

# CEN Workshop “Pre-normative plan for H2 applications to passenger ships - Guidelines for H2 passenger ships from the early stage of design”

## Workshop description form

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

## PART A – Workshop SUMMARY

<b>1</b>	<b>WS details</b>																	
1.1.	<b>Organization</b>	<input checked="" type="checkbox"/> CEN <input type="checkbox"/> CENELEC <input type="checkbox"/> Joint with <input type="checkbox"/> CEN lead <input type="checkbox"/> CENELEC lead																
1.2.	<b>Title</b>	CEN WS “E-Shyips - Pre-normative plan for H2 applications to passenger ships - Guidelines for H2 passenger ships from the early stage of design”																
1.3.	<b>Scope</b>	<p>The goal of this CEN/WS is the development of a CWA which provides a set of design and installation recommendations for the arrangement and installation of propulsion systems, using hydrogen as fuel, on passenger ships. No new safety requirements are defined in the CWA, but these recommendations can be used for a risk assessment, leveraging on existing standards (e.g. HAZOP, HAZID, FMECA), to be applicable already from the early design phases and discriminating based on the presence of passengers on board. These recommendations can be useful for a risk assessment (to be carried out in a second stage), but the risk assessment is not the focus of this CWA. The document leverages on the results of the experiments carried out within the EU e-SHYIPS project. Ultimately the document is expected to benefit the industry also in terms of knowledge sharing and policy makers for the update of relevant documents.</p>																
1.4.	<b>Does this WS stem from an EU Research project?</b>	<input checked="" type="checkbox"/> YES Name of the project: E-SHYIPS Grant number: 101007226 End date 2024-12-31  <input type="checkbox"/> NO																
1.5.	<b>Financial support</b>	<input checked="" type="checkbox"/> EU Research project <input type="checkbox"/> EC/EFTA Grant reference: Type here <input type="checkbox"/> Other Specify, if needed: Type here																
1.6.	<b>WS Proposer/Proposed Chair</b>	<table border="0"> <tr> <td>Name:</td> <td>Brendan Patrick Sullivan</td> </tr> <tr> <td>Organization:</td> <td>Politecnico di Milano</td> </tr> <tr> <td>Postal address:</td> <td>Piazza Leonardo da Vinci, 32 – 20133 Milano - Italy</td> </tr> <tr> <td>Email:</td> <td>na</td> </tr> <tr> <td>Phone:</td> <td>https://www.polimi.it</td> </tr> <tr> <td>Webpage:</td> <td>Brendan Patrick Sullivan</td> </tr> <tr> <td>Contact person (name and email):</td> <td>(brendan.sullivan@polimi.it)</td> </tr> </table>	Name:	Brendan Patrick Sullivan	Organization:	Politecnico di Milano	Postal address:	Piazza Leonardo da Vinci, 32 – 20133 Milano - Italy	Email:	na	Phone:	https://www.polimi.it	Webpage:	Brendan Patrick Sullivan	Contact person (name and email):	(brendan.sullivan@polimi.it)		
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1.7.	<b>WS Secretariat</b>	<table border="0"> <tr> <td>Organization:</td> <td>UNI</td> </tr> <tr> <td>Postal address:</td> <td>Via Sannio, 2 – 20137 Milano (Italy)</td> </tr> <tr> <td>Email:</td> <td>fabrizio.tacca@uni.com</td> </tr> <tr> <td>Phone:</td> <td>+39 02700241</td> </tr> <tr> <td>Webpage:</td> <td>www.uni.com</td> </tr> <tr> <td>WS Secretary name:</td> <td>Fabrizio Tacca</td> </tr> <tr> <td>Email:</td> <td>fabrizio.tacca@uni.com</td> </tr> <tr> <td>Phone:</td> <td>+39 0270024482</td> </tr> </table>	Organization:	UNI	Postal address:	Via Sannio, 2 – 20137 Milano (Italy)	Email:	fabrizio.tacca@uni.com	Phone:	+39 02700241	Webpage:	www.uni.com	WS Secretary name:	Fabrizio Tacca	Email:	fabrizio.tacca@uni.com	Phone:	+39 0270024482
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1.8.	<b>CEN and CENELEC Management Centre (CCMC) contact</b>	<table border="0"> <tr> <td>Organization:</td> <td>CEN and CENELEC</td> </tr> <tr> <td>Postal address:</td> <td>Rue de la Science 23B - 1040 Brussels, Belgium</td> </tr> <tr> <td>Webpage:</td> <td><a href="https://www.cencenelec.eu/Pages/default.aspx">https://www.cencenelec.eu/Pages/default.aspx</a></td> </tr> </table>	Organization:	CEN and CENELEC	Postal address:	Rue de la Science 23B - 1040 Brussels, Belgium	Webpage:	<a href="https://www.cencenelec.eu/Pages/default.aspx">https://www.cencenelec.eu/Pages/default.aspx</a>										
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		CCMC Project Manager name: Email: Phone:	Marc-Antoine Carreira da Cruz macarreira@cencenelec.eu
1.9.	<b>Tentative date and place of the Kick-off Meeting</b>	Date: 2024-07-17	Place: ZOOM
1.10.	<b>Does the proposed Workshop fall within the scope of existing CEN and/or CENELEC Technical Bodies?<sup>1</sup></b>	<input type="checkbox"/> YES Specify: Type here  <input checked="" type="checkbox"/> NO	
1.11.	<b>Are there other Technical Bodies or Joint Advisory and Coordination Groups potentially interested in the Workshop? <sup>2</sup></b>	<input checked="" type="checkbox"/> YES Specify: ISO/TC 197, ISO/TC 8, CEN/TC 268  <input type="checkbox"/> NO	
1.12.	<b>Are the following aspects affected?</b>	Safety matters Management system aspects Conformity assessment aspects Security matters	YES <sup>3</sup> <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES <sup>4</sup> <input type="checkbox"/> 7 <input checked="" type="checkbox"/> YES <sup>5</sup> <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES <sup>6</sup> <input type="checkbox"/> NO <input checked="" type="checkbox"/> NO 8
		Add information/explanations if Management System aspects and Conformity Assessment aspects are affected: Type here	
<b>2</b>	<b>WS Deliverables</b>		
<b>2.1.</b>	<b>CWA #1</b>		
2.1.1	<b>Title</b>	<input checked="" type="checkbox"/> Same as WS title (1.2) <input type="checkbox"/> Other: Type here	
2.1.2	<b>Scope</b>	The goal of this CEN/WS is the development of a CWA which provides a set of design and installation recommendations for the arrangement and installation of propulsion systems, using hydrogen as fuel, on passenger ships. No new safety requirements are defined in the CWA, but these recommendations can be used for a risk assessment, leveraging on existing standards (e.g. HAZOP, HAZID, FMECA), to be applicable already from the early design phases and discriminating based on the presence of passengers on board. These recommendations can be useful for a risk assessment (to be carried out in a second stage), but the risk assessment is not the focus of this CWA. The document leverages on the results of the experiments carried out within the EU e-SHyIPS project. Ultimately the document is expected to benefit the industry also in terms of knowledge sharing and policy makers for the update of relevant documents.	

<sup>1</sup> 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).

<sup>2</sup> 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.

<sup>3</sup> Work on the proposed CEN and/or CENELEC Workshop shall not be initiated.

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

<sup>5</sup> CEN-CENELEC Internal Regulations - Part 3, Clause 33 applies.

<sup>6</sup> For projects dealing with security matters the security risk analysis provided in Annex I shall be carried out.

<sup>7</sup> See Note 2 in CEN-CENELEC Guide 29, Clause 3.

<sup>8</sup> See Note 2 in CEN-CENELEC Guide 29, Clause 3.



CENELEC

2.1.3	<b>Does the proposed CWA conflict with a published EN</b>	<input type="checkbox"/> <input checked="" type="checkbox"/>	YES Specify: Type here NO <b>In case the answer is 'yes', the development of the CWA shall be stopped</b>
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## **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 the WS secretary.

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 **2024-07-17**.

### **2 Workshop proposer and potential Workshop participants**

#### **2.1 Workshop proposer**

The proposer of this CEN Workshop is the E-shyips project funded by Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) under Grant agreement n. 101007226 and coordinated by:

Politecnico di Milano, Piazza Leonardo Da Vinci 32, 20133 Milano, Italy

The CEN national member holding the Workshop secretariat is:

UNI - Ente italiano di Normazione - Via Sannio n.2, Milano, Italy (20137).

#### **2.2 Potential participants**

This CWA will be developed in a Workshop (temporary body) that is open to any interested party. The participation of other experts would be helpful and is desired. It is recommended that:

- Academic and research bodies
- Funded European Projects (i.e. Horizon 2020, Horizon Europe)
- Industry and commerce
- Non-governmental organizations (NGO)
- Standards application

take part in the development of this CWA.

### **3 Workshop objectives and scope**

#### **3.1 Workshop background**

The maritime sector contributes significantly to the environmental impact, with an increased share of greenhouse gas emissions estimated for the next few years. The International Maritime Organization (IMO) has initially set a target to reduce CO<sup>2</sup> emissions by at least 50% in 2050. Recently, this strategy has been revised by IMO aiming for an ambitious zero-emissions scenario by the same year, towards the complete decarbonization of the maritime sector. In this context, hydrogen and hydrogen-based fuels are regarded as very promising, and a broad consensus has been reached within the shipping industry to replace conventional propulsion systems of vessels with new hydrogen technologies in the near future. Achieving the aforementioned target, also requires an unprecedented enhancement in innovation for the maritime sector, involving not only the re-design of vessels,

but also the implementation of new infrastructures in ports as well as the development of alternative bunkering approaches, to support the whole value chain related to hydrogen as fuel. Fuel cells and hydrogen technologies have been already demonstrated in few prototypes, at different scales and for different applications. However, to date, an international regulatory framework for the use of hydrogen on-board of ships is absent, this representing a barrier to its adoption at large scale.

In 2021, the IMO has released the Interim Guidelines for Fuel Cells, as a first step towards the development of prescriptive rules for hydrogen systems on-board of ships. Since then, significant progress on the development of guidelines for the safety of ships using hydrogen as fuel have been made, and on 20-29 September 2023 the Sub-Committee on Carriage of Cargoes and Containers (CCC 9) of IMO agreed to finalize and bring the approval of the draft interim guidelines to December 2024. These guidelines will represent a first try-out for the market to underpin the future IGF Code update, which, to date, covers liquefied natural gas (LNG) as a fuel, while it does not consider either liquid (LH2) or compressed gaseous (CGH2) hydrogen. According to the IMO agenda, amendments to the IGF Code will be ready to entry in force not before 2028. In this framework, the urgent need of providing crucial insights related to the use of hydrogen technologies for maritime applications emerges clearly, in order to speed up the process of improvement of the existing standards.

#### **Scope:**

The goal of this CEN/WS is the development of a CWA which provides a set of design and installation recommendations for the arrangement and installation of propulsion systems, using hydrogen as fuel, on passenger ships.

No new safety requirements are defined in the CWA, but these recommendations can be used for a risk assessment, leveraging on existing standards (e.g. HAZOP, HAZID, FMECA), to be applicable already from the early design phases and discriminating based on the presence of passengers on board.

These recommendations can be useful for a risk assessment (to be carried out in a second stage), but the risk assessment is not the focus of this CWA.

The document leverages on the results of the experiments carried out within the EU e-SHyIPS project.

Ultimately the document is expected to benefit the industry also in terms of knowledge sharing and policy makers for the update of relevant documents.

#### **Related activities:**

The e-SHyIPS project has already carried out more than three years of research activities, involving 16 partners in several European countries.

In particular, it has been carried out a research on existing gaps in the IGF Code to effectively include hydrogen among the low flash-point fuels. Moreover a state of the art analysis in terms of existing standards related to H2, in applications different from ships, was carried out at the beginning of the project (D1.3 – State of the art of safety standardisation framework).

The relevant CEN and ISO technical committees have been informed of the activities carried out in the project from the beginning:

- CEN/CLC/JTC 6 - Hydrogen in energy systems: the Chairman, Bernard Gindroz, is involved in the Advisory Board of the project and has contributed to the project from the beginning with inputs, comments, and participation to events. A formal liaison with this JTC is in progress.

Presentations of the project during JTC plenary meetings were also carried out.

- ISO/TC 197 – Hydrogen: the project and its research outputs were presented during a plenary meeting.

The Italian mirror of the CEN/CLC/JTC 6 and the ISO/TC 197, (UNI/CT 56) has been constantly kept updated about the latest developments of the project.

- ISO/TC 8 - Ships and marine technology: the project and its research outputs were presented during a plenary meeting. A formal C type Liaison is in progress.

## **4 Workshop programme**

### **4.1 General**

The CWA will be drawn up in English (language of meetings, minutes, etc.). The CWA will be written in English.

The drafting process is open and all comments will be considered, first by the chair person and secondarily by the participants of the workshop.

In order to minimize travelling, meetings will mostly be done remotely. If a physical meeting is desirable, it will be organized.

The kick-off meeting is planned to take place mid-July.

### **4.2 Workshop schedule**



**Table 1: Workshop schedule (preliminary)**

CEN/CENELEC Workshop	M01 April '24	M02	M03	M04	M05	M06	M07	M08	M09	M10	...
<b>Initiation</b>	[Dark Blue Bar]										
1. Workshop description form submission and TC response	[Light Blue Bar]	[Light Blue Bar]									
2. Open commenting period on draft project plan (mandatory)			[Light Blue Bar]								
<b>Operation</b>				[Teal Bar]							
3. Kick-off meeting				[Light Blue Bar]							
4. CWA(s) development				[Light Blue Bar]	[Light Blue Bar]	[Light Blue Bar]	[Light Blue Bar]	[Light Blue Bar]	[Light Blue Bar]		
5. CWA(s) finalized and approved by Workshop participants									[Light Blue Bar]		
<b>Publication</b>										[Green Bar]	
6. CWA(s) publication										[Light Green Bar]	
<b>Dissemination (see 6)</b>		[Orange Bar]							[Orange Bar]	[Orange Bar]	[Orange Bar]
<b>Milestones</b>				K V	V	V	V		V	M/A	P D

- Legend
- K** Kick-off
  - M** Workshop meeting
  - V** Virtual Workshop meeting





- A Adoption of CWA
- P Publication of CWA
- D Online distribution of CWA

## 5 Resource planning

The administrative costs of CEN Workshop Secretariat will be covered by resources from the Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) project E-shyips, identified by Grant Agreement No 101007226.

## 6 Workshop structure and rules of cooperation

The workshop will be led by a chair or vice-chair, while the project leader will support them in the organization.

The CEN Workshop Chair is responsible for ensuring that the development of the CWA follows the principles and content of the adopted project plan and the requirements of the CEN Guide 29. The CEN Workshop Chair may take decisions on the conduct of the CEN Workshop on the basis of the comments expressed by the participants according to the CWA rules.

The workshop secretariat is responsible for the organization and management of the workshops according to the CEN Guide 29.

CEN Workshop participants draft the CWA and take in consideration the comments after the public commenting phase. CEN Workshop participants are the CWA proposers (the members of E-shyips project), plus other relevant stakeholder, identified by the proposer.

### 6.1 Participation in the Workshop

The Workshop will be constituted during the course of 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:

- 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;
- the expansion would not result in the Workshop taking longer to complete;
- the new Workshop participant would not address any new or complementary issues beyond the scope defined and approved in the project plan;
- 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;
- the new Workshop participant would actively participate in the drafting of the manuscript by submitting concrete, not abstract, proposals and contributions;
- the new Workshop participant would ensure wider application of the CWA.

All Workshop participants who voted for 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 voted against the publication of the CWA, or who have abstained, 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.

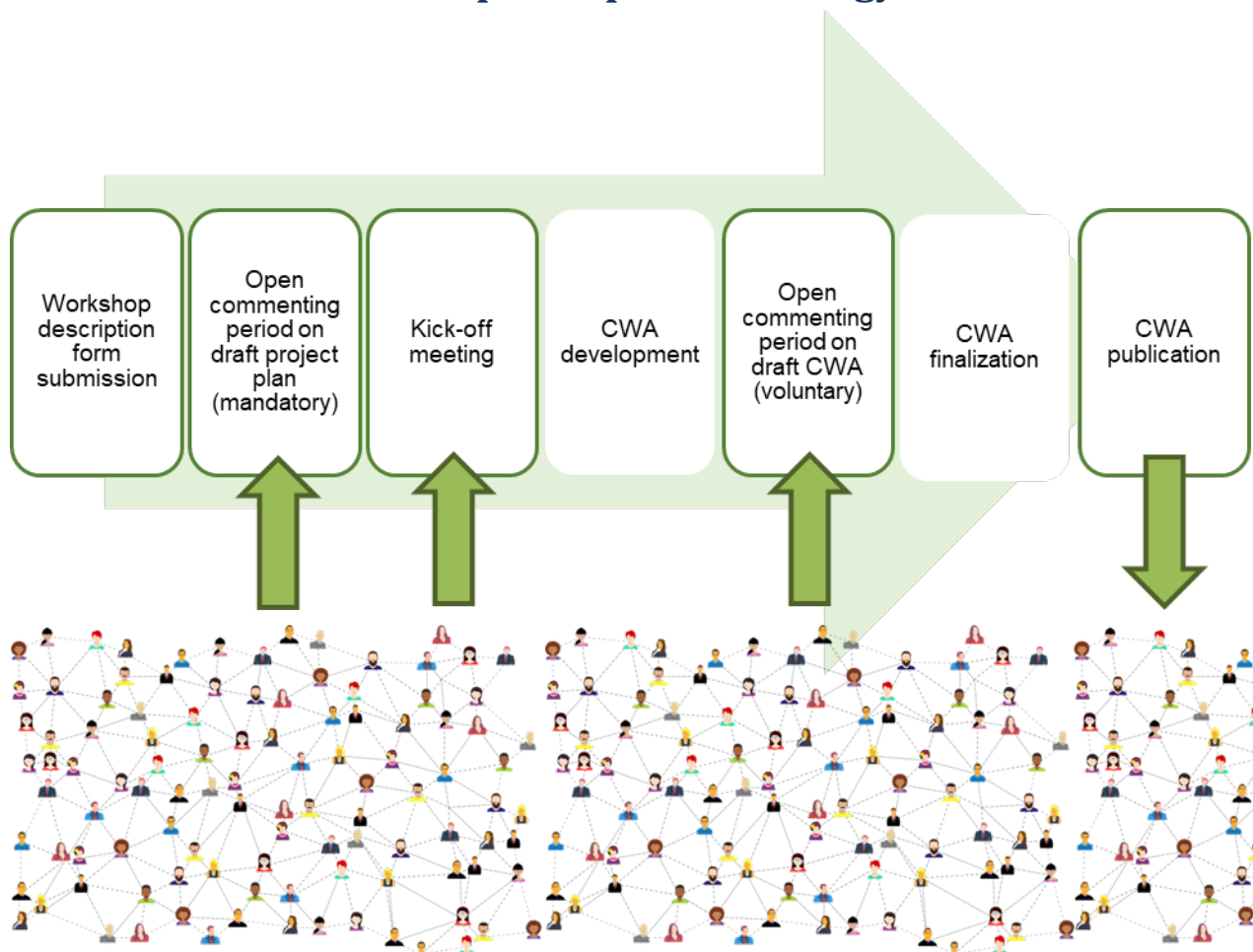
- Administrative and organizational contact point for the Workshop
- Ensures that the development of the CWA respects the principles and content of the adopted project plan and of the requirements of the CEN-CENELEC Guide 29
- Formally registers Workshop participants and maintains record of participating 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.

## 7 Dissemination and participation strategy



### Proposal form submission

The Workshop proposal will be disseminated to the following relevant stakeholders and bodies for consultation:

- standards committee, working group etc.
- publisher of technical rules
- sector forum
- focus group
- coordination group
- others

### Open commenting period on draft project plan

The project plan will be disseminated to the following relevant stakeholders and bodies for commenting:

- standards committee, working group etc.
- publisher of technical rules
- sector forum
- focus group
- coordination group
- others

In addition to the CCMC website, the project plan and the date of the kick-off meeting will be advertised on the E-shyips website (<https://e-shyips.com/>) to raise awareness. Interested parties are requested to contribute either through commenting of the project plan (short term) or through Workshop participation (long term).

### **Open commenting period on draft CWA**

The commenting phase is not compulsory in this case and it can be added. Decision on the submission of the draft CWA to public commenting phase can be agreed at a later stage, during the works of the CEN/WS.

### **CWA publication**

The final CWA will be disseminated to the following relevant stakeholders and bodies:

- standards committee, working group etc.
- publisher of technical rules
- sector forum
- focus group
- coordination group
- others

In addition to the CCMC website, the final CWA will be advertised on:

- sector specific newsletter
- social media, such as
  - Facebook
  - Instagram
  - LinkedIn
  - Twitter
- Research Gate
- EC Newsroom
- Other