

34th COOMET GA

Updates from the BIPM

Bureau
International des
Poids et
Mesures

Chingis KUANBAYEV

Head of CBKT and CIPM MRA support, BIPM
May 2023, Astana, Kazakhstan

Resolutions from the 27th CGPM



General Conference on Weights and Measures
27th meeting - 15-18 November 2022

Resolutions from the 27th CGPM

On the Evolving needs in Metrology

Encourages the CIPM to

- outline a new vision for the BIPM at the 150th anniversary (20th May 2025) and then consult widely on it ahead of the 28th CGPM.
- “develop a long-term vision for an international measurement system that will remain relevant and adequately address new metrological challenges” – on the same timescale.
- “establish inter-disciplinary (horizontal) groups that will address these new challenges and will be complementary to the CCs”



Resolutions from the 27th CGPM



Resolution 2

Digital Transformation

Encourages the CIPM to

- undertake the development and promotion of an SI digital framework, including:
 - a globally accepted digital representation of the SI
 - the adoption of the FAIR principles

Resolutions from the 27th CGPM



On the extension of the range of SI prefixes

-

decides to add to the list of SI prefixes to be used for multiples and submultiples of units the following prefixes:

Multiplying factor	Name	Symbol
10^{27}	r onna	R
10^{-27}	r onto	r
10^{30}	q uetta	Q
10^{-30}	q uecto	q

Resolutions from the 27th CGPM



Resolution 4 & 5

Continuous UTC and Roadmap for the redefinition of the second

For the CIPM (and CCTF) to

- Propose a new maximum value for (UT1-UTC) with an implementation plan for the 28th CGPM
- Propose the preferred species, or ensemble of species, to the 28th CGPM for the redefinition of the second

Resolutions from the 27th CGPM



Resolution 6

Universal adherence

Invites the CIPM to

- Review the membership practices of other international organizations and the application of the (text of the) Metre Convention
- Consider the implications of wider participation on the work programme and services of the BIPM.
- Propose actions to the 28th CGPM

Members and Associates

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Members and Associates (May 2023)



- 64 Member States* and
- 36 Associates of the CGPM
(States and Economies)

** The official term is "States Parties to the Metre Convention"; the term "Member States" is its synonym and used for easy reference.*

251 Institutes participating in the CIPM MRA

- 97 National Metrology Institutes + 3 Ministries
 - 64 Member States
 - 36 Associates
- 4 International organizations
(ESA, IAEA, JRC, WMO)
- plus 150 Designated Institutes

1 821 comparisons
1149 KCs, 672 SCs

25 849 CMCs
Peer-reviewed declarations

The 'encouragement' criteria in practice (2023)

RESOLUTION 4 of the 24th CGPM (2011):
Associates who have been encouraged to become Member States

#	Associate State	Date meeting criteria	Period of increasing subscription	
			Start	90% MS
1	Latvia	2011	2013	2017
2	Panama	2011	2013	2017
3	Viet Nam	2011	2013	2017
4	Peru	2014	2016	2020
5	Philippines	2014	2016	2020
6	Azerbaijan	2020	2022	2026
7	Luxembourg	2021	2023	2027
8	Sri Lanka	2023	2025	2029

Step on ladder:

5

2

1

World Metrology Day

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World Metrology Day

The theme of World Metrology Day in 2023 is
“Measurements supporting the global food system”

Partner RMO is SIM

<https://www.worldmetrologyday.org/index.html>

- *translations* into 48 *local* poster versions, next to French and English
- Listing of events open to countries/institutions

World Metrology Day: UNESCO initiative

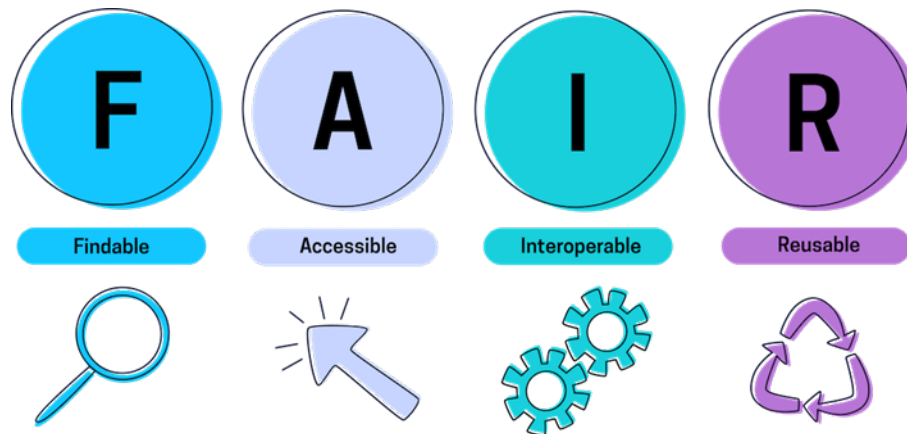


The UNESCO Executive Board took a key step towards recognizing 20 May - World Metrology Day at their session on 13 October 2022, following the proposal presented by Kazakhstan (prepared by the BIPM and the OIML) and supported by 42 UNESCO Member States.

The decision will need to be ratified by the 42nd session of the UNESCO General Conference to be held in November 2023.

If all goes to plan, UNESCO will proclaim 20 May of each year as a UNESCO world day which will then be celebrated every year from 20 May 2024.

Digital Transformation agenda



Digital Transformation

Digital Transformation

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

Joint Statement of Intent

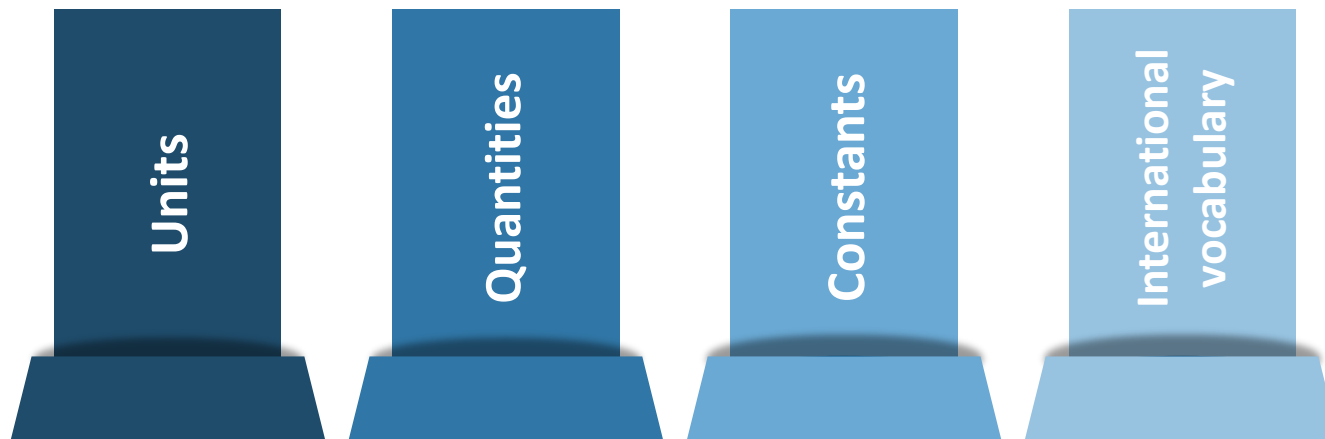
"On the digital transformation in the international scientific and quality infrastructure"

The joint statement provides a platform for the signatory organizations to come together to indicate their support, in a way appropriate to their particular organization, to the development, implementation, and promotion of the SI Digital Framework as part of a wider digital transformation of the international scientific and quality infrastructure.

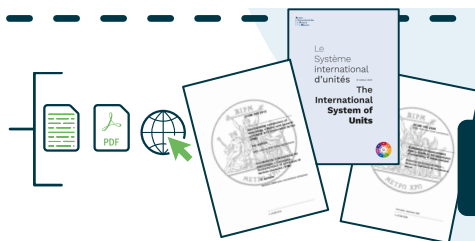
The joint statement is part of an ongoing initiative by the CIPM and its Task Group on the Digital SI (CIPM-TG-DSI) to develop and establish a world-wide uniform and secure data exchange format based on the International System of Units (SI).

Signed by: CIE, CODATA, IEC, ILAC, IMEKO, ISC, ISO, OIML

The Interoperability Plane: Interoperability and Reusability



BIPM core
references



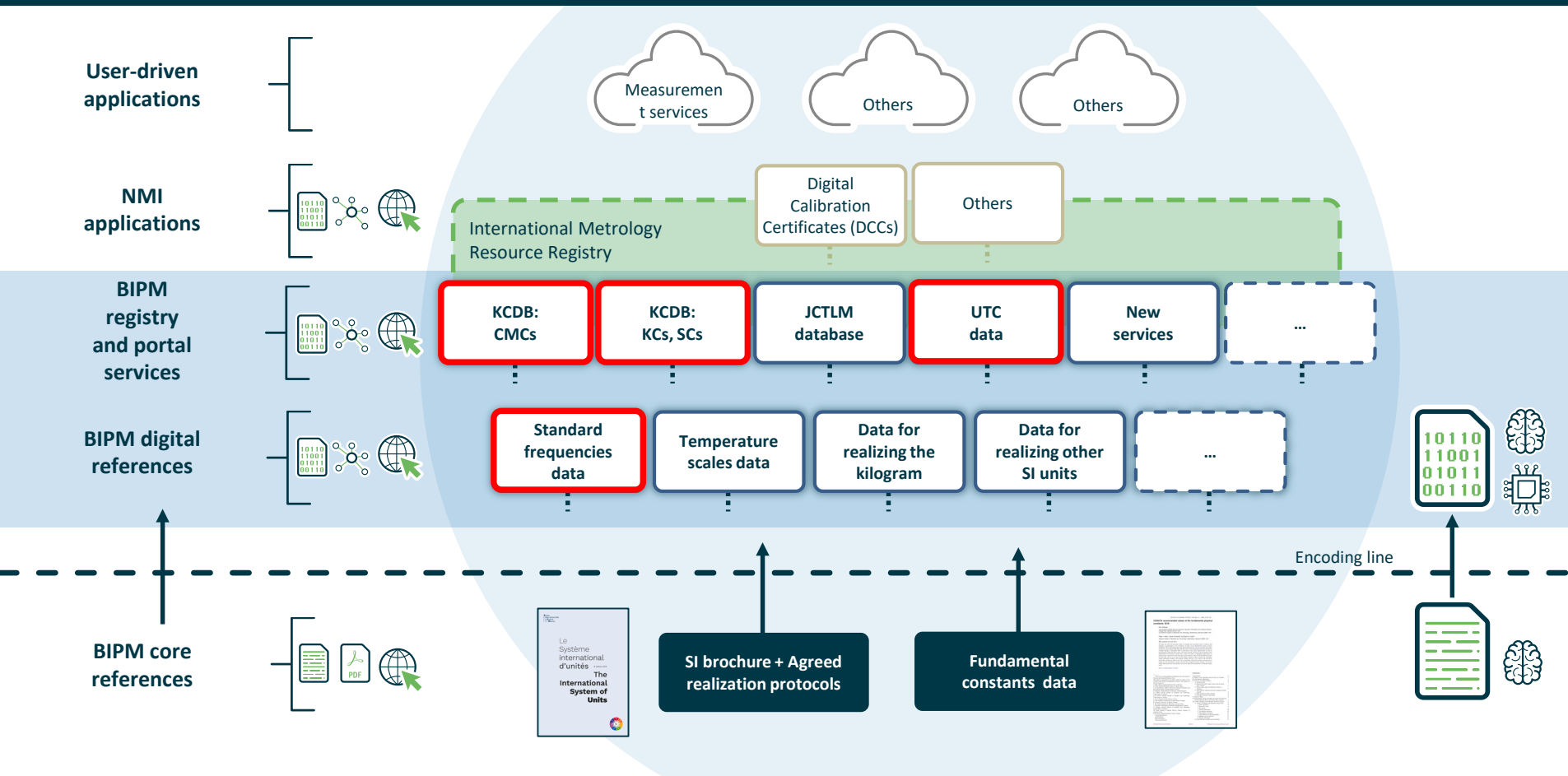
VIM

SI
brochure

GUM



The Data Plane: Findable and Accessible



Capacity Building and Knowledge transfer



CBKT statistics *(as of May 2023)*

52 CBKT initiatives

- **27** projects in-person at the BIPM and regions
- **25** projects online (*12 of them repeated to cover all time zones*)
- **60 +** lecturers from NMIs/DIs and IOs have been involved in delivery of the CBKT activities

3227 participation

- **527** in-person participation from NMIs/DIs
- **2700** online participation

Additionally:

- **604** Accreditation community
- **840** registered users in e-learning

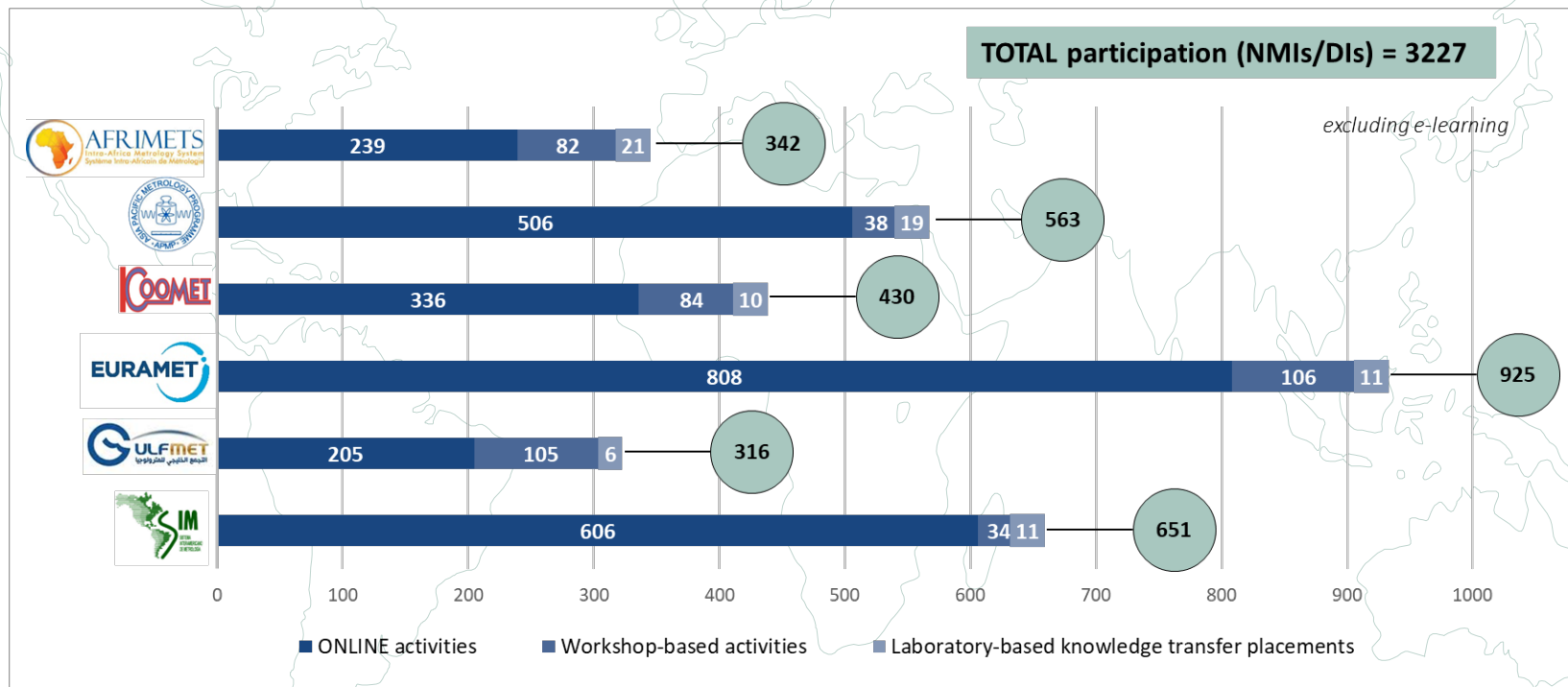
March 2022 - May 2023

8 initiatives

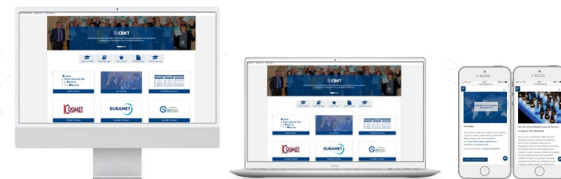
- **1** project placements
- **2** webinars jointly with RMOs
- **5** technical exchanges (*4 of them repeated to cover all time zones*)

989 participation: NMI/DI community

CBKT Participation by RMO *(global)*



e-Learning –courses



<https://e-learning.bipm.org/>

A “training platform” operated by the BIPM, able to host both BIPM and RMO e-learning material

- **bespoke e-learning solution** based on the Moodle - Open-Source software
- **840 users** in the platform
- **5 RMOs** have joined the initiative: APMP, COOMET, EURAMET, GULFMET, SIM
- **17 courses** from BIPM and participating RMOs are available today
- **Self-registration** system

...accessible around the clock and on any device

e-learning.bipm.org

Home / Courses

PROVIDER

- ☐ BIPM
- ☐ COOMET
- ☐ EURAMET
- ☐ GULFMET
- ☐ APMP

TOPIC AREA

- ☐ Quality infrastructure
- ☐ CIPM MRA
- ☐ Miscellaneous
- ☐ Mass and Related Quantities
- ☐ Chemistry and Biology
- ☐ Ionizing Radiation
- ☐ Thermometry
- ☐ Time and Frequency
- ☐ Measurement uncertainty

COURSE ACCESS

- ☐ Open
- ☐ Restricted

LANGUAGE

- ☐ English
- ☐ Russian

Search courses

18 results

FTIR Analysis for Gas Standards
BIPM
MORE DETAILS

SSDL and ISO/IEC 17025:2017
GULFMET
MORE DETAILS

Annual Reporting within EURAMET TC-Q
EURAMET
MORE DETAILS

APMP - Coming Soon!
APMP
MORE DETAILS

CIPM MRA
BIPM
MORE DETAILS

Dissemination of the kilogram following its redefinition
BIPM
MORE DETAILS

Estimation of Measurement Uncertainty in Chemical Analysis University of Turku
EURAMET
MORE DETAILS

Examples of Measure Uncertainty Evaluat
Good practice in evaluating measurement uncertainty: EMPiR Project EMUE 17/RMOS
EURAMET
MORE DETAILS

Knowledge Transfer through *Metrologia*



Knowledge Transfer initiative through funding the open-access publication of selected review papers in *Metrologia*

METROLOGIA REVIEW - OPEN ACCESS

The irony of the magnet system for Kibble balances - a review

Authors:

Li S., Schlamminger S.

→ [Metrologia 59 \(2022\) 022001](#)

SPONSORED BY: NIST (US)

METROLOGIA REVIEW - OPEN ACCESS

The new *mise en pratique* for the metre – a review of approaches for the practical realization of traceable length metrology from 10^{-11} m to 10^{13} m

Authors:

Schödel R., Yacoot A., Lewis A.

→ [Metrologia 58 \(2021\) 052002](#)

SPONSORED BY: PTB (DE)

This initiative highlights the service rendered to the world-wide metrology community by senior scientists devoting time to publishing review papers on topics of interest and these papers being made openly available to all through Open Access publication in *Metrologia*.

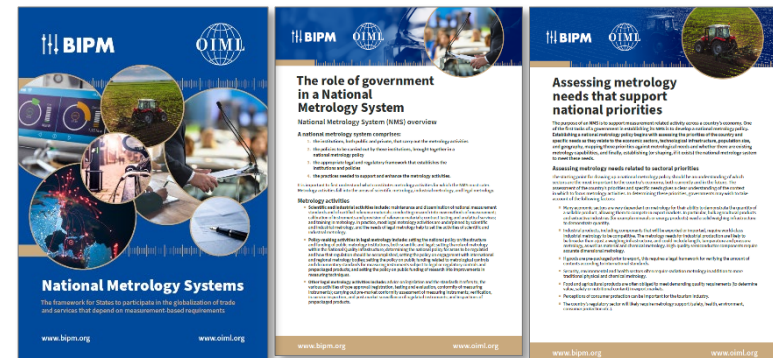
Authors interested in proposing a review paper for open-access publication are invited to contact the Editor of *Metrologia*.

Ongoing project -

Joint BIPM and OIML knowledge transfer initiative

The aim is to:

- support CEEMS in establishing of their national metrology systems through the prism of the OIML and BIPM document - ***“National Metrology Systems - Developing the institutional and legislative framework”***
- underpin the CGPM’s Resolution 6 *“On universal adherence to the Metre Convention”*



Outputs of the initiative:

- **e-learning** interactive course compatible with the BIPM’s and OIML’s e-learning platforms and published on both;
- **brochure** with inserts (written in accessible way) and published on BIPM and OIML websites.



Funded by METAS

BIPM/RMO forum

Why are we organizing this initiative?

Current formal interaction

The RMO Secretariats have been the focal point for interfacing with the BIPM and undertaking many practical aspects of the CIPM MRA for many years. This relationship is defined through the structures of the JCRB.

Other interactions:

matured and well defined, emerging and less well, or even not yet defined

- CBKT activities (organized at the BIPM or in the regions, e-learning platform)
- WMD poster (also with the OIML) for awareness raising
- *universal adherence to the Metre Convention (RMOs as ambassadors for states that do not yet participate in the activities of the BIPM)*
- *exchanging information related to communication and communication strategies*
- *exchanges related to the digital transformation agenda*
- *cooperation when developing strategy and foresight.*

Where do “young metrologists” think metrology will be in 2050+?

Mandate: Resolution 1 of 27th CGPM 2022

Aim: To complement the CIPM Strategy 2030+ with visionary ideas for future opportunities and challenges from young metrologists looking further into the future.

Approach: Consultation through RMOs (coordinated by Chingis KUANBAYEV). Online workshops / web-conference with virtual rooms / workshop and workshops (debates and interviews) at the BIPM Headquarters.

Consultation: Young metrologists from all RMOs (June 2023 – June 2024)

Deliverables: Presentation of "Young metrologists' vision 2050+" (May 2025)

“Young metrologists” = *RMOs define independently.*

Thank you