

OIML position on the relevant topics for 24th CCU meeting

Based on received information regarding the 24th CCU meeting from a CCU executive secretary Dr. Estefania de Mirandés, OIML has posted all relevant materials on the dedicated TC 2 Workspace and asked its members to submit their position on the 24th CCU meeting agenda topics 7, 8 and 9:

- 7) Discussion on the definition of the term “unit”
- 8) Discussion on angles and dimensionless quantities, and
- 9) Discussion on the SI in the digital world

We have received positions from four OIML members (US, Germany, Austria and Slovenia), which is a minority of the OIML members. A common position on all topics was not achieved. In the following, we present the summary of the views received.

7) Definition of the term “unit”

Majority position (three member states) is to keep the current text in the SI Brochure describing the term unit consistent with the existing terminology documents (VIM and ISO 80000 respectively). It is their common opinion that the SI Brochure is not a terminology standard. The text describing the term unit should therefore remain as it is or be improved by replacing the first paragraph of §2.1 with the following:

La valeur d'une grandeur est généralement exprimée sous la forme du produit d'un nombre par une unité. L'unité est un exemple particulier de la grandeur concernée, utilisé comme référence.

The value of a quantity is generally expressed as the product of a number and a unit. The unit is a particular example of the quantity concerned which is used as a reference.

It is also noted that the proposed definition of the unit being a “value” would be entirely circular.

Minority position (from one member state) is that the current text in the SI Brochure is inconsistent and that the the first paragraph of §2.1 should be replaced with the following:

The value Q of a quantity is expressed by the product of a number $\{Q\}$ and a unit $[Q]$: $Q = \{Q\}[Q]$. The unit is simply a particular example of the value of a quantity, defined by convention, which is used as a reference and the number is the ratio of the value of the quantity to the unit.

8) Angles and dimensionless quantities

It is a common position that “cycle” or “cyl” is not a unit and it should be avoided in any case.

Majority position (three member states) is to keep the current definition of the units radian and steradian.

Minority position (one member state) is to adding the radian as the unit for an 8th independent dimension, as it was already described in detail in document CCU/16-13.

There is a split position related to the unit one. On one side, it is believed that the unit one, being a unit on its own right, should not be a base unit. On the other side, it is believed that the unit one is redundant or even counterproductive and should be avoided altogether.

9) Discussion on the SI in the digital world

Just one position was received on this topic. While in principle the idea of providing authoritative, machine-interpretable artifacts derived from the SI Brochure and similar references is supported, it should be approached with due care to the following risks:

- a) Quantity calculus in software cannot logically follow the 9th SI Brochure verbatim because naïve automated reasoning falls into the contradictions introduced by unit one.
- b) Acknowledging that many implementations already exist without any explicit blessing or vetting by NMIs, there is a question on how to approach to build and verify such authoritative reference.
- c) The implementation should not seek to “pick a winner” so much as plan for the inevitability of needing to convert from one representation to another. Representations with an aspect of “vendor lock-in” are completely unacceptable.
- d) Market incentives exist for individual organizations to position themselves as the canonical source or keeper of the most authoritative machine-interpretable artifacts. The risk exists for such an organization to effectively appropriate the authoritative definitions of SI and render the normative international process irrelevant.

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