
**Draft Project plan for the CEN-
CENELEC Workshop on
"Manufacturer's declaration on
the data quality of a
manufacturing line: Guideline
for an audit procedure and
audit criteria"**

**Requests to participate in the Workshop
and/or comments on the project plan are
to be submitted by
2023-07-02
to Friederike.Nabrdalik@din.de¹**

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.

Berlin, 17.05.2023 (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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Summary

The motivation for this Workshop came from the European research project i4Q, which aims to provide an IoT-based Reliable Industrial Data Services (RIDS), a complete suite consisting of 22 i4Q Solutions, able to manage the huge amount of industrial data coming from cheap cost-effective, smart, and small size interconnected factory devices for supporting manufacturing online monitoring and control.

One of the 22 solutions developed by the i4Q project is an audit procedure for a manufacturer's declaration on the data quality of a manufacturing line, which forms the basis for the planned workshop. With the increasing digitization of the manufacturing industry as well with use of modern technologies for data analytics and data driven decision making, data quality is considered more crucial than ever. The audit guideline to be developed in this Workshop aims to ensure that all data resulting from the manufacturing processes are accurate and reliable. The procedure gives a clear overview of the status of data quality in the entire process of data generation and handling in auditee's manufacturing environment. This audit guideline can be applied to manufacturing resources (machine, cell, or manufacturing line) to measure and assess data quality in manufacturing. The audit criteria presented by this workshop define specific requirements to assess the data quality of a manufacturing line.

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 Friederike.Nabrdalik@din.de.

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 **2023-07-19**.

2 Workshop proposer and Workshop participants

2.1 Workshop proposer

<u>Person or organisation</u>	<u>Short description and interest in the subject</u>
Organization: CERTH - Information Technologies Institute, Centre for Research & Technology Hellas Name: Stefanos Vrochidis and Ilias Gialampoukidis Email: stefanos@iti.gr Phone: +30 2311 257754 Email: heliasgj@iti.gr Phone: +30 2311 257810 Webpage: https://www.certh.gr/root.en.aspx https://www.iti.gr/iti/people/Stefanos_Vrochidis.html https://www.iti.gr/iti/people/Ilias_Gialampoukidis.html	The Multimodal Data Fusion and Analytics (M4D) group emerged through the results of several National and European projects in the areas of Web and social media mining, Multimedia analysis and retrieval, Computer vision, Multimodal Data Fusion, Big Data processing, Multimodal analytics based on Artificial Intelligence, Knowledge Representation and Reasoning, as well as Decision support and visual analytics. The group is part of the Multimedia Knowledge and Social Media analytics Lab (MKLab) of the Information Technologies Institute of the Centre for Research and Technology Hellas. Currently, the M4D group of CERTH institute is participating in more than 85 European projects, some of which are also being coordinated by CERTH and has more than 346 publications. The group develops cutting-edge algorithms and novel solutions relevant to Multimodal data fusion, Multimedia analysis and retrieval and AI-based multimodal analytics in many application domains such as Arts & Media, Security, Health, Earth Observation,

	<p>Migration, Software infrastructure and Smart manufacturing.</p> <p>CERTH supports Smart Manufacturing by conducting research and investigating in depth the following areas:</p> <ul style="list-style-type: none"> • Internet of Things (IoT) • Big Data Analytics • Digital Transformation in Manufacturing • Information Technology (IT) and Operational Technology (OT) • Multi-Scale Dynamic Modeling and Simulation • Intelligent Automation
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2.2 Other 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:

- Industry
- Standards developers and applicants;
- Data analysts
- Software engineers
- etc.

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>
Dr. Ilias Gialampoukidis	CERTH - Information Technologies Institute, Centre for Research & Technology Hellas
Dr. Stefanos Vrochidis	CERTH - Information Technologies Institute, Centre for Research & Technology Hellas
Dr. Georgia Apostolou	CERTH - Information Technologies Institute, Centre for Research & Technology Hellas
Stefan Wellsandt	BIBA - Bremer Institut für Produktion und Logistik GmbH (BIBA)
Prof. Dr. Roland Jochem	Technische Universität Berlin (TUB)
Friederike Nabrdalik	DIN German Institute for Standardisation
Sarah Köhler	DIN German Institute for Standardisation

3 Workshop objectives and scope

3.1 Background

3.1.1 Introduction to the i4Q project

The European research project i4Q² will provide a complete solution to improve the quality of manufactured products aiming at zero-defect manufacturing, therefore pushing forward the concept of a smart, fully digitised factory.

i4Q Project aims to provide an IoT-based Reliable Industrial Data Services (RIDS), a complete suite consisting of 22 i4Q Solutions, able to manage the huge amount of industrial data coming from cheap cost-effective, smart, and small size interconnected factory devices for supporting manufacturing online monitoring and control. The i4Q Framework will guarantee data reliability with functions grouped into five basic capabilities around the data cycle: sensing, communication, computing infrastructure, storage, and analysis and optimisation. i4Q RIDS will include simulation and optimisation tools for manufacturing line continuous process qualification, quality diagnosis, reconfiguration and certification for ensuring high manufacturing efficiency, leading to an integrated approach to zero-defect manufacturing. The i4Q RIDS solutions will be validated in six Uses Cases from relevant industrial sectors.

More information can be found here <https://www.i4q-project.eu/>.

3.1.2 Motivation for the creation of this Workshop

One of the 22 solutions developed by the i4Q project is an audit procedure for a manufacturer's declaration on the data quality of a manufacturing line, this forms the basis for the planned workshop.

With the increasing digitization of the manufacturing industry as well with use of modern technologies for data analytics and data driven decision making, data quality is considered more crucial than ever.

Data Quality is an essential aspect of data collection, transformation, and analytics within the industrial manufacturing environment.

The guide presented by this workshop provides guidance on the standards for the measurement of these parameters and the measurement system (ISO/IEC/IEEE 15939:2017) which need to be in place to achieve good and reliable data quality which result in better accuracy of outputs of the solutions.

As data from manufacturing lines is the source of information for almost all analytical solutions and no procedure exists to audit the Data Life Cycle, this guide will be developed to fill this gap.

This audit procedure for a manufacturer's declaration on the data quality of a manufacturing line provides an audit guideline that is applied to manufacturing resources (machine, cell, or manufacturing line) to measure and assess data quality in manufacturing. The goal is to ensure that all data resulting from the manufacturing processes are accurate and reliable. The procedure describes the activities to be performed during audits as well as the elements of the manufacturing resources to be audited, the calibration equipment to be used, and the tests to be performed.

It can also be used to supplement current quality certifications (i.e., DIN EN ISO 9000:2015–11) by adding the need of generating and ensuring data quality during manufacturing processes. The guideline consists of terms and definitions related to audit and data quality along with the structure and applicability boundaries within the manufacturing process. Furthermore, basic prerequisites for the use of guideline are described, including the certification according to quality management standard ISO 9001:2015 and the realization of capable measurement systems in industrial manufacturing as well as capable IT-infrastructures.

Therefore, ISO 19011:2018 is used to define the frame, objectives, risks, and roles as well as the planning, implementation, controlling and improvement of the audit procedure.

The guideline and audit procedure are based on standards from four main topic areas,

- Quality Management Systems and related standards,

² The research project "i4Q— Industrial Data Services for Quality Control in Smart Manufacturing" has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 958205.

- Guideline for Auditing Management Systems,
- Data Quality, and
- Software Engineering

The procedure gives a clear overview of the status of data quality in the entire process of data generation and handling in auditee's manufacturing environment.

There are three types of quality audits: system, process, and product audits (Herrmann und Fritz 2021). In this case, an audit procedure is developed to ensure the data quality of a specific manufacturing process.

The audit criteria presented by this workshop defines specific requirements to assess the data quality of a manufacturing line.

3.2 Scope

The workshop will create two CEN-CENELEC Workshop Agreements (CWA) with the proposed titles: "Manufacturer's declaration on the data quality of a manufacturing line – Guideline for an audit procedure " and "Manufacturer's declaration on the data quality of a manufacturing line – Audit criteria".

The first CWA "Manufacturer's declaration on the data quality of a manufacturing line – Guideline for an audit procedure" will define a guideline for an audit procedure for a manufacturer's declaration on the data quality of a manufacturing line. The guide aims to ensure that all data resulting from the manufacturing processes are accurate and reliable. The procedure describes the activities to be performed during audits as well as the elements of the manufacturing resources to be audited. It is based on the basics of audit standard ISO 19011:2018.

The first CWA will also define prerequisites for the use of the guideline, including the certification according to quality management standard ISO 9001:2015 and the realization of capable measurement systems in industrial manufacturing as well as capable IT-infrastructures.

It can also be used to supplement current quality certifications (i.e., DIN EN ISO 9000:2015–11) by adding the need of generating and ensuring data quality during manufacturing processes.

The second CWA "Manufacturer's declaration on the data quality of a manufacturing line – Audit criteria" will define specific requirements to assess the data quality of a manufacturing line.

The planned CWAs are intended to be used by manufacturers from all industries to ensure the data quality of a manufacturing line.

3.3 Related activities

The subject of the planned CWA is 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:

standards committee, working group etc.:

ISO/TC 176/SC 1 Concepts and terminology

- DIN EN ISO 9000:2015–11

ISO/TC 176/SC 2 Quality systems

- ISO 9001:2015 Quality management systems — Requirements and associated standards

CEN-CLC/JTC 1 Criteria for conformity assessment bodies

- ISO 19011:2018
- EN ISO/IEC 17000:2004 Conformity assessment – Vocabulary and general principles

- EN ISO/IEC 17007:2009 Conformity assessment – Guidance for drafting normative documents suitable for use for conformity assessment
- EN ISO/IEC 17021-1:2015 Conformity assessment — Requirements for bodies providing audit and certification of management systems — Part 1: Requirements
- EN ISO/IEC 17021-3:2017 Conformity assessment — Requirements for bodies providing audit and certification of management systems — Part 3: Competence requirements for auditing and certification of quality management systems
- EN ISO/IEC 17050 – series

CEN-CLC/JTC 1 Criteria for conformity assessment bodies

ISO/IEC JTC 1/SC 7 Software and systems engineering

- ISO/IEC 25012:2008
- ISO/IEC 25024:2015

ISO/TC 184/SC 4 Industrial data

- ISO 8000-2:2020 Data quality – Part 2: Vocabulary
- ISO 8000-8:2015 Data quality — Part 8: Information and data quality
- ISO 8000-61:2016 Data quality — Part 61: Data quality management: Process reference model
- ISO 8000-63:2019 Data quality — Part 63: Data quality management: Process measurement
- ISO/TS 8000-81:2021 Data quality — Part 81: Data quality assessment
- ISO/TS 8000-150:2022 Data quality — Part 150: Master data: Quality management framework Roles and responsibilities

coordination group:

CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMa-CG) -Task Group on Industrial Data

4 Workshop programme

4.1 General

The kick-off meeting is planned to take place on July 19 via WebEx (Online). A draft for public commenting will not be published.

A total of 6 Workshop meetings (kick-off meeting and Workshop meetings) and web conferences will be held, during which the content of the CWA(s) 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**.

5 Resource planning

The CEN Workshop is financed by the European research project i4Q (Industrial Data Services for Quality Control in Smart Manufacturing). This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 958205.

All costs related to the participation of interested parties in the Workshop's activities have to be borne by themselves. The copyright of the final CEN Workshop Agreement will be at CEN. 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 programme under grant agreement number 958205 (i4Q)".

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 consultation:

- CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMa-CG) -Task Group on Industrial Data
- CEN-CLC/JTC 1 Criteria for conformity assessment bodies
- CLC/TC 65X Industrial-process measurement, control and automation

Open commenting period on draft project plan

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

- CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMa-CG) -Task Group on Industrial Data
- CEN-CLC/JTC 1 Criteria for conformity assessment bodies
- CLC/TC 65X Industrial-process measurement, control and automation
- i4Q Project members

In addition to the CCMC website, the project plan and the date of the kick-off meeting will be advertised on <https://www.i4q-project.eu/> 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 CWA will be disseminated to the following relevant stakeholders and bodies:

- CEN-CENELEC-ETSI Coordination Group on Smart Manufacturing (CEN-CLC-ETSI SMa-CG) -Task Group on Industrial Data
- CEN-CLC/JTC 1 Criteria for conformity assessment bodies
- CLC/TC 65X Industrial-process measurement, control and automation
- i4Q Project members

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

- social media, such as
 - o LinkedIn
 - o Twitter
- <https://www.i4q-project.eu/>

8 Contacts

- Workshop Secretariat:

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- Workshop proposer

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