



International Organization of Legal Metrology

Organisation Internationale de Métrologie Légale

***Digitalization of quality  
infrastructure processes***

***Approaches in legal metrology***

**UNECE WP.6 Forum meeting**

April 2024



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# Who looks after metrology at the international level?

## Scientific/industrial metrology

- Bureau International de Poids et Mesures
- Established in 1875
- Sèvres, France

Bureau  
International des  
Poids et  
Mesures



## Legal metrology

- Organisation Internationale de Métrologie Légale
- Established in 1955
- Paris, France





## Definition of legal metrology

“Legal Metrology is taken to comprise **all the activities for which legal requirements are prescribed on** measurement. It thus includes prescribed units of measurement, requirements on the use of **measuring instruments or systems and methods of measurement**, and activities performed **by or on behalf of governmental authorities**, in order **to ensure an appropriate level of confidence** in measurement results in the national regulatory environment..”

*(OIML D 1: 2020 , 2.6 National metrology systems – Developing the institutional and legislative framework)*



# How does the OIML help in harmonising regulatory structure?

- OIML D 1 *National metrology systems – Developing the institutional and legislative framework* (2020)
  - advice on legislation and organisation of legal metrology
  - revision developed in cooperation with the BIPM
- OIML Recommendations
  - intended as model technical regulations for measuring instruments
  - considered as “relevant international standards” in the context of the TBT Agreement
- OIML Documents and Guides
  - international “best practice” on legal metrology



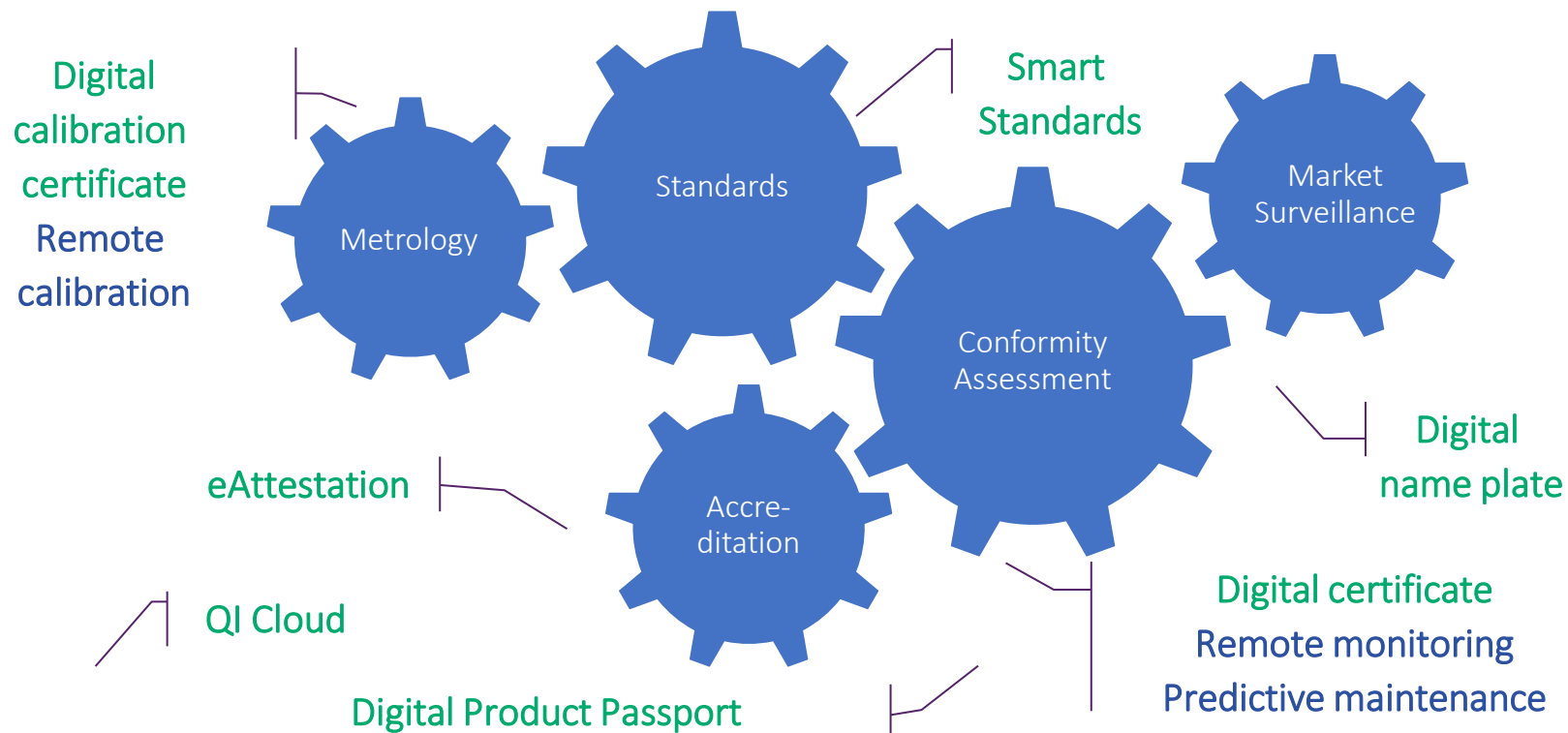
## Tasks in legal metrology

- Type approval of measuring instruments
  - ensures that design of instrument complies with the legislation
  - tests on sample(s) of an instrument
- Initial verification of measuring instruments
  - ensures production complies with type approval before being used
  - tests on every instrument (or on a sampling basis if high volume)
- Periodic verification or inspection of measuring instruments
  - ensures instruments continue to comply with requirements over time
- Control of prepackages
  - checks on packers to ensure they meet regulations
  - checks on imported products?
  - checks on products on the market

**All aim to ensure consumer protection and confidence in trade, health, safety, and environmental areas**



# Digitalisation in the quality infrastructure

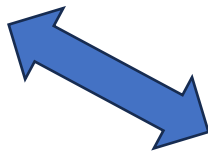
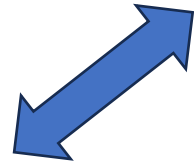




# Digitalisation in the quality infrastructure



Industry 4.0



**Conformity statements**

**Testing, calibration, inspection**



**Standards**

**Recommendations**

**Guidelines**







# Digitalisation in the quality infrastructure

This calibration service is underpinned by the CMC  
AFRIMETS-EM-KE-00000MUX-1:

Bureau  
International des  
Poids et  
Mesures



Machine-readable  
reference

National Metrology  
Institute

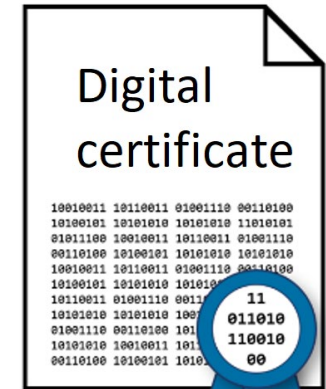


Accreditation  
body



Machine-readable  
reference

Laboratory



Digital  
traceability



# What does “digitalisation” mean in legal metrology?

## Scientific level

- Digital “quality statements”
  - type approval certificates
  - proof of verification
- Digital traceability chain from individual instrument back to International System of units (SI) maintained by the BIPM
  - link to digital SI under development by the BIPM

## Process level

- Improved planning of verification activities
  - helps where resources are limited or country is large
- Reduced opportunities for corruption in verification activities
  - fully digital system means no cash changes hands



# Joint Statement of Intent (JSI)

CIPM



**CIE**  
INTERNATIONAL COMMISSION ON ILLUMINATION



**CODATA**  
COMMITTEE ON DATA OF THE ISC



**IEC**  
INTERNATIONAL ELECTROTECHNICAL COMMISSION



**ILAC**  
INTERNATIONAL LABORATORY ACCREDITATION COOPERATION



**IMEKO**  
INTERNATIONAL MEASUREMENT CONFEDERATION



**ISC**  
INTERNATIONAL SCIENCE COUNCIL



**ISO**  
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION



**NCSLI**  
NATIONAL CONFERENCE OF STANDARDS LABORATORIES INTERNATIONAL



**OIML**  
INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY

## Joint statement of Intent

*On the digital transformation in the international scientific and quality infrastructure*

[...]

We the undersigned undertake to support in a way appropriate to each organisation the development, implementation, and promotion of the SI Digital Framework as part of a wider digital transformation of the international scientific and quality infrastructure.

➤ **CIPM Forum MD since March 2024**

➤ **JSI Roundtable since March 2023**



## OIML Digitalisation Task Group (DTG) Overview

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- Founded May 2022 as mirror group and link between the OIML and the Joint Statement of Intent
- 32 Members from 19 different countries and two organisations in liaison
- Sascha Eichstädt (Germany) as Chairperson and Yang Ping (P.R. China) as Deputy Chairperson
- Sub-committee “Smart Standards”, Convener Katya Delak (USA)
- Sub-committee “eLearning”, Convener Catharina Kulka-Peschke (Germany)



# OIML DTG Roadmap Elements



Machine-readable  
documents



Machine-readable  
statements and  
digital services



Sharing knowledge  
and best practice





# OIML Seminar “The future of the OIML in the digital era”

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Held October 2023  
in association with  
annual meeting of  
the International  
Committee of  
Legal Metrology

## **Benefits and opportunities**

- Cost reduction and increased effectiveness
- Access and insights into information and data
- New services and processes in legal metrology

## **Expectations towards the OIML**

- Training, guidance and exchange in legal metrology
- Harmonisation and evolving OIML technical work
- Provision of OIML digital tools

## **Connection with regional and national initiatives**

- Knowledge sharing across regions
- Strengthen partnerships and establish new ones
- Make use of digital technologies





## OIML DTG Roadmap Elements

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- Establishing a **training and education** programme, including eLearning material, training activities and workshops
- Developing **publication and communication** material for different groups of stakeholders, including decision and policy makers
- Fostering the **development of machine-readable information** in legal metrology, including OIML-CS, smart standards, and digital test reports / certificates
- Fostering the development **of digital tools and platforms** for digitalisation in legal metrology, including a certificate data base, digital OIML-CS, and verification services



## Summary

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- Digitalisation of quality infrastructure requires collaboration between international, regional and national organisations
- Joint Statement of Intent signed by 10 international bodies of the scientific and quality infrastructure
- Digitalisation in legal metrology is an important topic for the OIML, with strong relations to scientific metrology and standardisation
- Machine-readable certificates, reports, and OIML documents as foundation for FAIR principles in legal metrology
- Information hub and sharing of good practices to foster digital developments internationally
- More efficient processes, reducing overall costs and risks while improving consumer protection and confidence





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