CEN and/or CLC Workshop
Intelligent road intervention processes

Workshop description form

- PART A – Workshop Summary
- PART B – Project Plan

PART A – Workshop SUMMARY

1	WS details		
1.1.	**Organization**	☒ CEN ☐ CENELEC ☐ Joint with ☐ CEN lead ☐ CENELEC lead	
1.2.	**Title**	**Intelligent road intervention processes** (select CEN or CLC or leave CEN/CLC in case of joint WS)	
1.3.	**Scope**	This CEN-CENELEC Workshop intends to develop two CEN-CENELEC Workshop Agreement (CWA) related with the automation of road maintenance processes. The first one is focused on road maintenance execution, addressing the use of AR/VR technologies combined with a robotic modular platform for diverse maintenance tasks. The second one is related with the specifications needed for the development of a decision support system for road maintenance planning. This is based on data related to infrastructure condition state and operational data related to traffic and road work zones.	
1.4.	**Does this WS stem from an EU Research project?**	☒ YES Name of the project: OMICRON Grant number: 955269 End date 31/01/2025 ☐ NO	
1.5.	**Financial support**	☒ EU Research project ☐ EC/EFTA Grant reference: Type here ☐ Other Specify, if needed: Type here	
1.6.	**WS Proposer/Proposed Chair** **WS proposer**	Name: Organization: Postal address: Email: Phone: Webpage: Contact person (name and email):	José Solis CEMOSA Benaque 9, Málaga (Spain), 29004 Jose.solis@cemosa.es +34 952 230 842 www.cemosa.es José Solís Hernández (Jose.solis@cemosa.es)
1.7.	**WS Secretariat**	Organization: Postal address: Email: Phone: Webpage: WS Secretary name: Email: Phone:	UNE – Spanish association for standardization Calle Génova 6, Madrid (Spain),28004 info@une.org +34 915 294 900 www.une.org Javier Idiago fidiago@une.org +34 628 501 276
1.8.	**CEN and CENELEC Management Centre (CCMC) contact**	Organization: Postal address: Webpage: CCMC Project Manager name: Email: Phone:	CEN and CENELEC Rue de la Science 23B - 1040 Brussels, Belgium https://www.cencenelec.eu/Pages/default.aspx Kursley Alairy kalairy@cencenelec.eu +32478796710
1.9.	**Tentative date and place of the Kick-off Meeting**	Date: 07.10.2024	Place: Online

1.10.	**Does the proposed Workshop fall within the scope of existing CEN and/or CENELEC Technical Bodies?[1]**	☐ ☒	YES Specify:Type here NO. The CWAs does not fall within the scope of an existing TC but it has strong relation with the activities of CEN/TC 226, CEN/TC 227 and CEN/TC 278.
1.11.	**Are there other Technical Bodies or Joint Advisory and Coordination Groups potentially interested in the Workshop? ?[2]**	☐ ☒	YES Specify: Type here NO
1.12.	**Are the following aspects affected?**	Safety matters Management system aspects Conformity assessment aspects Security matters	YES[3] ☐ NO ☒ YES[4] ☐ NO[7] ☒ YES[5] ☐ NO ☒ YES[6] ☐ NO ☒ NO[8]
		Add information/explanations if Management System aspects and Conformity Assessment aspects are affected: Type here	
2	**WS Deliverables**		
2.1.	**CWA #1**		
2.1.1	**Title**	☐ ☒	Same as WS title (1.2) Other: **Road maintenance operations guided by XR technologies combined with a robotic modular platform**
2.1.2	**Scope**		This CWA specifies a protocol that aims to cover the usage of XR technologies in road maintenance operations in combination with a Robotic Modular Platform. The purpose of this document is to be used for the support the actions of road maintenance operators. This methodology involve: - The use of AR for on-road operator support with digital instructions and communication with other technologies such as V2X for alerts. - The use of VR for training and for teleoperation for the remote operator.
2.1.3	**Does the proposed CWA conflict with a published EN**	☐ ☒	YES Specify: Type here NO In case the answer is 'yes', the development of the CWA shall be stopped
2.1	**CWA #2**		

[1] Part A and Part B of this form shall be sent by the WS secretary to the secretary of the Technical Bodies identified in this section to inform them about the creation of the WS and register any possible objection within 30 days (45 during the holiday period).

[2] Part A and Part B of this form should be sent by the WS secretary to the Bodies identified in this section to inform them about the creation of the WS.

[3] Work on the proposed CEN and/or CENELEC Workshop shall not be initiated.

[4] The CEN and/or CENELEC Workshop proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

[5] CEN-CENELEC Internal Regulations - Part 3, Clause 33 applies.

[6] For projects dealing with security matters the security risk analysis provided in Annex I shall be carried out.

[7] See Note 2 in CEN-CENELEC Guide 29, Clause 3.

[8] See Note 2 in CEN-CENELEC Guide 29, Clause 3.

2.1.1	**Title**	☐ ☒	Same as WS title (1.2) Other: **Decision Support System for Highway Maintenance planning**
2.1.2	**Scope**		This CWA defines a Decision Support Tool for the optimal planning of road maintenance interventions and resources, moving towards advanced maintenance strategies. The methodology involves: - Guidelines to select the needed inputs related with the infrastructure condition and traffic data. - Guidelines to define the platform components including a data analysis module. - Guidelines to define the information flow between the components. - Guidelines for choosing the KPIs related with the traffic and the impact on final users, the status of the asset or the maintenance performance. - Guidelines for outputs visualisation by the infrastructure manager in an easy and user-friendly interface.
2.1.3	**Does the proposed CWA conflict with a published EN**	☐ ☒	YES Specify: Type here NO In case the answer is 'yes', the development of the CWA shall be stopped

PART B – Project Plan

1 Status of the project plan

Draft project plan for public commenting (Version 1.0)

This draft project plan is intended to inform the public of a new Workshop. Any interested party can take part in this Workshop and/or comment on this draft project plan by sending an email to **fidiago@une.org**.

All those who have applied for participation or have commented on the project plan by the deadline will be invited to the kick-off meeting of the Workshop on **07.10.2024**.

2 Workshop proposer and potential Workshop participants

2.1 Workshop proposer

Person or organisation	Short description and interest in the subject
CEMOSA – CENTRO DE ESTUDIOS DE MATERIALES Y CONTROL DE OBRA SA Tel +34 916 828 727 info@cemosa.es www.cemosa.es	The Workshop is an initiative of the OMICRON 'Towards a more automated and optimised maintenance, renewal and upgrade of roads by means of robotised technologies and intelligent decision support tools' which has received funding from the European Union's Horizon 2020 research and innovation framework programme under grant agreement N° 955269. CEMOSA, which is the coordinator of the project, provides Engineering and Quality Control Services in the field of Civil, Industrial and Aeronautical Engineering and Architecture. Its activities are applied to the following sectors: transport infrastructures, building services, renewables power plants, environment and water, and industry. CEMOSA counts on innovation with a major focus on Research & Development policies for the development of new technical and productive skills. Mr. Jose Solís Hernández holds a Bachelor of Mechanical Engineering (BEng, 2016) and M.Sc. in Advanced Mechanical Engineering (2017). He also holds a Masters in Statistical Learning and Data Science (2020). He worked as intern in 2015 at EIAT S.L., a Civil Engineering consultancy. He also worked at the Naval Architecture and Marine Engineering (NAME) office at University College London (UCL) as research assistant in

	2016, developing several projects on underwater robotics. He is currently Transport Infrastructure and Digitalisation Area Manager at the Research & Development division of CEMOSA. He focuses on the areas of monitoring, data analytics and predictive maintenance in the field of transport infrastructures. He has participated in several National and European projects such as ROBOTRACK (Spain), IN2SMART2 (H2020 Shift2Rail Project), IN2TRACK3 (H2020 Shift2Rail Project), TECH4INFRA (IDEA Andalusian Government) or IAM4RAIL (Horizon Europe Europe's Rail Project. He is the Project Coordinator of the H2020 OMICRON project.

2.2 Potential participants

This CWA will be developed in a Workshop (temporary body) that is open to any interested party. The participation of the following persons/organizations would be helpful and is desired. Participation is expected from the following organizations:

- FUNDACION TEKNIKER
- AISCAT SERVIZI SRL
- FUNDACION ANDALUZA PARA EL DESARROLLO AEROESPACIAL
- UNIVERSIDAD DE SEVILLA
- UNIVERSITY OF CAMBRIDGE.
- PANEPISTIMIO PATRON
- UNIVERSITA DEGLI STUDI DI GENOVA
- EIFFAGE INFRAESTRUCTURAS SA
- PAVASAL EMPRESA CONSTRUCTORA SA
- INDRA SISTEMAS SA
- REGENS INFORMATIKAI ZARTKORUEN MUKODO RESZVENYTARSASAG
- EUROPEAN SCIENCE COMMUNICATION INSTITUTE (ESCI) GGMBH
- ARMANO RITO ENGENHARIA SA
- TEIXEEIRA DUARTE – ENGENHARIAE CONSTRUCOES SA
- AUTOSTRADE PER L'ITALIA SPA

2.3 Participants at the kick-off meeting

The following persons or organisations already signed up to the kick-off meeting prior to the publication of the draft project plan.

Person	**Organisation**
Jose Solis-Hernandez	CEMOSA (Workshop proposer)

Alice Consilvio	University of Genoa (CWA #2 leader)
Paula López Arévalo	CEMOSA (CWA #1 co-leader)
Themis Anastasiou	LMS (CWA #1 leader)
Ander Ansuategi	Tekniker (CWA #1 co-leader)
Javier Idiago	UNE (Workshop secretary)

2.4 Registered Workshop participants

The following persons or organisations have registered as Workshop participants at the kick-off meeting and will actively participate in the development of the CWA.

Person	**Organisation**
Jose Solis-Hernandez	CEMOSA (Workshop proposer)
Alice Consilvio	University of Genoa (CWA #2 leader)
Paula López Arévalo	CEMOSA (CWA #1 co-leader)
Themis Anastasiou	LMS (CWA #1 leader)
Ander Ansuategi	Tekniker (CWA #1 co-leader)
Javier Idiago	UNE (Workshop secretary)

3 Workshop objectives and scope

3.1 Workshop background

Most of the European road network was constructed between 1960 and 1970, and it was designed for a working life of 50 years. This means that our roads are outdated, and this is normal nowadays. In the upcoming years, road infrastructure investment will be focused on smart solutions for road asset maintenance. Large interventions will be necessary since the road network is aged. We need technologies that are quick, efficient, safe and reliable.

To assess the magnitude of the potential impact of road asset maintenance in Europe, it's imperative to consider the scale of the market. In this sense, in the EU, government invest around EUR 112 billon a year in transport. These investments are mostly dedicated to building and maintaining roads, highlighting the economic importance

of the sector ("Road Infrastructure in Europe: road length and its impact on road performance", https://ec.europa.eu/regional_policy/sources/work/road-2022/road-infrastructure-2022.pdf)

This workshop emerges from the opportunity to consolidate, first a protocol for the usage of XR technologies in road maintenance operations in combination with a robotic modular platform. Second, a decision support tool for the optimal planning of road maintenance interventions and resources, moving towards advanced maintenance strategies. They have been developed as part of the R&D initiative H2020 OMICRON project.

The practical application of these tools will help increasing safety in road intervention actions for road users and personnel, reduce maintenance costs, and make road intervention processes more efficient. Furthermore, by improving the efficiency of road intervention traffic disruptions will be reduced.

This workshop primarily focuses on providing a methodology rather than a case study on implementing in road maintenance. Therefore, the envisioned CWA (CEN Workshop Agreement) will not prescribe any particular technology but rather present a comprehensive framework for implementing the usage of XR technologies and data-driven road management. This represents the main value proposition of this CWA.

The creation of the workshop is also a way to transfer of knowledge from the research and innovation activities within the OMICRON project, which has received funding from the European Union's Horizon 2020 research and innovation framework program under grant agreement N° 955269.

A CEN Workshop is the proposed approach due to the required agility to include the standardization work into the limited timeframe of a European research and innovation project. Other available standardization options do not match this requirement. Upon this, the WS offers other advantages, which have made the CWA the most usual standardization tool used by research and innovation projects:

• Open participation: The Workshop Agreement allows the involvement of the industry and other players (XR component manufacturers, integrators, application developers, etc.) as the workshop is open to anyone, including non-European participants, and the opportunity to participate is widely advertised in advance by CEN/CENELEC and the promoters. This guarantees that the different views of the stakeholders interested in the document are considered.

• Transparency: Public commenting periods at the starting point and prior to the publication of the CWA are available through the CEN/CENELEC webpage, together with updated information on the WS.

• Free availability of the resulting CWA: It is expected that the CWA is open for free download from the CEN/CENELEC webpage, being the relevant cost covered by OMICRON. This will facilitate its dissemination and use by the target stakeholders.

• Expected use for further standardization works: As a first standard approach, the CWA can be upgraded to, or used as a first input for the development of new standards by the relevant technical committees (e.g. CEN/TC 227).

3.2 Scope

This CEN-CENELEC Workshop intends to develop two CWA related with the automation of road maintenance technologies.

The first one specifies a protocol that aims to cover the usage of XR technologies in road maintenance operations in combination with a Robotic Modular Platform. This methodology involves the use of AR for on road operator support with digital instructions and communication with other technologies such as V2X for alerts. In addition, the use of VR for training and for teleoperation for the remote operator is also considered.

The second one defines a Decision Support Tool for the optimal planning of road maintenance interventions and resources, moving towards advanced maintenance strategies.

The methodology involves:
- Guidelines to select the needed inputs related with the infrastructure condition and traffic data.
- Guidelines to define the platform components including a data analysis module.
- Guidelines to define the information flow between the components
- Guidelines for choosing the KPIs related with the traffic and the impact on final users, the status of the asset or the maintenance performance.
- Guidelines for outputs visualisation by the infrastructure manager in an easy and user-friendly interface.

3.3 Related activities

The subject of the planned CWAs is not at present the subject of any standard. In addition, the CWAs does not fall within the scope of anu existing TC but it has strong relation with the activities of:

- CEN/TC 226: Road equipment

- CEN/TC 227: Road materials

- CEN/TC 278: Intelligent transport systems

- CEN/TC 442: Building Information Modelling

- CEN/CLC/JTC 21: Artificial Intelligence

4 Workshop programme

4.1 General

The kick-off meeting is planned to take place on 07.10.2024 in online as virtual meeting. A draft for public commenting will be published.

After the kick-off meeting, the necessary number of Workshop meetings, preferably by web conferences, will be held, during which the content of the CWA will be discussed, agreed and approved.

The working language (language of meetings, minutes, etc.) of the WS will be English. The CWA will be written in English.

4.2 Workshop schedule

Table 1: Workshop schedule (preliminary)

CEN/CENELEC Workshop	July	August	September	October	November	December
Initiation						
1. Workshop description form submission and TC response						
2. Open commenting period on draft project plan (mandatory)						
Operation						
3. Kick-off meeting						
4. CWA(s) development						
5. Open commenting period on draft CWA(s) (optional)						
6. CWA(s) finalized and approved by Workshop participants						
Publication						
7. CWA(s) publication						
Dissemination (see 6)						
Milestones			K	V	VA	PD

K Kick-off
V Virtual Workshop meeting
A Adoption of CWA
P Publication of CWA
D Online distribution of CWA

5 Resource planning

Both registration and participation at the Workshop here are free of charge. The management costs of the Workshop will be covered by resources from the OMICRON project.

The use of electronic meetings will be preferred. Nevertheless, in the case of physical meetings, they will be held in Europe and each participant must bear his/her own costs for travel, accommodation and subsistence.

The CWA will be published by CEN/CENELEC and made publicly available through CEN/CENELEC and the different standardization Institutes in the member states at normal costs in line with the guidelines in CEN/CENELEC Guide 10. It is foreseen that the CWA can be also freely downloaded from the CWA Download Area on the CEN/CENELEC webpage.

The copyright of the final CWA will be at CEN/CENELEC. The final document will include the following paragraph: "Results incorporated in this CEN Workshop Agreement received funding from the European Union's HORIZON 2020 research and innovation program under grant agreement number 955269".

6 Workshop structure and rules of cooperation

6.1 Participation in the Workshop

The Workshop will be constituted during the kick-off meeting. By approving this project plan, the interested parties declare their willingness to participate in the Workshop and will be formally named as Workshop participants, with the associated rights and duties. Participants at the kick-off meeting who do not approve the project plan are not given the status of a Workshop participant and are thus excluded from further decisions made during the kick-off meeting and from any other decisions regarding the Workshop.

As a rule, the request to participate in the Workshop is closed once it is constituted. The current Workshop participants shall decide whether any additional members will be accepted or not.

Any new participant in the Workshop at a later date is decided on by the participants making up the Workshop at that time. It is particularly important to consider these aspects:

a. expansion would be conducive to shortening the duration of the Workshop or to avoiding or averting an impending delay in the planned duration of the Workshop;
b. the expansion would not result in the Workshop taking longer to complete;
c. the new Workshop participant would not address any new or complementary issues beyond the scope defined and approved in the project plan;
d. the new Workshop participant would bring complementary expertise into the Workshop in order to incorporate the latest scientific findings and state-of-the-art knowledge;
e. the new Workshop participant would actively participate in the drafting of the manuscript by submitting concrete, not abstract, proposals and contributions;
f. the new Workshop participant would ensure wider application of the CWA.

All Workshop participants who approved the publication of the CWA or its draft will be named as authors in the European Foreword, including the organizations which they represent. All Workshop participants who did not approve the publication of the CWA will not be named in the European Foreword.

6.2 Workshop responsibilities

The Workshop Chair is responsible for content management and consensus building. The Workshop Chair is supported by the Workshop Vice-Chair (if any) and the responsible Workshop secretariat, whereby the Workshop secretariat will always remain neutral regarding the content of the CWA(s). Furthermore, the Workshop secretariat shall ensure that CEN-CENELEC's rules of procedure, rules of presentation, and the principles governing the publication of CWA(s) have been observed. Should a Workshop Chair no longer be able to carry out her/his duties, the Workshop secretariat shall initiate the election of a new Workshop Chair. The list below covers the main tasks of the Workshop Chair. It is not intended to be exhaustive.

- Content related contact point for the Workshop
- Presides at Workshop meetings
- Ensures that the development of the CWA respects the principles and content of the adopted project plan
- Manages the consensus building process, assesses when the Workshop participants have reached agreement on the final CWA, on the basis of the comments received
- Ensures due information exchange with the Workshop secretariat
- Represents the Workshop and its results to exterior

The Workshop secretariat, provided by a CEN and/or CENELEC Member, is responsible for organizing and leading the kick-off meeting, in consultation with the Workshop proposer. Further Workshop meetings and/or web conferences shall be organized by the Workshop secretariat in consultation with the Workshop Chair. The list below covers the main tasks of the Workshop secretariat. It is not intended to be exhaustive.

- Administrative and organizational contact point for the Workshop
- Ensures that the development of the CWA respects the principles and content of the adopted project plan and of the requirements of the CEN-CENELEC Guide 29
- Formally registers Workshop participants and maintains record of participating organizations and individuals
- Offers infrastructure and manages documents and their distribution through an electronic platform
- Prepares agenda and distributes information on meetings and meeting minutes as well as follow-up actions of the Workshop
- Initiates and manages CWA approval process upon decision by the Workshop Chair
- Interfaces with CEN-CENELEC Management Centre (CCMC) and Workshop Chair regarding strategic directions, problems arising, and external relationships
- Advises on CEN-CENELEC rules and brings any major problems encountered (if any) in the development of the CWA to the attention of CEN-CENELEC Management Centre (CCMC)
- Administrates the connection with relevant CEN or CENELEC/TCs

6.3 Decision making process

The CEN and/or CENELEC Workshop Chair is responsible for ensuring that the development of the CWA follows the principles and content of the project plan described in this document and the requirements of CEN-CENELEC Guide 29. The CEN and/or CENELEC Workshop Chair may take decisions on the conduct of the CEN and/or CENELEC Workshop on the basis of the comments expressed by the participants and of CEN-CENELEC Guide 29.

Decisions shall be taken based on consensus of the WS participants.

7 Contacts

- **Workshop Proposer & Proposed Chair:**
  Jose Solís Hernández
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  Jose.solis@cemosa.es
  www.cemosa.es

- **Workshop Secretariat:**
  Javier Idiago
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  Génova 6, 28004 Madrid
  fidiago@une.org
  www.une.org

- **CEN-CENELEC Management Centre:**
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