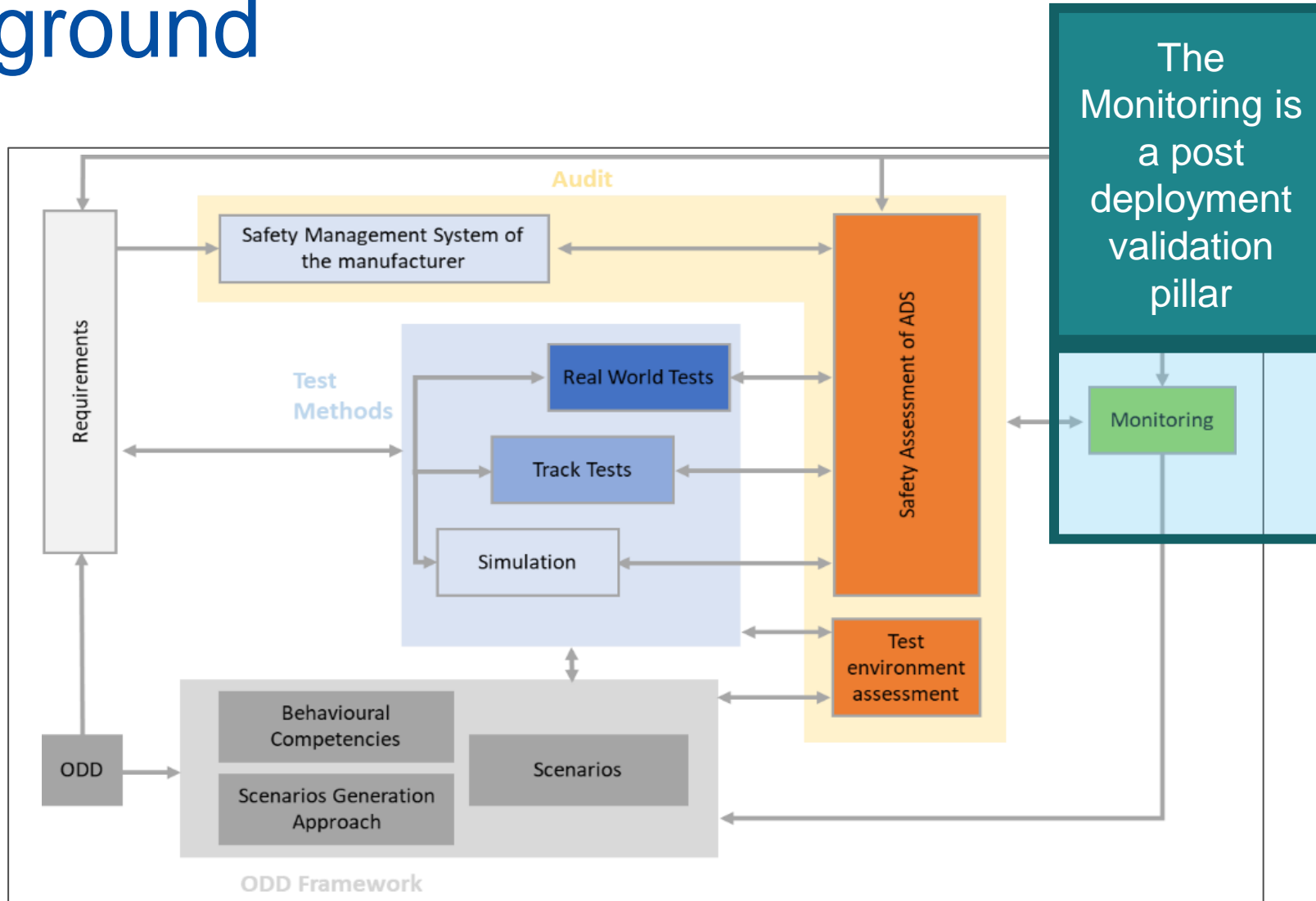


ADS-IWG

In-Service Monitoring and Reporting

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Background

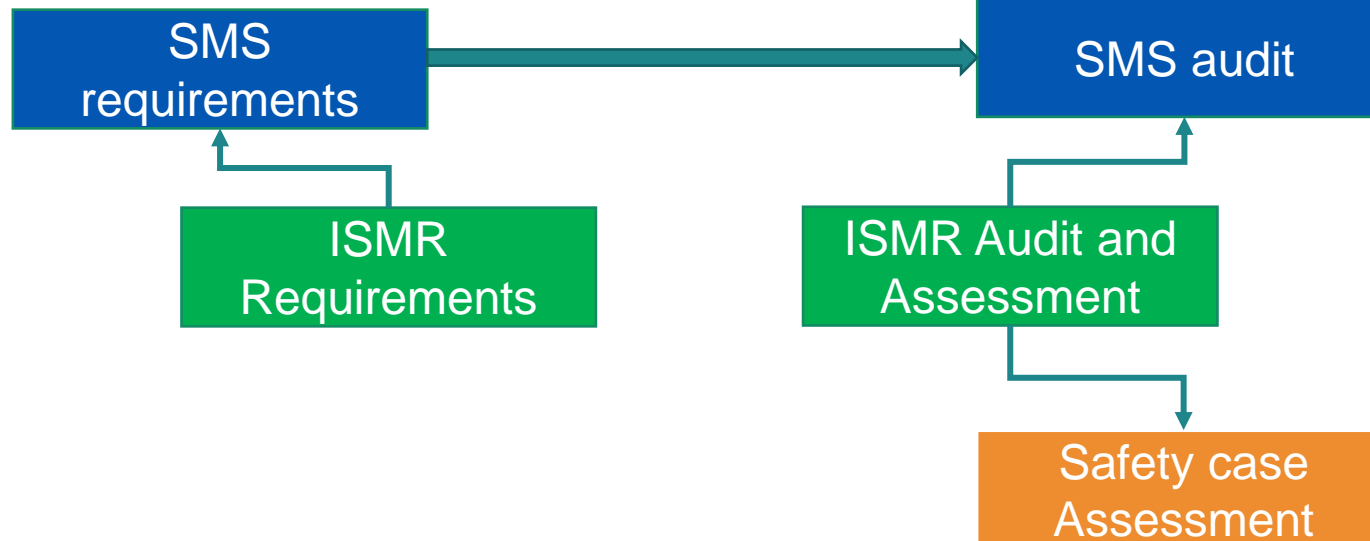


Implementation of ISMR

PRE-DEPLOYMENT

- The SMS section includes processes for ISMR
- **The ISMR section provides detailed information on the ISMR**

- The Audit of the SMS shall evaluate the processes/tools/people for ISMR activities taken into account SMS and ISMR section



- Justification of the suitability of ISMR for the ADS under evaluation
- Demonstration of compliance to specific requirements (e.g. metrics for monitoring)

POST-DEPLOYMENT

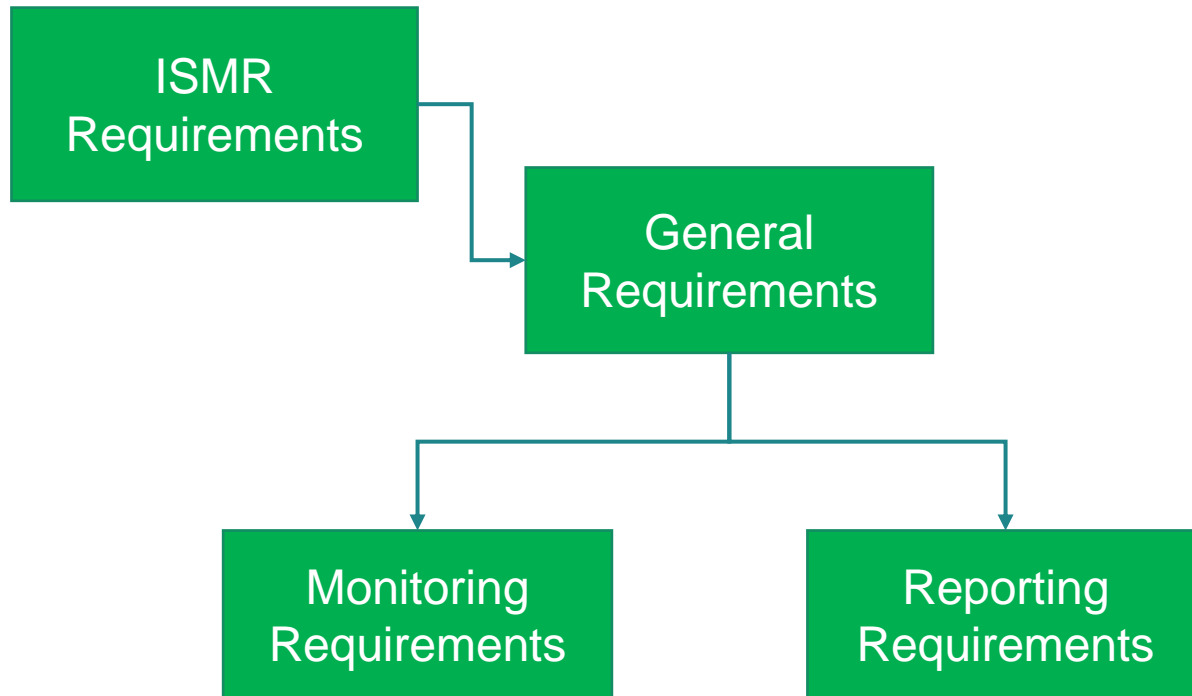
- ISMR requires the management of the short term and periodic reporting in the frame of the post deployment activities of the SMS [Day by day evaluation of ADS operation]



Status of the Activities

Phase 1 - Requirements

ISMR Requirements



There is general agreement on the text (ADS-05-05). However, the document will be checked:

1. To ensure consistency and alignment with EDR/DSSAD
2. To specify/indicate the relevant authority
3. To check for consistency with and to link with dedicated annexes (templates) and other sections (SMS, Safety case)
4. To check for consistency with new structure

Status of ISMR Phase1

1. ***Under Discussion in the ISMR work stream***

a) ***Unknown scenarios encountered by the ADS***

- *To check possibility of moving into other part of the document to remove from occurrence list*

b) ***To check whether the reference to the applicable laws should be intended as:***

- *Laws applicable in the countries/jurisdiction of operation of the ADS*
- *Laws applicable in the countries/jurisdiction of the relevant authority*

2. ***Topics to be discussed in Seoul***

a) ***UK proposal for reporting***

b) ***Thresholds for critical occurrence***

c) ***Alignment with DSSAD***

3. ***Topics for Interpretation Document***

- ### a) ***Occurrence and safety relevant events list requires further details/information (Example: operation outside the ODD, Should be always reported? Which metrics should be used??)***

Proposals for new requirements

The following new requirements were submitted:

1. **OPI:** *These requirements are without prejudice to applicable laws governing access to data, availability, privacy and data protection*
 - *AGREED*
2. **UK:** *These requirements are without prejudice to applicable laws on provision of info to other authorities*
 - *to be discussed in Seoul*
3. **FR:** *Emergency/complex manoeuvres to prevent a collision as safety relevant event to be reported*
 - *Discussion moved to Phase 3*
4. **FR:** *The manufacturer shall provide relevant data to the ADS's operator to fulfil its reporting obligations under applicable law*
 - *Moved to SMS. Discussion in Seoul*
5. **ITU:** *The Manufacturer shall give authorization to the relevant authority to use ISMR information concerning new or revised scenarios for the purpose of developing generalized scenarios to make available for general use*
 - *Discussion moved to Phase 3*



Highlights and Open points

Phase 1

Topics for discussion

- 1. Definitions of Occurrences and Events*
- 2. UK proposal for Requirement*
- 3. Thresholds for critical occurrence*
- 4. Alignment with DSSAD*

Definitions of Events and Occurrences

Definition

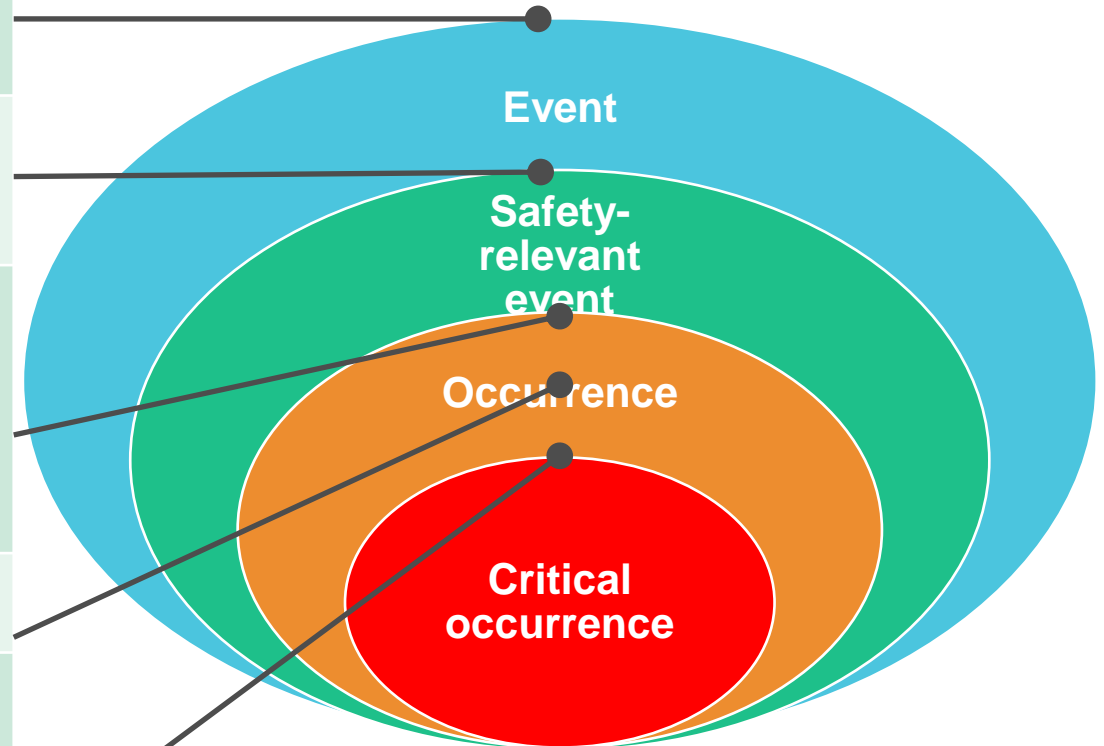
“**Event**” means any situation happening in a given time and location.

“**Safety-relevant event**” means an event which is relevant for the evaluation of the safe operation of the ADS Vehicle. These events also include normal operation which are relevant to argument specific ADS design choices and/or the safety case. (e.g., fallback user unavailability, MRM)

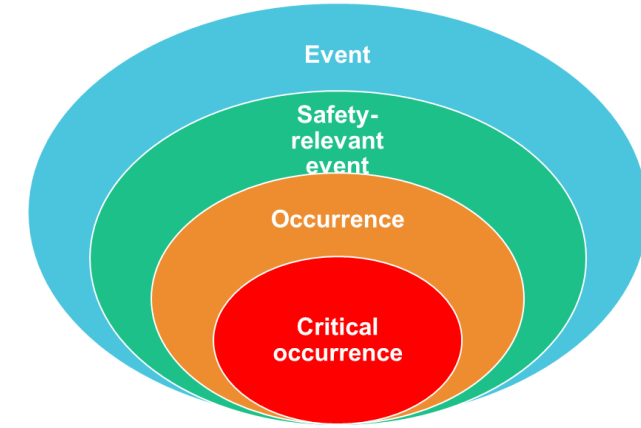
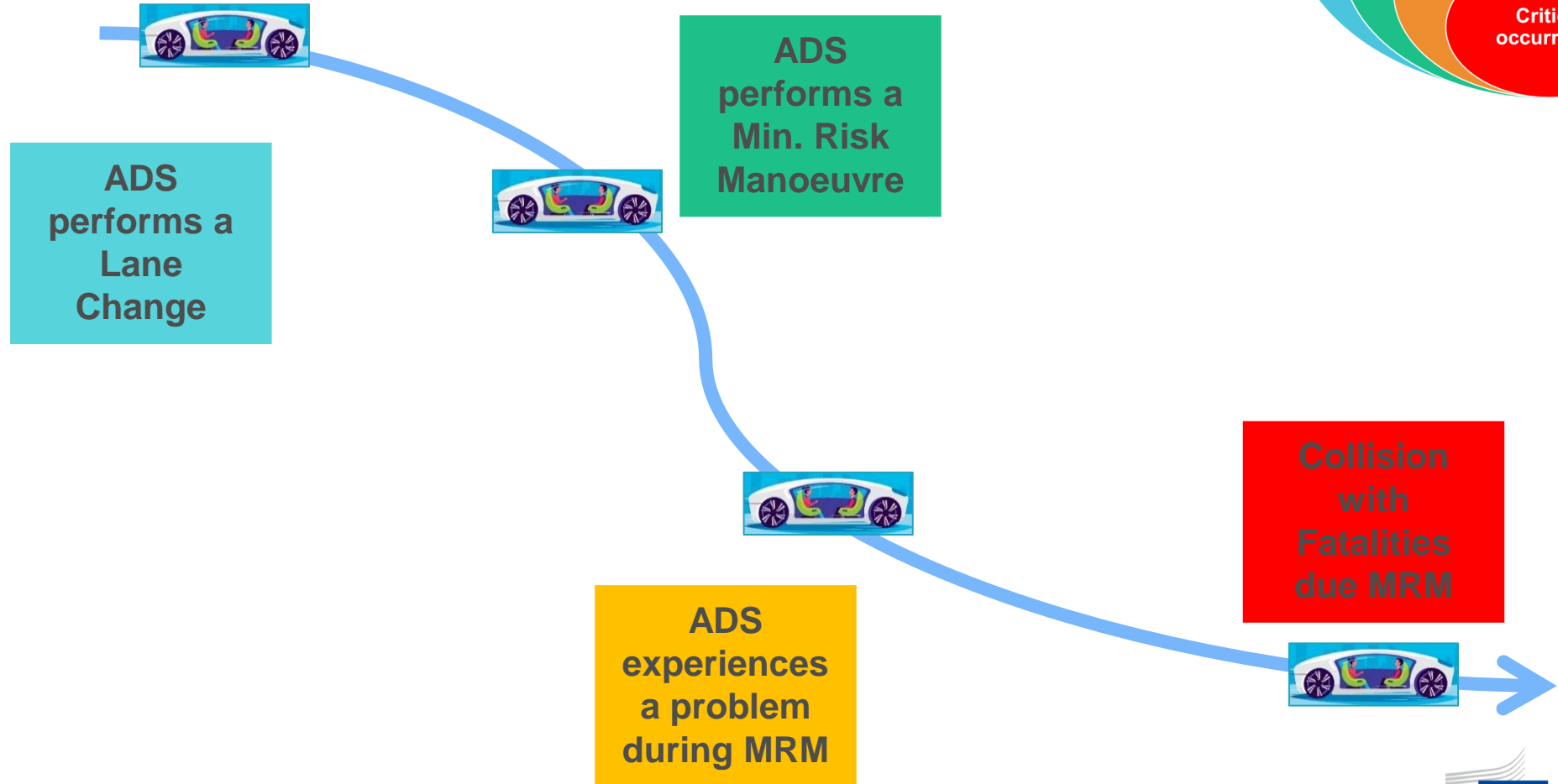
“**Occurrence**” means a Safety-relevant event during which at least one of the following criteria is fulfilled:
a) Collision involving the ADS vehicle
b) ADS vehicle system/component failure
c) ADS vehicle produces a noncompliance with respect to the requirements of this regulation
d) Injury/fatality as a result of being in the ADS vehicle or being involved in the event.

“**Non-critical Occurrence**” means occurrences which are not “Critical Occurrences”

“**Critical Occurrence**” means an occurrence during which at least one of the following criteria is fulfilled:
(a) at least one person suffers an injury that requires medical attention or dies as a result of being in the vehicle or being involved in the event.
(b) the ADS vehicle, other vehicles or stationary objects sustain physical damage that exceeds a certain threshold.
(c) any vehicle involved in the event experiences a deployment of any non reversible restraint systems



From Event to Critical Occurrences



Occurrence and Safety relevant event list

<i>Occurrences and safety relevant events</i>	<i>Short term reporting [30 days]</i>	<i>Periodic Reporting [1 Year]</i>
1 Critical occurrences known to the manufacturer	X	X
2 Non critical occurrences		
• Occurrences related to ADS operation outside its ODD	X	X
• ADS failure to achieve a minimal risk condition when necessary	X	X
• Occurrences related to Transfer of Control failure		X
• Occurrences related to communication-related occurrences issues		X
• Occurrences related to cybersecurity issues		X
• Occurrences related to failure scenarios		X
• Maintenance and repair problems to ADS and its components		X
• Occurrences related to unauthorized modifications		X
• Unknown scenarios encountered by the ADS		X
• Other Indications of failure to meet safety requirements	X	X
• Occurrences related to safety-relevant performance issues constituting an unreasonable risk to safety.	X	X
3) Safety relevant events		
• Events where an activated ADS feature required interaction with a remote assistant to navigate a driving situation (if applicable)		X
• Fallback user unavailability (where applicable)		X
• Prevention of takeover under unsafe conditions (where applicable)		X

Critical occurrences status

- “**Critical Occurrence**” means an occurrence during which at least one of the following criteria is fulfilled:
 - a) At least one person suffers **an injury** that requires medical attention or dies as a result of being in the vehicle or being involved in the occurrence.
 - b) The ADS vehicle, other vehicles or stationary objects sustain physical **damage that exceeds a certain threshold**.
 - c) Any vehicle involved in the event experiences the deployment of any non-reversible deployable **restraint system**.

Issue #1 – what is an injury?

- Different definitions for what is meant by ‘injury’
- A widely used standardization (also as of SG3) is the Maximum Abbreviated Injury Scale (MAIS):
 - *“An anatomically-based, consensus-derived, global severity scoring system that classifies each injury by body region according to its relative importance on a 6-point ordinal scale”*
 - Severity score: 1 (minor) – 6 (maximal)
 - Can deal with multiple types of injuries
 - Codified description for a wide variety of possible road injuries



Issue #2 – how to establish thresholds?

- Monetary threshold (e.g. special drawing rights SDR)
 - Fictitious currency based on a basket of 5 international currencies (USD, EUR, CNY, JPY, GBP)
 - Already used in refund practices to handle local currency dissimilarities
- Police report (triggers) / insurance claim
- Tow away
- Important Damage (supported by example to avoid being subjective)

Issue #3 – rationale for ‘restraint system’?

- Alignment with EDR/DSSAD
- In a collision with a pedestrian an airbag may not deploy but **active bonnet** should
- Different vehicle configurations covered here, they might not all feature airbags (e.g. shuttles, good delivery vehicles...)

Critical occurrence - Open questions

- Thresholds (injury/monetary/damage) to be specified in Reg or Interpretation Document?
- If Reg, where (main body/Annex)? when (Phase 3)?
- Might be complex defining exact minimum thresholds given different vehicle types (masses, speeds, ODD...)
- **OPI:** The activity will continue in the work stream. However, some direction is needed to decide where to include the thresholds. The Interpretation document seems the most appropriate document.

New requirement for phase 1

UK: *The following requirement is proposed by UK:*

- *These requirements are without prejudice to applicable laws on provision of info to other authorities.*

Rationale: *Under national law, additional reporting requirements on ADS (e.g. for enforcement rather than a no blame safety culture) are still possible. Thus, the text aims to clarify that ISMR requirements cannot limit the power of the countries to introduce additional reporting requirements on ADS under national law*

OPI: This is a new requirement so it should be addressed in phase3. However, it only clarifies that ISMR requirements cannot overrule National Law. This clarification is an important information to be included to avoid conflicts with national laws

Alignment with DSSAD

- DSSAD is not mandated for ISMR. However, it is expected that DSSAD will support the ISMR implementation.
- There are several topics which require alignment with EDR/DSSAD group:
 - Definitions
 - Occurrence/Events characterizations
 - Data protection, Retention
 - Data Recording (e.g. applicability of ISMR up to 30 seconds from the Deactivation).



Highlights and Open points

Phase 2

Assessment of ISMR

PRE-DEPLOYMENT

- The Audit of the SMS shall evaluate the processes/tools/people for ISMR activities taken into account SMS and ISMR section

POST-DEPLOYMENT

- ISMR requires the management of the short term and periodic reporting in the frame of the post deployment activities of the SMS
[Day by day evaluation of ADS operation]

ISMR Audit and Assessment

- Justification of the suitability of ISMR for the ADS under evaluation
- Demonstration of compliance to specific requirements (e.g. metrics for monitoring)

Assessment of In-Service Monitoring & Reporting

1) Pre-Deployment

- Suitability of the processes for the ADS
- Monitoring Capability
- Reporting Capability

2) Post Deployment

- Reception of information
- Review of information
- Review of data processing
- Confidentiality
- Verification of information
- Recommendations

Status of activities Phase 2

- Several meetings dedicated to the assessment of ISMR
- Revised assessment document: ADS-05-18
 - Focus on evaluation of the occurrences and safety relevant event management in the post deployment phase
- Revised template document: ADS-05-19
 - Focus on mandatory and non mandatory elements based on manufacturer availability
 - Focus on Confidentiality aspects based on IP/Sensitive information

WHAT		
Entry name	Field to be filled	Type/size
Headline*		Text(200)
OCCURRENCE AND EVENT CLASSIFICATION		
Occurrence class*		Text(50)
Occurrence type ² *		Text(200)
OCCURRENCE DETAILS		
Weather conditions*		Text(20)
Lighting conditions*		Text(20)
ADS vehicle pre-occurrence speed*		Number(3) – [km/h]
ADS vehicle post-occurrence max deceleration*		Number(3) – [m/s ²]
ADS vehicle estimated pre-occurrence mass		Number(5) – [kg]
ADS vehicle telematics provided*		[Y/N]
ADS vehicle EDR data provided*		[Y/N]
ADS vehicle DSSAD data provided*		[Y/N]
ADS vehicle media provided ³		[Y/N]
Third-party sources media/telematics provided		[Y/N]
Occurrence reported to the police		[Y/N]

Phase 2 – Relevant Authority

Relevant Authority (Preliminary approach)

Assessment section

- **58 Agreement**
 - Assessor= Technical Service
 - Relevant Authority=Type Approval Authority
- **98 Agreement**
 - We use always assessor/relevant authority

Harmonization

- Occurrence/safety relevant events list (already covered)
- Critical Occurrences (covered in the phase1)
- Templates (under discussion)

Recommendations for the Authority

- There is some text that falls outside the scope of the regulation. We could include this information in the recommendations section of the ADS regulation

Prepared by the ADS IWG co-chairs

document ADS-01-03
First ADS IWG session
22 April 2024

Supplemental Materials		
Overall mandate includes technical appendix on the develop of the GTR as required under the 1998 Agreement and agreement under the common regulatory approach that a guiding/interpretation document may be desired to support implementation of the ADS regulations. This table addresses these materials.		
Topic	Description/comments	OPI
Guiding/interpretation document	Documents differ due to application under Agreements. As it develops the GTR/UNR text(s), the IWG should provide information to support drafting of these documents.	
Appendix: Development of GTR		
Introduction		
Procedural background	Typical in GTR appendices but useful to consider for UNR implementation document. Consistency across GTR and UNR supporting documents beneficial.	
Technical background	Contents involve collaboration with IWG.	
Principle for developing the regulation		
Technical rationale and justification		
Recommendations	Address items relevant to overall safety outside scope of WP.29 and/or GTR/UNR such as recommendations to other groups, actors, policymakers, etc. (e.g., how to ensure fallback user awareness of responsibilities?)	[TBD ADS-01]
Extract references in guidelines into list, consolidate		
international voluntary standards	proposals (if any) to include national/regional legislation and/or voluntary standards.	[TBD ADS-01]
Benefits and costs	GTR and UNR not aimed at mandatory ADS installation. Some choices in provisions may be motivated by cost/benefit considerations. CPs may have needs to support CBA procedures for application of GTR/UNR.	

Status of the Open Items

- Near misses (Closed)
- Data collection from other sources (Closed)
- Occurrence list (Closed)
- Relevant Authority (ongoing, preliminary agreement)
- ISMR templates (ongoing)
- Alignment with EDR/DSSAD (ongoing)
- New text proposals (phase 3)
- Alignment with SMS (phase 3)
- Elaboration of occurrences and Safety relevant events [e.g. metrics](Interpretation Document)
- ISMR scenarios development and use (?)

Thank you



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