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Cybersecurity Assessment Summary for UN R155 – Motional AVCDL

File name	Revision	Date	Page
TUVSUD_CybersecurityAssessmentSummary_R155_Motional_AVCDL_v.3.1.docx	Rev 3.2	June 13, 2023	1 of 7

To whom it may concern:

TÜV SÜD has conducted a conformity assessment of Motional's cybersecurity framework called "Autonomous Vehicle Cybersecurity Development Lifecycle (AVCDL)" against the UN Regulation R155 [1].

This assessment refers to the conformity of the framework specifically with respect to the lifecycle aspects of the above regulation; it explicitly does not include any references to the regulation's implementation or interpretation. The assessment results, therefore, provide no statement on the underlying processes or the organizational implementation within Motional or any other organization.

Requirements related to the vehicle type were additionally included in the assessment as stated below, but with no relation to a specific vehicle. The AVCDL framework was only assessed for its supporting role in fulfilling these requirements.

Several requirements were considered out of scope, as they were not applicable to the AVCDL and thus could not be assessed.

The results of the assessment are as follows:

Clause	AVCDL requirement title	Conformity within the specified scope is given (y/n)
CSMS Requirements		
7.1.1	UN regulation non-exclusion	N/A (Out of Scope)
7.2.1	compliance verification	N/A (Out of Scope)
7.2.2.1(a)	development phase CSMS	Yes
7.2.2.1(b)	production phase CSMS	Yes
7.2.2.1(c)	post-production CSMS	Yes
7.2.2.2(a)	cybersecurity management	Yes
7.2.2.2(b)	risk identification	Yes
7.2.2.2(c)	risk assessment/treatment	Yes
7.2.2.2(d)	verification of risk management	Yes
7.2.2.2(e)	cybersecurity testing	Yes
7.2.2.2(f)	risk assessment kept current	Yes
7.2.2.2(g)	adaptable monitoring/response	Yes
7.2.2.2(h)	cybersecurity controls tracking	Yes
7.2.2.3	timely risk mitigation	Yes
7.2.2.4(a)	vehicle monitoring enrollment	N/A (Out of Scope)
7.2.2.4(b)	threat extraction from vehicle logs	Yes
7.2.2.5	supplier deficiency management	Yes
Vehicle Type Requirements		
7.3.1	certificate of compliance	N/A (Out of Scope)
7.3.2	management of type	Yes
7.3.3	critical element risk assessment	Yes
7.3.4	type risk protection	Yes
7.3.5	hosted environments	Yes
7.3.6	sufficient testing	Yes
7.3.7(a)	detect/prevent cyberattacks	Yes
7.3.7(b)	vehicle cybersecurity monitoring	Yes
7.3.7(c)	provide forensic capability	Yes
7.3.8	use standard crypto modules	Yes
7.4.1	periodic monitoring report	Yes
7.4.2	approval defect reporting	N/A (Out of Scope)

Non-conformities and corrective actions have been evaluated and documented in the assessment sheet [2].

The AVCDL's alignment with the process requirements of the UN R155 can be confirmed, as per the assessment date of June 1, 2023, 12:00 PM, within the scope and outcome of the assessment as stated above.

Note that the assessment was performed based on a specific version of the documents related to the above-mentioned date. Any changes to the assessed version will require a re-assessment.

Documents assessed are a subset of the documents corresponding to release 3.13.3 according to the AVCDL public GitHub repository [3], subject to commit hash Nr: 6ebfa13b61c55307e9fc091946514b8a3f7b7af4. A reference to the documents assessed is provided in this document in Annex A: Assessed Documents.

This report may not be published in parts, only as a whole. In addition, any public statement about the assessment outside the scope and outcome of the assessment as stated above must be expressly agreed on by TÜV SÜD prior to publication. Any use of the TÜV SÜD logo and/or trademark shall not be permitted unless otherwise agreed in writing between TÜV SÜD and Motional.

References

[1] Addendum 154 – UN Regulation No. 155, Uniform provisions concerning the approval of vehicles with regards to cyber security and cyber security management system, 4 March 2021.

[2] TÜV SÜD, "Assessment Checklist R155_AVCDL_rev18_20230527.xlsx," 27.05.2023.

[3] C. Wilson, "Release 3.13.3 nutonomy/AVCDL," Motional, 23 05 2023. [Online]. Available: https://github.com/nutonomy/AVCDL/releases/tag/3.13.3. [Accessed 01 06 2023].

[4] C. Wilson, "AVCDL Phase Requirement Product UNECE WP.29 R155 Work Product Fulfillment.pdf," 2022.

Yours sincerely,

Assessor, TÜV SÜD Auto Service GmbH

Management, TÜV SÜD America Inc.

Annex A: Assessed Documents*

File name	Version and date as referred in the documents
Archive Manifest.pdf	Version 2 1/27/22 8:19 AM
Attack Surface Analysis Report.pdf	Version 3 11/15/21 9:45 AM
Autonomous Vehicle Cybersecurity Manufacturer Disclosure Statement.pdf	Version 2 1/5/22 10:43 AM
AVCDL cybersecurity interface agreement summary template.xlsx	Revision 4 12/17/21
AVCDL Cybersecurity Interface Agreement template.docx	Revision 15 12/17/21
AVCDL Phase Requirement Product ISO 21434 Work Product Fulfillment Summary.pdf	Version 4 7/19/22 6:14 PM
AVCDL Phase Requirement Product UNECE WP.29 R155 Work Product Fulfillment.pdf	Version 13 5/19/23 5:56 PM
AVCDL roles and responsibilities.xlsx	no version 13/7/2021
AVCDL.pdf	Version 54 2/22/2023 7:40:00 PM
AVCMDS Worksheet template.xlsx	Revision 4 1/6/22
Build Process Documentation.pdf	Version 3 11/15/21 10:06 AM
Code Protection Plan.pdf	Version 6 6/3/22 12:32 PM
Component - Version - Product - Version Cross-reference Document.pdf	Version 2 11/15/21 10:08 AM
Currently Used Deprecated Functions Document.pdf	Version 3 11/15/21 10:13 AM
Cybersecurity Incident Report.pdf	Version 1 1/27/22 2:54 PM
Cybersecurity Interface Agreement.pdf	Version 3 1/10/22 11:19 AM
Cybersecurity Monitoring Plan.pdf	Version 8 2/23/23 7:53 PM

Decommissioning Plan.pdf	Version 3 11/15/21 8:46 AM
Decommissioning Report.pdf	Version 5 1/19/22 8:12 AM
Deployment Plan.pdf	Version 4 2/22/23 7:38 PM
Design Phase Gate.pdf	Version 3 11/15/21 9:47 AM
Design Showing Security Considerations.pdf	Version 5 7/22/22 2:40 PM
Dynamic Analysis Report.pdf	Version 2 11/15/21 10:15 AM
Element Cybersecurity Relevancy.pdf	Version 4 7/27/22 1:11 PM
Final Security Review Report.pdf	Version 3 11/15/21 11:01 AM
Fuzz Testing Report.pdf	Version 5 11/15/21 10:44 AM
Global Security Goals.pdf	Version 4 5/3/22 1:31 PM
Global Security Requirements.pdf	Version 3 11/15/21 10:02 AM
Implementation Phase Gate.pdf	Version 3 11/15/21 10:45 AM
Incident Response Plan.pdf	Version 12 12/5/22 3:16 PM
List of Approved Tools and Components.pdf	Version 5 11/15/21 9:05 AM
List of Tools and Components Used.pdf	Version 4 11/15/21 10:47 AM
Penetration Testing Report.pdf	Version 6 10/27/22 6:02 PM
Product-level Security Goals.pdf	Version 5 8/23/22 5:58 PM
Product-level Security Requirements.pdf	Version 4 11/15/21 9:33 AM
Ranked - Risked Threat Report.pdf	Version 6 5/31/22 11:19 AM
Release Integrity Plan.pdf	Version 5 8/23/22 11:21 AM

Release Phase Gate.pdf	Version 3 11/15/21 11:09 AM
Requirements Phase Gate.pdf	Version 3 11/15/21 9:59 AM
Secure Code Review Summary.pdf	Version 2 11/15/21 10:48 AM
Secure Design Principles.pdf	Version 6 10/11/22 2:34 PM
Secure Development.pdf	Version 7 10/19/22 4:51 PM
Secure Settings Document.pdf	Version 3 11/15/21 10:50 AM
Security Design Review Report.pdf	Version 2 2/9/22 3:05 PM
Software Bill of Materials Lifecycle.pdf	Version 2 3/16/22 5:21 PM
Software Deployment Report.pdf	Version 2 1/24/22 1:25 PM
Static Analysis Report	Version 2 11/15/21 10:51 AM
Supplier Self-reported Cybersecurity Maturity Assessment.pdf	Version 2 1/5/22 12:24 PM
System to Track Training Participation.pdf	Version 4 11/15/21 9:13 AM
Threat Modeling Report.pdf	Version 5 6/2/22 2:48 PM
Threat Prioritization Plan.pdf	Version 9 5/26/22 3:56 PM
Threat Report.pdf	Version 5 3/16/22 6:44 PM
Training Catalog.pdf	Version 3 11/15/21 9:17 AM
Understanding Cybersecurity Interface Agreements.pdf	Version 8 1/6/22 9:58 AM
Understanding Cybersecurity Risk Freshness in an AVCDL Context.pdf	Version 3 8/4/22 1:59 PM
Understanding Service Level Agreements in an AVCDL Context.pdf	Version 1 3/13/23 6:01 PM
Understanding Supply Chain Interaction in an AVCDL Context.pdf	Version 4 3/15/23 5:52 PM

Understanding TARA in an AVCDL Context.pdf	Version 4 3/28/22 5:19 PM
UNECE WP.29 R155.xlsx	no version 11/29/22
Updated Attack Surface Analysis.pdf	Version 3 11/15/21 10:54 AM
Updated Threat Model.pdf	Version 3 11/15/21 10:55 AM
Verification Phase Gate.pdf	Version 3 11/15/21 10:56 AM

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