

International Legal Metrology Update: 2026 NCWM Annual Meeting

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International Legal Metrology Program



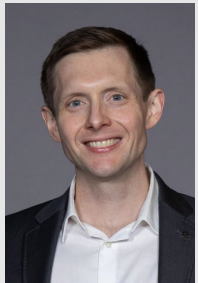
Dr. Katya Delak
Group Leader

Electrical metering,
digitalization, and supply
blockchain systems



Jan Konijnenburg
Scientific Engineer

Weighing instruments,
digitalization, and software
security



Dr. Michael Nelson
Physical Scientist

Chemical analyzers, medical
instruments, and electric vehicle
supply equipment



Isabel Chavez-Baucom
Quality Manager

Legal metrology regulations,
document digitalization, and
international accreditation
frameworks

What does OIML do?



Internationally-
harmonized legal
metrology standards



Global collaboration
and development



Certification System



Digital trends

Benefits of Participation



Global network of
expertise

Horizon scanning

Requirements for
manufacturers

OIML High Priority Projects & Publications

NIST

OIML-CS
Certificates
issued

Anticipation of
future
demand

Broadly
referenced
documents

Documents
used
regionally as
normative



OIML Top Projects



Electricity



Weighing



Volume

OIML Top Projects: Electricity



Credit: Adobe Stock

- **G22 “Electric Vehicle Supply Equipment (EVSE)”**
2WD issued following a 1CD in June. Test modes, accuracy are in discussion.
- **R46 “Electrical Energy Meters”**
Work on 3CD. Issues related to paradigm shift in reactive and apparent energy measurement. Synchronizing revision with IEC and ANSI C12 revisions.
- **New project: “DC Electricity Meters”**
Relevant to EVSE. Review of 2WD in progress. Unresolved areas involve testing conditions, specifically voltage and current combinations.



OIML Top Projects: Weighing Systems

All of the following OIML Recommendations are currently in active revision:

R51 “Catchweighers”

R76 “Non-automatic weighing Instruments (NAWI)”

R134 “Weigh-in-Motion (WIM) Systems”



OIML Top Projects: Volume



OIML revisions to be carried to completion

R 71 Fixed Storage Tanks
R 85 Automatic Level Gauges

Isabel Chavez-Baucom and Elizabeth (Els) Koncki convening.

Re-initiated PG work. Documents at 2WD status are receiving comments in the summer of 2026.



OIML Top Projects: Volume

Liquefied Natural Gas (LNG)

Covered by OIML R117 "Dynamic measuring systems for liquids other than water"

Hydrogen

US in conjunction with NL has proposed revision of R117 to include liquid hydrogen. CIML vote to approve this year.

New Project: OIML G24

Fixed storage and transportable tanks. Calibration using electro-optical distance-ranging method.



NATIONAL INSTITUTE OF
STANDARDS AND TECHNOLOGY
U.S. DEPARTMENT OF COMMERCE

Opportunities

Propose revision for R121 Multi-dimensional Measuring Instruments
based on HB 44 text
Volumetric Measuring Devices

Other upcoming projects

R21 Taximeters

R139 Compressed Gaseous Fuel Measuring Systems for Vehicles

Decisions from CIML 60



New Project Approval

Fixed Storage and Transportable Tanks - Calibration
Using Optical Distance Ranging Method

Approval of Final Drafts

- R142 Automated Refractometers
- R91 Traffic Speed Meters
- R111 Weights of Classes E_1 , E_2 , F_1 , F_2 , M_1 , M_{1-2} , M_2 , M_{2-3} and M_3 (update only)

Cancelled Projects

- R95 Ships' Tanks – General Requirements
- R125 Measuring Systems for the Mass of Liquids in Tanks
- Combined revision R 101 & R 109 Indicating and Recording Pressure Gauges, Vacuum Gauges and Pressure-vacuum Gauges with Elastic Sensing Elements.

Interim Completed Publications

NIST



**D11 General Requirements
for Measuring Instruments –
Environmental Conditions**

**R54 pH Scale for Aqueous
Solutions**

OIML Digitalization Efforts

NIST



Digital Transformation

Joint Statement of Intent on the digital transformation in the international scientific and quality infrastructure

- **E-Learning**
- **Artificial Intelligence**
- **Digital OIML Recommendations**

Key Information in a Digital Product Passport



ISO/IEC JTC 5 Digital Product Passport

First meetings July

Motivated by EU Digital Product Passport
Ecodesign for Sustainable Products Regulation (ESPR)

- Clothing
- Batteries
- Later to include electronics.

Other countries – China, UAE, Turkey

Key Information in a Digital Product Passport



ISO/IEC JTC 5 Digital Product Passport

First meetings July

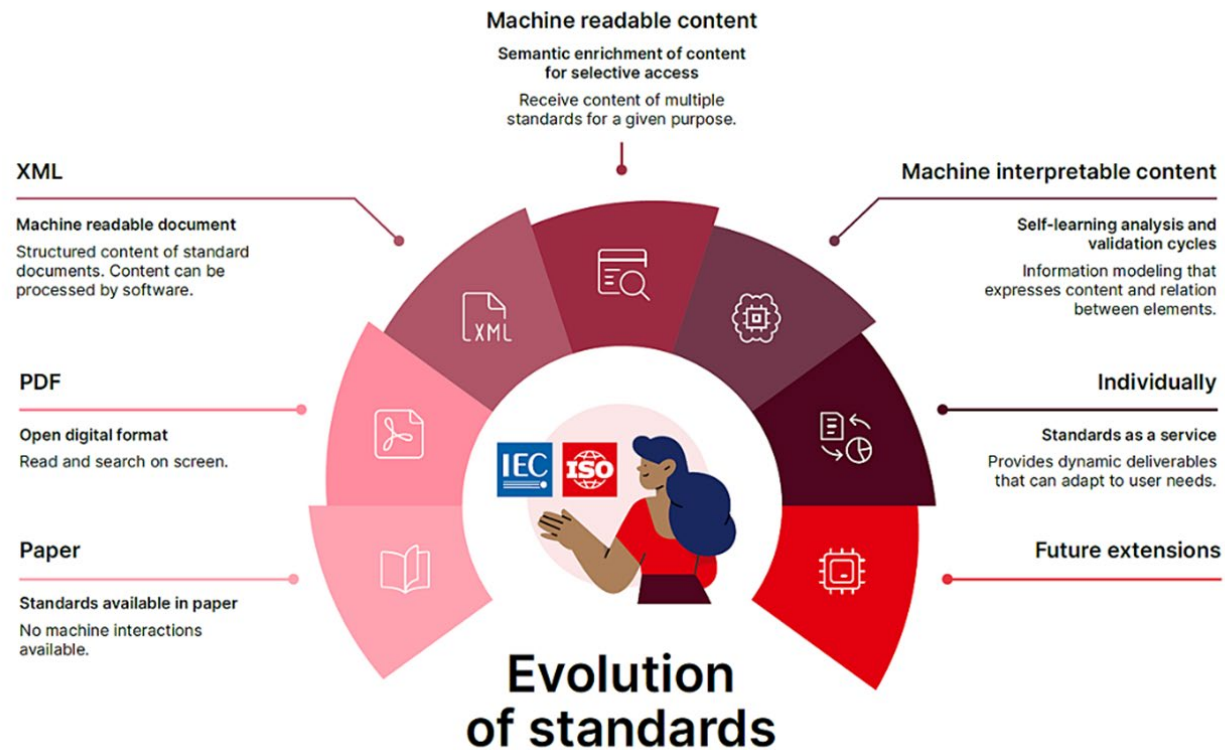
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Digital Type Evaluation Certificate

OIML Work in Digitalization

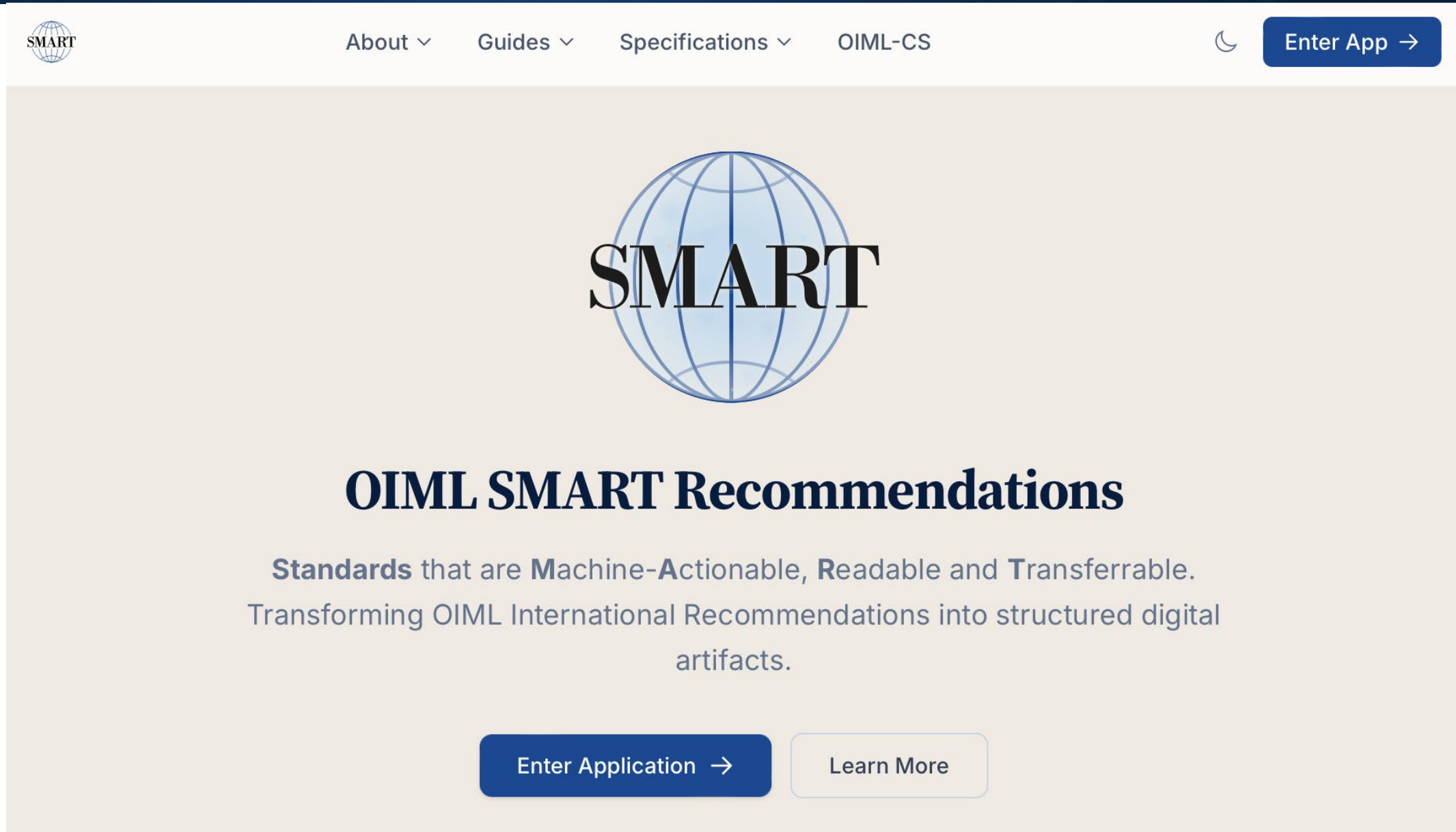


Credit: IEC/ISO SMART

Machine Readable Standards

- Pilot R 60 Load Cells
- Test Report
- Type Evaluation Report

OIML Digitalization Efforts: Pilot R60 Load Cells



OIML Digitalization Efforts: Pilot R60 Load Cells

[About](#) ▾[Guides](#) ▾[Specifications](#) ▾[OIML-CS](#)[Enter App](#) →

OIML SMART Recommendations

Standards that are **Machine-Actionable**, **Readable** and **Transferrable**.
Transforming OIML International Recommendations into structured digital artifacts.

[Enter Application](#) →[Demo Site: oimlsmart.org](https://oimlsmart.org)

OIML Digitalization Efforts: Pilot R60 Load Cells



 OIML SMART

R 60

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4 Description of load cells

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Part 1

OIML R 60:2021

Metrological regulation for load cells — Part 1: Metrological and technical requirements

Foreword

The International Organisation of Legal Metrology (OIML) is a worldwide, intergovernmental organisation whose primary aim is to harmonise the regulations and metrological controls applied by the national metrological services, or related organisations, of its Member States. The main categories of OIML publications are:

- **International Recommendations (OIML R)**, which are model regulations that establish the metrological characteristics required of certain measuring instruments and which specify methods and equipment for checking their conformity. OIML Member States shall implement these Recommendations to the greatest possible extent;
- **International Documents (OIML D)**, which are informative in nature and which are intended to harmonise and improve work in the field of legal metrology;
- **International Guides (OIML G)**, which are also informative in nature and which are intended to give guidelines for the application of certain requirements to legal metrology; and
- **International Basic Publications (OIML B)**, which define the operating rules of the various OIML structures and systems.

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Load Cell Dimensions

Select values for each dimension to determine the applicable test procedures, value model parameters, and conformance requirements for your product.

Dimensions

Select a value for each dimension to determine applicable tests and parameters.

Accuracy Class * — R 60-1, 5.1.1

- Class A**
Highest accuracy — $n_{LC} \geq 50\,000$. 5 runs per load point, 2 °C MDLO temperature increment. No span stability test.
- Class B**
High accuracy — $5\,000 \leq n_{LC} \leq 100\,000$. 5 runs per load point, 5 °C MDLO temperature increment. Span stability test required for electronic load cells.
- Class C**
Medium accuracy — $500 \leq n_{LC} \leq 10\,000$. 3 runs

Technology * — R 60-1, 5.7

- Analogue passive**
Load cell without built-in electronics. p_{LC} range 0.3–1.0. No electronic tests applicable.
- Analogue active**
Load cell with built-in analogue electronics (amplifier, A/D converter, etc.). Subject to electronic tests (5.7).
- Digital**
Load cell with digital output and built-in processing. Subject to electronic tests (5.7)

Humidity Class * — R 60-1, 6.2.4.4

- Cyclic humidity**
Load cell subjected to cyclic humidity test (12 cycles, 24 h each, RH 80–96 %, temp 25–40 °C). Default for unmarked load cells.
- Steady-state humidity**
Load cell subjected to steady-state humidity test (85 % RH, 48 h, constant temperature).
- Not humidity-tested**
Load cell not subjected to humidity testing. Marked with "NH" symbol.

 OIML SMART

R 60

Reference

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R 60 > Reference > Dimensions

Load Cell Dimensions

Select values for each dimension to determine the applicable test procedures, value model parameters, and conformance requirements for your product.

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Accuracy Class * — R 60-1, 5.1.1

Technology * — R 60-1, 5.7

Humidity Class * — R 60-1, 6.2.4.4

Class A

Highest accuracy — $n_{LC} \geq 50\,000$. 5 runs per load point, 2 °C MDLO temperature increment. No span stability test.

Class B

High accuracy — $5\,000 \leq n_{LC} \leq 100\,000$. 5 runs per load point, 5 °C MDLO temperature increment. Span stability test.

Class C

Medium accuracy — $500 \leq n_{LC} \leq 10\,000$. 3 runs per load point, 10 °C MDLO temperature increment. Span stability test.

Analogue passive

Load cell without built-in electronics. p_{LC} range 0.3–1.0. No electronic tests applicable.

Analogue active

Load cell with built-in analogue electronics (amplifier, A/D converter, etc.). Subject to electronic tests (5.7).

Digital

Load cell with digital output and built-in processing. Subject to electronic tests (5.7).

Cyclic humidity

Load cell subjected to cyclic humidity test (12 cycles, 24 h each, RH 80–96 %, temp 25–40 °C). Default for unmarked load cells.

Steady-state humidity

Load cell subjected to steady-state humidity test (95 % RH, 40 h each, 11 °C temp increment).

No humidity

Load cell not subjected to humidity testing. Marked with "NH" symbol.

Next step: Digital Type Evaluation Report

Credit: Ronald Tse, Ribose

Annual CIML Meeting

- The 61st CIML Meeting is currently scheduled to be held in October 2026.

OIML Certification System (OIML-CS)

- Certification System is now mature
- 37 OIML Recommendations are now in OIML-CS

Discussion/Questions?

Feel free to contact Katya Delak for more information

katya.delak@nist.gov

OIML High Priority Publications



Pub.	Title	Status
B6	<i>Directives for OIML technical work</i>	In revision
D11	<i>General requirements for measuring instruments – Environmental Conditions</i>	Published 2026
D31	<i>General requirements for software controlled measuring instruments</i>	In revision (2CD)
R46	<i>Active electrical energy meters</i>	In revision (2CD)
R49	<i>Water meters for cold potable water and hot water</i>	Published 2024
R51	<i>Automatic catchweighing instruments</i>	8WD; active
R60	<i>Metrological regulation for load cells</i>	OIML-CS Review
R76	<i>Non-automatic weighing instruments</i>	In revision
R91	<i>Radar equipment for the measurement of the speed of vehicles</i>	Published 2026
R117	<i>Dynamic measuring systems for liquids other than water</i>	New revision – liquid H2 approved; to start.
R137	<i>Gas meters</i>	In revision
R139	<i>Compressed gaseous fuel measuring systems for vehicles</i>	OIML-CS Review

OIML High Priority Projects



PG	Pub.	Title	Status
TC5/SC1/p2	D31	<i>General requirements for software controlled measuring instruments</i>	In revision
TC12/p1	R46	<i>Active electrical energy meters</i>	3CD released with PG meeting in June.
TC12/p3	Rxxx	<i>Electric Vehicle Supply</i>	2WD released in advance of PG meetings in June
TC12/p4	Rxxx	<i>DC Electricity metering</i>	2WD issued following 1CD; PG meetings June 2026 to work on 2WD
TC9/SC1/p1	R76	<i>Non-automatic weighing instruments</i>	Last activity Nov 2025. Core team working on this.
TC6/p6	R87	<i>Prepackage template</i>	No updates since April 2022
TC7/SC4/p3	R91	<i>Radar equipment for the measurement of the speed of vehicles</i>	Published 2026