



# Proposals for the BIPM Work Programme

**2024-2027**

Martin MILTON

16<sup>th</sup> November 2022

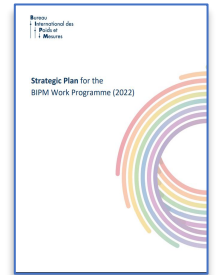
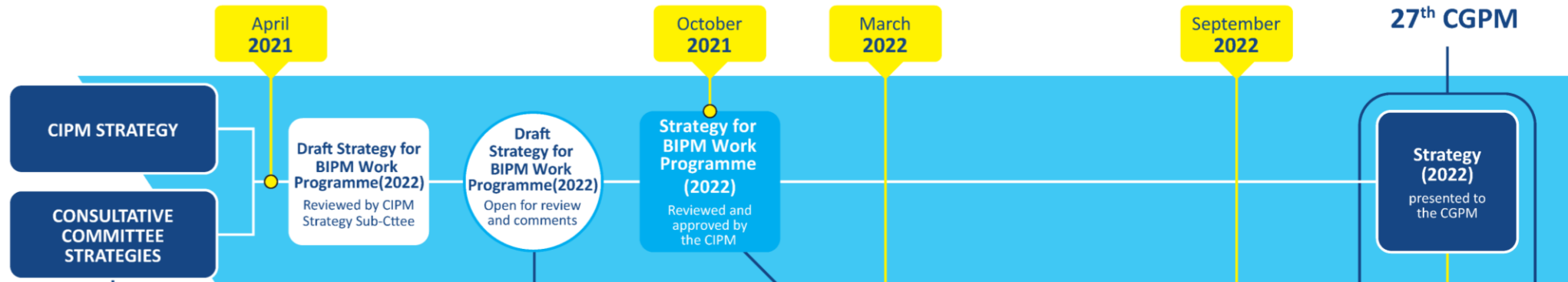
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27<sup>e</sup> réunion de la  
Conférence générale  
des poids et mesures



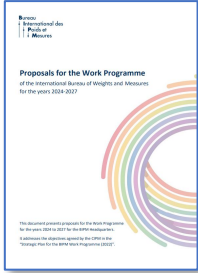
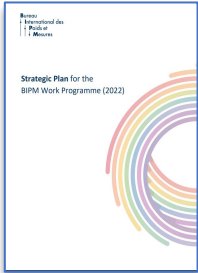
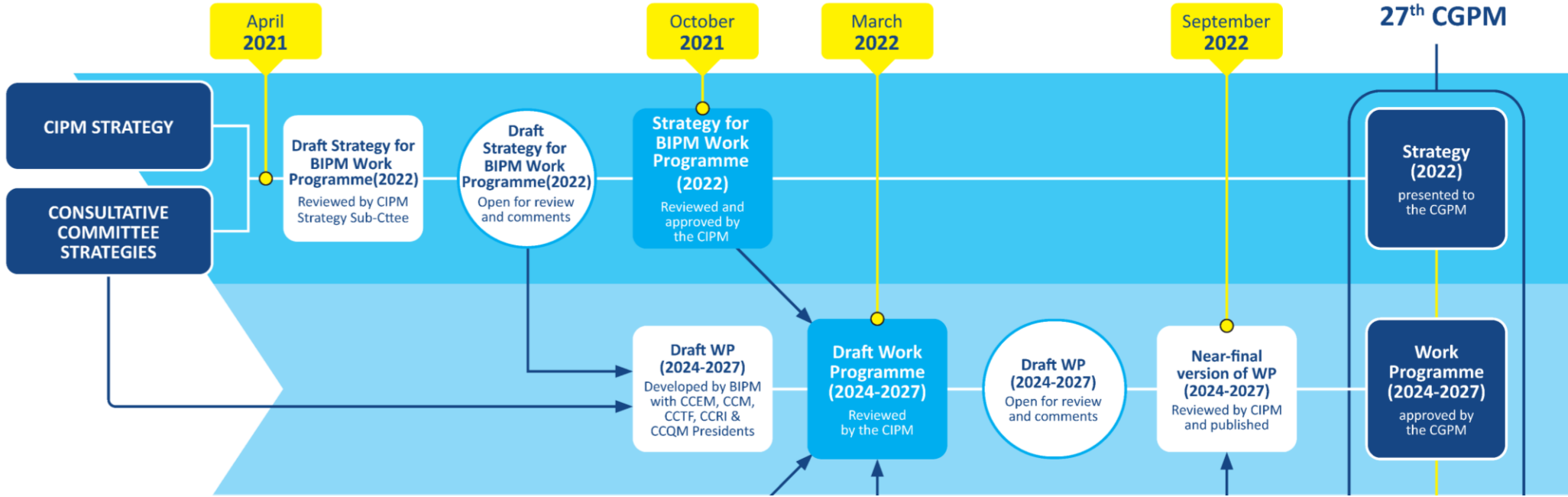
# Consultation timeline

April 2021 to Nov 2022



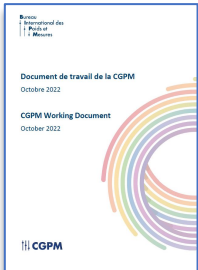
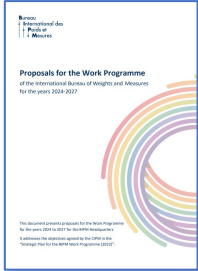
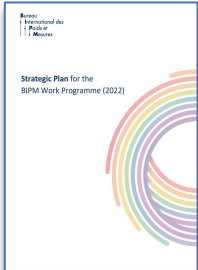
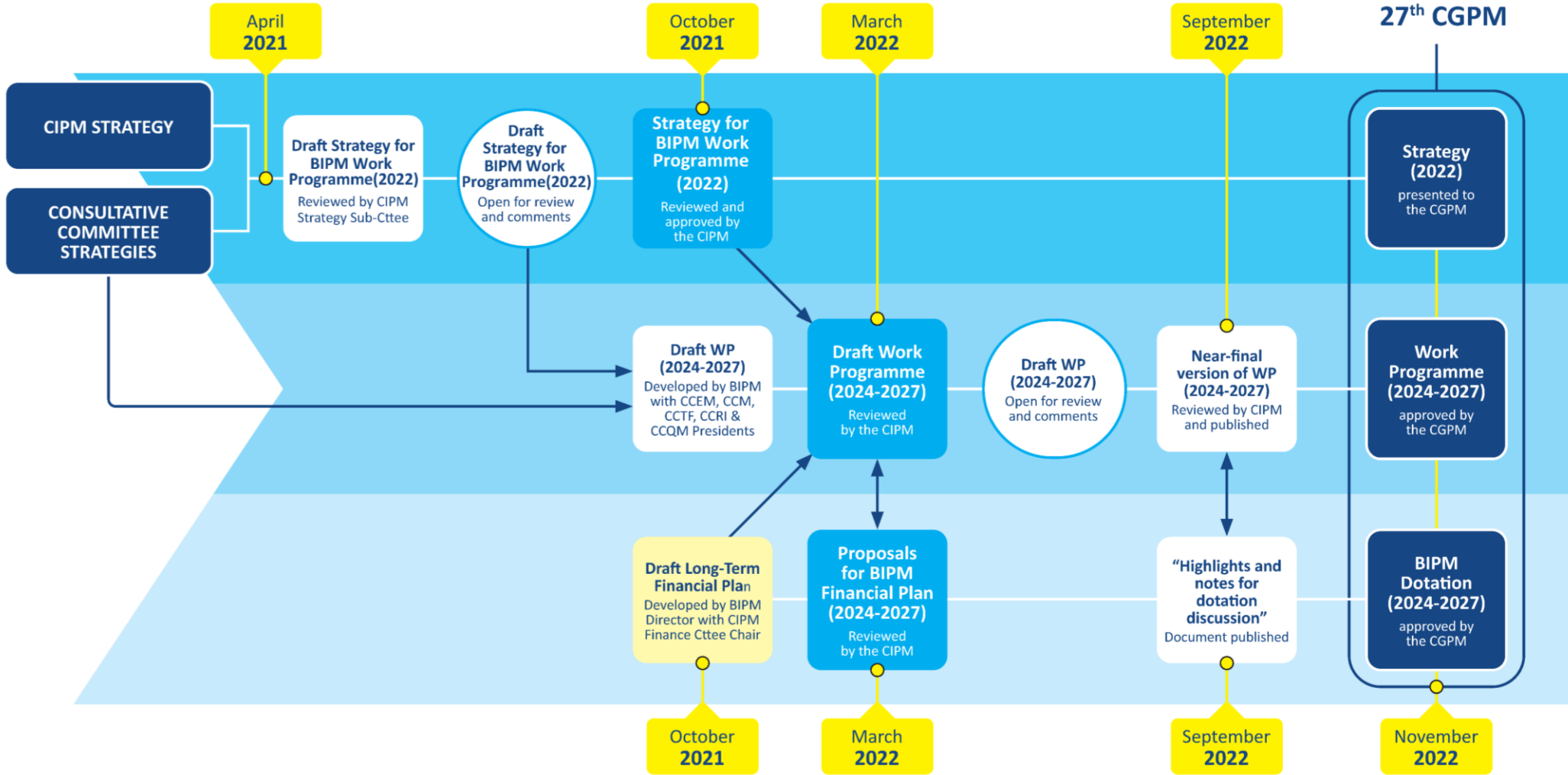
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April 2021 to Nov 2022



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April 2021 to Nov 2022



# The strategic plan for the work programme

Implements the objectives agreed by the CGPM in 2018

that the BIPM should:

- **represent** the world-wide measurement community, aiming to maximize its uptake and impact,
- be a centre for **scientific and technical collaboration** between Member States, providing capabilities for international measurement comparisons on a shared-cost basis,
- be the **coordinator** of the world-wide measurement system, ensuring it gives comparable and internationally accepted measurement results,

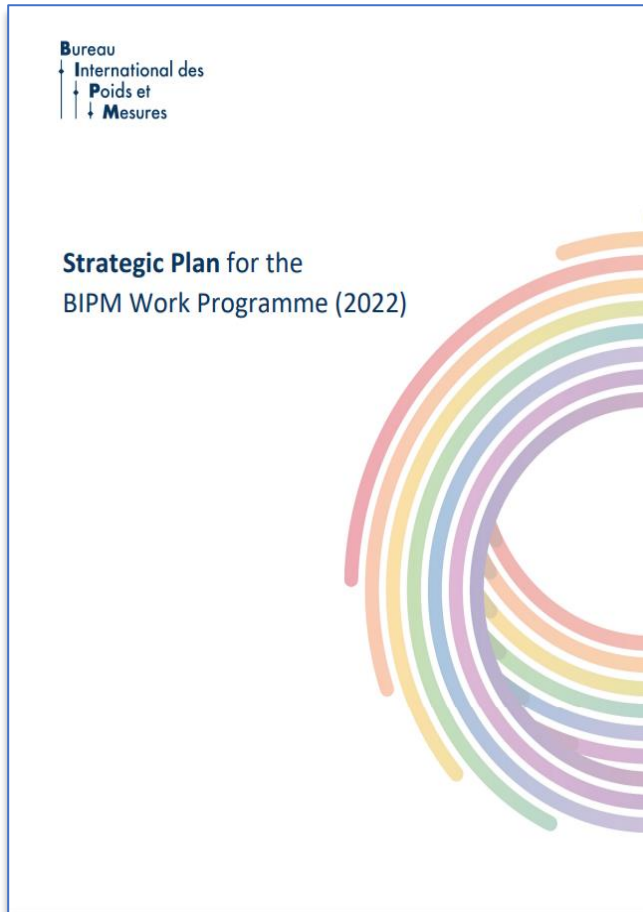
and that fulfilling the BIPM mission and objectives is complemented by its work in:

- **capacity building**, which aims to achieve a global balance between the metrology capabilities in Member States,
- **knowledge transfer**, which ensures that the work of the BIPM has the greatest impact”.

*Resolution 3 of the 26th meeting of the CGPM*

# The strategic plan for the work programme

Some of the key challenges from the strategy are to address:



- the challenges and opportunities afforded across all areas of the BIPM triggered by digital transformation,
- the opportunities identified in the consultative committee strategies,
- the continued need to operate according to a “new normal” by using new ways for BIPM staff to interact with NMIs, RMOs and other key stakeholders.
- the incorporation of capacity building and knowledge transfer activities in every part of the work programme.



# The strategic plan for the work programme

Some of the key challenges from the strategy are to address:



Open for review in Sept/Oct 2021. Many thanks for comments received from

1. SMU (Slovakia)
2. VSL (Netherlands)
3. NMIJ (Japan)
4. METAS (Switzerland)
5. CROSQ/CARIMET
6. PTB (Germany)
7. NRC (Canada)
8. SASO (Saudi Arabia)
9. LNE (France)
10. NIST (USA)
11. A-star (Singapore)

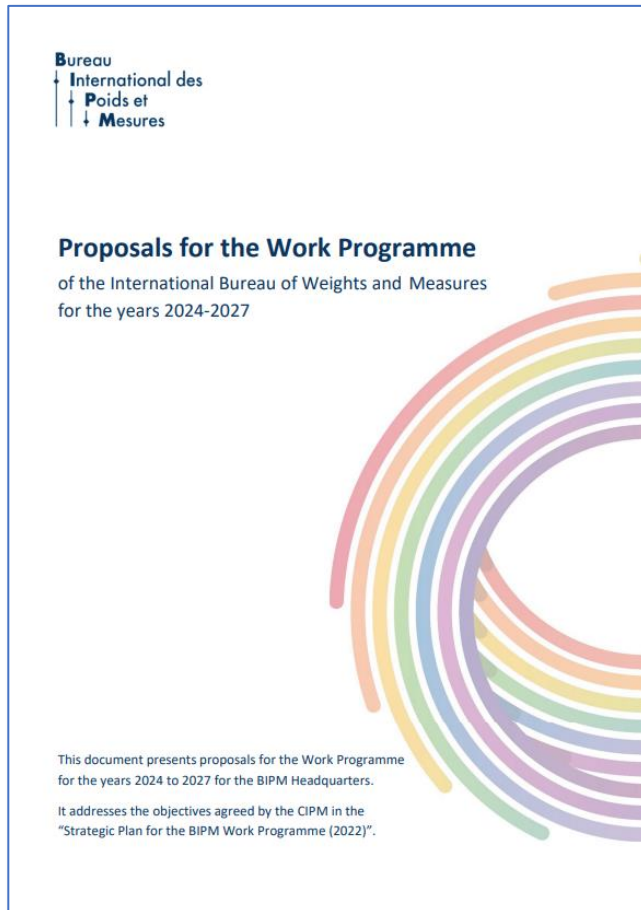
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# The development of the work programme

## Our priorities:

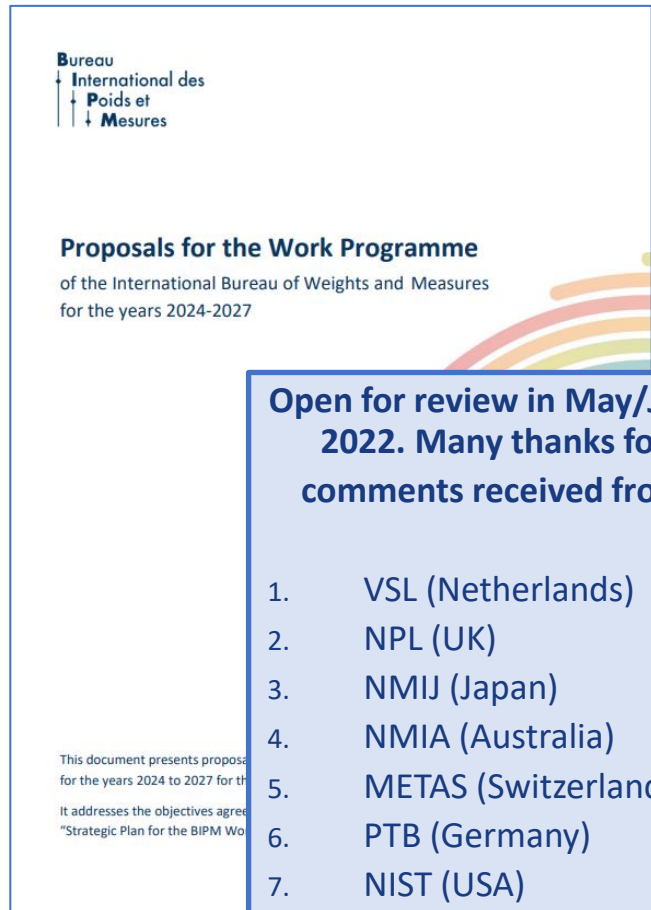


- ◆ To identify the highest-value activities required by Member States.
- ◆ To review the technical work needed at the BIPM Headquarters in physical metrology following the decision to redefine the base units of the SI at the 26th CGPM (2018),
- ◆ To balance the resources committed to the three strategic objectives (liaison, technical collaboration and coordination) with the capacity building and knowledge transfer activities and the new digital transformation activities,
- ◆ To develop a sustainable long-term financial plan through to 2027.

The foundation of BIPM Headquarters' activities will continue to be the work of staff carrying out liaison, coordination and technical collaboration, with technical activities limited to those where the BIPM Headquarters has a distinctive role and that provide direct support to many, or all, Member States.

# The development of the work programme

## Our priorities:



Open for review in May/June 2022. Many thanks for comments received from

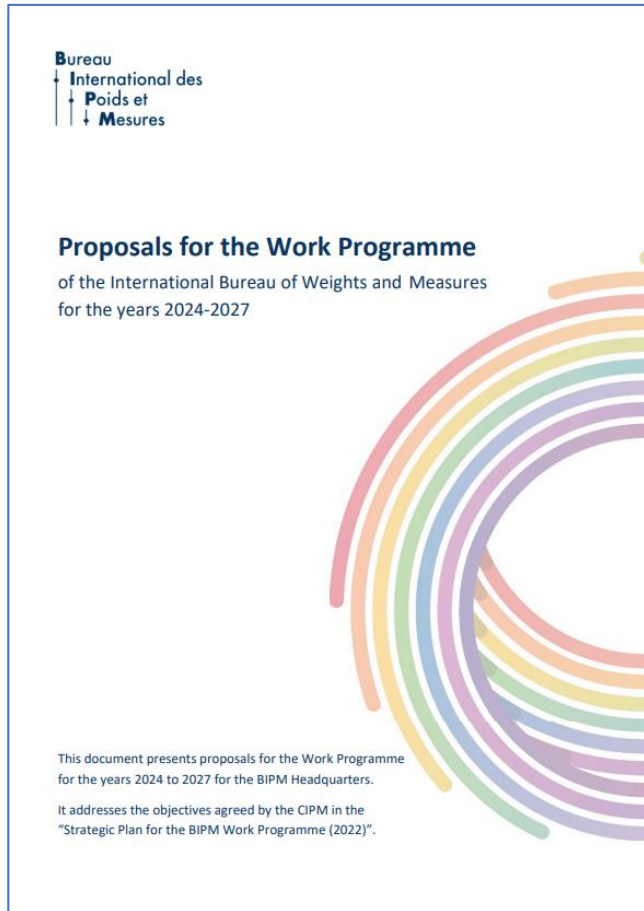
1. VSL (Netherlands)
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# Key points from the proposed work programme

Developed detailed proposals for laboratory, cross-cutting and support activities



## Laboratory departments

- Physical metrology
- Time metrology
- Chemical metrology
- Ionizing radiation metrology

## Cross-cutting activities

- Digital transformation and new digital services
- Capacity building and knowledge transfer
- Communication and promotion
- Coordination and institutional liaison

## Support activities

- People and infrastructure

Estimates of the staff resources and expenditure needed are given for 145 tasks.

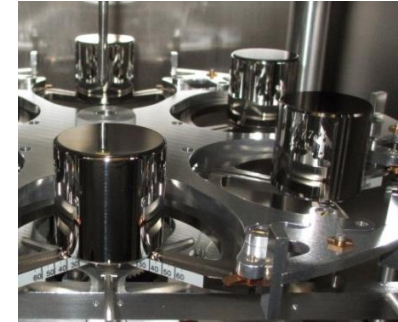
We plan to be able to deliver all of the tasks that we have presented in the consultation – if the 1.5% increase in dotation is agreed.

***I will only talk about a few of the tasks!***

# Key points from the proposed work programme

## Physical metrology

- ◆ to coordinate the comparison of primary realizations of the kilogram and maintain the consensus value for dissemination from the BIPM working standards
- ◆ to develop a graphene-based quantum Hall resistance standard for reduced cost and simplified on-site comparisons



## Time metrology

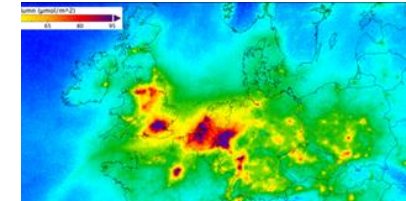
- ◆ to develop and use the best time and frequency transfer methods to introduce new optical frequency standards into UTC, also in support of the roadmap to the redefinition of the SI second.
- ◆ to work together with the ITU and other international organizations and stakeholders to agree on a future continuous UTC, according to draft resolution D



# Key points from the proposed work programme

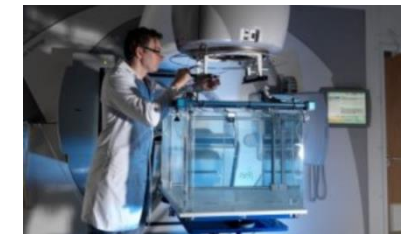
## Chemistry

- ◆ to provide five new on-demand comparisons for greenhouse gas and air quality standards.
- ◆ to extend the range of organic standard comparisons and knowledge transfer activities from small molecules to monoclonal antibodies



## Ionizing Radiation

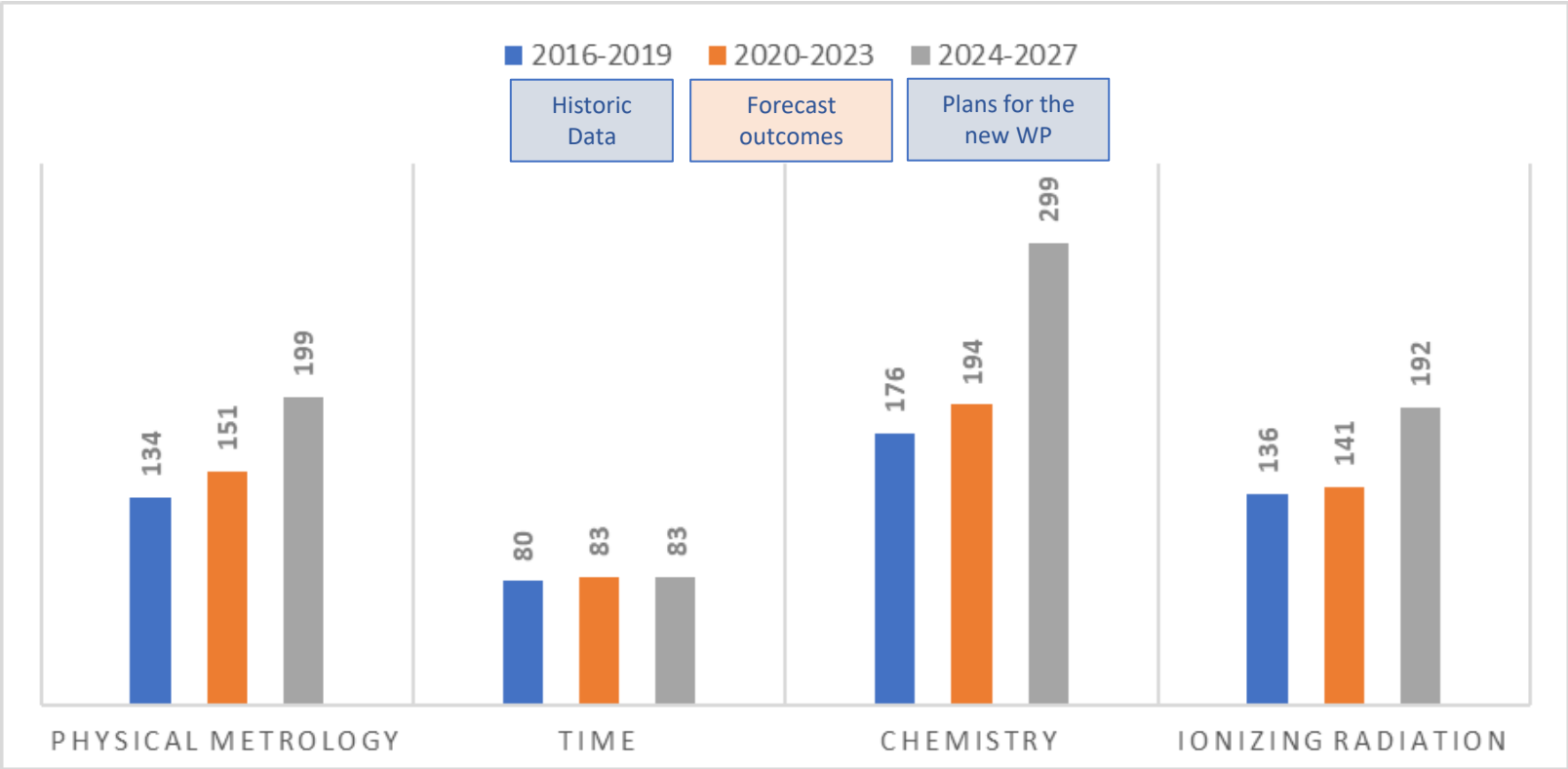
- ◆ to extend the off-site comparison services to a new priority field in response to the increasing use of new radiation fields in radiotherapy.
- ◆ to launch the next-generation International Reference System (SIR) for comparisons of gamma-emitting radionuclides, using new low-current measurement technologies to address applications in nuclear medicine and environmental monitoring.



# Planned participation in activities

Our targets:

Comparisons  
coordinated  
plus  
Calibrations  
carried out



The participations in the work of the Time Department refer to the monthly determination of UTC.

# Key points from the proposed work programme

## Coordination and institutional liaison

- ◆ Exploring (in conjunction with the CIPM) models that facilitate participation of those states not yet participating in the activities of the BIPM in support of Draft Resolution F “On universal adherence to the Metre Convention”.
- ◆ Continuing to work with the UNESCO to raise the profile of World Metrology Day by having it formally recognized as an annual UNESCO event.

## Communication and promotion

- ◆ Ensuring that the website continues to deliver services effectively and portrays an up-to-date image of the BIPM including the launch of an external digital repository using Digital Object Identifiers to aid machine accessibility.
- ◆ Planning the special events to celebrate the 150th anniversary of the signing of the Metre Convention (on 20 May 2025, which will showcase a new CIPM vision for the future opportunities and challenges for metrology world-wide.

# Key points from the proposed work programme

## Digital transformation and new digital services

The requirements for Digital Transformation have grown rapidly whilst this Work Programme has been developed. We plan

- ◆ To develop a set of new high-quality web services that provide access to the data provided by the BIPM website. For example:
  - Application of the FAIR (Findable, Accessible, Interoperable and Re-usable) principles to the KCDB,
  - Development of the SI Unique Reference point (the digital SI Brochure)
- ◆ To support the continuous development of the FAIR SI Digital Framework and other CIPM initiatives addressing the digital transformation of global measurements.

We have proposed projects to best capture the requirements and opportunities as they have been understood at the time of writing.

They will be planned and agreed in more detail with the CIPM.



# Key points from the proposed work programme

## Capacity building and knowledge transfer

### CORE CBKT

- New support for the Joint Committee for Traceability in Laboratory Medicine (JCTLM) through workshop and laboratory placement as well as e-learning material, to enhance the quality and recognition of laboratory clinical testing globally.
- New support actions for the generation of the international reference timescale (UTC) aimed to increase the quality of the input data and thus the quality of the timescales,
- Topic-based workshops identified with the RMOs as being of the highest priority.

### SPONSORED CBKT ACTIVITIES

including opportunities for laboratory-based placements across all BIPM Departments for:

- Capacity building, where the secondee is a prime beneficiary of the action.
- Knowledge transfer, where the secondee benefits and also supports delivery of the BIPM Work Programme during the placement.

#### “Core” CBKT

- at least **440 NMI/DI** staff are expected to attend courses and workshops

#### On-line

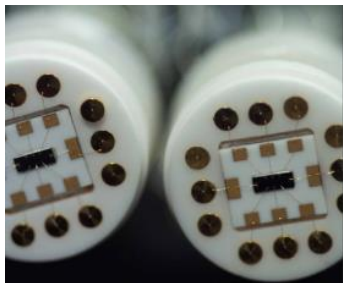
- **400 participations** in on-line workshops
- **500 participations** in e-learning

#### Placements

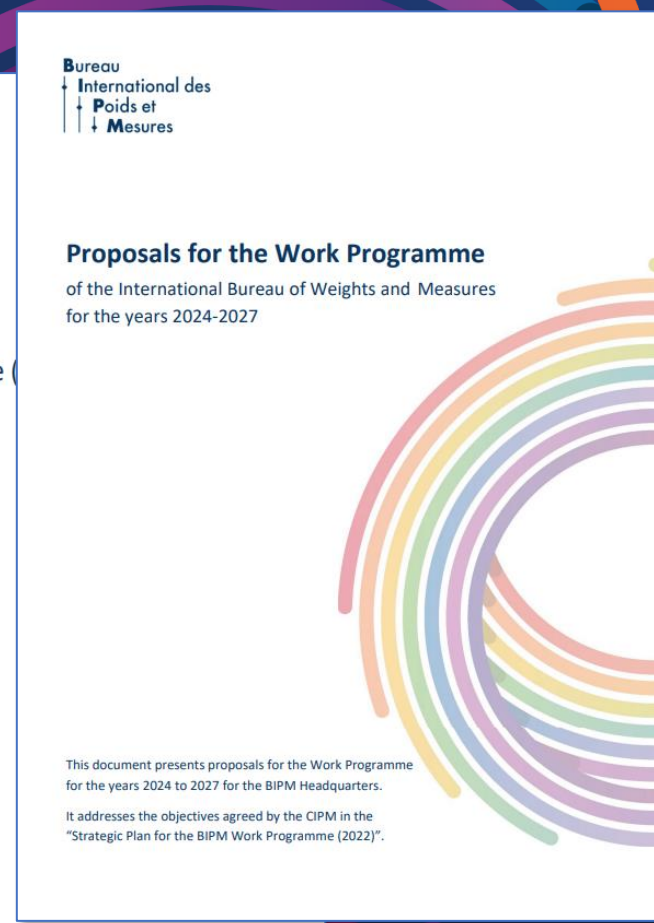
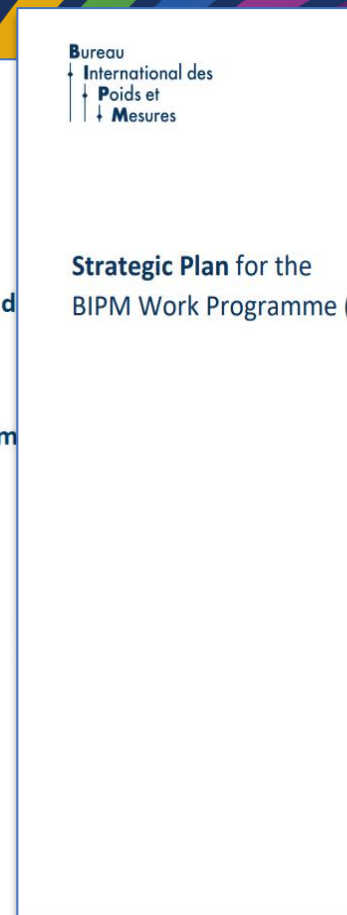
- **67 laboratory placements** at the BIPM totaling around 34 person month.
- **40 laboratory placements** are expected at partner NMIs/Dis.

# Summary

- The proposed activities are ambitious and depend on the work of visiting scientists and specialists working alongside BIPM staff for their delivery.
  - *The participation of visiting scientists reduces costs, brings in specific expertise when it is needed, injects new ideas, and provides flexibility in staffing.*
- The proposals also include capacity building and knowledge transfer activities in all areas, that will be expanded by securing sponsorship from NMIs, Member States and RMOs, or other bodies.
- New projects will enable the digital transformation of our services in support of a digital transformation of the world of metrology.
- We will continue to enable scientific and technical collaboration between Member States providing capabilities for international measurement comparisons on a shared-cost basis.



*Thank you*



**Programme**  
 15-18 November 2022  
 15-18 novembre 2022

**27th meeting of the General Conference on Weights and Measures**  
 27<sup>e</sup> réunion de la Conférence générale des poids et mesures

**CGPM**

Bureau International des Poids et Mesures

**Document de travail de la**  
 Octobre 2022

**CGPM Working Document**  
 October 2022

**CGPM**

**Projets de résolution de la Conférence générale des poids et mesures (27<sup>e</sup> réunion)**  
 15-18 novembre 2022

**Draft Resolutions of the General Conference on Weights and Measures (27th meeting)**  
 15-18 November 2022

Comité international des poids et mesures

Bureau International des poids et mesures

Bureau International des Poids et Mesures

**Strategic Plan for the BIPM Work Programme**

Bureau International des Poids et Mesures

**Proposals for the Work Programme of the International Bureau of Weights and Measures for the years 2024-2027**

This document presents proposals for the Work Programme for the years 2024 to 2027 for the BIPM Headquarters. It addresses the objectives agreed by the CIPM in the "Strategic Plan for the BIPM Work Programme (2022)".



