
Draft Project plan for the CEN Workshop on " Fatigue4Light advanced and fast fatigue testing methods"

**Requests to participate in the Workshop
and/or comments on the project plan are
to be submitted by 2023-09-14 to
rpostigo@une.org¹**

Recipients of this project plan are kindly requested to name all patent rights known to them to be relevant to the Workshop and to make available all supporting documents.

Manresa, 2023-09-22 (Version 1)

¹ Applications for participating in the Workshop and comments on the project plan that are not received by the deadline do not need to be taken into consideration. Once constituted, the Workshop will decide whether or not to consider the comments received in good time.

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Foreword (TO BE DELETED BEFORE THE PUBLICATION OF THE DRAFT PROJECT PLAN)

The content of the project plan is structured into chapters. These chapters represent the Workshop project plan's minimum content, as well as optional but recommended text modules. There is no restriction on the addition of further chapters if this is deemed useful.

Colour code:

- **Black font:** Fixed text modules. Please do not change.
- Green font: *Optional but recommended text modules. Please adjust according to your needs.*
- **<Red font>: Placeholder. Please fill in.**
- *Blue font:* Explanation. Please delete in the final version.

Summary

This workshop is motivated by the currently ongoing Horizon 2020 Fatigue4Light project (Fatigue modelling and fast testing methodologies to optimize part design and to boost lightweight materials deployment in chassis parts).

For vehicle chassis parts, the fatigue design of the components is essential. Nevertheless, standard fatigue characterization of the materials used for these parts is very time consuming. Achieving the goal of this project for lightening the vehicles requires accelerated or more straightforward tests to support the material development and characterization to rapidly evaluate the influence of the processes and choose the best solution for each part.

This workshop will be used for the dissemination of the project and its results reaching stakeholders on national, European and international level.

Fatigue4Light will lead the development of at least 2 CWA closely connected to project objectives and the developed technologies and processes in order to bring these closer to the market and to spread technological advances.

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. Please send any requests to participate or comments by e-mail to rpostigo@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 **2023-09-22**.

2 Workshop proposer and Workshop participants

2.1 Workshop proposer

| <u>Person or organisation</u> | <u>Short description and interest in the subject</u> |
|--|---|
| Spanish Association for Standardization (UNE) as partner for standardization in Fatigue4Light Project Consortium | <p>This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101006844.</p> <p>Fatigue4Light project is focused on the development of new tests and computer simulation methods to better estimate the fatigue life of chassis components and to select the optimal materials for lighter vehicle chassis.</p> |

2.2 Other potential participants

These 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:

- Industry and commerce, related to performance of materials under fatigue loads.
- Academic and research, experts on the engineering of simulation and modelling

take part in the development of this CWA.

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.

| <u>Person</u> | <u>Organisation</u> |
|---------------|---------------------|
|---------------|---------------------|

| | |
|--------------------|--------|
| Sergio Jiménez | CIMNE |
| Lucia Barbu | CIMNE |
| Violeta Vargas | EUT |
| Matthias Merzkirch | RISE |
| Erik Olsson | LTU |
| Míriam Vendrell | EUT |
| Michele Tedesco | CRF |
| Antonio Mateo | UPC |
| Rafael Postigo | UNE |
| Sergi Parareda | EUT |
| Magdalena Juntikka | RISE |
| Rickard Östlund | GES |
| Gustaf Gustafsson | GES |
| David Gustafsson | LTU |
| Davide Paolino | POLITO |
| Andrea Tridello | POLITO |
| Carlo Boursier | POLITO |

3 Workshop objectives and scope

3.1 Background

This workshop is motivated by the currently ongoing Horizon 2020 Fatigue4Light project (Fatigue modelling and fast testing methodologies to optimize part design and to boost lightweight materials deployment in chassis parts).

For vehicle chassis parts, the fatigue design of the components is essential. Nevertheless, standard fatigue characterization of the materials used for these parts is very time consuming. Achieving the goal of this project for lightening the vehicles requires accelerated or more straightforward tests to support the material development and characterization to rapidly evaluate the influence of the processes and choose the best solution for each part.

The creation of this CEN Workshop was identified by the project consortium as a very useful way for the translation of its results to marketable solutions. This initiative aligns the Fatigue4Light project with Commission Recommendation (EU) 2023/498 “Code of Practice on standardisation in the European Research Area” and Council Recommendation (EU) 2022/2415 “Guiding principles for knowledge valorisation”.

This workshop will be used for the dissemination of the project and its results reaching stakeholders on national, European and international level.

Fatigue4Light will lead the development of at least 2 CWA closely connected to project objectives and the developed technologies and processes in order to bring these closer to the market and to spread technological advances.

3.2 Scope

The planned Workshop intends to deliver 2 different documents related to obtaining in a limited time the materials fatigue properties. The first one, so called self-heating measurements, is based on the evolution of temperature measurements under cyclic loading. The second one, so called stiffness method measurements, is based on the evolution of the damage during cyclic loading. Their titles and scopes of the envisioned CWAs are the following:

- CWA 1: Fatigue testing. Self-heating measurements

The planned CEN Workshop Agreement establishes a testing methodology to determine the fatigue limit at shorter times and with a reduced number of specimens, by the evolution of the temperature of the specimen during cyclic loading to estimate the fatigue properties.

The planned CEN Workshop Agreement is applicable to the materials considered within Fatigue4light project. Hence, AHSS, stainless steel, Al alloys and hybrid metal-FRP materials.

- CWA 2: Fatigue testing. Rapid fatigue testing by damage control.

The planned CEN Workshop Agreement establishes a testing methodology to determine the fatigue limit at shorter times and with a reduced number of specimens, by the evolution of the stiffness of the specimen under cyclic loading.

The planned CEN Workshop Agreement is applicable to the materials considered within Fatigue4light project. Hence, AHSS, stainless steel, Al alloys and hybrid metal-FRP materials.

3.3 Related activities

The subjects of the planned CWAs are not at present the subject of a standard. However, there are committees, standards and/or other technical specifications that deal with related subjects and thus need to be taken into account - and involved, where necessary - during this Workshop:

ISO/TC 164/SC 4, Fatigue, fracture and toughness testing

- ISO 1099:2017, Metallic materials — Fatigue testing — Axial force-controlled method
- ISO 1143:2010, Metallic materials — Rotating bar bending fatigue testing
- ISO 1352:2011, Metallic materials — Torque-controlled fatigue testing
- ISO 4965-1:2012, Metallic materials — Dynamic force calibration for uniaxial fatigue testing — Part 1: Testing systems
- ISO 4965-2:2012, Metallic materials — Dynamic force calibration for uniaxial fatigue testing — Part 2: Dynamic calibration device (DCD) instrumentation
- ISO 12106:2017, Metallic materials — Fatigue testing — Axial-strain-controlled method
- ISO 12107:2012, Metallic materials — Fatigue testing — Statistical planning and analysis of data
- ISO 12108:2018, Metallic materials — Fatigue testing — Fatigue crack growth method
- ISO 12110-1:2013, Metallic materials — Fatigue testing — Variable amplitude fatigue testing — Part 1: General principles, test method and reporting requirements
- ISO 12110-2:2013, Metallic materials — Fatigue testing — Variable amplitude fatigue testing — Part 2: Cycle counting and related data reduction methods
- ISO 12111:2011, Metallic materials — Fatigue testing — Strain-controlled thermomechanical fatigue testing method
- ISO/TR 12112:2018, Metallic materials — Principles and designs for multiaxial fatigue testing
- ISO 22407:2021, Metallic materials — Fatigue testing — Axial plane bending method

4 Workshop programme

4.1 General

The kick-off meeting is planned to take place on 22nd of September of 2023, on-line. A draft for public commenting will be published for 30 days.

A total of 3 virtual workshop meetings (kick-off meeting and Workshop meetings) will be held, during which the content of the CWAs will be presented, discussed and approved.

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

4.2 Workshop schedule

The timescale and work programme will be in principle the same for the development of the 2 work items stated in the project plan. The virtual meetings will be held jointly at the same date for the 2 work items, consecutively. The preliminary Workshop schedule will be the following:

Table 1: Workshop schedule (preliminary)

| CEN/CENELEC Workshop | M01 | M02 | M03 | M04 | M05 | M06 | M07 | M08 | M09 | ... | |
|---|------|-----|-----|-----|-----|-----|------|-----|-----|-----|--|
| | 2023 | | | | | | 2024 | | | | |
| | JUL | AUG | SEP | OCT | NOV | DIC | ENE | FEB | APR | | |
| Initiation | | | | | | | | | | | |
| 1. Proposal form submission and TC response | | | | | | | | | | | |
| 2. Project plan development | | | | | | | | | | | |
| 3. Open commenting period on draft project plan (mandatory) | | | | | | | | | | | |
| Operation | | | | | | | | | | | |
| 4. Kick-off meeting | | | | | | | | | | | |
| 5. CWA(s) development | | | | | | | | | | | |
| 6. Open commenting period on draft CWA(s) (optional) | | | | | | | | | | | |
| 7. CWA(s) finalised and approved by Workshop participants | | | | | | | | | | | |
| Publication | | | | | | | | | | | |
| 8. CWA(s) publication | | | | | | | | | | | |
| Dissemination (see 7) | | | | | | | | | | | |
| Milestones | | | | K | V | V | V | A | P | O | |

- B** CEN/CENELEC BT meeting deciding on establishment of a CEN/CENELEC Workshop
- K** Kick-off
- V** Virtual Workshop meeting
- A** Adoption of CWA
- P** Publication of CWA
- D** Online distribution of CWA

5 Resource planning

The administrative costs of the CEN Workshop will be financed by resources from the Fatigue4Light project. The final document will include the following paragraph: "Results incorporated in this CEN Workshop Agreement have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101006844".

Both registration and participation at the CEN Workshop described here are free of charge. The use of electronic meetings will be preferred. Nevertheless, in the case of physical meetings, they will be held in Europe and each participant has to bear his/her own costs for travel, accommodation, and subsistence.

6 Workshop structure and rules of cooperation

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:

- 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 voted for the publication of the CWA or its draft will be named as authors in the European Foreword, including the organisations 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 any decision-making and voting procedures. The Workshop Chair is supported by the Workshop Vice-Chair 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, decides 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/CENELEC national member, is responsible for organising and leading the kick-off meeting, in consultation with the Workshop proposer. Further Workshop meetings and/or web

conferences shall be organised 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.

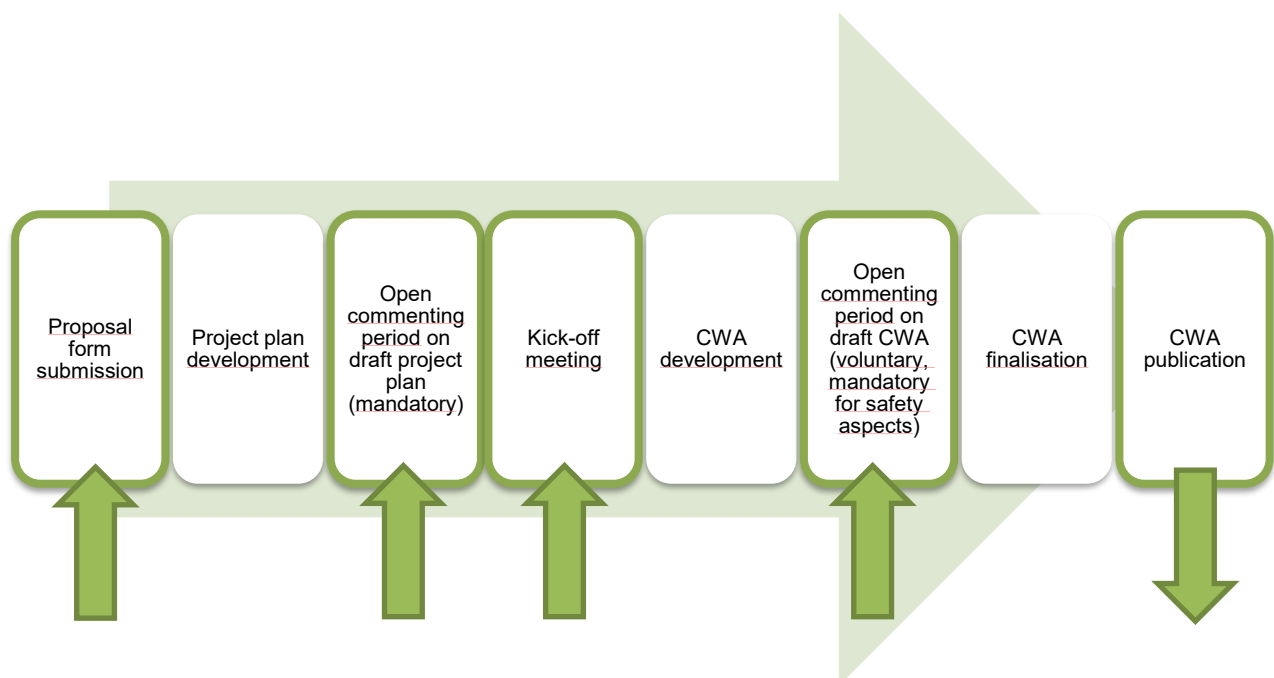
- Administrative and organisational contact point for the Workshop
- Ensures that the development of the CWA respects the principles and content of the adopted project plan and of the requirements of the CEN-CENELEC Guide 29
- Formally registers Workshop participants and maintains record of participating organisations and individuals
- Offers infrastructure and manage documents and their distribution through an electronic platform
- Prepares agenda and distribute information on meetings and meeting minutes as well as follow-up actions of the Workshop
- Initiates and manage CWA approval process upon decision by the Workshop Chair
- Interface with CEN-CENELEC Management Centre (CCMC) and Workshop Chair regarding strategic directions, problems arising, and external relationships
- Advises on CEN-CENELEC rules and bring 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

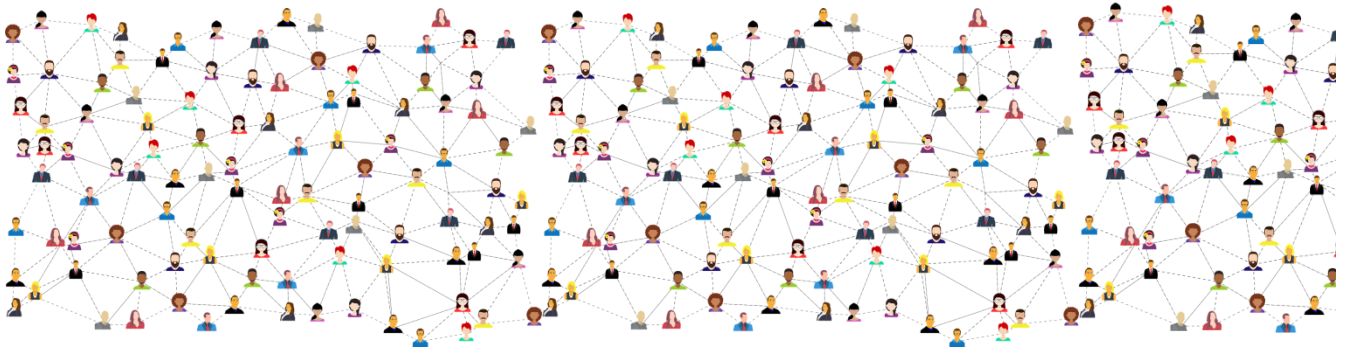
6.3 Decision making process

Each Workshop participant is entitled to vote and has one vote. If an organisation sends several experts to the Workshop, that organisation has only one vote, regardless of how many Workshop participants it sends. Transferring voting rights to other Workshop participants is not permitted. During voting procedures, decisions are passed by simple majority; abstentions do not count.

If Workshop participants cannot be present in the meetings when the CWA or its draft is adopted, an alternative means of including them in the voting procedure shall be used.

7 Dissemination and participation strategy





Proposal form submission

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

- ISO/TC 164/SC 4, Fatigue, fracture and toughness testing

Open commenting period on draft project plan

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

- ISO/TC 164/SC 4, Fatigue, fracture and toughness testing

In addition to the CCMC website, the project plan and the date of the kick-off meeting will be advertised on the social networks and communication channels of Fatigue4Light project 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 draft CWA will be disseminated to the following relevant stakeholders and bodies for commenting:

- ISO/TC 164/SC 4, Fatigue, fracture and toughness testing

In addition to the CCMC website, the project plan and the date of the kick-off meeting will be advertised on the social networks and communication channels of Fatigue4Light project to raise awareness. Interested parties are requested to contribute either through commenting of the project plan (short term) or through Workshop participation (long term).

CWA publication

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

- ISO/TC 164/SC 4, Fatigue, fracture and toughness testing

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

- INKplant project webpage (<https://www.inkplant.eu/>)
- INKplant social media:
 - Facebook
 - Instagram
 - LinkedIn
 - Twitter

8 Contacts

- Workshop Chair:

Sergio Jiménez
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[https://www. https://fatigue4light.eu](https://www.https://fatigue4light.eu)

– Workshop Secretariat:

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– Workshop proposer

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