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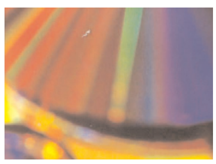

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Editorial

JEAN-FRANÇOIS MAGANA
Director, BIML

Looking towards the Thirteenth OIML Conference

This coming October, the Thirteenth OIML Conference will be held in Sydney, Australia. This key event will be the occasion, as is the case every four years, to report on progress made over the last four years and to make fundamental decisions for the next four-year period.

The OIML has indeed changed since the Twelfth Conference: strengthening of the technical competence of the Bureau with the recruitment of additional engineers, more emphasis on (and acceleration of) the technical work, increase in the number of publications approved, more interactivity with Member States and Corresponding Members using the web site, more reactivity in the circulation of information using online databases, more interactions with the OIML's environment, not only with the BIPM and ILAC/IAF, but also with other international organizations such as the WTO and UNIDO, whilst still paying great attention to other stakeholders (manufacturers of measuring instruments in particular).

The implementation of the OIML Mutual Acceptance Arrangement (MAA) has been set in motion, complementing the CIPM and ILAC MRAs. These three arrangements now together form an essential tool for structuring a Global International Metrology System, as recommended by Knut Birkeland in his report ten years ago in 1998.

As a result, the reputation of the OIML at international level is now well established, not only in the metrology and legal metrology spheres, but also in the world of trade and economic development.

There still remains a lot to do, including extending the implementation of the MAA, providing more interactive online tools to better carry out the OIML's work, developing conformity to type systems, developing an acceptance system for prepackages, facilitating communication between Regional Legal Metrology Organizations, addressing new fields of legal metrology, etc. The 2008 CIML Meeting and International Conference will steer the Organization towards a renewed period of progress which will enable us to continue to build for the future. ■

MEASUREMENT CAPABILITY

Interlaboratory comparison of seven standard weights in several Romanian laboratories

Adriana Vâlcu, George Florian Popa, Sterică Baicu

National Institute of Metrology, Bucharest, Romania

1 Introduction

This paper reports the results of measurements performed in an interlaboratory comparison of seven mass standards between fourteen metrology laboratories throughout Romania.

The goal in making these inter-laboratory measurements was to provide verification of each participating laboratory's measurement capability by obtaining a measurement that agrees with the pilot (coordinating) laboratory (called the "LP").

The comparison began on 15 August 2005 and ended on 10 May 2006, with the National Institute of Metrology (INM) acting as a pilot laboratory for the program.

Seven mass standards of nominal values 10 kg, 1 kg, 500 g, 200 g, 100 g, 20 g and 100 mg were sent to the participants and the results analyzed using E_n values.

Each laboratory's results are presented for each weight, including the declared uncertainty and normalized errors with respect to the INM. The transfer standards used were carefully selected by the pilot laboratory and the comparison scheme was chosen to minimize the influence of any instability in their mass.

The fourteen participants in the comparison were: Târgovişte, Piteşti, Ploieşti, Bacău, Iaşi, Botoşani, Piatra Neamţ, Braşov, Târgu Mureş, Sibiu, Bucureşti, Buzău, Brăila, and Timişoara. Each laboratory was assigned a code to ensure confidentiality of the results, the LP having the code "1".

2 Circulation scheme

The artifacts were initially calibrated by the LP and then circulated between the participating laboratories in two 'petals'. At the end of each petal, the artifacts were returned to the LP for re-calibration, before being sent out to the participating laboratories in the next petal.

The drift of the mass standards, estimated using the difference between the initial and final LP measurements, was negligible compared with the associated uncertainty.

The transfer standards (10 kg, 1 kg, 500 g, 200 g, 100 g, 20 g) were stainless steel weights of class E_2. The 100 mg weight was a nickel silver polygonal sheet of class E_2.

The density of the weights was provided by the LP as follows:

- from 10 kg to 20 g: 7950 kg/m^3, U = 140 kg/m^3
- for 100 mg weight: 8600 kg/m^3, U = 170 kg/m^3

3 Measurement instructions

To calculate the buoyancy correction, the densities of the weights were given by the LP. The participants carried out the calibrations without re-determining the density of the weights.

The following information about the transfer standards was given in advance to the participants: nominal masses, densities and their uncertainties and magnetic proprieties. Also, instructions were given concerning how to handle, store and transport the weights. For each laboratory the measurement time was two weeks, and the participants were asked to send their results to the LP within two weeks after the completion of the measurements.

In line with customary intercomparison practice, the laboratories were assigned numeric codes (1…15).

No detailed calibration instructions were given to the laboratories.

4 Tasks

It was the participants' tasks to determine the mass of the standards with an uncertainty corresponding to their capability. The nominal values of the weights were selected such that the weighing instruments and mass standards of the participants could be tested within a wide range. The evaluation by the participant was to supply the following information:

- mass and uncertainty of the 7 mass standards;
- traceability of the reference standards used;
- physical properties of the reference standards used;
- method used for calibration;
- specifications of the measuring instruments used (weighing instruments, barometers, hygrometers, thermometers); and

Labora-tory's code	10 kg		1 kg		500 g		200*g		100 g		20* g		100*mg	
	E mg	U mg	E mg	U mg	E mg	U mg	E mg	U mg	E mg	U mg	E mg	U mg	E mg	U mg
1	11027.1	2.4	617.27	0.12	32.00	0.07	16.20	0.04	17.97	0.04	2.226	0.010	–0.056	0.002
5	11040	21	616.7	1.4	31.1	1.3	6.16	0.09	8.01	0.06	2.240	0.019	–0.057	0.005
2	10889.583	121.140	617.375	5.904	34.125	7.677	16.158	0.192	17.998	0.139	2.238	0.025	–0.05733	0.013
12	10893.433	13	616.770	1.7	31.851	0.3	16.377	0.08	17.577	0.06	2.374	0.013	–0.05105	0.005
11	11021	25.4	616.75	2.4	31.52	2.3	16.36	0.3	17.85	0.3	2.25	0.03	–0.048	0.01
7	10999.7	21.33	701.7	2.66	37.6	2.10	20.9	0.263	20.6	0.166	2.3	0.132	0	0.102
13	11032.43	6.90	617.479	1.54	31.933	0.32	16.266	0.07	17.987	0.10	2.246	0.02	–0.057	0.044
3	11040	30	617	2	32.1	1.5	16.22	0.26	18.10	0.14	2.250	0.038	–0.049	0.013
10	11020	300	617.0	3.4	31.5	3.6	16.3	0.6	18.0	0.4	2.4	0.2	–0.04	0.19
8	215.7	10.52	616.3	1.44	31.84	1.22	16.38	0.40	18.15	0.54	2.19	0.13	–0.058	0.04
1	11028.4	2.4	617.34	0.16	31.96	0.07	16.16	0.04	17.96	0.04	2.220	0.011	–0.061	0.002
6	11030	10	617.0	1.5	31.9	0.8	16.2	0.3	18.00	0.15	2.250	0.025	–0.063	0.005
9	11030	20	617.3	1.0	31.7	0.8	16.2	0.2	18.02	0.15	2.254	0.015	–0.065	0.008
4	11047	28	616.8	2.3	32.4	1.6	16.17	2.0	18.31	0.13	2.25	0.06	–0.06	0.01
15	11032	35	617.1	2.9	31.2	2.8	16.3	0.2	18.10	0.16	2.24	0.04	–0.053	0.004
14	11050	6	617	1	32	1	16.2	0.13	18.1	0.1	2.32	0.03	–0.06	0.01
1	11028.2	2.4	617.14	0.16	31.97	0.07	16.17	0.04	17.98	0.04	2.227	0.01	–0.061	0.002

Table 1 Deviation from nominal mass (*E*) and expanded uncertainty (*U*) for the corresponding values

- ambient atmospheric conditions at the time of each measurement.

The participants were requested to specify the uncertainty budget in sufficient detail.

5 Results

A full calibration report with all the relevant data and uncertainty estimates based on recommendation was requested to be sent to the LP. All fourteen participants were able to perform the measurements and submit the measurement results to the LP - the results of the intercomparisons are summarized in Table 1.

All data are reported on the sample as received. The results are presented exactly as sent in by the participants.

Each laboratory reported the measured mass value assigned to each of the seven artifacts, together with an expanded uncertainty for each weight. For all laboratories, the coverage factor was 2.

A tool often used in analyzing the results from interlaboratory comparisons is the normalized error E_n which takes into account both the result and its uncertainty. The normalized error E_n is given as:

$$E_n = \frac{x_{lab} - x_{ref}}{\sqrt{U_{lab}^{\;2} + U_{ref}^{\;2}}}$$

where:

E_n = normalized error;

x_{lab} = result of measurement carried out by a participating laboratory;

x_{ref} = comparison reference value of the LP;

U_{ref} = measurement uncertainty of the LP;

U_{lab} = measurement uncertainty reported by the participating laboratory.

Nominal value	10 kg	1 kg	500 g	200 g	100 g	20 g	100 mg
X_{ref}	11027.9	617.25	31.98	16.18	17.97	2.224	–0.059
U_{ref}	3.2	0.26	0.09	0.06	0.05	0.014	0.005
Laboratory's code	**Normalized deviations E_n**						
1	–0.20	0.07	0.20	0.31	0.00	0.10	0.63
5	**0.57**	**–0.39**	**–0.67**	–91.13	–125.91	**0.66**	**0.33**
2	–1.14	**0.02**	**0.28**	**–0.09**	**0.19**	**0.47**	**0.14**
12	–10.05	**–0.28**	**–0.40**	1.97	–4.97	7.72	1.18
11	**–0.27**	**–0.21**	**–0.20**	**0.60**	**–0.39**	**0.77**	**1.02**
7	–1.31	31.59	2.68	17.46	15.13	**0.57**	**0.58**
13	**0.60**	**0.15**	**–0.13**	**0.95**	**0.15**	**0.88**	**0.05**
3	**0.40**	**–0.12**	**0.08**	**0.16**	**0.87**	**0.63**	**0.74**
10	**–0.03**	**–0.07**	**–0.13**	**0.20**	**0.07**	**0.88**	**0.10**
8	–984.57	**–0.65**	**–0.11**	**0.50**	**0.33**	**–0.26**	**0.03**
1	0.13	0.29	–0.14	–0.22	–0.15	–0.24	–0.32
6	**0.20**	**–0.16**	**–0.10**	**0.08**	**0.19**	**0.89**	**–0.52**
9	**0.10**	**0.05**	**–0.34**	**0.11**	**0.32**	1.43	**–0.60**
4	**0.68**	**–0.19**	**0.26**	**0.00**	2.43	**0.42**	**–0.06**
15	**0.12**	**–0.05**	**–0.28**	**0.59**	**0.77**	**0.37**	**1.00**
14	3.26	**–0.24**	**0.02**	**0.16**	1.16	2.88	**–0.06**
1	0.08	–0.36	–0.06	–0.09	0.15	0.15	–0.32
Normalized deviations E_n from reference values							

Red	$E_n > 1$
Blue	$E_n < -1$

Table 2

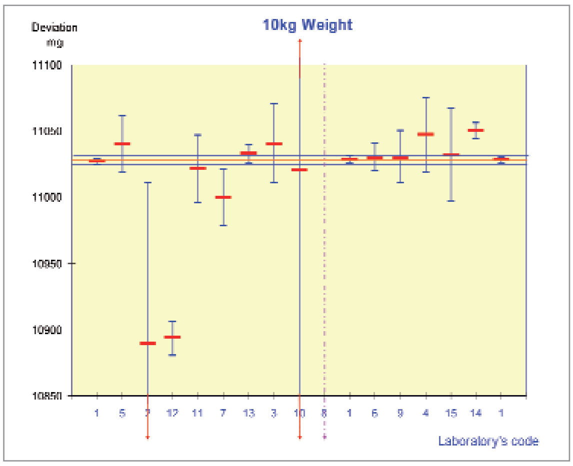
Utilizing this formula. an acceptable measurement and reported uncertainty would result in an E_n value of between –1 and +1 with a desired value close to zero. The E_n data for each laboratory is presented in Table 2.

This computation provides supplementary information concerning the measurement capability of the participating laboratories.

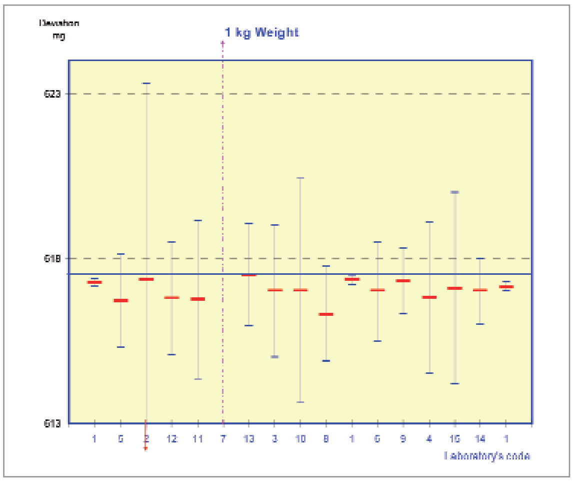
The x_{ref} and U_{ref} used for the computations was the mean of the opening and closing LP measurements. Graphs 1 to 7 present the differences between participants' results and the reference value, with the uncertainty (k = 2) for all the weights.

6 Discussion

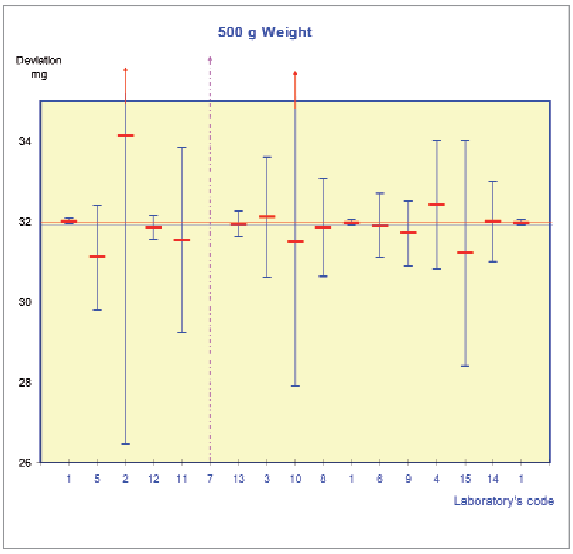
- Six participating laboratories (3, 6, 10, 11, 13 and 15) obtained comparable results with that of the LP for all the weights;
- For the 10 kg weight, five participating laboratories (2, 7, 8, 12 and 14) differed significantly from the results of the LP;
- For the 1 kg weight, one participating laboratory (7) differed from the result of the LP;
- For the 500 g weight, one participating laboratory (7) differed from the result of the LP;
- For the 200 g weight, three participating laboratories (5, 7 and 12) differed from the results of the LP;



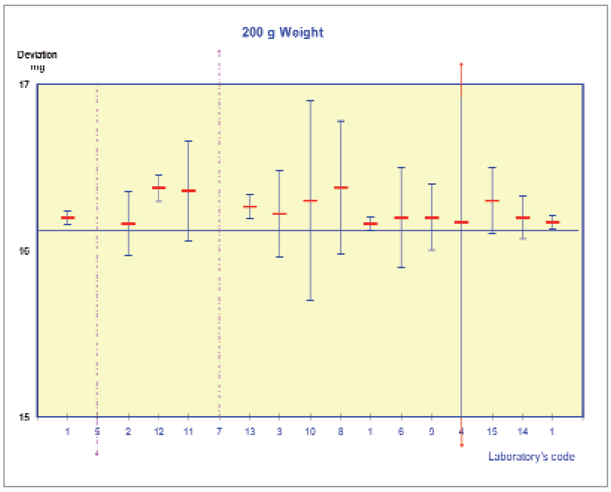
Graph 1



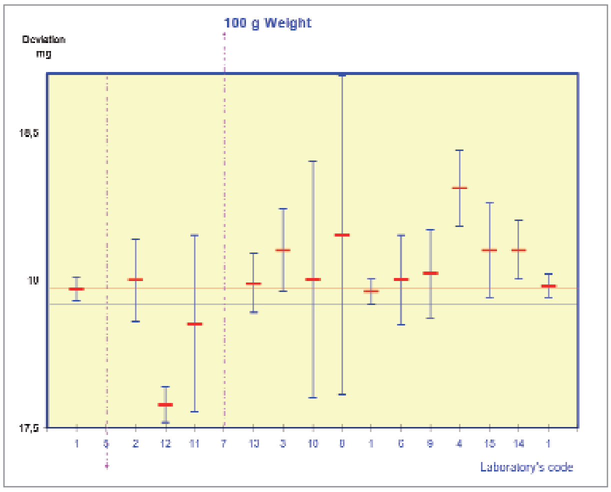
Graph 2



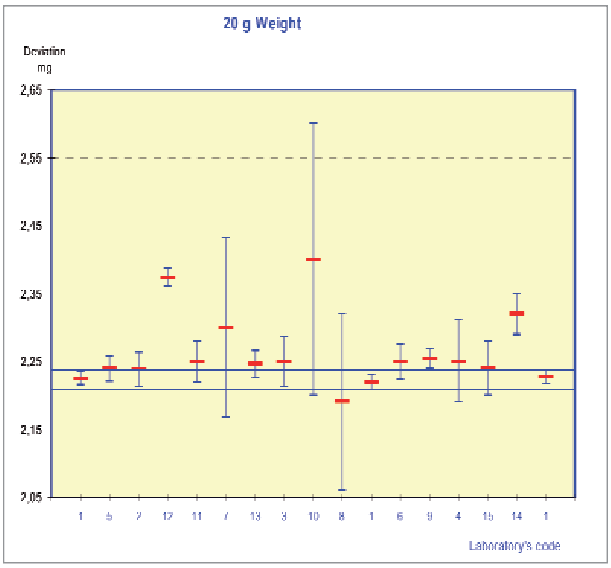
Graph 3



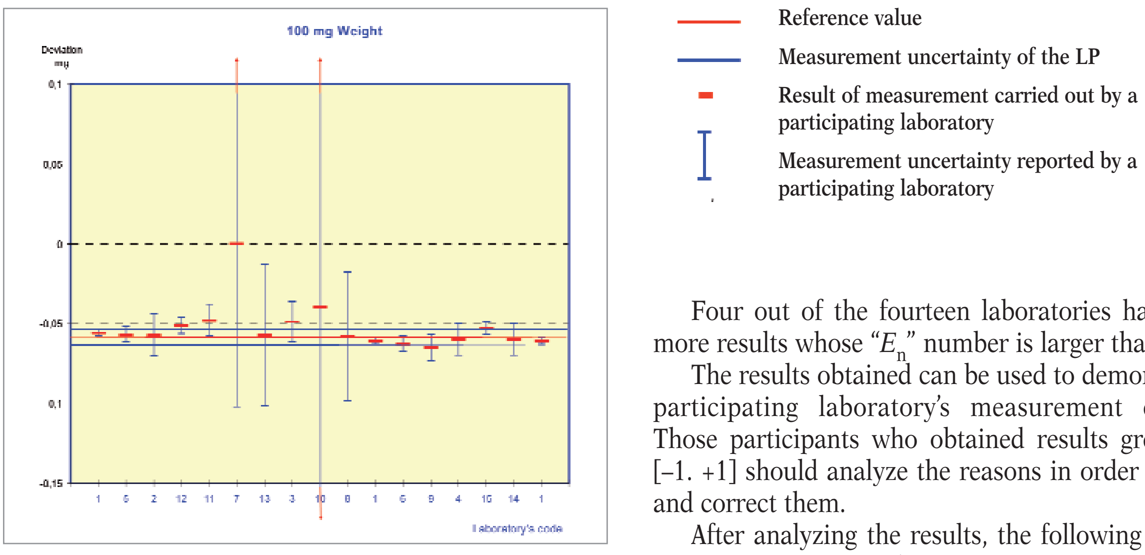
Graph 4



Graph 5



Graph 6



Graph 7

- For the 100 g weight, five participating laboratories (4, 5, 7, 12, and 14) differed from the results of the LP;
- For the 20 g weight, three participating laboratories (9, 12, and 14) differed from the results of the LP;
- For the 100 mg weight, one participating laboratory (12) differed from the results of the LP;
- LP asked participants to review their results for confirmation. Five participating laboratories replied, one making a small change to its calculations;
- Eight participating laboratories (2, 5, 8, 9, 10, 11, 12 and 13) took into account the uncertainty due to the eccentricity, even though the scales had a suspended load receptor;
- Three participants took no account in their uncertainty budgets of the contribution due to the difference between the standard and the test. Most laboratories took this into account, minimizing the problem using additional weights;
- Six participants did not take into account the effect of air buoyancy in their uncertainty budgets.

The LP sent out the summary of results in a draft report to all participants with the code number representing the laboratory names to ensure confidentiality. Each laboratory could therefore see all the results, but could not ascertain which results belonged to which laboratory (other than its own results).

7 Conclusions

Analyzing the results of the interlaboratory comparison it can be seen that 19 % of the total results contain discrepancies.

Four out of the fourteen laboratories have two or more results whose "E_n" number is larger than one.

The results obtained can be used to demonstrate the participating laboratory's measurement capability. Those participants who obtained results greater than [–1. +1] should analyze the reasons in order to remedy and correct them.

After analyzing the results, the following corrective measures are proposed:

- It is advisable that certain participants review their uncertainty analysis;
- Better control and monitoring of environmental conditions should be ensured;
- Controlled access of the personnel in the laboratory during the calibrations should be ensured;
- In the case of a big difference between the standard and the test, it is advisable to use additional weights so that this difference be rendered as small as possible, otherwise the uncertainty is increased with this component;
- Further qualification of the personnel in calibrating and estimating uncertainty is necessary.

References

[1] BRML: PML-5-03 "Comparări Interlaboratoare", 2002

[2] Adriana Vâlcu, George Popa, Sterică Baicu: "Determinarea masei şi evaluarea incertitudiniide măsurare pentru măsurile etalon", 2006

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PREPACKAGES

Labelling of prepackaged products

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Introduction

One of the outcomes of the OIML Seminar on Prepackages in Cape Town in October 2006 was the need to review OIML R 79[1] *Labelling requirements for prepackaged products*. It was recognised that all stakeholders should be consulted, including consumers. This paper gives the results of consumers' views and indicates how R 79 could address their concerns.

Besides legal metrology labelling requirements for prepackaged goods, other requirements for food labelling are to be found in certain international documents[2]. These have been reflected in European legislation[3], which EU Member States have to implement by way of their national laws.

Although there have been various consultations in Europe on labelling issues these have tended to look at specific aspects such as food labelling or quantity[4]. These tend to involve consultation with all stakeholders and there is often no agreement between the groupings consulted as the various stakeholders each have their own needs.

There are fundamentally three major stakeholders when it comes to labelling product: the consumer, business, and law enforcement bodies, and each of these has different requirements. Business will want packaging to attract consumers and to give information to promote their product. Consumers will want certain information so that they can make a decision as to whether to purchase the product. Law enforcement bodies will need information indentifying the person responsible for labelling so that they can verify the information provided.

The current international standards specify the minimum information that should be given, primarily to inform the consumer so that they can decide whether the product meets their needs.

Besides this standard information, which is generally required as a minimum in legislation, there is no restriction on other information given, as long as it is not false or misleading. This gives an opportunity for business to promote their company and products and assist consumers in other ways, such as providing cooking suggestions.

In 2007, there did not seem to have been any recent consultations on what consumers wanted on labels and in particular relating to quantity and so their views were sought to assist the review of OIML R 79.

This paper gives the results of a limited survey of consumers in the UK[5] which resulted in 219 responses. The survey was conducted by self-completion of a questionnaire, with no assistance being provided so that consumers' views could not be influenced.

This survey sought the views of consumers on what information is most useful to them, the information they would want on the front of pack, the minimum size of the information, how they would want to contact the producer, and expectations as to the minimum quantity of product they would expect in the package.

Information

Relevance: Consumers were asked to rank the relevance of thirteen pieces of information that are currently given. The top six given were:

- product description, which for food would be the legal name (for example chocolate bar containing nougat and nuts);
- price;
- trade name for product (for example 'Snickers');
- best before date;
- ingredients list; and
- quantity or size.

[1] OIML R 79: Labeling requirements for prepackaged products, OIML, 1997

[2] Codex Stan 1-1985: General Standard for the Labelling of Prepackaged Foods

[3] Directives 76/211/EEC; 2007/45/EC and 2000/13/EC are the substantive ones

[4] Metrological requirements for prepackaged goods, 24 August 2005
Labelling: Competitiveness, Consumer Information and Better Regulation for the EU, DG SANCO, December 2006

[5] Howard Burnett, 'Consultation on Consumer Labels', copy of questionnaire & collated results in Annex A

These were seen as being much more relevant than the other pieces of information. The next most relevant information was given as nutrition data, unit price and origin. Some consumers wanted other information such as whether a product was vegetarian, and also allergy information.

Front of pack: Consumers were also asked to rank the importance of information presented on the package so as to be visible when displayed on the shop shelf. The three most important to consumers were:

- full product description, which for food would be the full legal description;
- trade name of the product; and
- quantity or size.

This reflects the current requirements specified in the international standards and in European legislation.

Internet buying: Consumers were also asked what information was important to them when buying over the internet. The same top three (description, trade name and quantity) were given, with the ingredients list being the next most important. Consumers were not asked about information requirements when purchasing from vending machines.

Size of information

Consumers were given a product, producer name and quantity in font sizes 8-12, 14 and 16 and were asked to circle the minimum size in which they would want the information displayed on the label. Consumers indicated that they wanted the true name of the product to be the largest, the most requested size being 16 point font, with the producer's name and quantity marking being preferred in 12 point.

Company details

One of the current labelling requirements is for the company contact details. These requirements tend to be for a name and address which would enable consumers to contact the company by letter. Now that there are many possible means of communication, consumers were asked to rank the preferred method of contacting the producer. The results were:

- phone being the most favoured; then
- e-mail;
- post;
- text; and
- fax being the least favoured.

Minimum quantity

OIML R 87[6] specifies the acceptable minimum quantity that any package can contain. This is specified as a deficiency not exceeding twice the tolerable deficiency stated for a particular marked quantity. These tolerances have been in use for over 30 years, and are significantly large for small packages[7]. There seems to be no justification for the tolerances stated in the specification although it is likely that they were based on packing technology capabilities in the 1970s. Furthermore, these tolerances do not seem to have been reviewed in the intervening time to take into account the advances in technology that have been made.

The survey asked consumers to consider five specified packed products, and to indicate on a scale the minimum quantity they would find acceptable. The results are shown in Table 1, illustrating consumers' expectations with regard to minimum quantities, which are significantly different to those stated in the international standard.

Consumer labelling issues

Consumers were asked an open question as to what really annoys them about product labelling and packaging:

- 40 % indicated that they found the information unclear, in that there was too much information (e.g. promotional information, information in various languages);
- 36 % complained about print being too small and difficult to read (e.g. bad print / background contrast);
- 30 % did not want excess packaging; and
- 10 % complained about deceptive packaging.

Other issues raised included not being able to easily open the packaging, different units of measurement being used (rendering a comparison of unit pricing impossible), false information and there being no origin (which may indicate more interest in the carbon footprint of products).

A picture of two packages containing deodorant was shown and consumers were asked which contained the most product. Of those who expressed a preference, the majority indicated the product in the larger packaging.

[6] OIML R 87 *Quantity of product in prepackages*, OIML, 2004

[7] A deficiency of 18 % is permitted for goods with a marked weight between 5 g and 50 g

Product	Consumer average acceptable minimum quantity	OIML R 87 acceptable minimum quantity
50 g spices	48.5 g (3 %)	41 g (18 %)
100 g cold meat	97.1 g (2.9 %)	91 g (9 %)
190 g can of potatoes	183 g (3.7 %)	172.9 g (9 %)
400 g loaf	392 g (2 %)	376 g (6 %)
1 L orange juice	992 ml (0.8 %)	970 ml (1.5 %)

Table 1 Consumers' expectations with regard to minimum quantities

This confirms previous research that when consumers are not given information about quantity they base their decision on the size of the packaging/ container. Many consumers indicated that they would look for the quantity markings.

Discussion

The review of R 79 should ensure the consumers' requirements are addressed with the *quid pro quo* being that any other information can be given as long as it is accurate and does not interfere with or hide the consumer-required information.

Information requirements

This survey confirms that consumers want clear indications on the front of packages giving the full product description, trade name and quantity. This supports the current requirements in R 79, which could also address information provided prior to sales over the internet or from vending machines.

Position of information

The current R 79 requirement of having the quantity and product identity (description) on the principal display panel already meets consumers' requirements.

Size and legibility of information

Consumers want the information to be given in a font larger than is given at present on many products, and for it to be easy to read.

These consumer desires re-enforce the guidance given for legibility in the NWML document[8], which is derived from the Royal National Institute for the Blind's (RNIB) clear print guidelines[9].

The European Commission[10] has recognised the needs of vulnerable consumers such as the elderly with disabilities, and has indicated that "proper attention should be paid to ensuring that the weight and volume indications on consumer product labelling are more easily legible and visible on the prepackage under normal conditions of presentation".

A quick survey of a range of common consumer products showed that packers have taken this guidance on board and product quantity markings at present meet the larger of the US and EU height requirements, with a minimum font size of 16. This indicates that the majority of businesses are customer-focused and want to provide easily read information.

Identity of product

The identity (description) of the product on the goods surveyed was, in half the products, less than the recommended 14 point font, and in two cases was only 1 mm high. Also, the contrast of print colour against background colour varied considerably from black on white, through green on peach to gold on purple. Where the packaging was shiny, the information could only be read when illuminated in a certain way.

8 Weights & Measures (Packaged Goods) Regulations 2006 – Guidance Notes, NWML URN 07/1343

9 http://www.rnib.org.uk/xpedio/groups/public/documents/publicwebsite/public_printdesign.hcsp

10 Recital (12) of the Directive 2007/45/EC of 5 September 2007

The current requirements[11] that the product identity "shall be a conspicuous feature of the principal display panel and shall be in such type size and so positioned as to make it easy to read and understand" also reflects current consumer preferences. When reviewing R 79 the issue of contrast between the type and background, the use of shiny materials and use of italics, etc. can also be addressed so that no group of consumers is disadvantaged.

Name and place of business

Consumers would prefer to contact a company by phone and e-mail and R 79 could ensure that this information is given as well as a postal address.

Declared net quantity

Besides the minimum height of the declaration, its placement on the packaging and its legibility, the issue of units of measurement was raised by consumers. The European Directives[3] on quantity also recognise the need for similar products to have the quantity stated in the same unit of measurement so that consumers can compare quantity and, with unit price, value for money. The Directives require liquids to be sold by volume and other products by weight, except where there is a European-wide trade practice to the contrary – for example growing media and soil improvers where EN 12580 provides a standard method for determining the volume of this product, which can have variable moisture content.

For some products this requirement is not the most helpful and other supplementary declarations would be preferred. Examples would be the area that paint will cover, the number of washes that can be done by a pack of washing powder[12] and the quantity a concentrated car screen wash will make when diluted. These other declarations are only useful where there is a standard method of test, which will enable the information to be verified.

'Supplementary indications' can also be indications that are in other units of measurement or other quantities, for example drained weight and gross weight. So that consumers are not misled, any 'supplementary indication' should only be permitted if it accompanies the net weight or nominal quantity and should be no more prominent than these. This will address issues such as the gross weight being prominently displayed while the net weight resides on the base of a product.

Misleading practices

Excessive and deceptive packaging annoys consumers, as does the unclear information provided. R 79[13] and R 87 covers deceptive packaging[14] at present although guidance could usefully be given on acceptable tolerances for settlement, etc. of product.

Quantity in a package

Consumers do not want to be misled as to the quantity a package contains. Their expectations as to the minimum quantity that a package may contain are at variance with the existing tolerances permitted for packages.

Recent European legislation[15] has been introduced to ensure consumers are not misled, even if the information given is true.

This issue regarding quantity tolerances could usefully be explored in the current discussions on a 'minimum system' being proposed to sit alongside the existing OIML R 87 'average system'. It may be that this consumer concern can be addressed by appropriate marking requirements so that consumers are not misled.

These consumer views, and good customer-focused business practices, should be taken into account when reviewing the current recommendations on labelling and quantity of product in prepackages. ■

[11] OIML R 79 paragraph 3.2

[12] Regulation (EC) No 648/2004 of 31 March 2004, Annex VII B labelling requirements

[13] OIML R 79 1997 paragraph 6 Misleading practices

[14] OIML R 87 2004 Annex E Prohibition of misleading prepackages

[15] Unfair Commercial Practices Directive 2005/29/EC, 11 May 2005

Annex A: Consultation on Consumer Labels
(Results in Blue)

The purpose of this consultation is to seek the views of consumers on the labelling and quantity of prepacked product, in particular:

- what information they want to see on prepacked goods,
- if buying over the internet, what information they would like to see on the web site,
- where they would like the information presented on the packaging,
- the minimum size the information should be presented in, and
- the minimum quantity they want to receive.

1 In order to give an indication of the relevance of the information to you, please rank the information below from 1 being generally the most important or useful to 14 being generally the least important or useful

Information	Ranking
Trade name (e.g. Snickers)	999
Product description (Chocolate with nougat and nuts)	712
Quantity or size	1088
Ingredients list	995
Best before date	845
Price of the product	948
Unit price (price per 100 g or 1 kg)	1572
Country or area of origin of the product	1566
Quality marks (e.g. organic, farm assured tractor)	2487
Compliance with law marks (e, CE, etc. marks)	1844
Nutrition – traffic lights (red, orange, green indications)	1577
Nutrition – data (figures)	1573
Company contact details	2038
Other (state)	

2 Rank the importance to you for the information to be:

- facing you as the package is displayed on the shop shelf, and
- on the web page, when buying over the internet.

Information	Front (front panel)	Web site
Trade name (e.g. Snickers)	651	423
Product description (Choc + nougat & nuts)	551	354
Quantity or size	893	576
Ingredients list	1020	645
Best before date	1065	627
Country or area of origin of the product	1364	933
Quality marks (e.g. organic, farm assured)	1289	906
Compliance with law marks (e, CE, etc. marks)	1596	1053
Nutrition – traffic lights (red, orange, green)	1314	965
Nutrition – data (figures)	1393	932
Company contact details	1789	1087
Other (state)	......	......

3 Circle the minimum size for each of the three following pieces of information you would want displayed on the label

Product	paint	paint	paint	paint	paint	paint	paint
responses	6	5	10	22	42	58	69
Producer	Fred's	Fred's	Fred's	Fred's	Fred's	Fred's	Fred's
responses	14	10	20	30	71	49	22
Quantity	5 g	5 g	5 g	5 g	5 g	5 g	5 g
responses	10	13	28	26	56	45	38

4 Rank the way you would prefer to contact the producer from 1 to 5, with 1 being the most preferred method to 5 being the least preferred method

Contact method	Rank
Post	524
Telephone	413
E-mail or web site	503
Text	883
Fax	961

5 Which of these contains most product?

Consumers' reactions:

Responses indicated generally that the Mitchum product looked larger, but that many would look for the quantity declaration.

6 Some packages are packed to ensure an average system. This means that the average quantity contained in the packages will be the labelled quantity, but that also means that some packages will contain less than the labelled quantity. For the products below, put a cross on the scale at the minimum quantity you would consider to be acceptable.

Product	Scale
50 g spices Av. 48.5 g	|———|—X—|———|———|—|—|———|———|———|———|———| 50 g 48 g 46 g 44 g 42 g 40 g
100 g cold meat Av. 97.1 g	|————X——|-|—————|—|—————|—————|—————| 100 g 95 g 90 g 85 g 80 g 75 g
190 g can potatoes Av. 183 g	|———|-X——|-|———|—|—|———|———|———|———|———| 190 g 180 g 170 g 160 g 150 g 140 g
400 g loaf Av. 392 g	|———|-X——|—|———|———|——|-|———|———|———|———| 400 g 390 g 380 g 370 g 360 g 350 g
1 L Orange juice Av. 992 ml	|——X———|——|——|—————|—————|—————| 1000 ml 980 ml 960 ml 940 ml

7 Have you been consulted by any producer on:

- the quantity you would like products packed in	YES: 0
- the information you would like on labels or web sites	YES: 0
- how you would like information presented	YES: 1

What really annoys you about product labelling and packaging?

- unclear information 91
- small print & difficult to read 80
- excessive packaging....................................... 66
- deceptive packaging 22
- difficult to open 17
- different units of measurement..................... 12
- false information 9
- no origin.. 8

Thank you for your assistance, if you would like to participate in further consultations on consumer matters please provide your contact details:

Name ....

Address ....

E-mail address ....

Phone number...

In order to ensure we obtain views from a range of consumers it would help if would you please circle the data that applies to you:

Gender Male 73 Female 109

Age				
	up to 14 (0)	15-19 (8)	20-29 (37)	30-39 (24)
	40 –49 (28)	50-59 (36)	60-69 (42)	70 & over (30)

Ethnicity			
	White British (190)	White Other (3)	Chinese
	Other Asian (1)	Caribbean	African (1)
	Other ethnic group (1)		

Income range

up to £100 per week (£5,000/yr) (22)	£100 - £200/wk (£5 to £10,000) (21)
£200 - £300/wk (£10-15,000) (34)	£300 - £400/wk (£15-20,000) (33)
£400 - £500/wk (£20-25,000) (19)	over £500 a week (over £25,000/yr) (34)

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TERMINOLOGY

Developing consistent definitions

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The original version of this article was written for use within ISO TC 85 Radiation protection (document ISO TC 85 N948).

1 Introduction

Much of the discussions in Technical Committees drafting publications such as technical regulations, standards and guidance documents is about how to formulate texts clearly and unambiguously. Such publications must be worded in a way that their users, most of whom have not participated in the discussions, understand the texts as the authors have intended.

A **definition** may be regarded as a description of a '**unit of knowledge**' which is represented by a **term**. Using the same term with different definitions within the same subject field of knowledge (such as legal metrology) may lead to misunderstandings.

Example: 'Error' in legal metrology is defined as: measured quantity value minus a reference quantity value. However, 'error' is more commonly used in the sense of 'mistake'.

The challenge is to use terms and definitions that are appropriate for the specific field of knowledge we are dealing with (such as legal metrology), to the point and unambiguous. A definition shall describe the **essential characteristics** of the 'unit of knowledge' (represented by the term), in particular those that distinguish it from others (**delimiting characteristics**).

The definitions and corresponding terms used in a particular publication need to be consistent, not only with each other, but also with those of other, horizontal, publications in the specific field.

This article offers a description of the process for developing a consistent set of definitions.

2 General

First of all, one needs to be aware of the distinction between a 'word' and a 'term'. A word belongs to the general language and may mean different things to different people. A word (or a set of words) becomes a term only when it is used in a specific context (such as: legal metrology) and it is properly defined. This is what **terminology** is all about.

Terminology is based on the following principles:

a) the basis is the 'unit of knowledge' that we want to define and refer to by a term;
b) related 'units of knowledge' can be organized in systems and their relations shown in diagrams[1];
c) a definition is a verbal description of a 'unit of knowledge';
d) a term is a verbal designation of a 'unit of knowledge' in a specific field of knowledge;

In order to arrive at an appropriate set of definitions, it is necessary to analyze relevant texts (other publications in the same field of knowledge) to find the characteristics that are suitable for use in the description of the 'units of knowledge'.

Not all characteristics have the same importance. Only the essential ones shall be included, leaving aside the non-essential ones. Strictly speaking, only delimiting characteristics shall be taken into consideration.

3 Structuring 'units of knowledge'; relational diagrams

'Units of knowledge' are not independent. They always relate to others. In terminology work, the analysis of their relations is a prerequisite for the successful drafting of definitions.

By structuring the 'units of knowledge' into appropriate systems, the relationships between those 'units of knowledge' are clarified. This provides a cohesive **terminology structure** that facilitates the drafting of definitions that are intelligible and transparent with linguistic brevity.

There are three basic **types of relations**:

- generic,
- partitive,
- associative.

The relations in a terminology system typically are a mixture of the basic types.

[1] Among terminologists, the 'unit of knowledge' is called 'concept' and the graphical representation of the relations between concepts is called 'concept diagram'.

3.1 Generic relation

A **generic relation** exists when one 'unit of knowledge' is subordinate to another, sharing an identical set of characteristics, but where the subordinate one has at least one additional distinguishing characteristic.

In diagrams, generic relationships are shown as 'tree' diagrams (Figure 1).

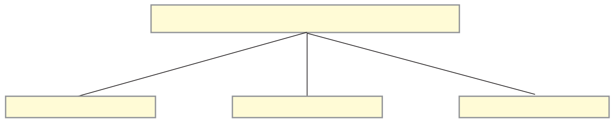


Figure 1 Graphical representation of a generic relation

Example (Figure 2):

3.4
TL dosemeter
passive device consisting of one or more TL detectors, which may be mounted in a holder (appropriate for the application), intended to be worn on a person's body or placed in an environment for the purpose of assessing the appropriate dose equivalent at or near the position where it is placed

3.4.1
extremity dosemeter
dosemeter intended to be worn on the finger or limb [hands, feet, forearms (including the elbow), and lower leg (including the patella)]

3.4.2
eye dosemeter
dosemeter intended to be worn near the eyes

3.4.3
reusable dosemeter
dosemeter intended to be reused, as opposed to one which is discarded after one use

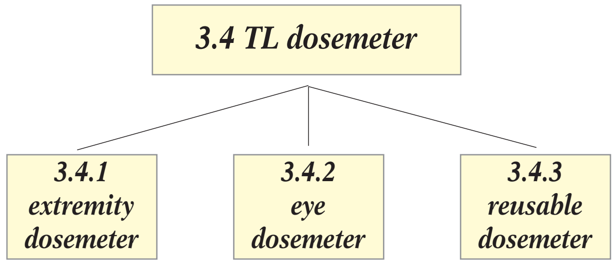


Figure 2 Example of generic relationships from ISO 12794:2000

3.2 Partitive relation

A **partitive relation** exists when the superordinate term designates the definition of an object[2] as a whole, while the subordinate term relates to a part of that whole.

In diagrams, partitive relationships are shown as 'rake' diagrams (Figure 3).

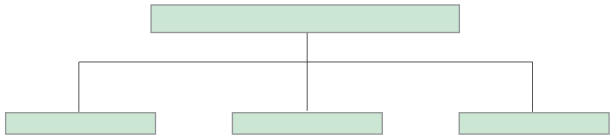


Figure 3 Graphical representation of a partitive relation

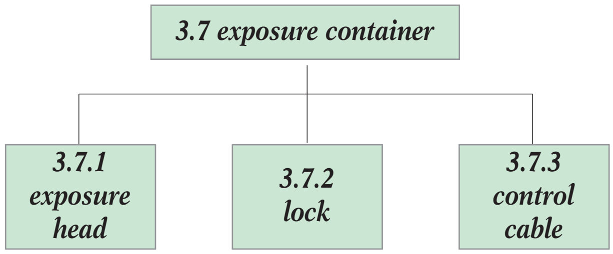


Figure 4 Example of partitive relation from ISO 3999-1

Example (Figure 4):

3.7
exposure container
shield, in the form of a container, designed to allow the controlled use of gamma radiation and employing a source assembly

3.7.1
exposure head
device which locates the sealed source included in the source assembly, in the selected working position, and prevents the source assembly from projecting out of the projection sheath

[2] An 'object' can be anything that is perceivable or conceivable. It may be material (e.g. an engine, a sheet of paper, a diamond), immaterial (e.g. a conversion rate, a project plan) or imagined (e.g. a unicorn).

3.7.2
lock
mechanical device with a key used to lock or unlock the exposure container

3.7.3
control cable
cable or other mechanical means used to project and retract the source assembly out from and into the exposure container by means of remote control

3.3 Associative relation

Associative relations include a wide range of non-hierarchical relations such as:

- cause↔effect,
- activity↔location,
- activity↔result,
- tool↔function,
- material↔product.

Associative relations are shown graphically in the form of a line diagram with arrowheads at each end as in Figure 5. The exception is the case of sequential activities. In that case the arrow head is positioned in the direction of flow.

Example (Figure 6):

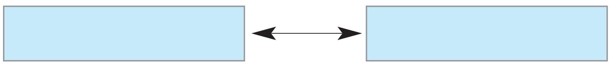


Figure 5 Graphical representation of an associative relation

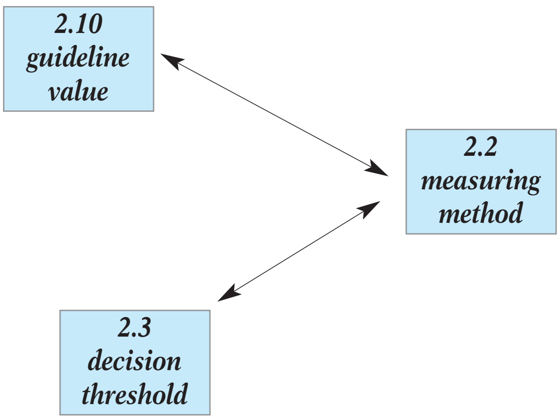


Figure 6 Example of an associative relation from ISO 11929-4:2001

2.2
measuring method
use of a linear-scale analogue ratemeter for pulse-rate measurements under specified conditions

2.10
guideline value
value which corresponds to scientific, legal or other requirements for which the measuring procedure is intended to assess, for example, as activity, specific activity, surface activity, or dose rate

2.3
decision threshold
critical value of a statistical test for the decision between the null hypothesis $\rho_s - \rho_0$ and the alternative hypothesis $\rho_s > \rho_0$

3.4 Mixed relations

As already mentioned, a terminology system typically consists of a mixture of relations (Figure 7). An example taken from the VIM [1] is shown in the Annex. (Note: this example was added to the original article at a later stage, and was not part of the original version).

4 Definitions and terms

4.1 Definitions

A definition is a statement that uniquely describes a single 'unit of knowledge' and permits its differentiation from other, related 'units of knowledge'.

Listing all the characteristics of the object of the definition (i.e. the 'unit of knowledge' we want to define) would make the definition incomprehensible. A definition should be as brief as possible.

A definition normally consists of two parts:

1 its principal or essential characteristic that is indispensable for understanding the object being defined and which is its position within a system, and

2 the essential distinguishing characteristics (delimiting characteristics) that differentiate the object being defined from related objects.

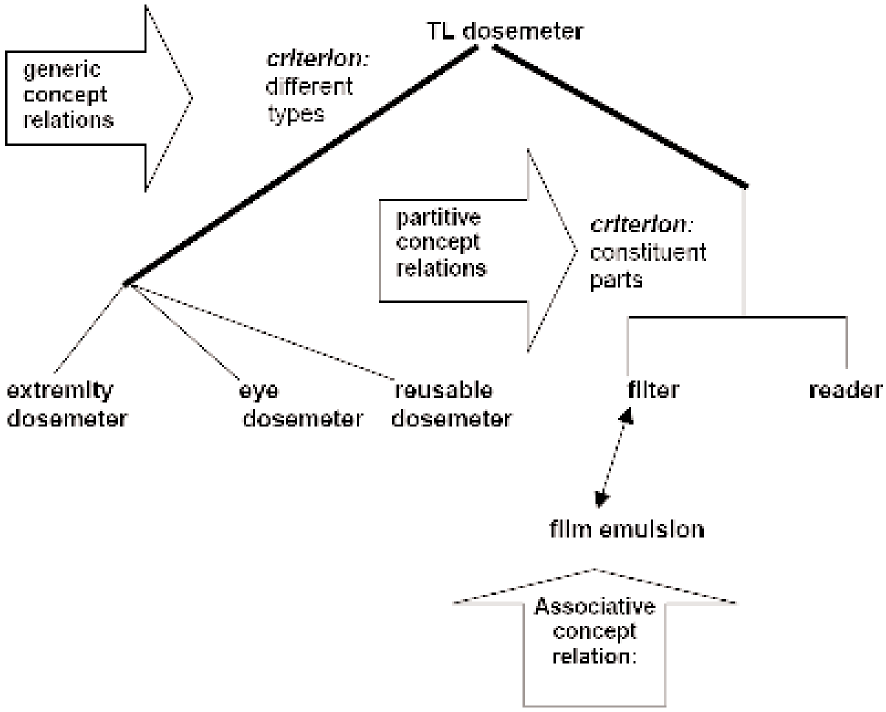


Figure 7 Mixed relations

Definitions that first indicate the superordinate term and then provide the distinguishing characteristics (so called intensional definitions) are the most advisable because of their clarity.

When drafting definitions, special care shall be taken to write them down as briefly as possible. Any additional information should be added in a note.

To test the quality of a definition, one should use the **principle of substitution**, that is to say, to replace in a text the term by the definition without changing the meaning of the text.

4.2 Terms

When selecting terms, one should consult reliable publications and specialists and take special care to choose not only appropriate terms but also those that are widely accepted in the users' circle.

Selected terms should comply with following principles:

- **transparency** (the 'obvious' term for the definition),
- **consistency** (integrated in a coherent system),
- **appropriateness** (adhering to established and familiar patterns of meaning),
- **linguistic economy** (short, brief),
- **accuracy** (to the point and unambiguous),
- **derivability** (allowing derivatives e.g.: 'electricity' is a derivative of 'electric'),
- **motivation** (the term already suggesting what is being defined),
- **linguistic correctness** (conforming to morphological and phonological norms), and
- **preference for native language**.

When having to create a new term, there are several possibilities:

- derive a term from an existing term (derivation),
- combine existing terms or elements of terms (compounding),
- use a word from the general language as a term (terminologization),
- use an existing term from another field of knowledge (transdisciplinary borrowing),
- use an existing term from another language (translingual borrowing), with or without translation.

5 Definition development process

When considering to create a new definition, the following steps could be taken:

Step 1: Is it necessary?

1) Is the term self-explanatory or commonly known and cannot be interpreted differently in different contexts?

   If so, do not define it. Define a common dictionary or current technical term only if it is used with a specific, different meaning in the relevant context.

2) Is there already a definition available in a horizontal publication or an appropriate International Standard?

   If so, use that definition and use the term that designates that definition. Do not:

   - "adapt" the definition of a term in a horizontal document;
   - use a different term for the same definition;
   - use the same term with a different definition.

Note: When quoting a definition from another document any information about the applicability of the definition in the specific context should be put in a note.

Step 2: Analyze

1) Look for, or create a suitable terminology diagram in which the new definition should be fitted.

   Check diagrams available for other publications to see whether definitions used in another context can be adapted or expanded. If not, devise a new subject field and develop an appropriate diagram.

2) Analyze the system and consider who the interested parties are that will be using the publication. These include the users of the instruments and methods which are the subject of the publication, those concerned with transferring knowledge, conformity assessment, etc.

3) Before starting to draft a definition, identify and analyze related definitions in the diagram of the system in which it is to be placed.

Step 3: Identify characteristics

1) Position the new term within the chosen diagram.
2) Identify the essential and delimiting characteristics.
3) Select just sufficient characteristics necessary to define the object uniquely within the system for your particular subject field.

Step 4: Draft the definition

1) Describe only a single object ('unit of knowledge') within a particular definition.
2) Include characteristics describing what the concept is, rather than what it is not.
3) Include a limiting subject field label <... > at the start of a definition, when the term has multiple meanings or is not used in a generic sense.

   For example: <radiation protection>.

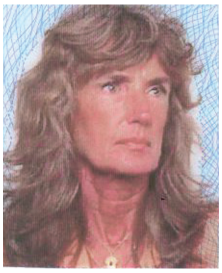
4) Phrase short sentences and consider only one issue in one sentence. Proceeding in this manner will contribute to improved clarity and make translation into other languages easier.
5) Include only words directly related to characteristics. Avoid such words as 'means', 'is' or 'the term is used for'.
6) Begin with the same part of speech in the definition as in the term (e.g. a verb or verbal form when defining a verb, a noun when defining a noun).
7) Use the singular form for the definition, with a lower case starting letter, no initial article and no final full stop.

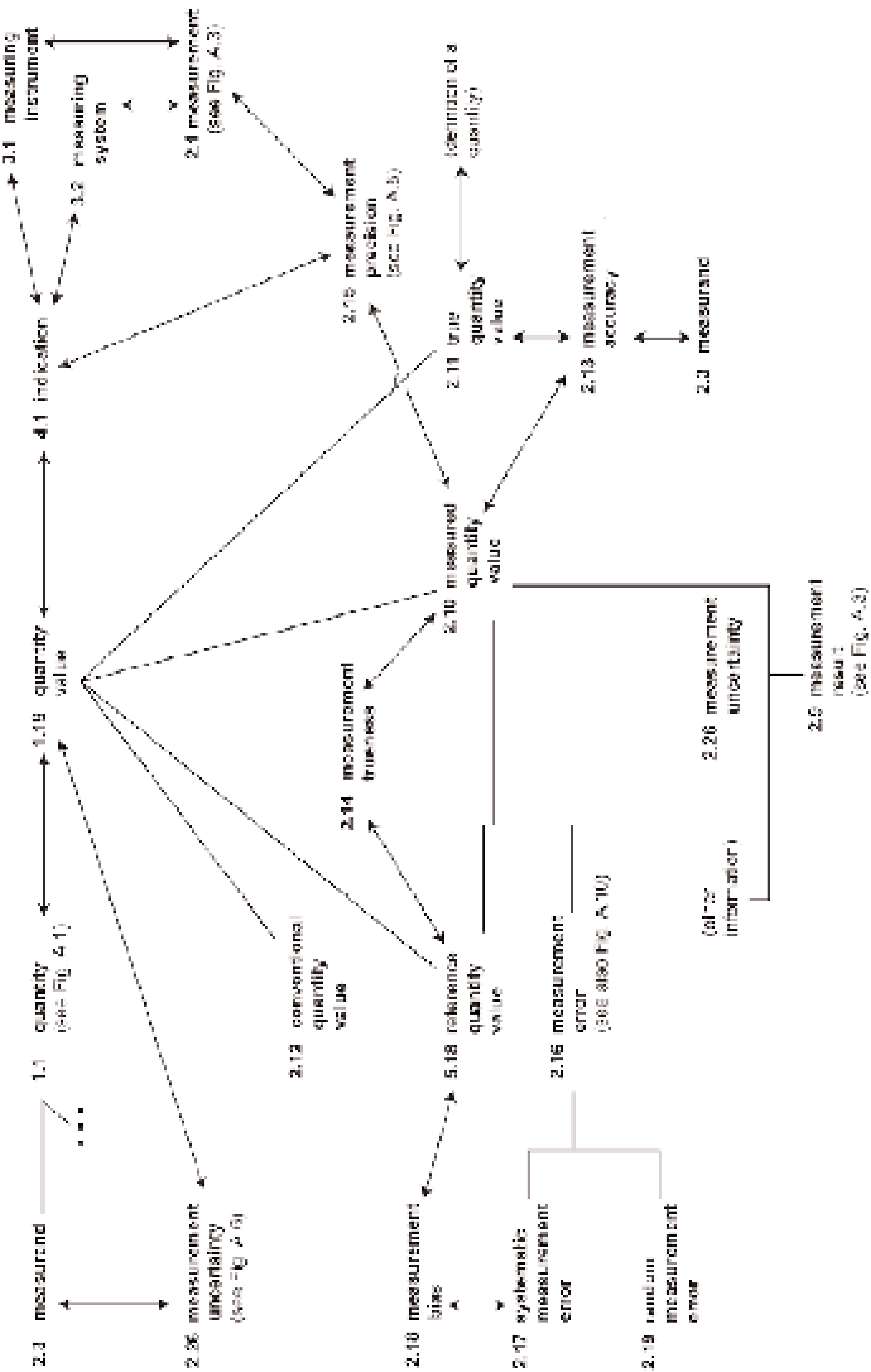
Step 5: Check and validate

1) Check the internal logic of the definitions.
2) Express the relationships between definitions, in terms of generic, partitive or associative relationships, in the form of a diagram.
3) Use the substitution rule to review the logical relationship of definitions. To achieve this replace specific terms by their definition. If the result shows that the logic is sustained the definitions are sound in this respect.

Reference

[1] International Vocabulary of Metrology - Basic and General Concepts and Associated Terms (VIM). Third Edition, 2007





ANNEX
Diagram for the term 'quantity value' (Taken from the VIM).

SOFTWARE

Experience gained from a comparative examination of measuring instrument software

Tanasko Tasić, Dieter Richter, Ulrich Grottker, Paul Kok, Christoph Rahm

Abstract

This paper describes an approach to the validation of the guidance document WELMEC 7.2 "Software Guide (Measuring Instruments Directive 2004/22/EC)". The aim of the Guide, which was developed in the EU-funded project "MID-SOFTWARE", is to support a harmonized implementation of the MID with regard to software in measuring instruments.

Although the Guide is relatively comprehensive, a residual uncertainty among national metrological institutes and manufacturers is still present and concerns the uniform implementation of the Guide. A comparative examination of measuring instrument software appeared as being the most appropriate way to resolve these concerns.

Six European national metrology institutes volunteered to participate in the experiment. Remarkable results were achieved, both with respect to improvements in the Guide and also with respect to general experience. The results proved the suitability of the Guide for its intended purpose. In addition, the experiment provided valuable knowledge about the prerequisites and necessary procedures to perform such types of comparisons. The approach proved to be basically suitable for application in other similar fields.

The experiment was restricted as regards the coverage of requirements of the Guide. In particular, more complex IT configurations were not included. It is considered as extremely beneficial to repeat such comparative tests with other measuring instruments in order to increase the validation coverage of the Guide.

1 Introduction

Being aware of the importance of software in measuring instruments, the legal metrology community has developed several software-related guidance documents in the past years ([1]). One particular project, funded by the European Commission, aimed at supporting the implementation of the Measuring Instruments Directive (MID) [2] in the field of software. This project had already been launched during the final phase of the harmonization of the MID once the technical requirements had become stable. It was part of the 5th Framework Program and ran under the name "MID-Software" from 2002 through 2004[1]. The outcome was a software Guide for measuring instruments, adopted in 2005 as WELMEC Guide 7.2 ([3], [4]).

Since the software-related requirements of the MID are very general, refinements are necessary to sufficiently support software tests. In addition, validation guidance is necessary since the conformity assessment of measuring instruments is generally supposed to be performed by metrologists who are not software testing experts. This guidance must be coherent with the refined requirements. WELMEC Guide 7.2 is the result of the endeavor to fulfill these aims.

The validation of software with respect to the developed requirements remains a demanding task due to the absence of straightforward defined procedures, i.e. of dedicated technical standards for metrological software. This becomes especially evident when comparing this area with other technical testing fields with available dedicated standards, such as for example electrical safety, electromagnetic immunity and chemical analysis.

Although WELMEC Guide 7.2 provides much assistance, it still leaves a certain degree of freedom for testers. The freedom consists in the selection of test methods and strategies to be applied, but also in the application of the requirements to new technical solutions. Consequently, there is a latent danger of different interpretations by different software testers; this could lead to different test results and finally to different conclusions on the conformity of the same unit under test.

This concern arose among participants in the MID-Software project at the outset during the preparation of the Guide. The idea arose in the WELMEC Working Group "Software" to apply the principle of intercomparison to remove uncertainty about the interpretation from the new Guide. This principle is well known in metrology, but has never before been applied to software. The implementation of the MID was the ideal opportunity for its realization. The main uncertainty which had to be resolved was the concern that WELMEC Guide 7.2 could not be sufficiently clear and straightforward to ensure that testers from different laboratories would come to the same results when

[1] contract G7RT-CT-2001-05064

examining the same software. In other words, a sort of degree of equivalence of software examination results was sought. And it was a challenge to produce results by the time the MID came into force on October 30, 2006.

Laboratories from six European national metrology institutes represented in WELMEC Working Group 7 took part in the intercomparison experiment[2]. The software of an electrical energy meter was selected as the unit under test. The software, together with the meter itself and the documentation, were provided by Landis+Gyr from Switzerland. The experiment was coordinated by the Metrology Institute of the Republic of Slovenia (MIRS).

2 WELMEC Guide 7.2

The intention of WELMEC Guide 7.2 is to remove uncertainty over the interpretation of software requirements laid down in the MID and to establish mutual confidence in the results of software examination and testing. The Guide has been harmonized among the 16 participating organizations from 13 countries, and beyond.

The Guide developed provides support to all those concerned with the application of the MID. It addresses both manufacturers of measuring instruments and third-party examiners. The Guide is purely advisory and does not itself impose any restrictions or additional technical requirements beyond those contained in the MID. Alternative approaches may be acceptable, but the guidance provided in this document represents the best practice to be followed. Although the Guide is oriented towards instruments included in the regulations of the MID, the results are of a general nature and may be applied beyond.

The main content of the Guide consists of specific software requirements based on the general requirements as given in Annex I of the MID. Furthermore, recommendations are given to carry out validations of the software.

The overall structure of the requirements follows the classification into configurations of measuring instruments. There are so-called basic configurations and extended IT configurations. The basic configurations are divided into two classes:

- built-for-purpose measuring instruments with embedded IT components and dedicated application software (called type P instruments); and
- measuring instruments using a universal computer and software running on it (called type U instruments).

Each type of measuring instrument can be assigned to exactly one basic configuration, the basic rule being that any instrument that cannot be unambiguously classified as a type P instrument is a type U instrument. The following extended IT configurations have been introduced:

- long-term storage of measurement data (called extension L);
- transmission of measurement data (called extension T);
- software download (called extension D);
- software separation (called extension S).

Each set of these requirements is only applicable if the corresponding function exists.

Furthermore, risk classes have been introduced. All requirements are differentiated according to risk classes. This means that before a measuring instrument can be assessed, the applicable risk class must be chosen so that the appropriate requirement blocks can be selected. Risk of software in legal metrology is influenced by three factors:

- risk that the software and the measurement data are accidentally changed or tampered with;
- risk that individual instruments are not in conformity with the instrument type approved;
- risk that examinations at type approval are not exhaustive enough to reasonably reduce the probability of deviations from requirements.

Based on this assessment, risk classes are defined by the combination of risk levels introduced for the relevant aspects: software protection, software conformity and software examination. For more details refer to [3].

The definitions in WELMEC Guide 7.2 are organized as a structured set of requirement blocks (see Figure 1). The overall structure follows the classification of measuring instruments into basic configurations and the use of IT configurations as described above. These sets of requirement blocks are complemented by instrument-specific requirements, which cannot be considered as being isolated from the instrument-independent parts. They are restricted to specific aspects of measuring instruments.

The use of the Guide is supported by a recommended procedure, comprising the following steps:

- Step 1: Selection of the basic configuration (P or U);

[2] Performers of the examination were Aleksander Premuš (MIRS, Slovenia), Wolfgang Waldmann (BEV, Austria), Petr Klapetek (CMI, Czech Republic), Jan Konijnenburg, Marcel Cloo and Henri Schouten (NMi, The Netherlands), Kazimierz Karnaszewski (GUM, Poland) and Heike Wippich and Ulrich Grottker (PTB, Germany).

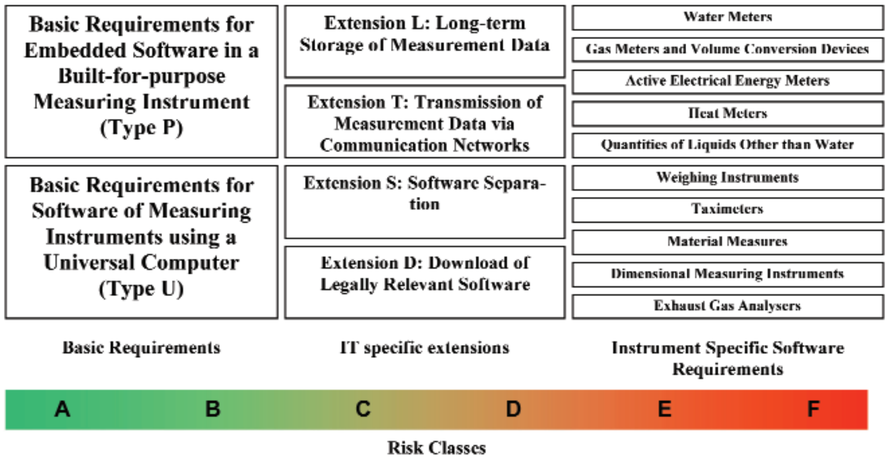


Figure 1 Modular structure of WELMEC Guide 7.2

- Step 2: Selection of applicable IT configurations (extensions L, T, S and D);
- Step 3: Selection of instrument specific requirements (extension I);
- Step 4: Selection of the applicable risk class.

In addition to this procedure, checklists are introduced to further support the work with the Guide. Checklists are a means to ensure that all the requirements within a chapter have been covered by the manufacturer or third party examiner.

To support the validation of requirements by independent test authorities, validation recommendations have been developed and associated with the requirements. These recommendations are differentiated according to the risk classes. Furthermore, a set of test methods for the validation has been compiled; this compilation is not part of the requirement guide but an additional supporting means [5].

3 The comparison

3.1 Preparation of the comparison

The equipment under test (EUT) was a static Landis+Gyr electrical energy meter with communication interfaces and without download possibility. The assumed risk class was “C”. The EUT documentation was in English and one copy of the EUT package was sent to each participant in the comparison, giving the possibility for all the participants to perform the work simultaneously. Each EUT package contained:

- one Landis+Gyr ZMD120AR meter;
- Landis+Gyr MAP110 service software for PC together with the necessary user manual and user authentication data;
- H 71 0015 0029 en - ZMD100AR - MID Software Declaration.pdf;
- H 71 0200 0268 en - ZMD100AR - User Manual.pdf;
- H 71 0200 0270 en - ZMD100AR - Functional Description.pdf;
- H 71 0200 0405 en - ZMD100AR - Software Description.pdf;
- H 71 0200 0406 en - ZMD100 AR - Parameter List.xls.

A test plan was drawn up according to WELMEC Guide 7.2 with some help from ISO/IEC GUIDE 43-1:1997 [6].

3.2 Execution of the comparison

The comparison was carried out in the following steps:

1 Preparation of instructions for all participants by the coordinator;
2 Simultaneous distribution of the EUT packages;
3 Parallel and independent execution of the test by the participants;
4 Provision of a test report by all participants to the coordinator;
5 Preparation of the test reports by the coordinator (e.g. anonymization of reports) for a comparative evaluation;
6 Evaluation of the test reports by an appointed group consisting of Christoph Rahm (Landis+Gyr), Paul Kok (NMi), Dieter Richter, (PTB) and Tanasko Tasić and Roman Flegar (MIRS).

The main objective of the comparison was the validation of the applicability of Guide 7.2, in this particular case for the conformity assessment of the MID MI-003 instruments according to module B. It was not the aim to assess the capabilities of participating laboratories. The focus was the understandability and applicability of the Guide.

To meet the aim, each participant had to:

- identify the applicable requirements from WELMEC Guide 7.2 by himself;
- develop a test plan;
- carry out the validation close to the validation guidance given in Guide 7.2;
- select the appropriate test methods and strategies by himself;
- perform the test as decided;
- write a test report following the pattern in Guide 7.2 and including results and additional information as the test plan developed, an evaluation of the applicability of Guide 7.2 parts used and other comments relating to the work performed.

In the case of detecting a deviation from requirements or a failure, participants were required to record the detection, not to replace the EUT or parts of it and to continue testing.

3.3 Results

As regards the execution of the comparison, the evaluation group found:

1 The EUT packages prepared by Landis+Gyr were complete and enabled an immediate start to the tests.
2 The documentation submitted was complete. In particular, the document "MID – Software declaration ZMD100AR", which explains where answers to particular requirements are described, was considered as very helpful, and saved a significant amount of time. It is recommended to have a corresponding document in all type approval applications.
3 The template of the test report in Guide 7.2 is adequate. All participants used the template for their reports.

The following observations with respect to Guide 7.2 were made:

1 The applicability of the long-time storage extension of the guide (part "L") to electricity meters was reconsidered. The conclusion was that it is necessary to apply this part to electricity meters.
2 At first glance it appeared that there were significant discrepancies in the validation outcomes for requirements P3 (Influence via user interface), P4 (Influence via communication interface) and P7 (Parameter protection). It turned out that different results were caused by a different understanding of the legal relevance of the particular parameters. As the result, it was concluded that a classification of the parameters with respect to their legal relevance should be part of the type documentation. However, this is beyond the scope of WELMEC Guide 7.2.
3 A need was revealed for a more precise definition of the user and the communication interfaces.
4 The need for an unambiguous interpretation of the requirement P2 "SW identification for verification and inspection purposes has to be easily shown" was stated.
5 It occasionally happened that the acceptable solutions proposed in the Guide were understood as being mandatory requirements, whereas in fact they are just proposals for acceptable solutions. The conclusion is to clearly differentiate in the Guide between requirements and acceptable solutions wherever appropriate. An example is the proposal to use the checksum of the software for the identification. It is not required to use the checksum as an identifier. Different types of identifiers are allowed.
6 An inconsistency was found among the requirements for long term storage of measurement data concerning the required warning from overwriting data. This warning is indeed not necessary if valid data are protected from overwriting by technical means.
7 A specific observation concerned an instrument-specific requirement. Clarification is necessary to establish what is considered as acceptable behavior in the case of a watchdog event.

4 Conclusions

Comparative measurement or testing of the same artefact among different laboratories is an established practice in many areas, including intercomparisons at the highest level of measurement (key comparisons) and so-called proficiency testing, which may even be understood as the comparison and ranking of the laboratories' measurement capabilities.

Comparative software examination was never before carried out, at least in the area of metrological software. No systematic knowledge of how to set up and organize such types of comparisons was available. Therefore, the approach of comparative testing was an experiment with the focus on the validation of the guidance document, but not on the capabilities of the participating laboratories.

The harmonization aim that shall be supported by WELMEC Guide 7.2 in the software area is finally met if the Guide is understandable, unambiguous and consistent. Furthermore, freedom shall be left for technological developments within the boundaries of the requirements given in the MID. The comparative examination of the software proved to be an appropriate way of validating these standards.

The comparative examinations performed were restricted to a certain type of instruments and only covered a small portion of the Guide. The restriction applies both to the set of requirements and to the risk classes. In particular, more complex IT configurations were not included. It is considered as extremely beneficial to repeat such comparative tests with other measuring instruments in order to increase the coverage of the Guide. In practice, a comparison of software tests is hardly possible since there is no identical software tested by different notified bodies.

Some findings were revealed by the comparison; these findings have led to improvements that were incorporated in the latest revision of the Guide.

Besides the special benefit for the intended purpose, this method of validation by comparative examination was found to be a very useful procedure for some basic aspects:

- at first, this method of validation is particularly useful for newly developed guides;
- one can determine something like a degree of application equivalence of an implemented guide;
- the third aspect is that comparative tests may be useful for maintaining a once achieved degree of application equivalence along with new technological developments.

The comparative examination of software has one significant advantage compared to other comparative examinations: there is no need for a unit under test to be transported from place to place. Certainly, each participant needs to have one sample instrument with embedded software, but the unit under test is the software so it is permitted to use copies of the instrument without impairing the test results. Consequently, all the participating laboratories may perform the work simultaneously and the duration of the comparison is significantly shorter than, for example, key comparisons. Well prepared documentation is essential for the quality of the examination and particularly for the comparison.

References

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[2] *Directive 2004/22/EC of the European Parliament and of the Council of 31 March 2004 on Measuring Instruments ("The Measuring Instruments Directive")*, available for download from http://eur-lex.europa.eu/LexUriServ/site/en/oj/2004/l_135/l_13520040430 en00010080.pdf, 2004.

[3] *WELMEC Guide 7.2: Software Guide (Measuring Instruments Directive 2004/22/EC)*, available for download at www.welmec.org.

[4] Dieter Richter, Ulrich Grottker, Daryosh Talebi, Roman Schwartz: *The new European software guide for legal metrology: Basic principles*, Computer, Standards & Interfaces, 28,3, 270-276, 2006.

[5] Jan Jacobson, Bengt Johansen: *Methods for validation and testing of software,* Report of the EU funded project "MID-Software", download from http://www.welmecwg7.ptb.de/Guides/MID-SW-Report-Validation_Testing.pdf, 2004

[6] ISO/IEC GUIDE 43-1,2: Proficiency testing by interlaboratory comparisons, 1997.

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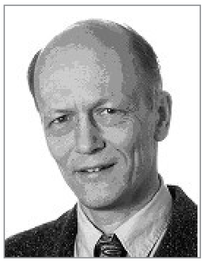

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[3] The work described in this article was performed during the author's employment in the Metrology Institute of the Republic of Slovenia (MIRS)

SOFTWARE

IT issues in legal metrology

J.F. Magana, BIML Director

Electronic devices appeared in measuring instruments subject to legal metrology control in the 1970's. At that time these devices were not programmable and were mainly composed of rather simple components.

The engineers in charge of type approval identified the reliability of components as being the main issue to address: what was the behavior of analog components under ambient temperature changes, what was the long-term stability and the drift of these analog components, what was the failure rate of digital components and the effect of surges, bursts, etc., and how to detect and act upon failure of a component. Measurement results were elaborated and displayed in real time; they were not stored in electronic memories and the storing of cumulative results was performed by electro-mechanical displays. Examining the electronic schemes of an instrument was sufficient to understand its operation, and examining an instrument's electronic boards was sufficient to appreciate its conformity to type.

One could think at that time that all legal metrology issues could be covered by environmental testing and by visual examination of components. The OIML developed D 11, which legal metrology specialists welcomed; it was considered that new technologies were covered for the years to come. In the European Commission, there was only one issue under discussion for electronic instruments: how to allow and define an alternative between reliability and durability (environmental testing and MTBF - Mean Time Between Failure) and detection of faults and internal failures. The protection of electronic devices was still achieved by physical sealings and evidence of an intervention could be detected by examining the electronic boards.

However, a number of difficulties already existed concerning conformity to type: a supplier of electronic components could change the specifications of the components without even informing its clients, so that over the life cycle of a type of instrument, the manufacturer could not assure conformity to type with a sufficient level of confidence. As manufacturers of measuring instruments are very small clients of the manufacturers of electronic components, they lacked the power to negotiate with them.

The evaluation of types of measuring instruments continued in the 1970's and at the beginning of the 1980's, taking into account the progressive complication of the functions of electronic chips which performed more and more automated functions, but which were not yet programmable. Type evaluation engineers had to increase their competence in electronics, but could still fully examine the functions of instruments. Storage of measurement data in rewritable memories just led to reliability issues and duplication of storage could offer acceptable solutions.

When microprocessors were first introduced into instruments, legal metrology specialists merely considered that this was just normal progress in the application of automatic technology. The software employed was relatively simple, could be fully described and evaluated, did not allow more user interfaces than former electronic instruments, and was inscribed on non erasable memory chips. Data security was generally assured by duplicating both memory and transmission lines. The protection of the instrument's integrity could still be accomplished by mechanical sealing, and conformity to type could be verified by examining the electronic board and, if necessary, by comparing ROMs.

In the second half of the 1980's, it became more obvious that instruments could no longer be considered merely as more or less simple pieces of electronic equipment, but that the problems were now of a different nature. Instruments could now accept a number of commands and data from interfaces, several different operating modes could be selected, key metrological parameters could be downloaded to the instrument, software updates and upgrades could also be downloaded, and measurement data could be transferred to external modules.

The first consequence is that the type approval body can only be aware of information described by the manufacturer in the documentation. Instruments are increasingly based on a PC board accompanied by external peripherals, sensors and acquisition interfaces. Some parts of the software may be developed specifically for different countries whose needs and requirements are different; other parts are developed only for the manufacturer's validation of the design, etc. To study what should be activated and what should not requires a thorough knowledge of the software, which may not be the case. How to prevent the activation of non authorized parts or functions of the software is a difficult issue.

What possibilities exist to access "protected" data or commands through the operating system, is it possible to capture data from peripherals and sensors without using the software of the instrument, is it possible to install different, alternative software on the same hard disk (software that could use the same user interface and which could easily be confused with the approved original software) - these are questions that the type approval authorities are not yet able to answer correctly.

Is the software protected against viruses and trojans, could spy software be uploaded to transmit confidential data, and are the software and databases correctly protected against hackers - these are new issues which can never be solved once and for all in a system. Hackers constantly develop new attacks and the security mechanisms have to be upgraded regularly. So what is the risk of breaking the security and what should be done when it has been broken, is a question that legal metrology is for the moment unable to answer consistently.

But it is clear that all these questions are crucial for legal metrology, whose objective is to provide confidence in measurement results which are given by instruments operating without the systematic permanent supervision of a competent third party.

If the security of information technologies is not applied to these instruments, confidence cannot be assured and all the other metrological and technical evaluations carried out by legal metrology are of very limited interest.

The work of OIML TC 5/SC 2 *Software* is therefore crucial for the credibility and existence of legal metrology.

OIML TC/SC MEETING

OIML TC 5/SC 2 "Software" First meeting

13–14 December 2007 Berlin, Germany

SAMUEL JUST
TC 5/SC 2 Co-Secretariat/BIML Contact Person

OIML TC 5/SC 2 *Software* was established at the end of 1999 in application of the decision of the 34th CIML Meeting, held in Tunis. Its Secretariat is held jointly by Germany (PTB, represented by Ulrich Grottker) and the BIML (represented by Samuel Just). This Technical Subcommittee is responsible for the key task of drawing up the first OIML International Document related to software. It is composed of 20 P-Members and 14 O-Members (see table) and Liaisons such as CECIP or CECOD.

P-Members:

Australia	Czech Republic	Norway
Belgium	Denmark	Romania
Belarus	Finland	Russian Federation
Brazil	France	Slovenia
Canada	Germany	United Kingdom
P.R. China	Japan	United States
Cuba	The Netherlands	

O-Members:

Austria	Mexico	Spain
Bulgaria	New Zealand	Sweden
Egypt	Poland	Switzerland
Indonesia	Slovakia	Serbia
Ireland	South Africa	

Considering that the software that equips measuring instruments (and especially the ways in which it can be manipulated) is a strategic issue, TC 5/SC 2 decided, after circulating several Working Drafts, to hold a first meeting in order to facilitate the resolution of a number of technical issues.

This first meeting was kindly hosted by the PTB at its Berlin premises. 34 stakeholders participated in the discussions, which were largely based on the comments received on the 1 CD.

Before discussions started, the Secretariat reminded those present of the voting rules and proposed a time schedule for the next step of the project. The objective is to propose the document for approval at the next CIML Meeting/Conference in October 2008.

Legally relevant

The first issue discussed was related to the use and definition of the wording *"legally relevant"*. Participants concluded that even if this wording is not strictly "academic", it is still the most appropriate because it does not have any metrological connotation. The definition agreed is therefore:

> *"Legally relevant: Software/hardware/data or part of the software/hardware/data of a measuring instrument which interferes with the accuracy of the measurement regulated by legal metrology or with the correct functioning of the measuring instrument."*

Electronic sealing

Another issue discussed during the meeting was the use of electronic sealing for measuring instruments. Basically, an audit trail (e.g. an event logger) can be considered as an electronic seal since it fulfils the same functions as a mechanical seal in that when a settable parameter of the measuring instrument is modified, the new value of this parameter is recorded in the audit trail in addition to the previous one. This serves to indicate when a metrological characteristic of the measuring instrument has been modified (such as a mechanical seal). Obviously, an electronic seal cannot be utilized in the same way as a mechanical seal, but it can be useful for specific applications (e.g. R 51:2006).

Software identification

The last important issue discussed during this meeting was software identification; the means of identification are well known and have been well accepted for a long time. But the way to indicate the software identification was actively discussed during the meeting and finally the following consensus was reached:

The software identification shall be displayed at the start up of the measuring instrument if the latter can be turned off and on again, or the software identification may be displayed on command during operation. An alternative solution was proposed during the meeting: the imprint of the software identification on the housing of the measuring instrument. This solution has to be considered under specific circumstances:

A. The user interface does not have any control capability to activate the indication of the software identification on the display, or the display does not technically allow the identification of the software to be shown (mechanical counter).

B. After production of a meter a change in the software is not possible, or only possible if the hardware (or a hardware component) is also changed.

The manufacturer of the hardware (or hardware component) is responsible for ensuring that the software identification is correctly marked on the concerned hardware.

It was clearly accepted during the meeting that this technical solution is not acceptable for all the categories of measuring instruments, but limited to non-interruptible measurements.

Follow up

This first TC 5/SC 2 meeting was a great success, and the time schedule presented at the beginning of the meeting appears to represent a reasonable forecast. This means that the final Draft Document can be submitted to the October 2008 Conference/CIML Meeting for approval, and this important field is now being actively researched and solutions worked out by the OIML to adapt to our continuously changing technological environment. ■

OIML Certificate System:

Certificates registered 2007.11–2008.01

Up to date information (including B 3): www.oiml.org

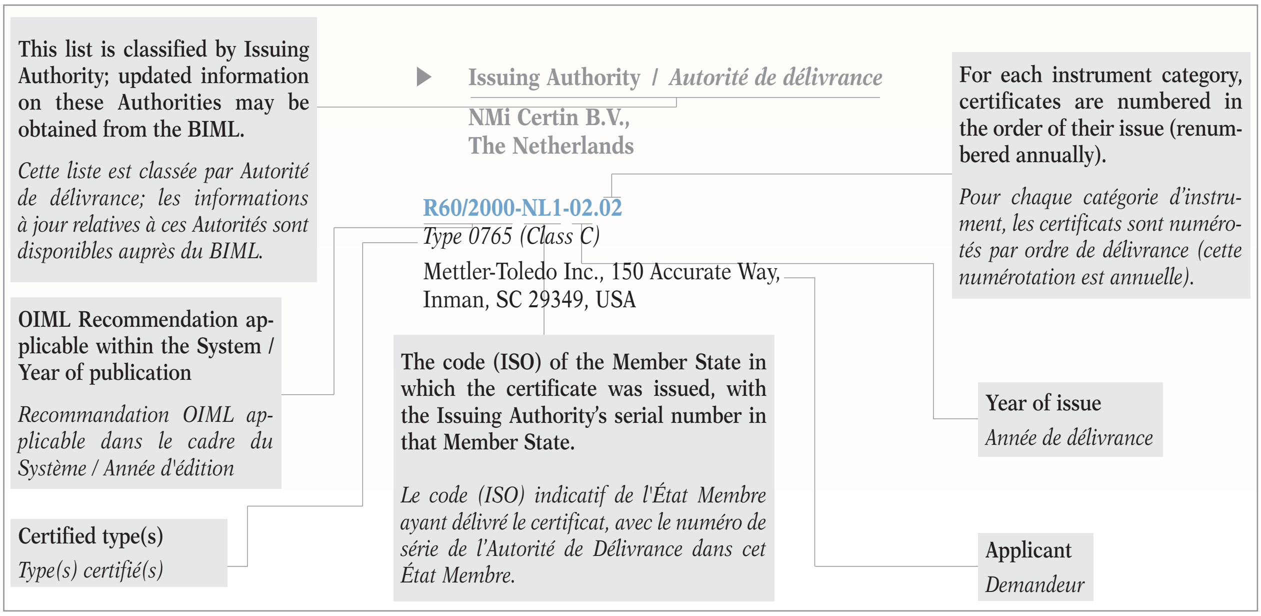
The *OIML Certificate System for Measuring Instruments* was introduced in 1991 to facilitate administrative procedures and lower costs associated with the international trade of measuring instruments subject to legal requirements.

The System provides the possibility for a manufacturer to obtain an OIML Certificate and a test report indicating that a given instrument type complies with the requirements of relevant OIML International Recommendations.

Certificates are delivered by OIML Member States that have established one or several Issuing Authorities responsible for processing applications by manufacturers wishing to have their instrument types certified.

The rules and conditions for the application, issuing and use of OIML Certificates are included in the 2003 edition of OIML B 3 *OIML Certificate System for Measuring Instruments.*

OIML Certificates are accepted by national metrology services on a voluntary basis, and as the climate for mutual confidence and recognition of test results develops between OIML Members, the OIML Certificate System serves to simplify the type approval process for manufacturers and metrology authorities by eliminating costly duplication of application and test procedures.



Système de Certificats OIML:

Certificats enregistrés 2007.11–2008.01

Informations à jour (y compris le B 3): www.oiml.org

Le *Système de Certificats OIML pour les Instruments de Mesure* a été introduit en 1991 afin de faciliter les procédures administratives et d'abaisser les coûts liés au commerce international des instruments de mesure soumis aux exigences légales.

Le Système permet à un constructeur d'obtenir un certificat OIML et un rapport d'essai indiquant qu'un type d'instrument satisfait aux exigences des Recommandations OIML applicables.

Les certificats sont délivrés par les États Membres de l'OIML, qui ont établi une ou plusieurs autorités de délivrance responsables du traitement des demandes présentées par des constructeurs souhaitant voir certifier leurs types d'instruments.

Les règles et conditions pour la demande, la délivrance et l'utilisation de Certificats OIML sont définies dans l'édition 2003 de la Publication B 3 *Système de Certificats OIML pour les Instruments de Mesure.*

Les services nationaux de métrologie légale peuvent accepter les certificats sur une base volontaire; avec le développement entre Membres OIML d'un climat de confiance mutuelle et de reconnaissance des résultats d'essais, le Système simplifie les processus d'approbation de type pour les constructeurs et les autorités métrologiques par l'élimination des répétitions coûteuses dans les procédures de demande et d'essai.

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic catchweighing instruments
Instruments de pesage trieurs-étiqueteurs à fonctionnement automatique

R 51 (1996)

▶ Issuing Authority / *Autorité de délivrance*

Physikalisch-Technische Bundesanstalt (PTB), Germany

R051/2006-DE1-2007.06
Automatic catchweighing instrument - Type: ABC
Mettler-Toledo Garvens GmbH, Kampstr. 7, D-31180 Giesen, Germany

R051/2006-DE1-2007.07
Automatic catchweighing instrument - Type: ABC
Mettler-Toledo Garvens GmbH, Kampstr. 7, D-31180 Giesen, Germany

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Metrological regulation for load cells (applicable to analog and/or digital load cells)
Réglementation métrologique des cellules de pesée (applicable aux cellules de pesée à affichage analogique et/ou numérique)

R 60 (2000)

▶ Issuing Authority / *Autorité de délivrance*

National Weights and Measures Laboratory (NWML), United Kingdom

R060/2000-GB1-2007.06
Tool steel tension (S-type) strain gauge load cell
CAS Corporation, 19 Kanap-ri, Gwangjuk-Myoun, Yangju-Si, 482-841 Gyeonggi-Do, Korea (R.)

▶ Issuing Authority / *Autorité de délivrance*

NMi Certin B.V., The Netherlands

R060/2000-NL1-2004.16 Rev. 1
Load cell, with a digital output - Type: RC3D
Flintec GmbH, Bemannsbruch 9, D-74909 Meckesheim, Germany

R060/2000-NL1-2007.14
Bending beam load cell - Type: SSP1260
Mettler-Toledo (Changzhou) Precision Instruments Ltd., 5 Middel HuaShan Road, SanJing Industry Park, XinBei District, 213022 ChangZhou, JiangSu, P.R. China

R060/2000-NL1-2007.15
Bending beam load cell - Type: SSP-1241
Mettler-Toledo (Changzhou) Precision Instruments Ltd., 5 Middel HuaShan Road, SanJing Industry Park, XinBei District, 213022 ChangZhou, JiangSu, P.R. China

R060/2000-NL1-2007.16
Bending beam load cell - Type: MED-400, K-MED/400, MED-600 and K-MED/600
Hottinger Baldwin Measurements, Inc., 19 Bartlett Street, MA 01752 Marlboro, United States

R060/2000-NL1-2007.17
Single point load cell - Type: AG
Scaime S.A.S, Le Bois de Juvigny, B.P. 501, F-74105 Annemasse Cedex, France

R060/2000-NL1-2007.18
Bending beam load cell - Type: NA... and NA... M
Hope Technologic (Xiamen) Co. Ltd., 3FL Heng Sheng Building, Yue Hua E. RD., CN-361006 Hu-Li Xiamen, P.R. China

R060/2000-NL1-2007.18 Rev. 1
A bending beam load cell - Type: NA... and NA... M
Hope Technologic (Xiamen) Co. Ltd., 3FL Heng Sheng Building, Yue Hua E. RD., CN-361006 Hu-Li Xiamen, P.R. China

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Nonautomatic weighing instruments
Instruments de pesage à fonctionnement non automatique

R 76-1 (1992), R 76-2 (1993)

Issuing Authority / *Autorité de délivrance*

National Weights and Measures Laboratory (NWML), United Kingdom

R076/1992-GB1-2007.02
Avery Weigh-Tronix G236 NAWI
Avery Berkel - Tronicx Ltd., Foundry Lane, Smethwick, Warley, West Midlands B67 9DF, United Kingdom

R076/1992-GB1-2007.08 Rev. 2
IM Series, Models IM 100, IM 202, IM 300, IM 400 and IM 500 non-automatic weighing instruments.
Avery Berkel - Tronicx Ltd., Foundry Lane, Smethwick, Warley, West Midlands B67 9DF, United Kingdom

R076/1992-GB1-2007.11
FX50 non-automatic weighing instrument
Avery Berkel - Tronicx Ltd., Foundry Lane, Smethwick, Warley, West Midlands B67 9DF, United Kingdom

R076/1992-GB1-2007.12
CASTON Series non-automatic weighing instruments
CAS Corporation, 19 Kanap-ri, Gwangjuk-Myoun, Yangju-Si, 482-841 Gyeonggi-Do, Korea (R.)

R076/1992-GB1-2007.13
Non-automatic weighing instrument formed by connecting the DPS-700 or CM-700 indicator to a weighing platform
Digi Europe Limited, Digi House, Rookwood Way, Haverhill, Suffolk CB9 8DG, United Kingdom

Issuing Authority / *Autorité de délivrance*

NMi Certin B.V., The Netherlands

R076/1992-NL1-2007.33
Non-automatic weighing instrument - Type: DS-162C-C
Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan District, Shanghai 201505, P.R. China

R076/1992-NL1-2007.35
Non-automatic weighing instrument - Type: QSP/QTP
Taiwan Scale Mfg. Co. Ltd., 99 Shunchang Road, Zhoushi Town, Kunshan City, CN-215300 Suzhou Jiangsu Province, P.R. China

R076/1992-NL1-2007.36
Non-automatic weighing instrument - Type: D-POS/D-POS Scanner
Dibal S.A., Astinze Kalea, 24 Pol. Ind. Neinver, E-48160 Derio (Bilbao-Vizcaya), Spain

R076/1992-NL1-2007.37
Non-automatic weighing instrument - Type: BD-815MA
Tanita Corporation, 14-2, 1-Chome, Maeno-cho, Itabashi-ku, 147-8630 Tokyo, Japan

R076/1992-NL1-2007.38
Non automatic weighing instrument - Type: DS-673
Shanghai Teraoka Electronic Co. Ltd., Tinglin Industry Developmental Zone, Jin Shan District, Shanghai 201505, P.R. China

R076/1992-NL1-2007.39
Non-automatic weighing instrument - Type: Spider SW, BC, FC and SC - IND4..., IND4x9
Mettler-Toledo GmbH, Unter dem Malesfelden 34, D-72458 Albstadt, Germany

R076/1992-NL1-2007.40
Non automatic weighing instrument - Type: ML series
Motex Scales Co. Ltd., 222-105 Nae-Dong, Ojeong-Gu, Bucheon-City, 421-160 Kyunggi-Do, Korea (R.)

R076/1992-NL1-2007.41
Non automatic weighing instrument - Type: CBS-1000
Dibal S.A., Astinze Kalea, 24 Pol. Ind. Neinver, E-48160 Derio (Bilbao-Vizcaya), Spain

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Automatic level gauges for measuring the level of liquid in fixed storage tanks
Jaugeurs automatiques pour le mesurage des niveaux de liquide dans les réservoirs de stockage fixes

R 85 (1998)

▸ **Issuing Authority / *Autorité de délivrance***

NMi Certin B.V., The Netherlands

R085/1998-NL1-2007.04
Automatic level gauge for measuring the level of liquid in storage tanks, make Endress+Hauser Japan Co. Ltd., model NMS530, optionally equipped with a remote indicator, make Endress+Hauser Japan Co. Ltd., model NRF 560.

Endress+Hauser Japan Co. Ltd., 826-1 Mitsukunugi Sakaigawa-cho, Fuefuki-shi, JP - Yamanashi, Japan

INSTRUMENT CATEGORY
CATÉGORIE D'INSTRUMENT

Multi-dimensional measuring instruments
Instruments de mesure multidimensionnels

R 129 (2000)

▸ **Issuing Authority / *Autorité de délivrance***

NMi Certin B.V., The Netherlands

R129/2000-NL1-2007.01 Rev. 2
Multi-dimensional measuring instrument for measuring rectangular, non-rectangular, irregular shaped, non-reflective and opaque boxes. - Type: VMS 520

SICK AG., Nimburger Strasse 11, D-79276 Reute, Germany

OIML CERTIFICATE SYSTEM

List of OIML Issuing Authorities (by Country)

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AUSTRALIA

AU1 - National Measurement Institute	R 49	R 50	R 51	R 60	R 76	R 85
	R 106	R 107	R 117/118	R 126	R 129	

AUSTRIA

AT1 - Bundesamt für Eich- und Vermessungswesen	R 50	R 51	R 58	R 61	R 76	R 85
	R 88	R 97	R 98	R 102	R 104	R 106
	R 107	R 110	R 114	R 115	R 117/118	

BELGIUM

BE1 - Metrology Division	R 76	R 97	R 98

BRAZIL

BR1 - Instituto Nacional de Metrologia, Normalização e Qualidade Industrial	R 76

BULGARIA

BG1 - State Agency for Metrology and Technical Surveillance	R 76	R 98

CHINA

CN1 - State General Administration for Quality Supervision and Inspection and Quarantine	R 60	R 76	R 97	R 98

CZECH REPUBLIC

CZ1 - Czech Metrology Institute	R 49	R 76	R 81	R 85	R 105	R 117/118

DENMARK

DK1 - The Danish Accreditation and Metrology Fund	R 50	R 51	R 60	R 61	R 76	R 98
	R 105	R 106	R 107	R 117/118	R 129	
DK2 - FORCE Technology, FORCE-Dantest CERT	R 49					

FINLAND

FI1 - Inspecta Oy	R 50	R 51	R 60	R 61	R 76	R 85
	R 106	R 107	R 117/118			

FRANCE

FR1 - Bureau de la Métrologie	*All activities and responsibilities were transferred to FR2 in 2003*				
FR2 - Laboratoire National de Métrologie et d'Essais	R 31	R 49	R 50	R 51	R 58
	R 60	R 61	R 76	R 85	R 88
	R 97	R 98	R 102	R 105	R 106
	R 107	R 110	R 114	R 115	R 117/118
	R 126	R 129			

GERMANY

DE1 - Physikalisch-Technische Bundesanstalt (PTB)	R 16	R 31	R 49	R 50	R 51
	R 58	R 60	R 61	R 76	R 88
	R 97	R 98	R 102	R 104	R 105
	R 106	R 107	R 110	R 114	R 115
	R 117/118	R 128	R 129	R 133	R 136

HUNGARY

HU1 - Országos Mérésügyi Hivatal	R 76

JAPAN

JP1 - National Metrology Institute of Japan	R 60	R 76	R 115	R 117/118

KOREA (R.)

KR1 - Korean Agency for Technology and Standards	R 76

THE NETHERLANDS

NL1 - NMi Certin B.V.	R 31	R 49	R 50	R 51	R 60
	R 61	R 76	R 81	R 85	R 97
	R 105	R 106	R 107	R 117/118	R 126
	R 129	R 134			

NEW ZEALAND

NZ1 - Ministry of Consumer Affairs, Measurement and Product Safety Service	R 76

NORWAY

NO1 - Norwegian Metrology Service	R 50	R 51	R 61	R 76	R 105
	R 106	R 107	R 117/118	R 129	

POLAND

PL1 - Central Office of Measures	R 76	R 98	R 102

ROMANIA

RO1 - Romanian Bureau of Legal Metrology	R 97	R 98	R 110	R 114	R 115

RUSSIAN FEDERATION

RU1 - Russian Research Institute for Metrological Service	R 31	R 50	R 51	R 58	R 60
	R 61	R 76	R 85	R 88	R 93
	R 97	R 98	R 102	R 104	R 105
	R 106	R 107	R 110	R 112	R 113
	R 114	R 115	R 117/118	R 122	R 126
	R 128	R 129	R 133		

SLOVAKIA

SK1 - Slovak Legal Metrology (Banska Bystrica)	R 49	R 76	R 117/118		

SLOVENIA

SI1 - Metrology Institute of the Republic of Slovenia	R 76				

SPAIN

ES1 - Centro Español de Metrología	R 51	R 60	R 61	R 76	R 97
	R 98	R 126			

SWEDEN

SE1 - Swedish National Testing and Research Institute AB	R 50	R 51	R 60	R 61	R 76
	R 85	R 98	R 106	R 107	R 117/118

SWITZERLAND

CH1 - Federal Office of Metrology METAS	R 16	R 31	R 49	R 50	R 51
	R 60	R 61	R 76	R 97	R 98
	R 105	R 106	R 107	R 117/118	

UNITED KINGDOM

GB1 - National Weights and Measures Laboratory	R 49	R 50	R 51	R 60	R 61
	R 76	R 85	R 98	R 105	R 106
	R 107	R 117/118	R 129	R 134	
GB2 - National Physical Laboratory	R 97				

UNITED STATES

US1 - NCWM, Inc.	R 60	R 76			

VIETNAM

VN1 - Directorate for Standards and Quality (STAMEQ)	R 76				

MILESTONES IN METROLOGY

10-13 May 2009

Rotterdam, The Netherlands

First Announcement

The Third Milestones in Metrology congress will be held in Rotterdam, The Netherlands in May 2009.

This Congress is the international platform for a meeting between manufacturers, metrology institutes and regulators to discuss the future of legal metrology. This time, the Organizers would also like to introduce the knowledge and experience of professional end-users.

After two successful editions, in 2003 and 2006, we can start to talk about a tradition. On the occasion of the last edition of Milestones, no less than 90 % of the visitors voted in favor of holding a 3rd Congress. So here it is!

Main themes

Legal metrology covers all measuring instruments used for trade, public health, safety and environmental issues. Within this scope, the following four main themes will be covered by the 3rd Milestones in Metrology Congress:

• Oil & Gas

Focus on the Oil & Gas sector, including the strong demand for measurement standards and facilities for LNG and bio-fuels. Rotterdam, with the largest harbour in Europe, is a central point in custody transfers of energy.

• Traffic

Traffic is measured more and more. Speed meters, section control, breath analyses and many other instruments are used to safeguard the environment and enforce safety. There is no harmonization of legislation in Europe or in the world. When do we start to harmonize?

• Software

Software dominates the behavior of almost all measuring instruments. Legal metrology works towards clear criteria for software testing. WELMEC is drawing up a new Guide on software. Where are we now?

• MID and global market access

We also want to follow up the themes of the previous event, as they are still developing: How does the MID (Measurement Instruments Directive) operate? What is the approach and result on Market Surveillance organized by the EU Member States? How does "Module H" operate? And where are we regarding the new OIML Mutual Acceptance Arrangement?

Contact information

NMi, privatized in May 1989, will celebrate its 20th anniversary in 2009. During the Congress, special events will be organized to mark the celebrations.

For further information about Milestones in Metrology, please contact:

Congress Management
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Fax: +31 70 322 99 01
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P.O. Box 394
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E-mail: milestones@nmi.nl

www.milestonesinmetrology.nl

The OIML is pleased to welcome the following new

CIML Members

- **Switzerland:**
  Dr. Philippe Richard
- **France:**
  Mr. Roger Flandrin

OIML Meetings

8–11 April 2008 - Douai, France (Ecole des Mines)

Training Seminar (first session) for OIML TC/SC Secretariats

27–30 May 2008 - BIPM, Sèvres, France

TC 3/SC 5 Conformity assessment

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Committee Drafts

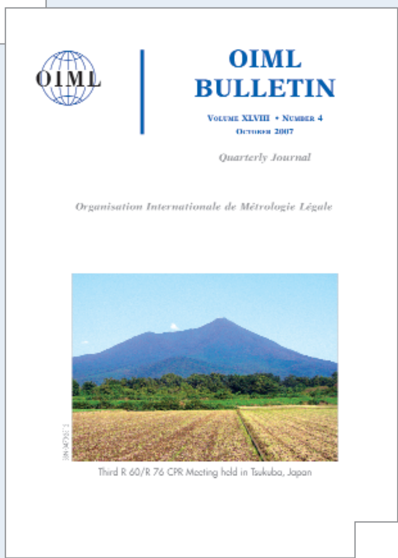
Received by the BIML, 2007.12 – 2008.02

General requirements for software controlled measuring instruments	E	2 CD	TC 5/SC 2	DE+BIML
Blackbody radiators for the temperature range from –50 °C to +2500 °C	E	2 CD	TC 11/SC 3	RU

Call for papers

OIML Members
RLMOs
Liaison Institutions
Manufacturers' Associations
Consumers' & Users' Groups, etc.

- Technical articles on legal metrology related subjects
- Features on metrology in your country
- Accounts of Seminars, Meetings, Conferences
- Announcements of forthcoming events, etc.



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- a titled, typed manuscript in Word or WordPerfect either on disk or (preferably) by e-mail;
- the paper originals of any relevant photos, illustrations, diagrams, etc.;
- a photograph of the author(s) suitable for publication together with full contact details: name, position, institution, address, telephone, fax and e-mail.

Note: Electronic images should be minimum 150 dpi, preferably 300 dpi.

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