

Report of the 44th Meeting of the JCRB

Held on 14 / 15 September 2021

Online

Item	Page
1. Welcome by the Chairman and confirmation of delegations' representatives with voting rights.....	3
2. Approval of the agenda	3
3. Approval of the minutes of the 43 rd meeting of the JCRB and review of pending actions.....	3
4. Comments on the BIPM progress since the 43 rd JCRB meeting.....	4
5. Comments on the report from the CIPM	5
6. Comments on the RMO reports to the JCRB.....	5
7. Remote Quality systems peer-review	8
8. Comments on the KCDB report	8
9. Comments on the status of CMC submissions and review: reporting on the system's performance	9
10. CIPM MRA documents and matters arising from them	9
11. Any other business	10
12. Next meetings and meeting closure.....	12

Participants

BIPM / CIPM

Dr Martin Milton
Dr Olav Werhahn
Mr Andy Henson
Dr James Olthoff, CIPM representative to JCRB
Dr Susanne Picard

AFRIMETS

Dr Wynand Louw
Prof. Mohamed Amer
Prof. Noha Khaled
Mr Abdellah Ziti
Mr Abdelkarim Mallat

APMP

Mr Xiang Fang
Dr Victoria Coleman
Dr Ping Yang
Dr Jinyuan Li
Ms Rugkanawan Wongpithayadisai

COOMET

Dr Valery Hurevich
Mr. Evgency Lazarenko
Prof. Pavel Neyezhmakov
Ms Nino Mikanadze
Dr Anna Chunovkina

EURAMET

Dr Jörn Stenger
Dr Julien Vuillemin-Toledo
Dr Kai Stoll-Malke
Dr Miruna Dobre

GULFMET

Mr Salah Al Rumaihi
Dr Ismail A. AlFaleh
Eng. Amina Hassan AlBastaki
Mrs Asma Al Hosani
Mr Omar Kanakrieh

SIM

Dr José Salvador Echeverría-Villagómez
Dr Claire M. Saundry
Ms Sally Bruce
Mrs Claudia Santo
Mr Christopher Cortes

Guests: Mr Nikita D. Zviagin (online observer COOMET, following item 2.1), Dr Antonio Possolo (NIST, item 10.1)

Like the preceding meeting, the 44th meeting of the JCRB was conducted as a series of daily 2-hour online sessions, held between 11.00 and 13.00 (UTC) to minimize difficulty for participants and to provide the best possible conditions for a meeting with global attendance. The items were addressed in the order foreseen in the agenda with items 1 through 7 on the first day, and items 8 through 12 on the second day.

1. Welcome by the Chairman and confirmation of delegations' representatives with voting rights

The JCRB Chairperson, Dr Milton opened the meeting, mentioning that APMP representative to the JCRB, Mr Xiang Fang, was not able to attend the meeting on day-1 for personal reasons, and hence APMP was represented by Dr Victoria Coleman, the first APMP JCRB advisor, on day-1 of the meeting.

Dr Milton welcomed Dr Olav Werhahn from PTB who started as the Executive Secretary of the JCRB in June 2021. He thanked Dr Sten Bergstrand for his outstanding work as the JCRB Executive Secretary, and particularly his commitment to the job through a time when travel and normal meeting arrangements have been so difficult.

The Chairperson stated that all delegations were present with respective voting rights.

2. Approval of the agenda

The Chairperson went through the agenda and pointed out the new agenda item 2.1. The agenda was approved by the representatives, no objection being raised.

2.1 Formal proposal for JCRB decision to allow for each RMO to include up to two observers to JCRB meetings held online

The SIM representative introduced the proposal brought forward to the JCRB to allow up to two observers per RMO to be registered for meetings of the JCRB held online.

The Chairperson asked all RMO representatives for their opinions on this proposal and for their votes. All RMO representatives supported this proposal.

An action on this decision was later formulated (Action 44/1).

- Action 44/01:
The JCRB requests the Executive Secretary to include the possibility of up to two additional observers from each RMO when issuing the convocation for future online JCRB meetings.

Following this accepted proposal SIM registered Dr. Lisa Karam and Mr. Andrew Conn as observers; COOMET registered Nikita D. Zviagin as observers for day-2 of the meeting

3. Approval of the minutes of the 43rd meeting of the JCRB and review of pending actions

The JCRB Chairperson recalled that the draft minutes of the 43rd meeting of the JCRB were uploaded to the BIPM website shortly after the meeting and comments requested and addressed. No further comments have since been received since. Wynand Louw said that he would send an

email to the Executive Secretary, Dr Olav Werhahn, on the same day-1 of the meeting with some minor editorial changes. With these small changes the minutes were approved.

[The report of the 43rd JCRB meeting is available on the unrestricted BIPM website

<https://www.bipm.org/en/committees/jc/jcrb>]

The Chairperson went on to review the actions

Action 43/1 requesting the RMOs to feedback contact persons in order to exchange information on digital transformation: Miruna Dobre confirmed that the information was sent by the RMOs and that a meeting on this topic has been scheduled by EURAMET at 14 October 2021. She advised that RMO contacts have been invited to this event. This action has been completed.

Action 43/2 asked the JCRB Executive Secretary to implement final editorial changes to the CIPM MRA-P-11 and -G-13 documents: The changes have been incorporated and all CIPM MRA-P and -G documents are uploaded to the BIPM website. This action has been completed.

Action 43/3 concerning a Task Group established to technically review the statistical criteria in CIPM MRA-G-11. The progress on this action is reported under agenda item 10.1.

Action 43/4 on an ad hoc TG reviewing QS assessment practices as described in CIPM MRA-G-12 and required changes in CIPM MRA-P-11. No comments or proposals have been received. The action is considered to be completed.

Action 43/5 on closure of the 'old' JCRB website. Dr Martin Milton advised that the former JCRB website has been closed and all information is now provided via the new BIPM website. The information remains available but is not linked from the BIPM website.

Resolution 43/1 on QS assessments at RMOs under Covid-19 conditions. Progress on this action is reported under agenda item 7.1.

4. Comments on the BIPM progress since the 43rd JCRB meeting

Dr Milton presented the BIPM report, uploaded as JCRB/44-04. Dr Milton highlighted the key numbers as of being now 63 Member States and 39 Associates to the CGPM and 259 institutes participating in the CIPM MRA. Dr Milton stated his pleasure at being able to report that following Recommendation JCRB/43-1 (2021) the CIPM had decided (CIPM/110-13) to admit GULFMET as a full member of the JCRB, with a voice and the right to vote. He advised he had, as the JCRB Chair, formally advised GULFMET of this decision. Dr Milton then welcomed GULFMET to the JCRB as a full member on behalf of the BIPM and the five other RMOs.

The status of Associate States meeting the CIPM criteria for being encouraged to accede and become Member States were displayed and a summary of activities on World Metrology Day (WMD) 2021 was presented. Dr Milton recalled that following the established sequence the 2022 WMD will be organised in cooperation with COOMET, and that Andy Henson had already made contact with them to launch the work.

The presentation included highlights identifying the efforts and success of the BIPM CBKT programme, often in association with the RMOs, also the e-learning platform that has been launched in April 2021. Only one workshop has been possible onsite due to the C19-crisis since early 2020. Hence the online training engagement and the provision of 15 online technical exchanges and 4 webinars the BIPM was able to reach out to more than 1200 participants from NMIs plus about 600 from the accreditation community. Furthermore, there were 363 participants registered for the e-learning platforms. The BIPM has developed various e-learning modules which

are available from the website <https://e-learning.bipm.org/>. On the CIPM MRA itself there are six modules aimed mainly at introducing participants to the CIPM MRA, including the processes related to comparisons, quality requirements and CMCs, and the concept of metrological traceability.

Dr Milton drew attention to the new Application-Programming-Interfaces (API) recently launched for the CMCs in the KCDB as well as the Time Department data (currently being Beta tested). He made mention of the digital transformations being surveyed by the CCL and to the development of the XML version of the SI-brochure.

Questions to the presentation on the progress made by the BIPM since the 43rd meeting of the JCRB by Claudia Santo focused around whether RMOs could make use of the e-learning platform to get RMO-mandated material hosted. The answer from Mr Henson (BIPM) was that this possibility was foreseen back in the 2018 BIPM Strategy, and that sufficient progress had been achieved developing the e-learning platform to enable BIPM to move to this phase. Initial contact had been made with all of the RMOs and he expects to intensify discussions with the aim of providing such opportunities to the RMOs in the coming months. He advised that he and Mr Chingis Kuanbayev, the Programme Manager for the BIPM CBKT, will take this forward with each RMO.

Dr Nikita Zviagin asked whether the KCDB-API would also be expanded, or supplemented, to allow for KC information to be accessed. Here, the answer from the KCDB office was that this had not yet been budgeted for, but that it would be interesting to know how much interest there was in accessing such metadata.

5. Comments on the report from the CIPM

In his oral presentation Dr Olthoff recalled that the next CGPM will be organized in November 2022. In preparation of this event the CIPM has been and is currently working on the strategic planning, including the possibility to widen participation in the activities of the BIPM in the future. Dr Olthoff also highlighted the recent decision CIPM/110-13 which takes GULFMET now onboard as full member. The next CIPM meeting will again be held in a virtual format.

6. Comments on the RMO reports to the JCRB

6.1. AFRIMETS (uploaded as JCRB/44-06.1)

Dr Louw reported that the AFRIMETS quality review has continued to be held online. There was no change in general memberships for AFRIMETS but a new sub-RMO region has been formed: ECOMET, comprising countries in West-Africa. The Kingdom of Morocco represented by the LPEE has published a CMC and submitted more CMCs for intraregional RMO review recently.

Two approaches to CMCs can be identified within AFRIMETS, the one comprises institutes that link each service to an individual CMC and the other one, trying to keep their number of CMCs as small as possible by addressing more services to a single CMC. Dr Louw pointed out that the general policy in AFRIMETS expects to ultimately follow the latter approach, whilst recognizing national requirements might reasonably lead to different viewpoints.

On the AFRIMETS report, Mr Henson asked whether Nigeria has made progress with its new laboratories and whether there was any news on the possibility of Nigeria participating in the activities of the BIPM, including the CIPM MRA.

Dr Louw answered that Nigeria is committed to its plans and that the labs are progressing. He understood internal discussions continue around how best to organize scientific and legal metrology, and that he hoped for progress in the not-too-distant future.

Ms Santo asked about the NIS situation with the number of CMCs being less than the number of services, if the client needs are being considered. Prof. Khaled answered that this approach has been well aligned with customers' requests.

6.2. APMP (uploaded as JCRB/44-06.2-1 and -2)

Dr Jinyuan Li presented the JCRB/44.06-1 document on behalf of Mr Xiang Fang. He highlighted APMP's participation in the BIPM workshop on topic of digital transformation and its impact on metrology. APMP had additionally investigated a survey of this topic at the APMP region that has been evaluated. One outcome of this study is the implementation of an APMP Focus Group on 'Digital Transformation in Metrology' (DXFG). Later in August NIMT in collaboration with PTB (Germany) has facilitated a webinar on the topic.

Dr Jinyuan Li then described actions in the fight against the Covid-19 pandemic and the various aspects APMP has addressed in this respect. Highlighted were the test of ventilators that has been initiated, the accurate measurements and development of nucleic acids reference material, and the non-destructive testing for medical PPE suits.

Finally, improvements and further monitoring of long-run comparisons of the APMP laboratories have been described. On this, new momentum will be sought by APMP by means of the EURAMET Comparison Toolbox, a project management online application that has been purposely designed for the Metrology Community participating in comparisons. By this APMP will look for help with comparisons, auto generate reminders, etc., by modifying and adopting the tool to suit APMP needs.

Questions and answers were exchanged after Claudia Santo asked about the scope for greater harmonization on the term 'broad scope' for CMCs between CCs and between RMOs. Victoria Coleman responded that in practice that might be difficult because the approach across CCs were different for both technical and practical reasons, and with differing views even within RMOs.

6.3. COOMET

Dr Hurevich presented a ppt which has been uploaded to the BIPM website at the restricted JCRB area as JCRB/44-06.3-1. COOMET has celebrated its 30th anniversary and corresponding events were held on 15 June 2021. Recordings of this webinar can be downloaded, and the link is provided in the JCRB/44.06.3-1. New in COOMET is the foundation of a working group considering the various aspects of the COMET project 'Development of a COOMET concept for digitalization in metrology'. The COOMET presidential council has released a formal request to all Chairs of all COOMET Structural Bodies to arrange for considerations of digitalization issues in metrology in 2021, and to provide input to the working group.

6.4. EURAMET

Dr Jörn Stenger reported on EURAMET's 2030 strategy development and the new metrology research programme, the "Metrology Partnership". Strategic priorities include the Green Deal and the digital transformation. The 2030 strategy document is publicly available on the EURAMET website.

Dr Stenger pointed out that EURAMET has established European Metrology Networks (EMN's) as new structures in addition to the TCs. They are set out to engage with key stakeholder communities, develop strategic agendas and aim at the development of sustainable, coordinated metrology infrastructures. Nine EMN's have been established by now.

Dr Milton asked whether the digital transformation will be covered as a topic by the new Research Programme, and how options to participate in the programme will look like for non EURAMET countries. Dr. Stenger replied that digital transformation is relevant for all thematic calls, but in addition there will be a dedicated call on generic digital technologies and metrology for data. Funded participation of non-EU countries is possible if the countries have concluded arrangements with the EU regarding Horizon Europe, or if they are low- or medium income countries. All these countries are listed in official EU documents.

6.5. GULFMET

Mr Omar Kanakrieh presented the GULFMET report stating GULFMET's acknowledgement of the CIPM decision admitting GULFMET the full membership in the JCRB with voice and voting rights. He thanked the BIPM and the other RMOs for their support and confidence.

Mr Kranakrieh detailed the current situation on membership and associates with GULFMET and pointed on some indications that Iraq could join GULFMET as an associate. The recent GA of GULFMET saw all members and associates attending but additionally representatives from APMP, AFRIMETS, SIM, and COOMET joined the meeting. In this GA, a formally new position of the 'TC Chair and Secretary Leader' was assigned to Mr. Jon Bartholomew to support the individual TCs in GULFMET. On the latter, the GA elected chairmen and secretaries for the TCs in QS, M, T, EMTF, CM, PR, L, and Legal. For the TC Chairs a transitional period of six months was agreed in which trainings and qualifications will take place. The new TC Chairs are expected to resume their tasks in January 2022.

6.6. SIM

Dr Salvador Echeverria reported for SIM that some changes within the SIM MWG chairpersons occurred recently and that the Dominican Republic and Guatemala have newly joined. There are now 32 countries in the SIM structure and 16 countries participating in the CIPM MRA with published CMCs in the KCDB. Dr Echeverria reported on six projects (thermohygrobarometer, time and frequency digital platform, lung ultrasound, optical 3D measuring, DT Supporting Health Services, circular economy) currently ongoing in the SIM region with three of them dealing with digitalization.

Ms Dobre asked about the digitalization projects as to whether their outcomes will be publicly available. This was answered positively by Ms Claudia Santo as that the results will be published.

Ms Bruce reported from the SIM Quality System Task Force that QMSs have successfully been approved in 18 different fields of metrology across six countries in the SIM region.

On the latter Dr Stoll-Malke asked whether the QMS auditing system is back on track within SIM. Ms. Bruce answered that SIM has developed virtual assessments and as well as some visits and that the back log is being caught up but has not yet been cleared.

7. Remote Quality systems peer-review

7.1 Updates of the RMOs related to Resolution 43/1

Resolution 43/1 says that: *Due to the continuing effects of the global pandemic on travel and workplace accessibility, the JCRB allows the RMOs to extend the validity of RMO-approved quality management systems for one year if it is not possible to develop sufficient confidence in reviews carried out online, in person or a combination of both. The JCRB will revisit this topic at its 44th meeting.*

It was pointed out by Dr Milton that the hope can be well expressed that following the period covered by this resolution, i.e., after March 2022, the work of the JCRB could focus on resuming with post-COVID-19 working conditions. He said that the BIPM would prefer to address those circumstances rather than to develop some more procedural arrangements on COVID-19-based peculiarities.

Mr Henson seconded that based on the fact that the current resolution already allows for the remaining period until March 2022 to work under remote assessments conditions.

A number of delegates expressed their views that probably a mixture of remote and onsite assessments and QS audits will last longer than March 2022. However, due to the period already covered by Resolution 43/1 there is currently no need to work on a new description of this.

Particular practices aimed at facilitating the audits that were being adopted in some regions such as 'hybrid audit plus live video recorded process views' were discussed.

All RMOs stated that remote work does provide useful results and does bring advantages, but that onsite work needs to support this. Even with accreditation bodies involved, remote peer reviews may be an option in the future.

In conclusion, Mr Henson, summed the situation up. The current mandate from Resolution 43/1 runs until the next JCRB in March 2022 with RMOs increasingly able to cope using a mix of on site and remote auditing. The position with COVID-19 is difficult to predict but vaccination seems to be improving, although this cannot be taken for granted. The topic should be revisited in March 2022.

A formal action was formulated on this:

- Action 44/2:
The JCRB requests the Executive Secretary to include an agenda item for the 45th meeting of the JCRB regarding the validity of RMO-approved quality management systems, to coincide with the end of the extension period granted at the 43rd meeting.

Day-1 of the 44th meeting of the JCRB ended with this agenda item at 13:10 UTC.

8. Comments on the KCDB report

Dr Picard presented the KCDB report and noted that for the first-time the QM sector has fully used the KCDB 2.0 platform from submission of CMCs.

As already stated by the previous KCDB report it is confirmed by the present one that Key and Supplementary comparisons appear to be levelling out at around 30 new registrations per year.

Dr Picard pointed out that the API for CMC search has a link at the bottom of the KCDB Homepage.

9. Comments on the status of CMC submissions and review: reporting on the system's performance

Dr Olav Werhahn reported that the transition to the KCDB 2.0 has been completed and that based on its new technical features an evaluation of the system's performance can be carried out. Dr Werhahn presented a set of possible measures that were also explained in the KCDB report under section 4. Among those possible criteria Dr Werhahn presented the ones which have been evaluated and reported before but that can now be computed by means of technical features in the statistics tools of the KCDB 2.0 platform: reviewing durations for submitted CMCs in the JCRB review plus durations for the intra-regional RMO review. For this criteria the trend already seen in the previous KCDB report is seen to continue also for the Sep. 2021 report which indicates a reasonable reduction in the duration of the JCRB review from about 140 days in the pre-KCDB 2.0 system to about 60 days on average nowadays. This duration for the JCRB review is for reported across all metrology areas and for all RMO submissions. Dr Werhahn also mentioned an effect visible from the outliers of JCRB review times for specific CMCs that exceeds the 60-day-median duration in some cases by more than a factor of 5. This would probably have caused much longer delays in the old system when working on the batch mode. For the first time the KCDB report gives numbers for the intra-regional RMO review, but there is no historical data with which to compare it. This of course is something that can be looked at as time passes.

On the criteria 'evolution of the total number of CMCs in the system', Dr Werhahn reported that the numbers given in the KCDB report clearly state the levelling observable during the last decade has continued. Currently there are nearly 25900 CMCs published in the KCDB. It was recalled that the introduction of matrices and the increasing use of board scope CMCs is such that counting numbers of CMCs has only limited value.

The KCDB report furthermore contains numbers on the first full cycle reviewing of QM CMCs. The JCRB review duration in the QM area, although still a bit different than the other areas, show a mean of 110 days, that is already less than the 140-days-average across all metrology areas in the former system.

Dr Werhahn completed his presentation saying that more evaluation criteria were possible, and he was open if RMO delegations would like to come back on this.

On agenda items 8 and 9 there were two questions. The first was on whether the approach to distribute the workload in the JCRB reviewing by the WG chair was applied across many CCs. Ms Picard answered that this does indeed depend on the metrology area, with CCEM for example actively using this approach, but the QM area doing it differently. The other question was whether any impact of the broad scope or generic CMCs could be observable by the most recent data in the system. Here the answer from the KCDB Office is that there's currently no flag on CMCs as to whether it is broad scope or generic CMC. Thus, it was not possible to make any observation, noting also the different use of the term 'broad scope' by different CCs.

10. CIPM MRA documents and matters arising from them

10.1 Response from the CIPM MRA-G-11 Task Group on statistics following comments from the RMOs – referring to Action 43/3

On this item Mr Antonio Possolo, the TG leader, was invited to join the meeting. Dr Milton introduced the status on Action 43/3 and the Task Group's activities. He pointed out that the TG

had prepared detailed proposals to change the CIPM MRA-G-11 guideline which were sent to the RMOs for feedback. The RMO feedback was such that all but one RMO agreed with the proposed changes. Some comments were received from EURAMET. Some were minor in nature, others more substantive. Because of the timing ahead of the 44th meeting of the JCRB, the TG could not react jointly to the EURAMET comments. Therefore, only a private comment was drafted by Mr Possolo and attached to the original documents.

Mr Possolo suggested to circulate the set of documents, the proposed changes to the CIPM MRA-G-11, the EURAMET comments, and the private feedback of the TG's leader to the CCs asking for their comments.

Dr Milton asked the RMO representatives for their opinion and received general support, particularly Dr Stenger confirmed that EURAMET agrees that their comments be included with the set of documents and sent to all 9 CCs.

Based on this, Dr Milton asked the JCRB Executive Secretary to collate the documents and initiate the circulation to the CCs.

10.2 Proposed revised draft of the G-13 document (to better align the 'greying-out practice' with KCDB 2.0)

Dr Olav Werhahn said that following new technical possibilities with the KCDB 2.0 platform and following recent experiences with the procedures in place on the greying-out of CMCs, the BIPM is proposing to slightly adapt the text in CIPM MRA-G-13, Section 10 on the greying-out practice.

Dr Werhahn explained that there are two main drivers to change the text:

- the KCDB 2.0 platform provides the option to the institute holding CMCs itself to take actions on their CMCs with respect to the 'greying-out practice', so the greying-out practice should become clearer to be under the auspices of the institute holding the CMCs rather than the JCRB Executive Secretary or the KCDB Office;
- the KCDB 2.0 provides options for automated technical notifications to the acting parties, that facilitate sharing an alert at the appropriate for all acting players in the 'greying-out practice'.

Following this explanations, Dr Werhahn proposed that the draft changes shall be made available to the JCRB delegates via the JCRB website asking the RMOs for their views with the aim of approving the document, if possible, at the 45th meeting of the JCRB.

A formal action was formulated on this:

- Action 44/3:
The JCRB requests the Exec. Sec. to upload proposed draft changes to CIPM MRA-G-13 onto the JCRB site, and requests that the RMOs review these minor changes, with a view to approving the revised text at the 45th meeting of the JCRB.

11. Any other business

11.1 Brief discussion: Up-take and experiences with generic CMCs (HFTLS)

Dr Stenger on behalf of EURAMET opened a discussion with the other RMOs on experiences with what he termed 'generic CMCs'. To start with Dr Stenger summarised the various options for CMCs

to be defined other than by the conventional one-quantity-one-measurement-range approach. Further, Dr Stenger stated that within EURAMET the broader-scope and/or generic CMC option is promoted in particular by the TC-IR and TC-MC (chemistry) areas with the other TCs apparently not that interested.

On behalf of AFRIMETS Dr Louw indicated that discussions on this are mostly TC-internal to the CCs and that he is aware that AFRIMETS TC-EM is triggering broad scope CMC claims within AFRIMETS. Dr Louw said that a proposal could be to perform RMO-based TC assessments on this topic and announced that this can be promoted at RMO TC Chair meetings.

Dr Coleman said that at APMP the TCs EM, IR, and QM are following this path.

Ms Santo explained that SIM would like to see definitions and decisions first before the CCs and TCs decide. She also asked for more detailed reasons behind the proposal or whether it is just intended to reduce the pure number of CMCs.

Dr Picard commented that in the KCDB, uncertainty tables are being used for more areas as, e.g., AUV and QM in addition to E&M which have pioneered their use.

Ms Mikanadze mentioned that Customers may have to be consulted on broader scope CMCs, and that their view will vary by discipline and probably by region or even country. Prof. Chunovkina doubted that definitions of broad scope CMCs would be possible across all areas.

Dr Louw replied that in AFRIMETS where CMCs are often one per service, there is a move to broad scope CMCs but only where it makes sense and is acceptable to the user community, such that the number of services per CMC can be optimized.

11.1 Brief discussion: Impacts of the re-definition: which developments, such as new primary standards, has it triggered? Are there demonstrations of benefits of the re-definition?

Dr Stenger opened the discussion saying that within EURAMET so far not many new innovations have yet arrived, but in the T and M measurement areas the use of the new definitions has brought new activities.

Dr Louw was asking on what general angle EURAMET's question has been raised. He would think that time has not yet come to generate lots of new developments. In AFRIMETS the re-definition so far has been used for training exercises, like in a 3-D-printed Kibble balance.

Ms Picard (on her experience as CCT Executive Secretary) said that the CCT has come up with a document about 'Traceability at the measurement site' that makes use of the re-defined units.

Prof Neyezhnikov followed by saying that from the KCDB news it became public that one follow-on effect of the re-definition was that the uncertainty for mass standards had to be increased, but that to him it will also bring new thinking and opportunities.

Dr Echeverria added that the SIM includes advanced but also many less advanced NMIs. And that following the re-definitions those who are following are getting in touch with the advanced colleagues now, but that this process takes some time.

Dr Coleman replied that APMP included a broad diversity of NMIs and that a Task Force is organizing workshops on new realization of the SI units making use of the new definitions.

Generally, under agenda item 11, Dr Dobre asked on the digitalization topic who on the BIPM level is coordinating. Dr Milton replied that the CIPM is very active on this topic and that there is a Task Group Digitalisation installed that meets monthly. He added that the 45th meeting of the JCRB could be used to exchange more detailed information based on the CIPM representative or the JCRB

Chairperson. Dr Milton therefore suggested to add this to the agenda of the 45th meeting of the JCRB.

12. Next meetings and meeting closure

12.1 The 45th meeting of the JCRB

While noticing the difficulties to foresee the evolution of Covid-19, Dr Milton expressed his hope to at least plan the 45th meeting of the JCRB as a physical meeting at the BIPM in March 2022.

The JCRB Executive Secretary will circulate appropriate options for dates.

12.2 The 46th meeting of the JCRB

In late 2022 there will be a CGPM . Whereas in previous CGPM years, the September JCRB meeting had been waived, Dr Milton proposed to keep with the option to hold an online JCRB meeting in September 2022 to keep the momentum within the JCRB.

12.3 Reading of the Resolutions, Recommendations, and Actions

The actions below were read out and agreed, and the JCRB was concluded:

Action 44/1: The JCRB requests the Executive Secretary to include the possibility of up to two additional observers from each RMO when issuing the convocation for future online JCRB meetings.

Action 44/2: The JCRB requests the Executive Secretary to include an agenda item for the 45th meeting of the JCRB regarding the validity of RMO-approved quality management systems, to coincide with the end of the extension period granted at the 43rd meeting.

Action 44/3: The JCRB requests the Exec. Sec. to upload proposed draft changes to CIPM MRA-G-13 onto the JCRB site, and requests that the RMOs review these minor changes, with a view to approving the revised text at the 45th meeting of the JCRB.