CGPM

Joint Committee for Guides in Metrology (JCGM)

Prof. Pavel Neyezhmakov, CIPM

November 2022

Mission

The tasks of the JCGM are to maintain and promote the use of the *Guide to the Expression of Uncertainty in Measurement* (known as the GUM) and the *International Vocabulary of Metrology – Basic and General Concepts and Associated Terms* (known as the VIM).

The JCGM has taken over responsibility for these two documents from ISO TAG 4, who originally published them under the auspices of the BIPM, IEC, IFCC, ISO, IUPAC, IUPAP and OIML.

The JCGM works through two working groups

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Working Groups

Select

View

JCGM Working Group on the Expression of Uncertainty in Measurement (JCGM-WG1:GUM)

Convener

Dr Walter Bich

National Institute of Metrological Research/Istituto Nazionale di Ricerca Metrologica

Italy

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Working Groups

Select

View

JCGM Working Group on the International Vocabulary of Metrology (JCGM-WG2:VIM)

Convener

Dr Charles D. Ehrlich

International Legal Metrology Program

National Institute of Standards and Technology

United States of America

JCGM The current membership

Bureau International des Poids et Mesures

ISO

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY

ilac

OIML

IEC

IUPAP International Union of Pure and Applied Physics

ifcc International Federation of Clinical Chemistry and Laboratory Medicine

Membership of the Joint Committee is open to international organizations, that are broadly related to metrology and measurement, at the discretion of the Joint Committee.

JCGM Updates on Working Group 1 (GUM)

The principles of the GUM are now used world-wide at all levels, from NMIs to industry.

To adapt effectively to the rapidly changing world, it was decided to produce a **new version** of the **GUM.**

JCGM GUM-6:2020 Guide to the expression of uncertainty in measurement – Part 6: Developing and using measurement models (in previous documents denoted as JCGM 103 Supplement 3 to the GUM, etc.)
was published in December 2020. ***This is the first document published as a part of the "new" GUM.***

According to the roadmap,

JCGM GUM-1:202X (Guide to the expression of uncertainty in measurement – Part 1: Introduction)
was circulated in early 2022.

The **first CD of JCGM GUM-5:202X (Guide to the expression of uncertainty in measurement – Part 5: Examples of uncertainty evaluation)**
should be ready for circulation by the end of 2022.

The revision of the supplements

JCGM GUM-7:202X (Guide to the expression of uncertainty in measurement – Part 7: Propagation of distributions using a Monte Carlo method) and
JCGM GUM-8:202X (Guide to the expression of uncertainty in measurement – Part 8: Extension to any number of output quantities)
will be carried out in the second half of 2023.

Furthermore, the JCGM-WG1 has started studying the measurement uncertainty in the context of the SI Digital Framework, digital calibration certificates and Web Ontology Language (OWL).

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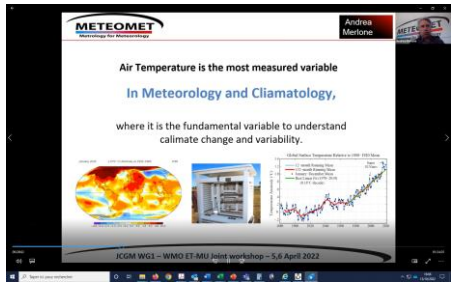
The Joint JCGM-WG1 and WMO-ET-MU Workshop
MEASUREMENT UNCERTAINTY IN METEOROLOGY AND CLIMATOLOGY

2022
APRIL
5-6

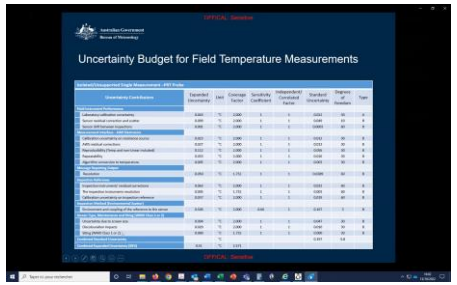
- ✓ Workshop contributed to enhancing cooperation between the JCGM-WG1 and WMO Expert Team on Measurement Uncertainty (ET-MU).
- ✓ Seventy-seven scientists, from all continents, registered for the event.

WORLD METEOROLOGICAL ORGANIZATION



Aims:

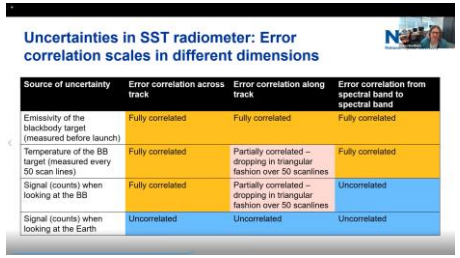
- to recognize the current level of convergence in the field of measurement uncertainty
- to identify the outstanding tasks
- to support addressing these tasks



As a result of the collaboration, a recommendation, the INFCOM 2 DOC 7.4/2 on "Harmonization of the definition of uncertainty and related terminology across key INFCOM-related WMO publications", was submitted for approval at the second session of the WMO Commission for Observation, Infrastructure and Information Systems

stating that

To avoid potential confusion in the use and interpretation of the uncertainties expressed in the WMO publications, it is necessary to harmonize the definition of uncertainty and related terminology and, if appropriate, fully align it with GUM and VIM.



JCGM Updates on Working Group 2 (VIM)

The International Vocabulary of Metrology (VIM) is a guidance document that aims at disseminating scientific and technological knowledge about metrology by harmonizing world-wide the related fundamental terminology.

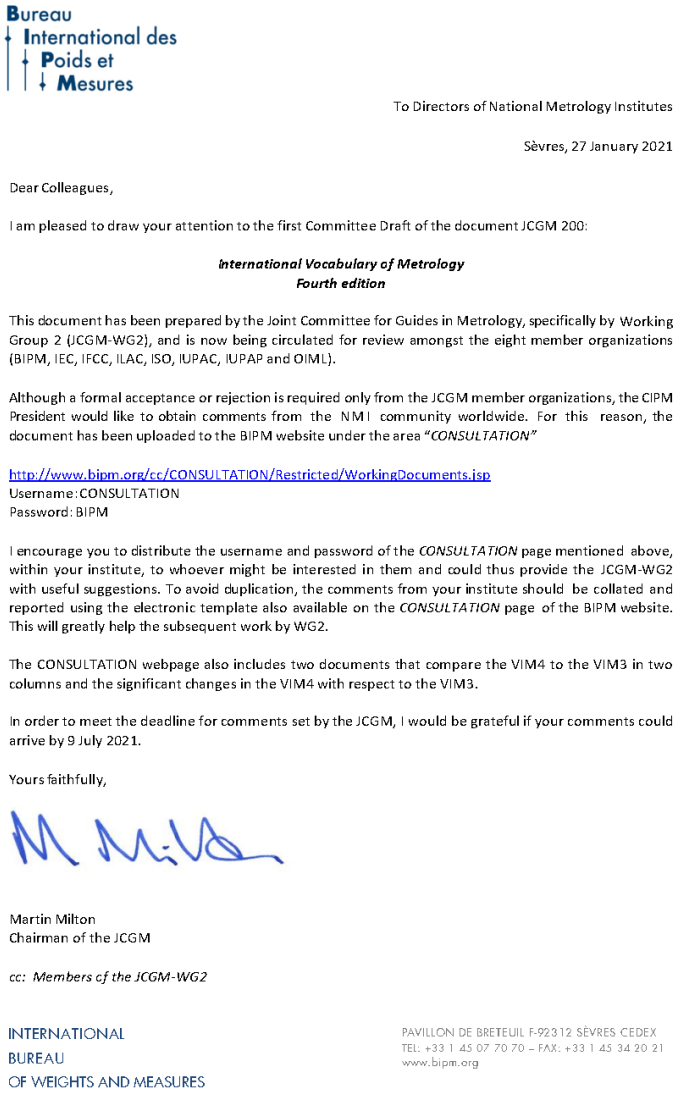
2021 was a landmark year for WG2 with the circulation of the VIM4 1CD and the organization of a webinar which allowed wider engagement and consultation with the stakeholders and broader metrology community.

Each new edition of the VIM has represented an opportunity to revise and improve its structure. This has been the case with the VIM4, which includes a **new chapter** on *nominal properties and examinations*.

Over **1 700 comments** were received on the VIM4 1CD.

The BIPM has made available a dedicated SharePoint site that has been used by WG2 to facilitate its work on the VIM4 1CD.

Due to the lengthy consultation period on the VIM4 1CD and the large number of comments received, there has been a proposal to send out a questionnaire and to draw up at least one more CD (VIM4 2CD) for comment.



Bureau International des Poids et Mesures

To Directors of National Metrology Institutes

Sèvres, 27 January 2021

Dear Colleagues,

I am pleased to draw your attention to the first Committee Draft of the document JCGM 200:

International Vocabulary of Metrology
Fourth edition

This document has been prepared by the Joint Committee for Guides in Metrology, specifically by Working Group 2 (JCGM-WG2), and is now being circulated for review amongst the eight member organizations (BIPM, IEC, IFCC, ILAC, ISO, IUPAC, IUPAP and OIML).

Although a formal acceptance or rejection is required only from the JCGM member organizations, the CIPM President would like to obtain comments from the NMI community worldwide. For this reason, the document has been uploaded to the BIPM website under the area *"CONSULTATION"*

http://www.bipm.org/cc/CONSULTATION/Restricted/WorkingDocuments.jsp
Username: CONSULTATION
Password: BIPM

I encourage you to distribute the username and password of the *CONSULTATION* page mentioned above, within your institute, to whoever might be interested in them and could thus provide the JCGM-WG2 with useful suggestions. To avoid duplication, the comments from your institute should be collated and reported using the electronic template also available on the *CONSULTATION* page of the BIPM website. This will greatly help the subsequent work by WG2.

The CONSULTATION webpage also includes two documents that compare the VIM4 to the VIM3 in two columns and the significant changes in the VIM4 with respect to the VIM3.

In order to meet the deadline for comments set by the JCGM, I would be grateful if your comments could arrive by 9 July 2021.

Yours faithfully,

Martin Milton
Chairman of the JCGM

cc: Members of the JCGM-WG2

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WG2 Webinar

An overview – New edition of the International Vocabulary of Metrology (VIM4)

2021
MAY
6

- ✓ The webinar focused on the new structure and significant changes in the VIM4.
- ✓ The webinar attracted approximately 400 attendees (around 600 people had registered).

- ✓ A YouTube video of the webinar was produced and posted on the BIPM website.
- ✓ Feedback from the webinar indicated that other webinars, to spread the word about the VIM and possibly discuss specific related topics, would be welcomed.

JCGM The new structure of the VIM4

3. Measurement quality: uncertainty, error, accuracy, etc

31 entries (*merge of part of Ch 2 and part of Ch 4*)

4.Measuring devices and their properties: measuring instruments and their characterization

33 entries (*merge of Ch 3 and part of Ch 4*)

5. Measurement standards and metrological traceability: metrological systems and calibration

28 entries (*merge of Ch 5 and parts of Ch 2 and 4*)

6. Nominal properties and examinations: beyond quantities and measurement

17 entries (*new*)

2. Measurement: the process and its models

17 entries (*subset of Ch 2*)

1. *Quantities and units:* the key entities of metrology: quantities, units, values, and scales

33 entries (*no changes*)

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Machine readable VIM

One of the main outstanding issues with the VIM4 is its aspiration for machine readable definitions.

To this end, the CCU Working Group on Core Metrological Terms (CCU-WG-CMT) was established and requested to identify core metrological terms in the context of machine readability of these terms.

The CCU-WG-CMT works with the experts from mathematics, linguistics and semantics and members of the CIPM Task Group on the Digital SI (CIPM-TG-DSI) and Expert Group, CODATA and VIM committees.

To start with, three terms were selected for discussion by the CCU-WG-CMT: “quantity”, “unit” and “quantity value”.

The conclusion from the experts is that the whole process of developing machine-readable and machine-actionable definitions of CMTs needs more time because of the complexity of the task. The urgent goal is to reach machine-readable, executable and machine-interpretable content of documents. The ultimate goal is to allow a machine to take decisions without human intervention.

It is worth mentioning that the WG2 has already developed a machine-readable VIM3 which is available from the website: https://jcgm.bipm.org/vim/en/index.html

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Thank you

for your attention!

Merci

de votre attention!