Overview of JCGM, WG2 (VIM Committee), and VIM4 1CD

Joint Committee for Guides in Metrology (JCGM)
Working Group on the International Vocabulary of Metrology (VIM) - WG2

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Chuck Ehrlich, JCGM WG2 Chairman,
(Representing OIML on JCGM WG2)

JCGM/WG2 webinar:
An overview of the VIM4
Joint Committee for Guides in Metrology
JCGM, 1997
1. The Joint Committee
   • … is composed of broadly-based international organizations working in the field of metrology.

2. Terms of reference
   • to develop and maintain, at the international level, guidance documents (VIM and GUM) addressing the general metrological needs of science and technology, and to consider arrangements for their dissemination;

   • to promote worldwide adoption and implementation of the results of its work;

   • to be responsible for the overall monitoring of its work and its associated Working Groups.
JCGM Guides: VIM and GUM

**VIM**
- First edition published by ISO in 1984
- Second edition published by ISO in 1993
- Third edition published by JCGM in 2008

**GUM**
- The ‘undisputed’ reference in uncertainty evaluation since 1993
The International Vocabulary of Metrology (VIM) is a guidance document that aims at disseminating scientific and technological knowledge about metrology by harmonizing worldwide the related fundamental terminology.”

VIM3 and VIM4 1CD definition of ‘metrology’:
science of measurement and its application

VIM focuses on fundamental terminology and not applications
The VIM presents a consistent, terminologically correct system of terms and definitions, while striving to be as understandable as possible.

(e.g., substitution principle is maintained for definitions, and there must be no circularity among definitions)

(concept diagrams removed, but underlying concept system remains)

The phraseology has been systematically simplified.

(e.g., “quantity value” changed to “value” when there is no chance for ambiguity)
The VIM presents a consistent, terminologically correct system of terms and definitions, while striving to be as understandable as possible.

The phraseology has been systematically simplified.

The structure in chapters has been maintained and updated.

The structure of each entry has been maintained (term(s), definition, optional notes and examples).
The new Structure of Chapters

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

2. *Measurement*: the process and its models
The new Structure of Chapters

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<td>6. <strong>Nominal properties and examinations</strong>: beyond quantities and measurement</td>
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It will be made available both as a traditional, linear document and as an online, machine readable hypertext.
The treatment of nominal properties and the process of the evaluation is greatly expanded but considered formally outside metrology.
A consequence of the more extensive treatment of nominal properties (and, to a lesser extent, ordinal quantities) in the VIM4 was that the definitions of ‘measurement’ and ‘metrology’ were considered more carefully.

In particular, the question arose of whether the definitions of either or both should be expanded beyond quantities to include nominal property examination.

An inquiry among JCGM member organizations was conducted, yielding sometimes strong opinions on both sides of the question.

It was therefore decided that for now the time is not right to make such a change, but notes have been added to some relevant entries to indicate that the debate exists and could influence future versions of the VIM on this matter.
The treatment of nominal properties and the process of the evaluation is greatly expanded but considered formally outside metrology.

Like in the VIM3, ordinal properties are considered to be (measurable) quantities.

**Examples**

- Hardness on Mohs Hardness Scale
- Earthquake Intensity on Earthquakes Magnitude Scale
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Like in the VIM3, ordinal properties are considered to be (measurable) quantities.

The VIM maintains its focus on physical (including chemical and biological) properties, but not psychosocial properties.
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• The VIM maintains its focus on physical (including chemical and biological) properties, but not properties like psychosocial properties.

• Measurement remains defined as an experimental process.

• All features of measurement and its results (uncertainty, error, accuracy, etc) are defined according to operational criteria.
2 Measurement

2.1 [VIM3: 2.1; VIM2: 2.1; VIM1: 2.01]

measurement

process of experimentally obtaining one or more values that can reasonably be attributed to a quantity together with any other available relevant information

NOTE 1 The quantity mentioned in the definition is an individual quantity.

NOTE 2 The relevant information mentioned in the definition may be about the values obtained by the measurement, such that some may be more representative of the measurand than others.

NOTE 3 Measurement is sometimes considered to apply to nominal properties, but not in this Vocabulary, where the process of obtaining values of nominal properties is called “examination”.

NOTE 4 Measurement requires both experimental comparison of quantities or experimental counting of entities at some step of the process and the use of models and calculations that are based on conceptual considerations.

NOTE 5 The conditions of reasonable attribution mentioned in the definition take into account a description of the quantity commensurate with the intended use of a measurement result, a measurement procedure, and a calibrated measuring system operating according to the specified measurement procedure, including the measurement conditions. Moreover, a maximum permissible error and/or a target uncertainty may be specified, and the measurement procedure and the measuring system should then be chosen in order not to exceed these measuring system specifications.
Four Documents are being Circulated

- VIM4 1CD

- Two-column VIM4 1CD / VIM3 (or VIN)

- “Significant changes of the VIM4 with respect to the VIM3”

- Comment Template

Links to these documents are available through your JCGM Member Organization, and comments are to be submitted back through your JCGM Member Organization, using the Comment Template.
Thank you for your support and assistance!