

The Regional Metrology Organisations Coordination Working Group of the CIPM FORUM on Metrology and Digitalization. Helping Emerging NMIs on Their Path to Digital Transformation

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Abstract – On the first Meeting of the CIPM Forum on Metrology and Digitalization (FORUM MD) in the March 2024 several task and working groups were established. Amongst them is the Working Group on RMO Coordination (FORUM MD WG RMO) which includes the chairpersons of working or task groups responsible for the digitalization projects inside 6 RMOs (AFRIMETS, APMP, COOMET, EURAMET, GULFMET and SIM). One of the main tasks of the group is to provide a link through RMOs between the Forum and every NMI (and their stakeholders), including NMIs that are not participating in the work of the Forum and are not yet the Signatories of the CIPM MRA and/or the Metre Convention, thus providing emerging NMIs with the possibility to get recent information on the topic and observe best practices in the field that have been already implemented by developed NMIs. The paper gives information about the FORUM MD WG RMO, its structure and participants, the work already done, current activities and future plans.

I. INTRODUCTION

Regional Metrological Organisations (RMOs) play significant role in providing link between CIPM CCs and Forums, which due to their missions and rules include NMIs with highest expertise in corresponding areas and small, young and emerging NMIs. The task of digital transformation of metrology that in many cases require use of high-end informational technologies, expensive equipment, involving of experienced IT-specialists and/or additional education of inner metrological staff makes the gap in possibilities and capabilities between big and smaller NMIs even bigger. In that case the way how RMO organises its work, distributes information, provides learning courses and coordinates the cooperation between NMIs in the region becomes crucial. Moreover

the situation persists on the higher level. Different RMOs supported by their NMIs demonstrate different capabilities in the specific issues of digital transformation. In order to resolve that problem and facilitate the process of interregional cooperation on digital transformation matters the CIPM FORUM on Metrology and Digitalisation (the FORUM MD) on its first meeting in the March 2024 has established the Working Group on Coordination between Regional Metrology Organisations (the WG RMO). The group consists of six members – the heads of corresponding RMO working/focus or task groups on digitalisation and a number of interested observers.

This paper talks about the mission of the WG RMO, its objectives, the work done through the first year of activity, plans and perspectives for the future.

II. MISSION AND OBJECTIVES

Following the initial recommendations received during the First Meeting of the FORUM MD, discussions inside the WG RMO throughout the year and the recommendations of FORUM MD Working Group on Strategy the terms of references for the WG RMO we formulated as follows:

Area:

The purpose of this group is to harmonize procedures on different digitalization topics between the RMOs, interacting with the FORUM MD Task Groups and Working Groups.

Activities:

Coordinate the work between RMOs in the field of Digital Transformation in Metrology.

Exchange information on activities in regions to share knowledge transfer and explore synergies.

Communicate regional needs, relating to digital transformation, to the Forum, the CIPM, the BIPM.

Provide a link through RMOs between the Forum and every NMI (and their stakeholders), including NMIs that are not participating in the work of the Forum and are not yet the Signatories of the CIPM MRA and/or the Metre Convention, and

Discuss the needs of the emerging NMIs.

These terms of references were approved on the Second Meeting of the FORUM MD that took place at the BIPM in the February 2025[1].

III. STRUCTURE

The Working Group consists of six Members representing six RMOs . Each of the members heads the corresponding working/focus or task group in his region, namely:

For AFRIMETS: Digitization Working Group

For APMP: Focus Group on Digital Transformation (DXFG) [2]

For COOMET: Task Group on the issues of digital transformation [3]

For EURAMET: Working Group on Metrology for Digital Transformation [4]

For GULFMET: Digital Transformation Working Group [6]

For SIM: Metrology for Digital Transformation Working Group [7]

Also there is a number of observers from the NMIs interested in the activities of the group. The participation in the group in status of observer is open for any representative of the NMIs which are either Members or Observers of the FORUM MD. The group is headed by the Chair, who is elected for the two years term from the members (although it's not the case for the present moment with current interim chair who has been appointed by the FORUM MD).

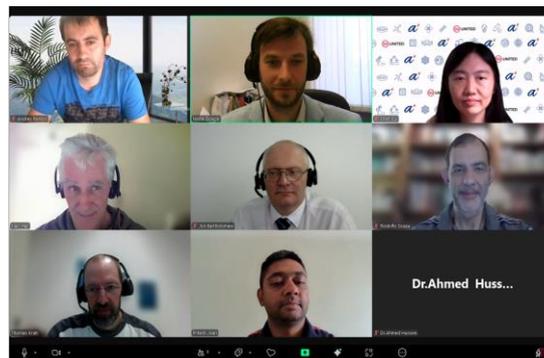


Fig. 1. The 3rd Meeting of WG RMO

IV. WHAT HAS BEEN DONE SO FAR

There have been 4 meetings of the working group during the period between the first and the second meetings of the FORUM MD that were organized by the BIPM through the ZOOM platform. The screenshot from one of the meeting is shown on the Fig. 1.

The 5th meeting of the WG RMO took place in hybrid format at the BIPM on 18th February 2025 during the FORUM MD week.

The two main topics were in the focus during those meetings:

- the exchange of the information on current and planned activities in the digital transformation area in the RMOs
- the analysis of current situation on the set of issues inside the RMOs. The analysis has been organized as follows:

A. The Analysis

An analysis table has been prepared by the Chair. It consisted of several sections each dedicated to one of the following issues from the area of digital transformation which were chosen on the base of existing FORUM MD Working groups list and some additional topics identified by the members of the WG RMO:

- Digital Calibration Certificates (DCCs)
- FAIR Data
- Artificial Intelligence (AI)
- BIPM APIs
- SI reference point (SIrefPoint)
- Semantics
- Authentication of documents
- Sensor networks
- Automation of processes, robotization
- Legal metrology matters: digital type approval certificates, measuring instruments passports

Each section had the following list of questions:

- Are there any works implemented in the RMO? The level of implementation
- Main problems? What help is needed from other RMOs and the FORUM?
- What an RMO could suggest? (Workshops, guidelines, webresources)
- What are the main stakeholders and end users of the service in the RMO.

Every member of the WG RMO has filled in the cells of the table, presenting that way the summary information on achievements and lack of knowledge on different issues in their RMOs.

The main aim of the analysis was in

- Identifying common problems and immediate actions needed and
- Developing of a scope of recommendations to RMOs and FORUM MD on organizing joint workshops and preparing joint guidelines on different issues

The Table of Analysis has been distributed between the FORUM MD TGs. Feedback was discussed on the meeting of the WG RMO during the FORUM MD Week in February 2025.

The zoomed-out part of the table of Analysis is presented on the Fig 2.

Fig. 2. The table of Analysis

V. THE RESULTS

After the conducted analysis the WG RMO has come to the following conclusions:

- On most of the issues of Digitalisation the works in RMOs are only on the beginning stage;

- DCC is probably the most covered issue so far;
- Other topics are either covered by one or two RMOs or not covered at all;
- On the current stage there is not too much work for the WG RMO. The Group has to wait for the task groups to provide some results of their work and then help in distribution and implementation of it.

The following recommendations were prepared:

- FAIR Data is chosen as a «hot topic» and WG RMO suggests to have and propose organising a webinar (or series of webinars) to the FORUM MD
- Use of e-learning platform for the need of the FORUM is recommended

VI. FUTURE PLANS

The idea on the series of Fair Data webinars has been approved by the FORUM MD and supported by the members of the Task Group on FAIR data. So the RMO WG plans to conduct together with the TG FAIR data webinars on the topic for all the RMOs. The main aim of these webinars is to introduce the principles of FAIR data to the global metrological community mostly focusing on the emerging and smaller NMIs which are not aware about the topic. This will be one of the main activities for this year.

The WG RMO will continue actively meeting throughout the year, discussing the activities, taking place inside the RMOs and sharing the information with each other.

More active collaboration with other task groups of the FORUM MD is planned.

VII. CONCLUSIONS

The active discussions inside the WG RMO during the meetings together with the positive feedback from other task groups, working group on strategy and the FORUM MD as a whole have shown that FORUM MD decision on creation of the WG RMO has been the right and rational thing. The coordination between different NMIs inside one RMO or globally still requires more attention. Emerging NMIs need help from the CIPM, BiPM, its CCs and FORUMS especially in such a difficult and complex issue as the digital transformation for metrology.

REFERENCES

- [1] FORUM-MD Working Group on coordination between Regional Metrology Organizations (FORUM-MD-WG-RMO) webpage on the BIPM

- website:
<https://www.bipm.org/en/committees/fo/forum-md/wg/forum-md-wg-rmo>
- [2] APMP Digital Transformation webpage:
<https://apmpweb.org/portal/list/index/id/52.html>
- [3] COOMET Digital transformation in metrology webpage: <https://www.coomet.net/activities/digital-trasformation-in-metrology-tg-digr?type=94>
- [4] EURAMET Metrology for digital transformation webpage <https://www.euramet.org/technical-committees/tc-im/metrology-for-digital-transformation>
- [5] GULFMET Digital Transformation Working Group webpage: <https://www.gso.org.sa/gd/committees/GENERAL/committee/DT-WG>
- [6] SIM Metrology for Digital Transformation Working Group webpage: <https://sim-metrologia.org/>