[1]2022-01-272022-05-05

DRAFT

Project Plan for the CEN-CENELEC Workshop on LEVEL-UP Protocols
WS Acronym: LUP

Workshop
(to be approved during the Kick-off meeting on 2022-mm-dd)

The content of the Project Plan is structured into chapters. These chapters represent the Project Plan's minimum content. There is no restriction on the addition of further chapters if this is deemed useful.

1. Status of the Project Plan

- Initial draft Project Plan, to be further developed, prior to submission for approval
- Draft Project Plan to be approved at the Kick-off meeting of the Workshop
- Approved Project Plan

2. Background to the Workshop[2]

2.1 Market environment

The aim of LEVEL-UP is to offer a scalable platform covering the overall lifecycle, ranging from the digital twins setup, modernisation actions to diagnose and predict the operation of physical assets, to the refurbishment and remanufacturing activities towards end of life. In-situ repair technologies and the redesign for new upgraded components will be facilitated through virtual simulations for increased performance and lifetime.

The actions for modernising, diagnosing, inspecting, repairing, disassembling, upgrading, refurbishing, remanufacturing, recycling and reassembly & testing will be structured and formalised into special Protocols, linked with an Industrial Digital Thread weaving a seamless digital integration with all actors in the value chain for improved future iterations.

2.3 Existing standards and standard related activities and documents

Fields of standard related activities are for instance:

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[2] *Use font Arial 12 bold for headers (header tab stop at number 1), Arial 11 for body text*

- EN 13306, *Maintenance - Maintenance terminology*
- EN 15341, *Maintenance - Maintenance Key Performance Indicators*
- EN 16646, *Maintenance - Maintenance within physical asset management*
- ISO 230-series, *Test code for machine tools*.
- ISO 6983-1, *Automation systems and integration - Numerical control of machines - Program format and definitions of address words - Part 1: Data format for positioning, line motion and contouring control systems*
- ~~ISO 12100, *Safety of machinery - General principles for design - Risk assessment and risk reduction*~~
- ~~ISO 13849-1, *Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design*~~
- IEC 60812, *Failure modes and effects analysis (FMEA and FMECA)*
- IEC-Series for *Industrial communication networks (IEC/TC 65/SC 65C)*
- IEC-Series for *Enterprise-control system integration* and *OPC unified architecture (UA) (IEC/TC 65/SC 65E)*
- IEC TR 62837, *Energy efficiency through automation systems*
- IEC PAS 63088, *Smart manufacturing - Reference architecture model industry 4.0 (RAMI4.0)*
- CWA 17492, *Predictive control and maintenance of data intensive industrial processes*

2.4 Motivation for the Creation of this Workshop

In the framework of the research project LEVEL-UP, co-funded by the Horizon 2020 Program of the European Commission, Grant Agreement No. 869991, existing standards were analysed regarding their ability to deliver protocols that trigger actions and processes to be executed on all levels. These protocols are not covered by the work program of existing European standardization/technical bodies.

Based on the above objectives the motivation of LEVEL-UP for creating the CEN-CENELEC Workshop is to develop a set of Protocols (see figure 1) to ensure a standardised and formalised selection of processes for Modernising, Refurbishing, Repair, Remanufacturing, and Upgrading of Large Industrial Equipment ~~with no data collection nor Interfacing options~~.

NOTE: In the EC review of the project LEVEL-UP it was proposed to establish a European Standardization deliverable in terms of data format towards increased interoperability. For R&D and Academia, harmonisation of data will represent one of business assets.

Figure 1 – Protocols of LEVEL-UP

3. Workshop proposers and Workshop participants

3.1 Workshop proposer

The CEN-CENELEC Workshop is proposed by the research project LEVEL-UP, co-funded by the Horizon2020 Program of the European Commission, Grant Agreement No. 869991.

Organisation	Person	Proposer
BIBA - Bremer Institut für Produktion und Logistik GmbH (BIBA)	(Task lead T1.5)	Proposer
Asociación De Investigación Metalúrgica Del Noroeste (AIMEN)		Co-proposer
ATLANTIS Engineering AE (ATLA)		Co-proposer
Brunel University London (BUL)		Co-proposer
Core Innovation and Technology OE (CORE)		Co-proposer
Tampereen Korkeakoulusäätiö Sr (TAU)		Co-proposer
Holonix Srl (HOLO)		Co-proposer
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e. V. (Fraunhofer)		Co-proposer
Asociación de Empresas Tecnológicas Innovalia (INNO)		Co-proposer
Sensap Swiss AG (SENS)		Co-proposer
International Data Spaces EV (IDSA)		Co-proposer
SCM GROUP S.p.A. (SCM)		Co-proposer

Organisation	Person	Proposer
KMWE Precision B.V. (KMWE)		Co-proposer
INEGI - Instituto de Ciência e Inovação em Engenharia Mecânica e Engenharia Industrial (INEGI)		Co-proposer
Fagor Arrasate S. Coop. (FAGOR)		Co-proposer
Trimek SA (TRIM)		Co-proposer
Ideko S.Coop (IDEK)		Co-proposer
SIEMENS Aktiengesellschaft (SIEM)		Co-proposer
Vysoké učení technické v Brně (VUT)		Co-proposer
Sofies SA (SOFI)		Co-proposer
TOSHULIN, a.s. (THU)		Co-proposer
Danobat (DANO)		Co-proposer
Thinking Additive Ltd. (THAD)		Co-proposer
ESI Software Germany GmbH (ESI)		Co-proposer
TTS - Technology Transfer System S.r.l. (TTSN)		Co-proposer
Centre Technique Industriel de la Plasturgie et des Composites (IPC)		Co-proposer
Marlegno S.r.l. Tecnologie Del Legno (MARL)		Co-proposer
Koplast Ekstruzija in konfekcija, d.o.o., Slovenske Konjice (KOPL)		Co-proposer
Estampaciones Mayo S.A. (ESMA)		Co-proposer
Lucchini RS S.p.A. (LUCC)		Co-proposer
Centro Ricerche Fiat S.C.p.A. (CRF)		Co-proposer

3.2 CEN national member holding the Workshop secretariat

Austrian Standards International as CEN national member will hold the Workshop secretariat, performing the tasks and responsibilities as included in CEN-CENELEC Guide 29.

3.3 Expected Workshop Participants

The workshop is open to any interested party or entity that is willing to support the aims of the project plan. The participation will be free of charge. A list of participants at the kick-off will be attached as an Annex to this project plan. The project plan will be sent to relevant Technical Bodies TCs and CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMa-CG) to enable a broad participation. Furthermore, the workshop will be held online.

Indicative List:

- RE-manufaCturing and Refurbishment LArge Industrial equipment (RECLAIM);
- European Factories of the Future Research Association (EFFRA);

- Industrial clusters and platforms like SMECluster.

NOTE: After Kick-off meeting: Registered participants having approved the current Project Plan (preferably through linking to an Annex)

4. Workshop scope and objectives

The aim of the Workshop is to develop a CEN-CENELEC Workshop Agreement (CWA) for a set of protocols to ensure a standardised and formalised selection of processes for Modernising, Refurbishing, Repair, Remanufacturing, and Upgrading of Large Industrial Equipment ~~with no data collection nor Interfacing options~~.

Applying the concepts of Digital Twin and virtual simulations, the planned Workshop describes a set of protocols

for modernising, diagnosing, inspecting, repairing, disassembling, upgrading, refurbishing, remanufacturing, recycling and reassembly and testing of Large Industrial Equipment. It provides a formal Protocols Specifications Document (PSD), specifying for each protocol unambiguously steps, processes, deployment requirements and conditions, etc.

The CWA will give firstly a holistic overview about the protocols and their interactions flowchart. Depending on the actual scenarios in industrial companies, they can follow the flowchart to reach the goal of extending the useful Life of major capital investments and Large Industrial Equipment. In order to enable companies understanding the details of each protocol, this document provides guidelines for ten special protocols. Each protocol guideline provides protocol definition and detail description of protocol, including purposes, conditions, as well as list of detailed actions and steps. For each protocol, this document gives a flowchart to visualize the process and interaction of different actions and steps. The kind of guidelines and flowchart will accelerate industrial companies to understand and adopt the protocols.

This CWA will not define requirements related to safety aspects.

5. Workshop programme

The working language will be English, and the CWA will be drafted and published in English. The estimated duration of the Workshop is 15 months. During the Workshop lifetime, several web meetings are foreseen to draft the CEN-CENELEC Workshop Agreement.

5.1 Work Plan

Anyone can comment on this Project Plan of the envisaged CWA. All comments received will be considered by the chairperson preliminary to the kick-off meeting. At the kick-off meeting, each comment received shall be presented, discussed, and resolved.

Any meeting will be organized as virtual meeting.

It is intended to conduct a public commenting phase of 60 days.

Table 1: Workshop schedule (preliminary)

CEN-CENELEC Workshop	M0	M1	M2	M3	M4	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Initiation															
1. commenting on draft project plan, announcing kick-off meeting															
Development															
2. Kick-off meeting / Workshop constituted															
3. Drafting CWA															
Dissemination															
4. Public commenting on draft CWA															
5. Resolution of comments and approval of CWA															
Publication															
6. Publication of CWA															

6. Workshop structure

6.1 Workshop Chairperson

The Workshop Chairperson has the following responsibilities as specified in CEN-CENELEC Guide 29:

- Presides at Workshop meetings;
- Ensures that the development of the CWA follows the principles and content of the adopted project plan and the requirements of CEN-CENELEC Guide 29;
- takes decisions on the conduct of the CEN-CENELEC Workshop on the basis of the comments expressed by the participants and of CEN-CENELEC Guide 29;
- decides when the Workshop participants have reached agreement on the final CWA, on the basis of the comments received;
- interfaces with CEN-CENELEC Management Centre (CCMC) and CEN-CENELEC Workshop Secretariat regarding strategic directions, problems arising, and external relationships;
- ensures due information exchange with the Workshop Secretariat.

6.2 Workshop Secretary

The Workshop Secretary has the following responsibilities as specified in CEN-CENELEC Guide 29:

- formally register Workshop participants and maintain record of participating organisations and individuals;
- ensure, in coordination with the CEN/CENELEC Workshop Chair, that CEN-CENELEC Guide 29 is followed;
- engage with identified European and international Technical Bodies;
- offer infrastructure and manage documents and their distribution through the electronic platform provided by CEN/CENELEC to ensure transparency;
- prepare agenda and distribute information on meetings and meeting minutes/follow up actions;
- initiate and manage CWA approval process upon decision by the Chairperson;
- notify CCMC of any possible conflict with a European Standard (either existing or under development as active work item) that could arise from adoption of the CWA under development;

- advise 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) in order to find solutions.

7. Resource requirements

Registration and participation at this CEN-CENELEC Workshop are free of charge, but each participant shall bear his/her own costs for travel, accommodation, and subsistence.

The administrative costs of the CEN-CENELEC Workshop Secretariat as well as the logistical support, such as online conference tool, will be covered by LEVEL-UP through its Horizon 2020 funding (grant agreement no. 869991).

8. Rules of Cooperation in the Workshop

8.1 General

Operation of the Workshop is subject to CEN-CENELEC Guide 29.

8.2 Joining the CEN-CENELEC Workshop after the kick-off meeting

Joining the CEN-CENELEC Workshop after the kick-off meeting is subject to the agreement of the CEN-CENELEC Workshop based on a recommendation from the Chairperson and considering:

- 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 deliverable by submitting concrete, not abstract, proposals and contributions;
- the new Workshop participant would ensure wider application of the CWA.

8.3 Voting Rules

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 never count.

9. Dissemination plan

During the open commenting period on draft project plan and kick-off meeting the draft project plan will be disseminated by the Workshop Secretariat to the following stakeholders and bodies for commenting:

- RECLAIM project
- CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMaCG)
- DMP Cluster: cluster of European Commission funded projects that focus on establishing Digital Manufacturing Platforms for Connected Smart Factories
- European Factories of the Future Research Association (EFFRA)
- FORESEE Cluster, European cluster for sustainable predictive maintenance solutions in the factory of the future

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

The draft CWA will be disseminated to the following relevant stakeholders and bodies for commenting:

- RECLAIM project
- CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMaCG)
- DMP Cluster: cluster of European Commission funded projects that focus on establishing Digital Manufacturing Platforms for Connected Smart Factories
- European Factories of the Future Research Association (EFFRA)
- FORESEE Cluster, European cluster for sustainable predictive maintenance solutions in the factory of the future

In addition to the CCMC website, the draft CWA will be advertised on social media channels of the Workshop proposer and Workshop Secretariat to raise awareness. Interested parties are requested to contribute through commenting of the draft CWA (short term).

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

- Social Media Channels of LEVEL-UP and Workshops Secretariat

- EC Newsroom

10. Related activities, liaisons, etc.

The topic of the CWA is related to the following European technical committees:

- CEN/TC 319, Maintenance
- CEN/TC 406, Mechanical products - Ecodesign methodology
- CEN-CLC JTC 10, Material efficiency aspects for products in scope of Ecodesign legislation
- CLC/TC 111x, Environment

The topic of the CWA is related to the following European Coordination Group:

- CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMaCG)
- CEN CENELEC Ecodesign Coordination Group (CEN-CLC/Eco-CG)
- ~~CEN/TC 319, Maintenance~~

On international level the following technical committees are the most relevant ones:

- ISO/TC 39/SC 2, Test conditions for metal cutting machine tools
- ISO/TC 184/SC 1, Physical device control
- ISO/TC 184/SC 4, Industrial data
- ISO/TC 184/SC 5, Interoperability, integration, and architectures for enterprise systems and automation applications
- ~~ISO/TC 199, Safety of machinery~~
- ISO/IEC JTC 1/SC 7, Software and systems engineering
- ISO/IEC JTC 1/SC 27, Information security, cybersecurity and privacy protection
- ISO/IEC JTC 1/SC 32, Data management and interchange
- IEC/TC 65, Industrial-process measurement, control and automation
- IEC/TC 65/SC 65C, Industrial networks
- IEC/TC 65/ SC 65E, Devices and integration in enterprise systems

The Workshop shall ensure appropriate links are in place with these initiatives.

11. Contact points

Appointed Chairperson:
Marco Franke
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CWA
Template for the self-assessment

Title of the proposed CWA:

Circularity Protocols for extending the useful Life of Large Industrial Equipment

1. Does the proposed CWA conflict with an EN or an HD for CENELEC?

☒ NO

☐ YES → **WARNING**: Work on the proposed CWA shall not be initiated.

2. Does the proposed CWA intend to define requirements related to safety matters?

☒ NO

☐ YES Is the proposed CWA within the scope of

☐ CEN? → The CWA proposal shall be submitted to CEN/BT for decision.

☐ CENELEC? → **WARNING**: Work on the proposed CWA shall not be initiated.

3. Is the scope of the proposed CWA within the scope of an existing CEN/CENELEC technical body?

☒ NO

☐ YES → The relevant CEN/CENELEC technical body shall be consulted on the CWA proposal:

- If this technical body responds positively and sees no harm in the CWA being developed, the CWA proposal may be processed.
- If the technical body is opposed to a CWA being launched, the CWA proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

4. Does the proposed CWA intend to define requirements related to management system aspects?

☒ NO

☐ YES → The CWA proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

5. Does the proposed CWA intend to define requirements related to conformity assessment aspects?

☒ NO

☐ YES → CEN/CENELEC Internal Regulations - Part 3, 6.7 applies.

If all these questions are answered NO, the CWA proposal may be processed.

If not, special conditions apply as given above.