

CONCEPT DIAGRAMS FOR INTERNATIONAL VOCABULARY OF TERMS IN LEGAL METROLOGY

O. Velychko

State Enterprise “Ukrmetrteststandard”, Ukraine, 4, Metrologichna Street, 03680, Kyiv

Abstract: This paper describes the main concepts for legal metrology, which listed in the International Vocabulary of Terms in Legal metrology (VIML). In paper presented reasonable proposals for the concept diagrams around legal metrology concepts for the new edition of the VIML.

Keywords: legal metrology, definition of term, vocabulary, concept diagram.

1. INTRODUCTION

Legal metrology comprises all activities for which legal requirements are prescribed on measurement, units of measurement, measuring instruments and methods of measurement, these activities being performed by or on behalf of governmental authorities, in order to ensure an appropriate level of credibility of measurement results in the national regulatory environment [1].

Legal metrology is part of metrology relating to activities which result from statutory requirements and concern measurement, units of measurement, measuring instruments and methods of measurement and which are performed by competent bodies [2].

The VIML now includes only the concepts used in the field of legal metrology. These concepts concern the activities of the legal metrology service, the relevant documents as well as other problems linked with this activity. The importance of international aspects of terminology in legal metrology and the need to speak a common language in international cooperation resulted in the continuation of work on the VIML for his improvement [3].

2. STRUCTURE OF THE INTERNATIONAL VOCABULARY OF TERMS IN LEGAL METROLOGY

The VIML is intended to bring together the general concepts, term and definitions that are specific to the field of legal metrology and to promote the harmonization and common use of these concepts, term and definitions within the International Organization of Legal Metrology (OIML) and in particular in OIML Publications.

The VIML now includes four main parts (total 44 terms):

- 1 Basic term in Legal Metrology (3 terms),
- 2 Legal Metrology activities (24 terms),
- 3 Documents and marks within Legal Metrology (10 terms),
- 4 Units and measuring instruments (7 terms).

The definition of terms given in VIML, as well as their formats, comply as far as possible with the rules of terminology work, as outlined in international standards ISO 704, ISO 1087-1 and ISO 10241 [4–6]. In particular, the substitution principle applies; that is, it is possible in any definition to replace a term referring to a concept defined elsewhere in the VIML by the definition corresponding to that term, without introducing contradiction or circularity.

The VIML does not reflect all modern concepts that are used in legal metrology now, in particular, within wide using in metrological practice of modern information technologies.

In [3] indicated structure for the new edition of VIML:

- 0 Introduction. Basic terms,
- 1 Metrology and its legal aspects,
- 2 Legal metrology activities,
- 3 Documents and marks in legal metrology,
- 4 Classification of measuring instruments,
- 5 Construction and operation of measuring instruments,
- 6 Software in legal metrology,
- 7 Test in legal metrology.

For a new VIML proposed to extend an existent part related to measuring instruments, and to enter two new parts, related to software and test in legal metrology.

3. PROPOSED CONCEPT DIAGRAMS FOR TERMS IN LEGAL METROLOGY

To facilitate the understanding of the different relations between the various concepts given in a VIML, concept diagrams can be introduced in special informative annex of VIML. However, that a given concept may be describable by many characteristics and only essential delimiting characteristics are included in the definition.

Law on metrology is legal acts and regulations that in particular define the legal units of measurement and prescribe the organizational structure of legal metrology programs and activities [2].

For proposed concept diagram within documents and marks on legal metrology the hierarchical and non-hierarchical relations was set on the basis of analysis of International Documents and International Recommendations of the OIML.

In a concept diagram on a Fig. 1 entered two parentetic terms (“document on legal metrology” and “mark on legal metrology”). These terms not defined in a VIML, but are taken as a primitive which is assumed to be generally understood.

On Fig. 2 shown a proposed concept diagram for concept “*legal control of measuring instruments*”, which used in the construction of the above concepts, are presented in a VIML.

Legal control of measuring instruments is generic term used to globally designate legal operations to which measuring instruments may be subjected, e.g. type approval, verification, etc [2].

For concept “legal control of measuring instruments” there are six terms that have generic relations: “legal metrological control”; “legal control of measuring instruments”; “type approval”; “verification of a measuring instrument”; “subsequent verification”; and “inspection of a measuring instrument”.

Legal metrological control is the whole of legal metrology activities which contribute to metrological assurance. Legal metrological control includes: legal control of measuring instruments, metrological supervision, and metrological expertise.

Legal control of measuring instruments is generic term used to globally designate legal operations to which measuring instruments may be subjected, e.g. type approval, verification, etc.

Type approval is decision of legal relevance, based on the evaluation report that the type of a measuring instrument complies with the relevant statutory requirements and is suitable for use in the regulated area in such a way that it is expected to provide reliable measurement results over a defined period of time.

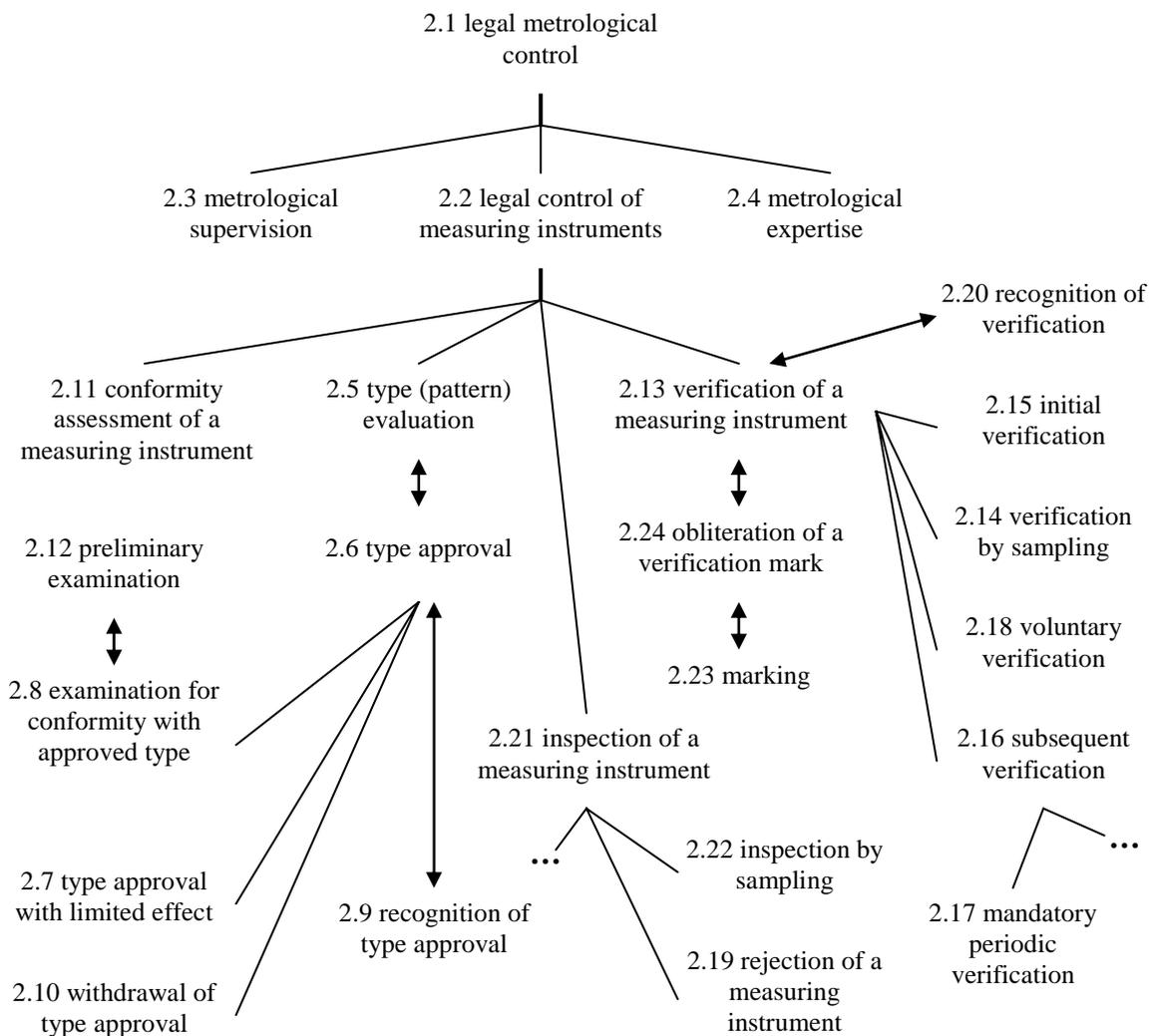


Fig. 2 Proposed concept diagram for VIML around “legal control of measuring instruments”

Verification of a measuring instrument is procedure (other than type approval) which includes the examination and marking and/or issuing of a verification certificate, that ascertains and confirms that the measuring instrument complies with the statutory requirements.

Subsequent verification is any verification of a measuring instrument after a previous verification and including: mandatory periodic verification and verification after repair.

Inspection of a measuring instrument is examination of a measuring instrument to ascertain all or some of the following: verification mark and/or certificate is valid, no sealing marks are damaged, after verification the instrument suffered no obvious modification, and its errors do not exceed the maximum permissible in-service errors.

On Fig. 3 shown a proposed concept diagram for concept “*legally controlled measuring instrument*”, which is used in the construction of the above concepts are presented in a VIML. For this concept there are all terms that have associative relations.

Legally controlled measuring instrument is measuring instrument which conforms to prescribed requirements, in particular legal metrological requirements [2].

shall, when applicable, be compatible with the International Recommendations of the OIML and make use of their requirements.

Regulations on measurements may be made by national body in field of the legal metrology to define quantities to be referred to in the methods of sale, to prescribe that certain measurements are to be the basis of transactions or law enforcement activities, and to define the list of measurements subject to legal metrological requirements for the mentioned purposes.

When necessary and for specific applications, these regulations may: define requirements applicable to the individuals or bodies who perform the measurements; require records of the measurement operations to be available to the legal metrology officials; require the issuing of certificates for the result of these measurements; require records of the traceability of measurement results to be available to the legal metrology officials; and define controls to be applied by legal metrology officials or by specialized bodies regarding the activity of the individuals or bodies who perform the measurements [1].

Regulations on prepackages may be made by national body in field of the legal metrology to set up metrological requirements and legal control

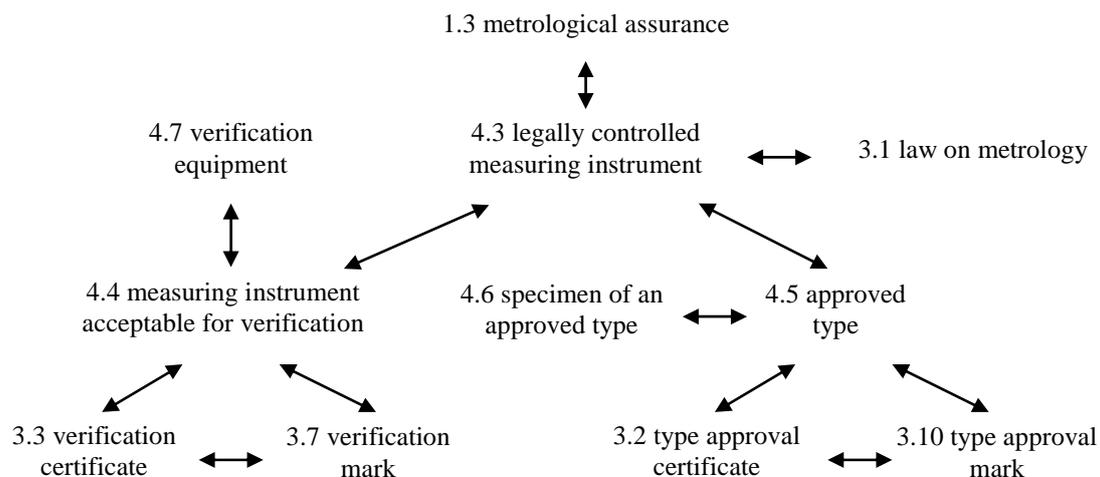


Fig. 3 Proposed concept diagram for VIML around “legally controlled measuring instrument”

4. SOME PROPOSALS TO THE NEW EDITION OF THE VIML

Regulations on measurements, on prepackages and on measuring instruments, as described in Chapter V “Legal metrology” of International Document OIML D1 [1], may be made by national body in field of the legal metrology in order to: protect the interests of individuals and enterprises; protect national interests; protect public health and safety, including in relation to the environment and medical services; and meet the requirements of international trade. These regulations

provisions applicable to the quantity content of prepackages offered or exposed for sale or sold. In accordance with the OIML Convention and with the WTO/TBT Agreement, these regulations shall be based on the International Recommendations of the OIML as far as possible.

Regulations on measuring instruments may be made by national body in field of the legal metrology to define the list of measuring instrument categories subject to legal control for the mentioned purposes. In accordance with the OIML Convention and, when applicable, the WTO/TBT Agreement, these

regulations also shall be based on the International Recommendations of the OIML as far as possible.

These regulations shall include the appropriate control and supervision procedures: to assess the initial conformity of instruments to legal requirements, at the stage of design (e.g. type approval) and at the stage of manufacturing (e.g. initial verification); to ensure that instruments in service maintain their required metrological properties under expected conditions of use and with age (e.g. re-verification, in service inspection and field surveillance), or are withdrawn from use; and to ensure that instruments are correctly installed and used and operated under the defined correct conditions (e.g. environmental) [1].

To prevent unauthorized adjustments or interventions, the regulations may restrict access to certain parts or functions of the instruments (including software). This access may be required to be physically protected by sealing marks (or protection of access to the software) defined by the regulations.

In connection with the requirements of International Document OIML D1 relative to regulations on measurements, on prepackages and on measuring instruments it is necessary to take into account insertion to the new edition VIML as new terms, so even new divisions. It can demand development of new concept diagrams also.

5. CONCLUSION

In preparing the new edition of the VIML appropriate need to develop specific concept diagrams within documents and marks on legal metrology, around concepts “legally controlled measuring instrument”, “legal control of measuring instruments”, and other new basic concepts of new edition of the VIML. It is necessary to improve the perception of relations of concepts in the field of legal metrology, which are widely used now.

6. REFERENCES

- [1] OIML D1:2004. Elements for a Law on Metrology.
- [2] OIML V1:2000. International Vocabulary of Terms in Legal metrology (VIML).
- [3] W. Kool TC 1 Terminology. Warsaw, 29–30 September 2010 // OIML Bulletin, vol. LII, numb. 1, January 2011, p. 36.
- [4] ISO 704:2000. Terminology work. – Principles and methods.
- [5] ISO 1087-1:2000 Terminology work – Vocabulary – Part 1: Theory and application.
- [6] ISO 10241:1992 International terminology standards – Preparation and layout.
- [7] OIML V2-200:2007. International Vocabulary of Metrology. – Basic and General Concepts and Associated Terms (VIM).