

**International Committee
for Weights and Measures**

Proceedings of Session III

of the 112th meeting

(17-18 October 2023)

Executive Summary

Session III of the 112th meeting of the CIPM (17-18 October 2023)

Changes to CIPM membership

The CIPM expressed its condolences following the death of P. Neyezhnikov and acknowledged the planned retirement of Y. Duan and J. Ullrich and their intention to step down as CIPM members. Nominations will be invited from all Member States for the three vacancies.

President of the Consultative Committee for Mass and Related Quantities (CCM)

G. Macdonald was appointed as CCM President.

President of the Consultative Committee for Thermometry (CCT)

D. del Campo Maldonado was appointed as CCT President.

President of the Consultative Committee for Units (CCU)

The election of the CCU President will be deferred to its meeting in March 2024. R. Brown (NPL) will be invited to chair the meeting in April 2024.

Value of the “point”

The value of the point applicable to both salaries and pensions is to be revised on 1 January 2024 by 5.3 %.

Changes to the budget for 2024

The values for the staff costs and electricity costs in the budget for 2024 are to be updated.

Third exceptional transfer to the pension fund

The CIPM authorized a third exceptional transfer of 3 million euros of unreserved cash to the Pension Fund, effective by the end of 2023.

CIPM Rules of Procedure

Edition 1.2 of the CIPM Rules of Procedure was approved.

Changes to the Notification

Future Notifications will be published based on the best available information, taking into account the provisional data for the UN Scale available for the following period, and the payment status of Member States.

Forum on Metrology and Digitalization

The membership, Chair and Vice-Chair of the forum were agreed.

Closure of the CIPM Task Group on the SI Digital Framework (TG-DIG)

The Task Group was closed following the completion of its work.

Participation in forums

Rules and criteria are to be drafted for participation in forums and to update document CIPM-D-01.

**MEMBERS OF THE
INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES**

As of 17 October 2023

President

W. Louw

Secretary

T. Usuda

Members

V.G. Achanta

D. del Campo Maldonado

V. Coleman

N. Dimarcq

Y. Duan

J.-T. Janssen

H. Laiz

G. Macdonald

P. Neyezhnikov

J. Olthoff *CIPM Vice-President.*

S.-R. Park

M.L. Rastello

P. Richard *CIPM Vice-President.*

G. Rietveld

G.P. Ripper

J. Ullrich

Contents

Executive Summary	2
1. Opening of the Session; Quorum; Approval of the agenda.....	5
2. Secretary’s Report	5
3. President’s Report.....	6
4. Director’s Report.....	6
5. Finance	7
6. The BIPM Pension and Provident Fund	9
7. Report from the CIPM Sub-Committee on Governance.....	10
8. Report from the Committee for CIPM Election (CEC)	12
9. Reports from the Joint Committees	12
10. Reports from the Consultative Committees	13
11. Report from the CIPM Sectorial Task Group on Climate Change and Environment (CIPM-STG-CENV)	17
12. Update on planning for future meetings	17
13. Review of decisions and CIPM meeting dates for 2024.....	18
14. In Camera Session	19
15. Miscellaneous reports	19
16. Any other business.....	24

1. OPENING OF THE SESSION; QUORUM; APPROVAL OF THE AGENDA

The International Committee for Weights and Measures (CIPM) held Session III of its 112th meeting on Tuesday 17 to Wednesday 18 October 2023 as a hybrid meeting.

Participating in person: V. Coleman, D. del Campo Maldonado, N. Dimarcq, Y. Duan, J.-T. Janssen, W. Louw, G. Macdonald, M. Milton (Director of the BIPM), J. Olthoff, S.-R. Park, M.L. Rastello, P. Richard, G. Rietveld, G. Ripper, J. Ullrich and T. Usuda.

Participating remotely: V.G. Achanta and H. Laiz.

Also attending the meeting were: C. Fellag Ariouet (Personal Assistant to the Director and Head of the Executive and Meetings Office), C. Planche (Web and Translation) and R. Sitton (Publications).

The following were in attendance for parts of the meeting: A. Cypionka (Director of the International Liaison and Communication Department), V. Gressier (Director of the Ionizing Radiation Department and Executive Secretary of the CCRI), C. Kuanbayev (International Liaison and Communication Department), G. Panfilo (Executive Secretary of the CCAUV and CCL), S. Solve (Executive Secretary of the CCT), D. Spelzini (Head of the Finance Office), M. Stock (Director of the Physical Metrology Department and Executive Secretary of the CCEM and CCU), J. Viallon (Executive Secretary of the CCPR) and R. Wielgosz (Director of the Chemistry Department and Executive Secretary of the CCQM and JCTLM).

Dr Louw opened the meeting and welcomed those members attending in person and those taking part remotely.

He informed the CIPM that Prof. Pavel Neyezhnikov had died on 16 October 2023. P. Neyezhnikov had been a member of the CIPM since 2018 and was the General Director of NSC IM (Ukraine). The CIPM observed silence for one minute in his memory.

The following additions to the agenda were proposed:

- Transfer of unreserved cash to the BIPM Pension Fund (Items 5 and 6)
- Draft rules for missions and travel (Item 7)
- Presidency of the CCM (Item 10)
- (Re)appointment of a CIPM representative to CODATA.

The CIPM approved the agenda with these additions.

The Director said that the report of Session II of its 112th meeting had included an error in the text of Decision CIPM/112-25. The text that had been agreed by the CIPM, stated that ‘The CIPM adopted “Forum on/of Metrology and Digitalization” as the name for the horizontal forum on digitalization’. This should have been “Forum on Metrology and Digitalization” and has subsequently been corrected. The CIPM accepted the revised report of Session II of its 112th meeting as a true record.

Decision CIPM/112-26 (2023) The CIPM accepted the minutes of Session II of the 112th meeting of the CIPM as a true record.

2. SECRETARY’S REPORT

Dr Usuda gave his report, which covered the CIPM bureau meeting held on 28 September 2023 and other

activities of the bureau since June 2023. The main topics discussed by the CIPM bureau had been the impact of high inflation on the BIPM Work Programme, staff matters and BIPM representation at stakeholder meetings. The report is available as document [CIPM/2023-III-16](#).

3. PRESIDENT'S REPORT

The President said that in future the bureau is planning to meet about two weeks before CIPM meetings so that it can post documents to the website in advance. He added that the system for advance notification of representation of the BIPM at stakeholder meetings is working well and reiterated that any CIPM members who are asked to represent the BIPM at meetings should inform the President and Secretary so that the list of attendees can be updated

4. DIRECTOR'S REPORT

The Director reported on events since Session II in June 2023. The Head of the Human Resources Service, P. Imbert, will retire at the end of October 2023. F. Aktas, has been appointed as his successor and will start at the beginning of November. A new site guardian, A. Sahnine, has been recruited and will work alongside E. Dominguez until his retirement at the end of 2023. Interviews are under way for several posts, including senior scientists in the Chemistry and Ionizing Radiation Departments to replace planned retirements in 2024. A Liaison Officer to support the Capacity Building and Knowledge Transfer (CBKT) programme and the BIPM key comparison database (KCDB) will be recruited in the near future following a successful second round of interviews. The BIPM is continuing its efforts to recruit a Scientific Software Engineer and Data Scientist to support the calculation of Coordinated Universal Time (UTC) in the Time Department. In addition, a site engineer is being sought to support improvements in electricity usage and air conditioning.

Elections for the Commission for Conditions of Employment (CCE) were held on 26 September 2023 and four members were elected. The CCE will meet with the CIPM bureau on 17 October.

The BIPM hosted a meeting of the International Telecommunication Union (ITU) Working Party 7A (WP 7A) – Time signals and frequency standard emissions. The Director and P. Tavella, Director of the Time Department, attended the meeting and the BIPM was able to progress the agenda mandated by CGPM Resolutions 4 (2022) *On the use and future development of UTC* and 5 *On the future redefinition of the second*.

The annual *Journées du patrimoine* was held on 16-17 September and the BIPM headquarters received 500 visitors over the weekend. The Director thanked C. Fellag Ariouet for the work involved in organizing the open days.

The BIPM received a visit from Luis Mayaute Vargas, Counsellor from the Embassy of Peru on 4 August 2023. Peru was one of the initial signatories of the Metre Convention but is currently an Associate. His Excellency Jose Buainain Sarquis, the Ambassador of Brazil to the International Organizations (IOs), visited the BIPM on 8 September 2023. He is the successor to His Excellency Carlos Cozendey. The Director welcomed Askar Abdrakhmanov, the Ambassador of Kazakhstan to the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the IOs on 13 October 2023. He is working closely with the BIPM with regard to the official recognition of World Metrology Day by UNESCO.

The Director said that he had chaired the 27th meeting of the Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB) in Costa Rica on 12-13 September 2023. He had presented the work of the

BIPM on the digital transformation at the joint PTB/BAM/DIN “QI-Digital Forum 2023” in Berlin on 10-11 October 2023. He will give a similar talk at the IEEE International Conference on “Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering”, in Milan on 25-27 October 2023. The Director will attend the meeting of the International Advisory Board of NIM (China) in association with the 39th APMP General Assembly on 27 November to 3 December 2023.

The Director recalled that Prof. Christian Bordé had died on 30 August 2023 and that he had attended the funeral on 7 September along with P. Tavella. C. Bordé had presided over the meetings of the General Conference on Weights and Measures (CGPM) in 1999, 2003, 2007 and 2011.

The President thanked the Director and expressed the CIPM’s condolences to the families of both C. Bordé and P. Neyezhnikov.

5. FINANCE

Report from the CIPM Sub-Committee on Finance (FSC)

P. Richard, the Chair of the FSC, gave a report of the meeting held on 6 October 2023 (Document [CIPM/2023-III-15](#)). He said that the meeting had discussed the BIPM financial performance for 2023; the value of the “point” for staff and pensioners for 2024; the budget for 2024 and the long-term financial plan; and transfer of funds into the BIPM Pension Fund from the BIPM reserves. Two Member States, Argentina and Pakistan, are in arrears by three years and may have their advantages and prerogatives conferred by accession to the Metre Convention suspended at the end of 2023. Oman, an Associate State, may be excluded from the Metre Convention at the end of 2023 following six years of arrears. He added that bank transfers from Belarus and the Russian Federation are currently difficult due to banking sanctions.

He recalled that the Sub-Committee had discussed the possibility of simplifying the calculation of the amount indicated in the Notification, particularly regarding the redistribution of contributions for Member States that are approaching suspension, based on the best available information, and the use of provisional data for the UN Scale. Full details of the proposals are available in the report ([CIPM/2023 III-15](#)) and a draft decision was presented.

P. Richard said that expenditure for 2023 is within the expected budget and the global financial performance for the year is good.

The CIPM approved the following decision after a brief discussion.

Decision CIPM/112-27 The CIPM noted that the Notification of the Contributive Parts due by Governments of the High Contracting Parties for the maintenance of the International Bureau of Weights and Measures and of Subscriptions due by Associate States and Economies of the CGPM is published on or before 1st December of the year preceding its application. The CIPM decided that the Notification should be published at that time based on the best available information, taking into account the provisional data for the UN Scale available for the following period, and the payment status of Member States.

Value of the “point” (applicable to salaries and pensions) for 2024

Dr Richard said that the FSC had discussed the value of the “point” and had taken into consideration the consumer price index of 5.3 % calculated by the services of the Coordinated Organizations for 2024. As a result, the FSC agreed to recommend to the CIPM an increase the value of the “point” for both salaries and pensions by 5.3 % in accordance with regulation 10.2 of the staff regulations applicable to BIPM staff members. He noted

that the sum of the increases for 2023 and 2024 is 9.8 % and that this will have long-term consequences for the BIPM's finances and those of the pension fund.

Moreover, the FSC President referred to the Note to the CIPM on the salary adjustment for 2024 and on the proposal to revise the salary adjustment methodology (document [CIPM/2023-III-05b](#)) including the recommendation of the BIPM Director to the CIPM that the value of the point to be revised on 1 January 2024 by 5.3 %. The FSC therefore recommended to the CIPM that the decision to approve the 5.3 % adjustment be accompanied by a detailed analysis of the BIPM financial situation for the years 2024 to 2027 to ensure that the accounts are balanced over the entire period. The FSC welcomed the idea that a proposal for the improvement of the salary adjustment methodology (for example Rule 10.2.1, affordability clause) will be presented to the CIPM in consultation with the members of the CCE, during the March 2024 meeting.

The President thanked P. Richard and indicated that the CIPM should consider the long-term consequences of approving the proposed increase to the value of the "point" on the sustainability of the BIPM and the future finances, considering that the 5.3 % increase is significantly more than was allowed for in the budget.

The Director added that clause 10.2.1 (affordability clause) in the staff regulations notes that "*the CIPM may, if exceptional or unforeseen circumstances warranting so, phase in the adjustment of the point value, apply it in part, suspend it or defer it if the BIPM cannot, without one of these measures, meet both its financial obligations and essential operating requirements*". In 2022, inflation rose very rapidly, this increase was both unexpected and exceptional, due to the scale of the increase. In 2023, the same argument does not apply as the increase in inflation is a continuation of the situation in 2022 and is not therefore unforeseen. He added that he is working together with the CCE to bring a proposal to amend Rule 10.2.1 in line with best practice followed by other international organizations (IOs). A document presenting the *affordability clauses* in use by the Coordinated Organizations ([CIPM/2023-III-05-a](#)) is available on the CIPM webpage.

P. Richard added that the amendments to Rule 10.2.1 should be implemented by the end of 2024. The President asked for clarification regarding exactly when the services of the Coordinated Organizations had calculated the consumer price index for 2024. D. Spelzini explained that the level of 5.3 % for 2024 was calculated in September 2023.

S.-R. Park asked if the NMIs are taking inflation into account when calculating salaries. The President replied that many NMIs are not able to offer increases that match inflation. P. Richard said that the situation is different in the IOs when compared to the NMIs. The Director commented that the CIPM had used assumptions for an increase in inflation for 2024, 2025, 2026 and 2027 of 3 %, 3 %, 2 % and 2 % respectively. G. Rietveld reiterated concerns expressed earlier in the discussion regarding the long-term effects of the 5.3 % increase on the BIPM Work Programme. V.G. Achanta said that the 9.8 % increase over 2023-2024 represents only 1 % of the total budget and is included in the salaries section of the budget. J. Ullrich observed that some Member States may be concerned about the proposed increase.

The CIPM approved unanimously the following two decisions relating to the value of the "point" for both salaries and pensions in 2024.

Decision CIPM/112-28 The CIPM decided that the value of the point applicable to salaries be revised on 1 January 2024, in accordance with Regulation 10.2 of the Regulations applicable to BIPM staff members, by 5.3 %, which will allow the BIPM to meet its financial obligations and essential operating requirements, while safeguarding the interests of staff given the particularly high inflation rate in France.

Decision CIPM/112-29 The CIPM decided that the value of the point applicable to pensions be revised on 1 January 2024, in accordance with Rule 17.4 of the Rules of the Pension and Provident Fund, by 5.3 %, which will allow the BIPM to meet its financial obligations and long-term financial sustainability of the Pension Fund, while safeguarding the interests of pensioners given the particularly high inflation rate in France.

Revision of the budget for 2024 and the long-term financial plan (2024-2027) to allow for inflation.

P. Richard said that Director had presented the updated budget for 2024 to the FSC on 6 October. The updated budget included revised staff costs, taking into account the proposed 5.3 % increase in the value of the “point” to compensate for inflation and the 40 % increase in electricity costs. He noted that the BIPM is already over budget regarding electricity costs for 2023. The corrected budget, which also includes provisions for inflation, is available as appendix 6b to the report ([CIPM/2023 III-15](#)). P. Richard said that the FSC, taking into account the corrections to the budget and the statement on the proposed inflation compensation, recommends that the CIPM approves the proposed budget for 2024. He stressed that the only changes to the budget are related to staff and electricity costs.

The CIPM approved the revised budget for 2024.

Decision CIPM/112-30 The CIPM decided that the budget for 2024 should follow the expenditure agreed by the CGPM at its 27th meeting (2022) with updated values for the staff cost and electricity cost as presented to the CIPM Sub-Committee on Finance and the CIPM by the BIPM Director.

Transfer of unreserved cash to the BIPM Pension Fund

P. Richard recalled Decision CIPM/111-15 (2022), which noted that the CIPM may consider a further exceptional transfer of unreserved cash to the BIPM Pension Fund in 2023, if the financial position allowed such a measure. The FSC concluded that the level of unreserved cash is still high and proposed a third exceptional transfer of 3 million euros of unreserved cash to the Pension Fund, effective by the end of 2023. He commented that this may be the last time that such a transfer is possible and that this cash transfer is important to ensure the long-term stability of the Pension Fund. This topic was further discussed in §6.

6. THE BIPM PENSION AND PROVIDENT FUND (PFAB)

G. Macdonald, Chair of the PFAB, said that its activities over the last year had focused on the 2023 Actuarial Study by Mercer. The first draft of the study had been presented to the PFAB in June 2023 for comment and the second draft was discussed at its meeting held on 16 October 2023. The PFAB expects to finalize its recommendations to the CIPM by the end of November. The Chair of the PFAB will present this report to the CIPM for discussion at its next session in March 2024. G. Macdonald added that the PFAB strongly recommends that the CIPM should approve the third exceptional transfer of 3 million euros of unreserved cash to the Pension Fund as it will have a significant impact on the ongoing sustainability of the pension fund, if such a measure is

financially prudent and if funds are available. Other options will be presented in the PFAB report for the CIPM's consideration.

The President thanked the Chair of the PFAB and invited questions.

G. Macdonald confirmed that the actuarial study includes different scenarios for future evolution of the Pension Fund as well as Mercer's recommendations. She added that Mercer had concluded that any staff member requesting to change from the "Pre-2010" or "Post-2010" sections of the scheme to the "Post-2017" section as of 1 January 2024 would not significantly alter the dynamics of the pension scheme.

J. Olthoff asked if the PFAB had carried out a risk analysis of the exceptional transfers on the operating budget and the need to maintain a large reserve versus the benefits to the pension fund. G. Macdonald reiterated that the PFAB had discussed these issues and the Director indicated that the BIPM has a policy of retaining 50 % of the dotation as a reserve fund, which in 2022 amounted to 6.365 million euros. In addition, the unreserved cash included 3.153 million euros which was committed to transactions. The BIPM's reserves are robust and a surplus of 900 000 to 1 million euros is forecast for 2023. The Director added that a transfer of 3 million euros to the pension fund is modest and prudent as there are 8.6 million euros outside the scope of what the CIPM has mandated the BIPM to keep as a reserve. The Pension Fund has assets of 23 million euros and more sophisticated investment methods can be investigated whereby the asset may be better matched to the liability in the future.

P. Richard, speaking as Chair of the FSC, reiterated that the current reserves are sufficient to support the proposed transfer and he added that there is no link between the compensation for inflation and the transfer to the Pension Fund and that a balanced budget is needed for the entire period 2024 to 2027 without using the reserves. For 2023 there are sufficient reserves to carry out the transfer.

G. Macdonald emphasized that the decision to increase the "point" for pensions by 5.3 % and the proposal to transfer 3 million euros of unreserved cash into the Pension Fund are separate issues; the latter is a prudent measure to improve the long-term financial sustainability of the Fund and the cash is available. P. Richard noted that the proposed transfer will have the effect of diminishing financial risks to the Member States; money can be invested in the pension fund, which could otherwise not be invested.

The CIPM noted the PFAB Chair's comments and remarks. It also approved the following decision on 18 October.

Decision CIPM/112-31 Recalling Decisions CIPM/106-07 (2017), CIPM/109-12 (2020), CIPM/110-18 (2021) and CIPM/111-15 (2022) and following the recommendations from the CIPM Sub-Committee on Finance meeting held on 6 October 2023, the CIPM decided to authorize a third exceptional transfer of 3 million euros of unreserved cash to the Pension Fund, effective by the end of 2023.

7. REPORT FROM THE CIPM SUB-COMMITTEE ON GOVERNANCE (SC-G)

Dr Richard, the Chair of the SC-G, gave a report on its activities. He indicated that the SC-G has been working on drafting By-Laws for the BIPM, including Rules of Procedure (RoP) for the CGPM and explanatory documents. It wishes to consult widely with the Member States during the preparation process. The By-Laws are the appropriate instrument to clarify the wording of the Metre Convention and its Annexed Regulations without the need to amend these texts. He said that the objective is to establish the BIPM By-Laws and CGPM RoP in parallel. The timetable is to have the By-Laws and RoP approved by the CIPM in October 2025 and submitted for approval to the CGPM at its 28th meeting in 2026.

Dr Richard presented the recent work of the Sub-Committee, which included the preparation of a position paper with the proposed options to be followed, completed in July 2023, and the consultation with legal experts on the position paper, submitted in August-September 2023. The next steps are to prepare a final position paper during October and to receive a draft of the BIPM By-Laws before the end of the year from an independent legal expert.

In addition, a consultation between the SC-G, the CIPM and the Committee for CIPM Election (CEC), regarding the election of the CIPM at meetings of the CGPM, will be carried out in December 2023. The SC-G has scheduled the first round of official consultations with the Member States between January and February 2024, followed by a report. A second round of official consultations with the Member States will take place between March and October 2024. Dr Richard commented that although the deadlines are tight, and there remains a considerable amount of work to do, it is essential to keep to the schedule. It was agreed that the new draft of the By-Laws will be circulated to the CIPM for discussion as soon as it is received and that the first round of consultations with the Member States should go ahead as scheduled. The draft By-Laws can be discussed fully by the CIPM at its meeting in March 2024.

The President referred to document [CIPM/2023-III-11](#) *Addendum 1 to the CIPM Rules of Procedure: Draft Rules of Mission and Travel for CIPM members and the Director* and said that a procedure is needed on this topic, which is currently handled on an *ad hoc* basis. He said that CIPM members are increasingly asking for assistance to travel to and attend events and meetings when it is on behalf of the CIPM, for example attendance at the APMP General Assembly, and that it can be difficult to request financial support from an NMI to travel on behalf of the CIPM. While the CIPM agreed there may be a need to clarify this issue, the document presented did not obtain consensus among the CIPM members and the topic would be dealt with at another meeting.

P. Richard informed the CIPM that changes have been proposed to the CIPM Rules of Procedure, which are highlighted in the documents [CIPM/2023-III-10](#), which were available on the CIPM webpages in advance of the meeting. The majority of the amendments were concerned with the use of hybrid and on-line meetings of the CIPM and the voting procedure at such meetings. These proposed amendments affect Rules 2.2, 24.1 and 28.1. The CIPM discussed the voting procedure and it was agreed that although the rules and requirements for voting during in-person, online and hybrid meetings are the same, the procedures by which the rules are satisfied can be different. P. Richard recalled that during the revision of the document, a number of minor editorial changes had been discussed and agreed with the BIPM Legal Adviser and, following a discussion at the current meeting, additional changes were proposed to improve the gender neutrality of the document. The President added that additional amendments were proposed to Rules 4, 5, 14.2, 19.4 and 32.5. New rules 14.4 and 14.5 were added.

J. Olthoff asked about the new rules 14.4 and 14.5 (composition and election) and what would happen if an elected CIPM member were to have the nationality of a Member State that has been excluded or suspended. He asked for clarification of the difference between excluded and suspended Member States. The Director replied that after three years of non-payment, a Member State is suspended from its rights and privileges as a member. After a further three years of non-payment (six years of non-payment in total), a Member State is excluded. He noted that the situation has not yet arisen whereby a suspended Member State has had representation on the CIPM or the Consultative Committees and that it remains an open question as to how this would be addressed. The situation regarding an excluded Member State is much clearer and it would not be possible for such a State to have a representative on the CIPM.

The CIPM discussed and agreed the proposed the amendments to the Rules of Procedure, with a few minor changes, which will be published as edition 1.2.

<p>Decision CIPM/112-32 (2023) The CIPM approved edition 1.2 of the CIPM Rules of Procedure, with additional amendments to improve gender neutrality. The CIPM requested the BIPM headquarters staff to publish the amended CIPM Rules of Procedure and to update the Compendium accordingly.</p>
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8. REPORT FROM THE COMMITTEE FOR CIPM ELECTION (CEC)

The President said that a report had been received from R. Gunn, the Chair of the CEC, and is attached to document [CIPM/2023-III-16](#) as an appendix for information. He summarized the report, noting it proposes that candidates for election to the CIPM should supply additional supporting information to allow their suitability to be judged against the set criteria and that it will be made clear that candidates must have the support of their government. The President cautioned that although the call for additional supporting information is welcome, he asked the CIPM to consider who will be expected to evaluate this extra information. H. Laiz reiterated that it should be made very clear that it is mandatory for future candidates for election to the CIPM to have the support of their governments.

The President recalled that the CEC had discussed a number of improvements to the Criteria and Process for Election of CIPM Members and commented that the Member State representatives can recommend amendments to the document, but it is the responsibility of the CIPM to make the changes. He also noted that the election process is not fully in-line with the Metre Convention, which calls for the CIPM to be renewed by half at each meeting of the CGPM. (ART. 7 (1875) and ART. 8 (1921) of the Annexed Regulations). He added that these issues will be discussed in advance of the 28th meeting of the CGPM (2026).

P. Richard and the President said that they will re-examine the existing procedure in the text of the Metre Convention to provisionally fill vacancies that may occur between meetings of the CGPM to replace Y. Duan, P. Neyezhnikov and J. Ullrich. It was recalled that, the election process to fill the three CIPM vacancies, on a provisional basis, arising between meetings of the CGPM is fully detailed in the document Criteria and Process for Election of CIPM Members.

9. REPORTS FROM THE JOINT COMMITTEES

Joint Committee of the Regional Metrology Organizations and the BIPM (JCRB)

J. Olthoff, Chair of the JCRB, said that its 47th meeting had been held in Costa Rica on 12-13 September 2023. Document [CIPM/2023-III-07](#) *Report to the CIPM from the JCRB* gives a summary of the meeting and is available on the website for noting. The report includes four actions and one resolution.

Joint Committee for Guides in Metrology (JCGM)

There was no report from the JCGM, following the death of P. Neyezhnikov, the CIPM representative to the JCGM. The President said that the CIPM would appoint a new representative to the JCGM, JCGM-WG2 (VIM) and the CCU Working Group on Core Metrological Terms (CCU-WG-CMT). There were no volunteers from the CIPM. The Director suggested that future calls for nominations for CIPM membership should make it clear that candidates will be expected to engage in a range of activities, not just the Consultative Committees.

Committee on Data of the International Science Council (CODATA)

The Director noted that there is currently no CIPM representative to CODATA following the retirement of A. Steele at the 27th meeting of the CGPM. There was a call for volunteers from among the CIPM and none were forthcoming. It was agreed that A. Steele should be contacted to determine if he would be prepared to continue in the role.

The President announced on 18 October that A. Steele had agreed to continue to represent the BIPM on

CODATA and the following decision was adopted.

Decision CIPM/112-33 (2023) The CIPM agreed that A. Steele will continue to represent the BIPM at CODATA.

10. REPORTS FROM THE CONSULTATIVE COMMITTEES

Consultative Committee for Units (CCU)

J. Ullrich presented the *Report from the CCU* ([CIPM/2023-III-14a](#)) and commented that the 26th meeting of the CCU is scheduled for 9-11 April 2024 at the BIPM headquarters. The CCU Working Group on Core Metrological Terms (CCU-WG-CMT), which was chaired by P. Neyezhnikov, has been working on the definitions of the core terms ‘quantity’, ‘unit’ and ‘quantity value’, however a consensus could not be reached. The WG-CMT has been complemented by the inclusion of experts from the mathematics, semantics and digitalization areas and a Focus Group was recently installed to give advice on axiomatic systems of terms. This Focus Group has taken a significantly different approach to that of the WG-CMT in terms of examining the relationships between the underlying concepts for the terms rather than their definitions. The Focus Group concluded that the proposals for the definitions produced by WG-CMT were not appropriate for digitalization and that instead the definitions in the VIM4 1CD and 2CD should be supported. The WG-CMT discussed the issue and agreed with the findings of the Focus Group. It will recommend to the CCU to officially support the definitions proposed in the VIM4 and to recommend to the CIPM to endorse them. In April 2024 the CCU will decide on the future work programme for the WG-CMT and the Focus Group. He expressed his hope that its work will continue as it will help to make future editions of the VIM even clearer.

J. Ullrich recalled that the CCU Task Group on angle and dimensionless quantities in the SI Brochure (CCU-TG-ADQSIB), chaired by R. Brown, has been working to improve the SI Brochure with respect to these topics based on existing CGPM resolutions and CIPM decisions. The TG-ADQSIB has made a number of proposals for improvement, which require approval by the CCU. A joint CCU/CCQM Workshop on “The metrology of quantities which can be counted” was held on 28-30 March 2023. The workshop agreed that these should be referred to as “number quantities” and a Focus Group was set up, *CCU Task Group on Angles and Dimensionless Quantities in the SI Brochure Focus Group on Counting and Number Quantities (CCU-TG-ADQSIB-FG-CNQ)*, which reached a consensus on this issue with regard to clarifying the text of the SI brochure. The CCU will discuss its findings in April 2024. The CCU will decide whether to close the CCU-TG-ADQSIB now that it has completed its work.

J. Ullrich said that there is no strategy regarding non-SI units in the SI Brochure; the development of the last edition included efforts to reduce the number of non-SI units. He added that the issue of non-SI units will become a problem when the development starts on the next issue, so a strategy is required to clarify how to deal with them. An associated question is whether the SI Brochure should include considerations on the distinction between base and derived units. He suggested that both topics should be discussed in the near future to avoid having to seek guidance during the later stages of drafting the next edition of the SI Brochure.

J. Ullrich presented the inclusion of nominal properties in the VIM4 by the JCGM Working Group on the International Vocabulary of Metrology (JCGM-WG2:VIM). As a consequence, the definition of metrology in the VIM4 has been changed from *science of measurement and its application* to *science of measurement and examination, and their applications*. This change is based on Decisions CIPM/101-63 (2012) and CIPM/107-25 (2018), which mentioned a proposed broader definition of the term “measurement” to include ordinal and

nominal properties. The proposed change has been extensively discussed in JCGM-WG2 and its member organizations, but there has been little discussion in the CIPM and the CCU. JCGM-WG2 conducted a consultation among JCGM Member Organizations, yielding strong opinions on both sides of the issue. It was therefore decided that at present, the time is not right to change the definition of ‘measurement’, which remains related to quantitative properties. However, it was observed that today most, if not all, NMIs deal with nominal properties and their examinations and this was considered sufficient justification to expand the scope of ‘metrology’, which is encompassed in the VIM4. He noted that this is a far-reaching decision without any discussion in the CCU and only a brief report in the CIPM. This will be rectified by having a discussion in the CCU, which will report to the CIPM.

The President thanked J. Ullrich and invited questions and comments. The Director commented on the inclusion of non-SI units in the SI Brochure. He said that although the BIPM is responsible for the International System of Units, it is also responsible for the global comparability of measurements. In this respect, there are some ambiguities concerned with units that have been brought into use by other international organizations that are not strictly SI units. It is important to consider which non-SI units are essential for the functioning of these other IOs, when reviewing which should be included or excluded in future editions of the SI Brochure. Examples include the astronomical unit, the knot and the nautical mile. The BIPM should retain the vision from 1875 to encourage the comparability of measurements, whilst acknowledging that other “non-SI” units exist that other IOs depend on and which should be included in the Brochure. However, the SI should continue to be the preferred choice for measurements.

G. Rietveld asked for clarification regarding when the CIPM will discuss the proposal to develop a broader definition of the term “measurement” to include nominal properties. J. Ullrich said that the intention is to discuss the topic, along with the definition of metrology, in the April 2024 meeting of the CCU and to report back to the CIPM in June 2024. It was noted that the proposal to redefine measurement has been discussed comprehensively by JCGM-WG2 and the issue has polarized the NMI community. The opinions of the seven member organizations of the JCGM and the NMIs will be discussed by JCGM-WG2, which will come to a consensus opinion. The Director added that potential legal issues are more likely to be connected to the definition of measurement rather than metrology. J. Ullrich said that the question is not whether nominal properties need to be included, but instead how they should be included.

Consultative Committee for Time and Frequency (CCTF)

N. Dimarcq said that there is synergy between the CCTF strategy and the BIPM strategy for time metrology particularly concerning the continuous reference time scale, UTC, and the development and best use of optical frequency standards in the future redefinition of the second. In addition, there are many activities in the BIPM Time Department concerning the digital transformation, for example the development of application programming interfaces (APIs) for time scales and the Consultative Committee for Length (CCL)/CCTF standard frequencies as well as the promotion of continuous UTC for the international synchronization of interconnected networks. He said that a focus issue of *Metrologia* will highlight the CCTF strategy through a series of papers that will focus on the four individual “hot topics” of the CCTF.

N. Dimarcq recalled that the CCTF project related to the “hot topic”, *sharing resources for capacity building to improve (inter)national timekeeping* has included the placement of a secondee from NPLI (India) in the BIPM Time Department, who is co-sponsored by the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society. The objective of this secondment is to share resources by bringing together the common training tools, videos, guidelines and software modules that already exist in the NMIs under the coordination and guidance of the BIPM.

Work within the CCTF towards the “hot topic” *promoting the mutual benefit of UTC and GNSS, including*

Traceability to UTC from GNSS measurement, has included collaboration with the UN International Committee on GNSS. This work has focused on interoperability of the Global Navigation Satellite System (GNSS) based on Coordinated Universal Time (UTC) as a common pivot time scale; traceability to UTC through GNSS measurements; the impact of continuous UTC in GNSS broadcast information; evaluation of UTC prediction broadcast by Galileo and Beidou (in addition to the current GPS and GLONASS); and calibration of GNSS receivers for timing. In addition, there have been discussions on setting up a reference time scale for the moon.

N. Dimarcq said that there has been considerable progress within the CCTF and the BIPM Time Department on the subject of continuous UTC in response to Resolution 4 of the 27th CGPM (2022) *On the use and future development of UTC*. Activities have included collaboration with other IOs in preparation for the International Telecommunication Union (ITU) World Radiocommunication Conference 2023 (WRC-23), to be held in Dubai on 20 November to 15 December 2023, and to prepare a draft resolution for the 28th meeting of the CGPM (2026) on the future development of UTC, which will include the new tolerance for UT1-UTC. He presented the main interactions between the BIPM and the ITU since the signing of the Memorandum of Understanding (MoU) in 2020. N. Dimarcq called on the CIPM members to ensure that the national delegations to the ITU WRC-23 are well prepared and informed regarding the importance of continuous UTC, in advance of the meeting. He added that the need to make a decision on continuous UTC is becoming more urgent to compensate for the recent acceleration in the rotation of the Earth, which may require the implementation of the first negative leap second during the next decade. The acceleration is currently 200 milliseconds every three years and, despite there being a protocol to handle negative leap seconds, this has never been applied or tested and it is considered to be a high risk of failure for several automated systems; implementation of a continuous UTC is therefore vital. The preparation of the draft resolution will include options for the new tolerance for UT1-UTC and an assurance that both UTC and accurate and real-time estimations of UT1-UTC will continue to be provided to users.

He gave a summary of the work towards the redefinition of the second, as outlined in Resolution 5 of the 27th CGPM (2022). The CCTF is following a roadmap to bring proposals to the 28th meeting of the CGPM (2026) for the choice of the preferred species, or ensemble of species for a new definition of the second. The CCTF is working towards a consensus on the choice of definition option and which radiation(s) to choose, or whether an ensemble is required. It is also developing a clear, achievable and verifiable roadmap to satisfy the mandatory criteria by 2029 for the redefinition of the second. The CCTF Task Force for the Redefinition of the Second has been reorganized into three Sub-Groups that cover: definition options (SG1); criteria (SG2); and education (SG3).

N. Dimarcq completed his presentation by giving an update on the current status of the fulfilment level of the mandatory criteria to achieve a redefinition of the second. Three of the criteria had a low fulfilment percentage in 2022: optical frequency standard (OFS) accuracy budgets ($<2 \times 10^{-18}$); validation of OFS accuracy budgets – frequency ratios ($<5 \times 10^{-18}$); and regular contributions of OFS to International Atomic Time (TAI) (five OFS contributing at 2×10^{-16}). Further work is needed in these areas. He presented a timetable for the actions and deliverables for the CCTF and the three Sub-Groups until the 28th CGPM (2026). He noted that the CCTF will hold session II of its 24th meeting in September 2025 and by this time a decision will be needed on the redefinition options, with a roadmap to satisfy the mandatory criteria by 2029 for the redefinition of the second in 2030. If this is not achievable, the roadmap will need to be updated with a postponed date for redefinition.

The President thanked N. Dimarcq and opened the floor for questions and comments. The Director said that the possibility of having to implement the first negative leap second during the next decade is a major concern to NMIs and those managing digital infrastructure in many countries. He has discussed with P. Tavella and the CIPM bureau whether it would be useful to commission an expert external review to examine the risks of a negative leap second, which could be tabled in support of the discussions on the importance of continuous UTC. In addition, he recalled that the CCTF has had many discussions on the possible mechanisms for the redefinition of the second based on an ensemble of radiations and acknowledged that the topic is very complex. He suggested

that the CIPM could invite Sébastien Bize (LNE-SYRTE) to a future session to give a presentation on the subject to allow the CIPM to better engage in the redefinition at this early stage. N. Dimarcq added that Sub-Group 1 on options is working on pedagogical documents in this area. He agreed that a presentation by Sébastien Bize would be useful, however the pedagogical documents should be made available first, possibly in early 2024. The President agreed that this presentation could be added to the agenda for the June 2024 session of the CIPM. He stressed that the actions and deliverables along with the draft resolution for the redefinition of the second will need to be available for the October 2025 meeting of the CIPM in readiness for the 28th CGPM (2026).

Consultative Committee for Mass and Related Quantities (CCM)

P. Richard said that he is stepping down as CCM President due to his increasing responsibilities within the CIPM. The CIPM bureau and the Executive Secretary have been informed of his decision. He has been President for eleven years, during which time the CCM had a leading role in the redefinition of the kilogram.

The CIPM President thanked P. Richard for his work as CCM President, especially during the challenging period leading up to the redefinition of the SI.

The CIPM President called for volunteers within the CIPM to become the CCM President. G. Macdonald was the only volunteer and, following a show of hands, was unanimously appointed. P. Richard said that he will organize a hand-over meeting with G. Macdonald and the Executive Secretary of the CCM.

Decision CIPM/112-34 (2023) The CIPM expressed its appreciation for the work carried out by P. Richard, the outgoing President of the Consultative Committee for Mass and Related Quantities (CCM), and appointed G. Macdonald as CCM President.

Consultative Committee for Thermometry (CCT)

Y. Duan confirmed that he is stepping down as CCT President. The CIPM President thanked Y. Duan for his work as the CCT President and called for volunteers within the CIPM to become the next President. D. del Campo Maldonado volunteered and, following a show of hands, was unanimously appointed.

Decision CIPM/112-35 (2023) The CIPM expressed its appreciation for the work carried out by Y. Duan the outgoing President of the Consultative Committee for Thermometry (CCT), and appointed D. del Campo Maldonado as CCT President.

Consultative Committee for Units (CCU)

J. Ullrich confirmed that he is resigning from the CIPM and will step down as CCU President at Session I of the 113th meeting of the CIPM in March 2024. Following a discussion, the CIPM agreed to postpone the election of the next CCU President until its meeting in March 2024. R. Brown (NPL) will be invited to chair the next CCU meeting in April 2024. The CIPM President thanked J. Ullrich for his work as CCU President.

Decision CIPM/112-36 (2023) The CIPM noted that the President of the Consultative Committee for Units (CCU) will step down at Session I of the 113th meeting of the CIPM in March 2024. The CIPM expressed its appreciation for the work carried out by J. Ullrich as CCU President.

The CIPM decided to defer the election of the CCU President to its meeting in March 2024.

R. Brown (NPL) will be invited to chair the next CCU meeting in April 2024.

11. REPORT FROM THE CIPM SECTORIAL TASK GROUP ON CLIMATE CHANGE AND ENVIRONMENT (CIPM-STG-CENV)

D. del Campo Maldonado, Chair of the CIPM-STG-CENV, recalled that the Task Group had met following the June 2023 meeting of the CIPM and that J. Olthoff has joined the group. The Task Group is discussing the most effective way to organize its work among the representatives of organizations such as the World Meteorological Organization (WMO) and the Global Climate Observing System (GCOS) to address the recommendations from the CIPM and the BIPM-WMO Workshop on Metrology for Climate Action held on 26-30 September 2022. She recalled that the workshop had been divided into two themes: Metrology in support of the physical science basis of climate change and climate observations; and Metrology as an integral component of operational systems to estimate greenhouse gas emissions based on accurate measurements and analyses. The CIPM-STG-CENV has made progress with the first theme, however there is still work to be done towards addressing the second theme, particularly topics related to greenhouse gas (GHG) emissions.

The CIPM-STG-CENV is planning to hold its first plenary meeting in September 2024. The meeting will be open to NMIs, stakeholders and RMOs and it will cover the progress made with the BIPM-WMO Workshop on Metrology for Climate Action recommendations.

D. del Campo Maldonado informed the CIPM that A. Cypionka (Director of the ILC Department) and E. Flores Jardines (BIPM Chemistry Department) will represent the BIPM at the UN Climate Change Conference (COP28), to be held in Dubai, United Arab Emirates, from 30 November to 12 December 2023. The CIPM-STG-CENV and the two representatives have been involved in discussions with colleagues from NIST and the WMO who have attended previous COP meetings and who provided background information. A report on potential future inputs to COP meetings, based on experiences at COP28 will be shared with the CIPM-STG-CENV and the CIPM at its session in March 2024.

The President thanked D. del Campo Maldonado and asked if there were any questions. R. Wielgosz referred to the comment that there are some issues relating to the second theme of the joint BIPM-WMO workshop in the area of GHG emissions. He said that there is a considerable amount of work being carried out in this area, for example in 2023 the WMO launched a Global Greenhouse Gas Watch (GGGW) initiative, which will include the establishment of a global infrastructure to monitor carbon dioxide and methane fluxes around the world. He added that some nations are setting up national initiatives, for example the US Greenhouse Gas Center, with the assistance of NIST, National Aeronautics and Space Administration (NASA) and National Oceanic and Atmospheric Administration (NOAA). The establishment of such systems will increase the demand for gas calibration standards that can be met by the metrology community working in collaboration with the atmospheric monitoring community. In addition, the WMO will present the GGGW, modelling for climate and early warning systems at the COP28.

12. UPDATE ON PLANNING FOR FUTURE MEETINGS

A complete list of meeting dates for 2024 and 2025, including the Consultative Committees, is available as document [CIPM/2023-III-09](#). The President said that he will work with the Secretary, Director and BIPM meetings office to try and ensure harmonization of meeting dates, particularly for CIPM and CIPM sponsored meetings, so that they are held as close together as possible to minimize travel requirements for the members.

P. Richard suggested that the Report from the CIPM Sub-Committee on Governance should be highlighted at

the forthcoming meeting of NMI and Member State Representatives due to its importance to the Member States. The President agreed and said that the discussions on strategy at the meeting of Member State Representatives will allow the CIPM to provide feedback and reinforce the message that it is working hard to fulfil the requirements of the mandates given to it at the 27th meeting of the CGPM, ready for discussion at the 28th meeting.

The kick-off meeting of the Forum on Metrology and Digitalization is scheduled for 21 November 2023. J. Ullrich said that he will comment on this meeting during his presentation on 18 October. An International Conference on FAIR Data in the Scientific and Quality Infrastructure is scheduled for 5-6 March 2024 and will be held as a hybrid meeting.

The Workshop on Accelerating the Adoption of Quantum Technologies through Measurement and Standards is scheduled for 21-22 March 2024. J.-T. Janssen, Chair of the workshop, said that it will be a hybrid meeting with in-person attendance at the BIPM headquarters. He presented the organizing committee and commented that the plenary speaker will be Prof. Sir Peter Knight. In-person attendance will be limited to two people per country (one delegate and one expert) and two on-line attendees. This limit does not apply to the CIPM and BIPM organizing committee.

M.L. Rastello said that the Consultative Committee for Photometry and Radiometry (CCPR) and International Commission on Illumination (CIE) will hold a joint workshop, *100 Years of $V(\lambda)$ and Future of Photometry*, on 3 June 2024 as a hybrid meeting based at the BIPM headquarters. The workshop will commemorate the 100th anniversary of $V(\lambda)$, provide an overview of the history of SI photometric units, spectral luminous efficiency functions, and introduce the cone fundamentals published by the CIE in 2006 and 2015. It will discuss the future of photometry and colorimetry with cone-fundamental-based spectral luminous efficiency functions and colour-matching functions.

The CIPM-STG-CENV is planning to hold its first plenary meeting in September 2024. This is expected to be a significant meeting and the dates have not yet been fixed.

13. REVIEW OF DECISIONS AND CIPM MEETING DATES FOR 2024

The following meeting dates for the CIPM in 2024 were confirmed:

– CIPM bureau	19 March
– Session I of the 113th meeting (hybrid)	20 March
– Session II of the 113th meeting (hybrid)	19-20 June
– CIPM meetings with BIPM staff	21 June
– CIPM bureau	14 October
– Session III of the 113th meeting (hybrid)	15-16 October

G. Macdonald commented that if the CIPM intends to hold a meeting with the BIPM staff on Friday 21 June 2024, it should be clear that attendance by the CIPM members is compulsory. The President added that the CIPM will be expected to remain at the meeting until 15h00.

The President noted that in 2025 the CIPM will need to discuss the strategy and asked when it should meet. He suggested that alternatively the strategy may be discussed in October 2024. He said that the 150th anniversary celebrations of the signing of the Metre Convention will be in the week 19-23 May 2025. Following a brief discussion, it was agreed that the CIPM should meet in March and October 2025, with an option to meet in June.

If there is no meeting in June, the laboratory tours should be rescheduled for one of the other sessions.

The Director asked each CC President to discuss with their respective Executive Secretaries any plans for meetings and dates for 2026 so that they can be scheduled in advance of the 28th meeting of the CGPM in November 2026.

14. IN CAMERA SESSION

There was no report from this session. One decision was adopted.

Decision CIPM/112-37 (2023) The CIPM acknowledged the excellent work done at the BIPM headquarters during the period 2020-2022 and the successful organization of the 27th meeting of the CGPM (2022) as a team and under the leadership of M. Milton as Director, and approved his bonus for this period.

15. MISCELLANEOUS REPORTS

CIPM Task Group on the SI Digital Framework (CIPM-TG-DIG)

J. Ullrich recalled that the Forum on Metrology and Digitalization (FORUM-MD) has received 27 applications for membership and one “intention to submit” from the LNE. The Forum has adopted the membership criteria from the document CIPM-D-01 *Rules of procedure for the Consultative Committees (CCs) created by the CIPM, CC working groups and CC workshops*, with one minor change. The third bullet point under Clause 4.2 (member status) has been changed from *have demonstrated competence by a record of participation in international comparisons* to *have demonstrated competence by a record of participation in international activities*. The FORUM-MD considers that membership should be limited to around ten and so far, it has eleven members that meet the criteria with three from APMP, one from COOMET, four from SIM and three from EURAMET and these members were proposed to the CIPM. The eleven members are: CENAM (Mexico), INTI (Argentina), METAS (Switzerland), MSL (New Zealand), NIM (China), NIST (United States), NMIA (Australia), NPL (United Kingdom), NRC (Canada), PTB (Germany), VNIIMS (Russian Federation). The Forum remains open for new applications and other institutes and Member States can send representatives as observers.

J. Ullrich paused to allow the CIPM to discuss the membership criteria. The President raised a concern that the membership criteria being used can give the impression that the FORUM-MD is being organized like a CC, whereas the intention is to have a horizontal forum. However, he noted that the only guidance for membership are the criteria available in CIPM-D-01. G. Macdonald asked about the criteria used to set up the CIPM Sectorial Task Group on Climate Change and Environment (CIPM-STG-CENV); did it use a different methodology to that proposed by the FORUM-MD. D. del Campo Maldonado replied that a different methodology was used. The core group of the CIPM-STG-CENV was agreed by the participants following the BIPM-WMO Workshop on Metrology for Climate Action. The main difference is that some of the members are part of the WMO and GCOS and are not therefore NMIs. In addition, the membership of the CIPM-STG-CENV includes CIPM members and representatives from the RMOs that have active forums and working groups related to climate change and the environment. She added that the activities of the CIPM-STG-CENV are different to those of the FORUM-MD.

P. Richard suggested that criteria are needed for horizontal forums, as more are likely to be created in the future. The criteria could be incorporated into CIPM-D-01 to avoid any future disputes regarding membership. The Director commented that, as mentioned by J. Ullrich, Member States can send representatives to the Forum as observers, as specified in Clause 4.5 of CIPM-D-01. This would encourage broad and inclusive participation. The President agreed and said that one of the aims of setting up cross-cutting horizontal forums was to encourage more inclusivity than is possible within the CC structure. He acknowledged that when the intention to follow the rules in CIPM-D-01 was discussed by the CIPM in June 2023, the shortcomings were not realized and it was not anticipated that the Forum would start to resemble a CC. He also suggested that as an interim measure, until the membership criteria issue is resolved, representatives from AFRIMETS and GULFMET could be invited to participate to ensure that regional representation is improved. It was suggested that there is no clear definition of the difference between a member and an observer to the Forum and their specific activities. The CIPM could give guidance to the FORUM-MD as it starts to evolve and create Sub-Groups to ensure that there is representation across all RMOs and activities. P. Richard added that observer status in CIPM-D-01 could be updated to reflect the needs of the Forums. The CIPM concluded that it will ask the Chairs of the horizontal forums, the BIPM Director and others as required, to draft rules and criteria for participation in the forums and to update CIPM-D-01.

The CIPM discussed the membership of the FORUM-MD and agreed that it noted the expression of interest from other institutions and invited them to participate as observers to the Forum. This would allow the 16 NMIs from among the 27 that applied for membership, and which were not initially selected, to be included in the Forum. The CIPM requested the BIPM Director to invite organizations from the international scientific and quality infrastructure, in particular Signatories of *the Joint Statement of Intent on the digital transformation in the international scientific and quality infrastructure*, to participate as liaisons to the Forum on Metrology and Digitalization.

The CIPM invited J. Ullrich to Chair the first meeting of the FORUM-MD and, following a call for volunteers, appointed G. Macdonald as Vice-Chair.

Decision CIPM/112-38 (2023) The CIPM approved CENAM (Mexico), INTI (Argentina), METAS (Switzerland), MSL (New Zealand), NIM (China), NIST (United States), NMIA (Australia), NPL (United Kingdom), NRC (Canada), PTB (Germany), VNIIMS (Russia) as Members of the Forum on Metrology and Digitalization.

The CIPM noted the expression of interest from other institutions and invited them to participate as Observers to the Forum.

The CIPM requested the BIPM Director to invite organizations from the international scientific and quality infrastructure, in particular Signatories of the Joint Statement of Intent on the digital transformation in the international scientific and quality infrastructure, to participate as Liaisons to the Forum on Metrology and Digitalization.

The CIPM invited J. Ullrich to Chair the first meeting of the Forum on Metrology and Digitalization and appointed G. Macdonald as Vice-Chair.

Decision CIPM/112-39 (2023) The CIPM asked the Chairs of the horizontal forums, the BIPM Director and others as required, to draft rules and criteria for participation in the forums and to update CIPM-D-01.

J. Ullrich said that a Forum *ad hoc* Working Group on Strategy (FMD WG-S) was required to work on the

preparation of the kick-off meeting, to prepare for the plenary session and to suggest early activities for the Forum on Metrology and Digitalization. He presented the members of the FMD WG-S: H. Laiz (INTI), R. Hanisch (NIST), C. Denz (PTB), G. Macdonald (NRC), M. Milton and J. Miles (BIPM) and said that a Chair and Vice-Chair are needed.

J. Ullrich gave an update on the status of the “Joint Statement Signatory Hub”, which is now known as the “Joint Statement Round Table”, which held its first meeting on 22 September 2023. The Round Table brings together the signatories of the *Joint Statement of Intent on the digital transformation in the international scientific and quality infrastructure* (JSI). The meeting discussed the proposal for a joint workshop “FAIR data in the scientific and quality infrastructure” to be held on 5-6 March 2024. He mentioned that a programme committee is needed for the workshop and R. Hanisch (NIST) and L. Wright (NPL) were suggested to represent the BIPM. The status of the Joint Statement Round Table, including the vision, mission and purpose, and organization were presented. J. Ullrich said that full details are available in the presentation ([CIPM/2023-III-12-a](#)), which is available on the CIPM web pages. He presented the text of a draft decision, which was adopted by the CIPM.

Decision CIPM/112-40 (2023) The CIPM nominated Bob Hanisch (NIST) and Louise Wright (NPL) to represent the BIPM on the programme committee of the International Conference on “FAIR data in the scientific and quality infrastructure” by the Signatories of the *Joint Statement of Intent on the digital transformation in the international scientific and quality infrastructure* (JSI).

The CIPM welcomed the establishment of the Joint Statement Signatory Round Table to foster collaboration and exchanges between the Signatories of the JSI. Its scope extends beyond metrology and covers cross domain topics of relevance for the JSI Signatories.

J. Ullrich said that the CIPM Task Group on the SI Digital Framework (CIPM-TG-DIG) and its Expert Group have achieved their milestones and should be closed. He listed the accomplishments of the Task Group and Expert Group and thanked the Expert Group in particular for their work and acknowledged that their help and advice had been invaluable. The President added the CIPM’s thanks to the CIPM-TG-DIG and its Expert Group and the following decision was adopted.

Decision CIPM/112-41 (2023) The CIPM thanked the members of the CIPM Task Group on the SI Digital Framework (TG-DIG) and those of the related Expert Group for their valuable contributions and declared the Task Group closed.

J. Ullrich referred to his decision to resign from the CIPM in March 2024. He thanked all of the CIPM and CCU members that he has worked with and commented that it had been a privilege to lead the CCU, particularly during the redefinition of the SI. He said that he was proud to have taken a leading role in the drive towards furthering digitalization in metrology and thanked the entire team involved in the project, especially R. Hanisch, D. Hutzschenreuter and finally J. Miles and her work on the SI Reference Point.

Report on Digital Transformation activities within the BIPM Work programme

The Director reported that work on the SI Reference Point (SIRP) is ongoing. Its development is part of the SI digital framework, which is itself part of the mandate given to the CIPM in Resolution 2 of the 27th CGPM (2022) *On the global digital transformation and the International System of Units*. The SI digital framework includes a number of elements that are grouped under the headings of SI digital references and External digital references. SI digital references include: the SIRP; the digital reference service; digital references for calibration and measurement capabilities; digital references for NMIs; and the Unit Interoperability Service. External digital references include: references to organizations (Research Organization Registry - RORs); references to people (Orcid); and references to chemicals (International Chemical Identifier (InCHI), developed by the International

Union of Pure and Applied Chemistry (IUPAC)). In addition, the digital framework includes the BIPM on-line databases with digital access, for example the KCDB and the UTC database.

The SIRP is a semantically encoded reference for the SI Brochure. It includes the encoded definitions, the units, prefixes, defining constants and quantities. It is accessible through a web browser using an API or through a SPARQL query. The Director presented the semantic coding and knowledge map for the metre. The SIRP can be set up to be a web page, where the page contains the digital reference.

The Director said that alpha testing of the SIRP has been completed and beta testing is under way among the Expert Group. Open beta testing for this new digital service will begin in November 2023. J. Miles and a team of collaborators and secondees are leading the work on the SIRP. The Director presented an example of a digital service from the KCDB, highlighting digital references for CMCs, which contain links to the SIRP.

The CCs are carrying out a considerable amount of work on digitalization. The CCL, in association with the NPL, are working on a digital reference for wavelength and frequency standards. The CCTF is developing coding for machine access to the UTC database, with assistance from a secondee from the PTB. The CCRI has made a proposal regarding digital comparison reports and the CCQM is planning a FAIR data workshop in 2024.

The Director concluded by saying that the digital transformation activities are a collaborative effort and he thanked J. Ullrich for driving the initiative and the Expert Group for the work that they have carried out in this area. He acknowledged the support of the NMIs in providing secondees and the BIPM's quality infrastructure (QI) partners for their collaboration on the SIRP. Finally, he thanked J. Miles for leading the project.

Joint Committee for Traceability in Laboratory Medicine (JCTLM)

R. Wielgosz, Executive Secretary of the JCTLM, gave an update of the work carried out since March 2023. He noted that the declaration of cooperation may need to be updated in the future to cover new models of membership and financing of the joint committee. The Executive Committee of the JCTLM has been changed to include the CIPM President, who has replaced T. Liew as the CIPM representative. The call for voluntary contributions to complete development of the JCTLM database has been successful, with seven NMIs agreeing to provide funding. The JCTLM has implemented a registration fee for the JCTLM Stakeholders' meeting in December 2023 and a long-term financial plan for the JCTLM has been developed, although this is awaiting board approval by the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC).

R. Wielgosz recalled that the new version of the JCTLM database was launched in 2022 and an API was implemented in April 2023. As mentioned above, the additional 70 thousand euros required to complete the development of the JCTLM database has been raised, thanks to support from the NMIs KRISS (Republic of Korea), LGC (UK), HSA (Singapore), NIM (China), NIST (USA), NMIA (Australia) and PTB (Germany), as well as the IFCC and International Council for Standardization in Haematology (ICSH).

R. Wielgosz said that funding of the JCTLM has been the subject of many discussions over the last two years, driven by the IFCC and their concerns over the amount they contribute, which totals 50 thousand euros annually. A JCTLM Strategy Group was set up to address these concerns. The group has held four meetings and is co-chaired by R. Wielgosz and G. Miller the Chair of the JCTLM. The group sent a questionnaire to the stakeholders and users of the JCTLM Database and 220 responses have been received. The questionnaire focused on whether the JCTLM remains useful after 20 years and if not, should an alternative be considered. Over 90 % replied that the database is considered to be useful to essential. He noted that there is an extensive third-party review process for nominations to the database, which is very labour intensive. He said that this process could be simplified with self-declaration of compliance to ISO standards. The questionnaire asked for opinions on the value of the third-party review process and the majority of replies indicated that it is essential. The major

outcome of the questionnaire was that the JCTLM database is valued by its user community.

The JCTLM is developing objectives, goals and a draft business plan for the coming years. The objective is to have all *in-vitro* diagnostic (IVD) manufacturers, regulators and laboratory medicine professions world-wide using and referring to the JCTLM database when claiming accuracy of diagnostic results. A full SWOT analysis of the database has been carried out and a number of opportunities have been identified. R. Wielgosz said that it is estimated that maintaining a database and having the funds to develop a new version in ten years will require an annual income of 40 thousand euros. The latest JCTLM database cost 200 thousand euros, and he cautioned that unless efforts are made now to raise these funds, it will be necessary to find the 200 thousand euro investment cost in ten years. The goal is to provide the JCTLM with the financial resources to supply database services beyond 2040 and to develop mechanisms that will allow organizations to provide financial support to the JCTLM if they wish to do so. One proposal to achieve this goal is to introduce a two-tiered membership structure, consisting of membership and associate membership. Associate membership would require no fees, whereas full membership would allow some privileges at a reduced cost, for example participation in meetings and publicity in the JCTLM newsletter. This proposal will be made to the stakeholders and the Executive Board at the next meeting of the JCTLM in December 2023.

The President thanked R. Wielgosz and asked if there were any questions. R. Wielgosz replied to a question regarding the machine-readability and digitalization of the JCTLM database by saying that an API has already been developed.

International Liaison and Communication (ILC)

A. Cypionka, Director of the ILC Department, gave an update on membership. There are five Associates (Latvia, Panama, Vietnam, Peru and the Philippines) that are on the escalator mechanism, of these, Panama and Peru have been in contact with the BIPM to ask how to become Member States. Notifications have been sent to Argentina and Pakistan (Member States) for outstanding contributions and to Oman (Associate) for outstanding subscriptions.

The highlights of the work of the ILC Department were presented. R. Guliyeva has started a loan working arrangement with the Organisation for Economic Co-operation and Development (OECD) for two days each week to work on a study that will highlight the interrelations between quality infrastructure and regulations. A. Cypionka, E. Flores Jardines and R. Guliyeva are collaborating to prepare a fact-finding mission to the COP 28 meeting that will take place in Dubai, United Arab Emirates, from 30 November to 12 December 2023 in readiness for the BIPM's first attendance as an observer.

A. Cypionka said that a workshop *BIPM/RMO forum: Supporting RMO Secretariats* had been held at the BIPM headquarters on 27-29 September 2023. The workshop had 21 participants from all six RMOs. The aim of the workshop was to improve communication and collaboration between the BIPM and the RMO secretariats as well as enhancing communication between the secretariats. The workshop encompassed topics outside of those covered by JCRB activities, and where the BIPM could work more closely with the regions, including CBKT, World Metrology Day, digital transformation and universal adherence. The workshop was supported by the development of a digital toolbox that provides an easily accessible information resource for the RMO secretariats and will allow new secretariat members to obtain information to aid continuity. The toolbox is available on the liaison webpage of the BIPM website.

C. Kuanbayev presented the project for the development of the Young metrologists' 2050+ vision. He said that the JCRB meeting in March 2023 had asked RMOs to nominate coordinators for the initiative and this has been completed. The BIPM is supporting the RMOs in running the initiative and a questionnaire was developed to gather initial ideas regarding the future of metrology from young metrologists within the RMOs. The

questionnaire was launched in July 2023 and the RMOs are operating internal promotional activities for the initiative. A virtual on-line workshop will be held in November 2023 in each RMO using the GatherTown platform. He noted that there had been discussions on the age criteria for the young metrologists and each RMO operates a different policy. For example, EURAMET considers a young metrologist to be someone that been working at an NMI for not more than five years. C. Kuanbayev said that the Young metrologists' 2050+ vision initiative is being run by the RMOs with support from the BIPM, and the RMO coordinators are playing an active role. The deadline for submission of responses to the questionnaire is June 2024 and following this date, an in-person meeting will be organized at the BIPM headquarters with the RMO coordinators to collate the responses as an input to the CIPM strategy process.

The President thanked C. Kuanbayev.

16. ANY OTHER BUSINESS

The President congratulated D. del Campo Maldonado on becoming the Chairperson-Elect of EURAMET.

The CIPM discussed the three vacancies that had arisen following the death of P. Neyezhnikov and the retirements of Y. Duan and J. Ullrich. The members agreed that nominations should be invited from all Member States to fill the vacancies.

<p>Decision CIPM/112-42 (2023) The CIPM expressed its condolences following the death of P. Neyezhnikov and acknowledged the planned retirement of Y. Duan and J. Ullrich and thanked them for their service to the CIPM. It decided to invite nominations from all Member States for the three vacancies.</p>
