



1. General Aspects

General metrological issues cutting across all technical fields are subject of the Technical Committee for Interdisciplinary Metrology (TC-IM). In particular it provides a forum to discuss the issues arising from the CIPM-MRA, to support the TC Quality, the Board of Directors and the General Assembly, a forum to support the planning of EURAMET metrological research in particular in areas which do not fall naturally within the remit of another Technical Committee, a place to develop foresight studies and prioritisation methods for the direct benefit of the NMIs as well as for joint European coordination for metrology. In addition, TC-IM can coordinate projects proposed by the Chairperson, the Contact Persons of TC-IM, the Board of Directors or the General Assembly.

TC-IM has representatives from 31 of the 37 members of EURAMET. Close cooperation is established with Coomet TC4 "Information and Training"

Since 2020, TC-IM established a work group 'Metrology for Digital Transformation' (WG M4D) aimed to support EURAMET in its mission to implement a strategic digital transformation that is aligned both with the aims of the European Commission, as well as the relevant needs of EURAMET members: <https://www.euramet.org/technical-committees/tc-im/metrology-for-digital-transformation/>

WG4D brings together the expertise of EURAMET Members specialised in data management, digital certificates and processes, Internet of Things and sensor networks.

2. Projects

IM	1460	Memorandum of Understanding for Closer Collaboration in Baltic States
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IM	1449	Research data management and the European Open Science Cloud
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The goal of this project is to foster the development of harmonised research data management (RDM) and metadata standards for metrological data and services. This is the requirement for establishing a joint metrological implementation network of the European Open Science Cloud (EOSC) principles of FAIR data and services. (Findable, Accessible, Interoperable, Reusable). The team has already organised 3 tutorials for the EURAMET research community, in collaboration with the MSU:

- A general introduction to RDM (22/01/2021)
- Preparation and implementation of data management plans (15/02/2021)
- Metadata for RDM and publications for EMPIR projects (11/03/2021)

The training material will be made available through the EURAMET e-learning platform.

IM	1448	Development of digital calibration certificates
		<p>The goal of this project is to foster the development of harmonized digital calibration certificates (DCC) at national metrology institutes and calibration laboratories. The focus is on DCCs with machine interpretable information about the calibration in such a way that it can be utilized for digital workflows in measurement science, calibration, conformity assessment and industry.</p> <p>Minimum requirements are already defined for DCC contents and interfaces. Amongst the latest actions of the project, the support provided to the M4D working group with the organisation of the TC workshop.</p>
IM	1374	Metrology - in short, fourth edition

PhD and postgraduate training in metrology

TC-IM performed a survey within Euramet NMIs on the different initiatives related to PhD and Post-graduate courses which are present in the NMIs. The goals of the project are to gather information about PhD/Post-graduate opportunities and inform potential candidates around EU of new calls for open positions related to PhD/Post-graduate courses and encourage the mobility of PhD/Post-graduate students within NMIs: towards an Euramet doctoral program in metrology.

3. Comparisons: n.a.

4. CMCs: n.a.

5. Activities of the Work Group for Digital Transformation WG4D

Considering that digitalization is a high priority topic, Euramet GA decided to intensify working on digitalization (decision D13-D06 on 21/05/2019). The BoD asked TC-IM to establish a WG to coordinate metrology for digital transformation and provide input to develop an Euramet vision and strategy in the area. The WG is supported since September 2020 by a Euramet secondee.

Specifically, the working group aims to:

- Continuously monitor relevant topics in the digital transformation of metrology and industry, analyse their relevance to EURAMET, and connect the individual developments within a harmonised approach;
- Enable and encourage synergies and prevent unnecessary parallel work by improving communication and collaboration within EURAMET and beyond;
- Develop guidelines (e.g. on trustworthy, certified and validated software tools) and strategic roadmaps (e.g. in collaboration with the TCs);
- Identify suitable software tools and other resources for EURAMET TCs, EMNs and additional internal stakeholders;
- Provide and maintain an open exchange of ideas, suggestions and questions;
- Bring together expertise and activities in and beyond EURAMET in order to ensure a coherent and comprehensive overview and joint picture;

- Ensure the engagement of all EURAMET TCs in the harmonisation process across different metrology areas;
- Foster the uptake and harmonisation of individual developments by EURAMET Members, EMNs and research projects.

The first half of February 2021 brought about two virtual events that the WG Metrology for Digital Transformation (M4D) had been planning for the previous five months. Chronologically, the first event was a workshop with the EURAMET Technical Committees Chairs, dedicated to the harmonized implementation of digital calibration certificates (DCCs) within EURAMET.

The central goals of the workshop WG4D-TC Chairs have been:

- (i) the dissemination of current state-of-the-art information and
- (ii) the estimation of specific field-related requirements for DCC development at the TCs level.

The preparation of the workshop went from preliminary interviews to the elaboration of summary documents that were subsequently circulated amongst the invitees prior to the plenary meeting. On the day, three hours of live interactions enabled the WG to thoroughly apprehend the needs of the EURAMET community in view of a generalized adoption of DCCs.

The WG4D-EMN chairs workshop was committed to the particular needs of EMNs/JNPs in view of aligning their strategic research agendas with the EURAMET digital strategy. The brainstorming raised numerous points, ranging from specific stakeholder needs to R&D themes for future calls and to potentially novel capacity-building topics on digital transformation. Once more, know-how sharing and progress exchanges were acknowledged as crucial for the success of this venture, as its participants enrol from fairly disparate levels of preparedness in terms of digital agendas.

The exchanges during the TCs and EMNs/JNPs workshops have uncovered a plethora of tasks which tackling requires meticulous orchestration and devoted work time from all interested parties. Some highlights include:

- development of practical tools for information diffusion such as hands-on examples, tutorials and workshops;
- establishment of task forces whose role will be to steer and to oversee the DCC deployment;
- focus on horizontal needs within the EMNs digital agendas, that encompass topics such as data interoperability, machine learning, sensor networks and remote calibration/services

Various actions of WG4D:

- Input to EURAMET <-> EOSC (European Open Science Cloud) partnership preparations
- Input to revision of EURAMET Strategy
- Support for CIPM Workshop organization “The International System of Units (SI) in FAIR digital data”. <https://www.bipm.org/en/bipm-workshops/digital-si>
- Support for BIPM KCDB API testing
- Initial contacts with WELMEC, CEN/CENELEC
- Communication and exchange with SIM M4DT
- **See also projects 1448 and 1449 in section 2**

6. Participation in EMRP/ EMPIR: n.a.

7. Capacity Building: Activities of the last year and future needs

TCs should identify capacity building needs in their area and communicate them to the CBO, CB should be standing agenda item at the TC meetings. For the next meeting of the BoD WG-CB, a Steering Group which meets ahead of the plenary meeting and carries out the required strategic discussions will be established. Therefore, TC-IM will wait for the outcome of the SG.

8. Meetings

The 26rd TC-IM Meeting was held online, 25 March 2021, with more than 50 participants and guests from COOMET and SIM.

9. Issues

- Project N° 1374 "Metrology - in short" fourth edition should be ready for printing shortly

10. Strategic Planning

- Digitalisation

The WG4D will support Euramet with the deployment of instruments to support the digital transformation initiative:

- The 2022 call will already include some digital aspects (final decision to be made by the BoD in June 2021)
- The 2024 call will enclose a specific targeted programme
- The CSA funding scheme might envisage several secondments under the EPM and perhaps some small collaborative projects

- Calibration guides project

A proposed new TC-IM project aims at supporting the development and provision of calibration guidelines in EURAMET member countries, and possibly beyond, by cooperation between national providers of guidelines and EURAMET.

- Re-thinking intercomparisons

A possible future project aims at investigating the feasibility of a network of bilateral continuously maintained and extended. Advantages: easy – short duration – follow-up of staff turnover / new equipment. Challenges: results analysis

11. Outlook for 2021/2022

- Election of a new TC-IM chair