




G05.05.02

Analysis and Recommendations on National Metrology Infrastructure

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5th EURAMET GA
Sarajevo, Bosnia-Herzegovina, 7th June 2011

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Introduction

Objective of the analysis:

to provide the EURAMET Members and Associates (NMIs and A-DIs) with a comprehensive analysis of it's membership.

Specific challenge of EURAMET:

- to bring together many different institutes with their individual strategic priorities and organisational particularities
- to collaborate within EURAMET on a common strategic goal
- to enable EURAMET to act as a coherent European metrology organisation.

- NMIs: common understanding existing on their role to maintain national standards
- DIs: much wider dispersion of understanding and modus operandi
- Designation of DIs is the sole responsibility of national authorities
- EURAMET can support by providing designation criteria, measurable performance and progress indicators based on long-years experience and an internal analysis

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NMIs and DIs in the CIPM MRA



CIPM 2005-07

NMIs AND OTHER DESIGNATED INSTITUTES

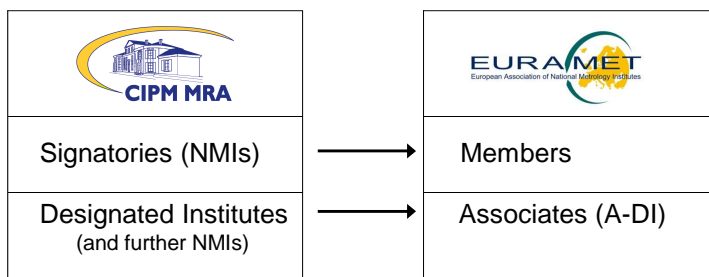
1. The current situation

1.1 Paragraphs 1.4 and 1.5 of the CIPM MRA introduced the concept of "designated institutes" as responsible for certain national standards and associated services that are not covered by the activities of the "traditional" NMI. As the importance of metrology grows in chemistry, medicine and food, so traditional concepts of traceability to the SI are less clear than in physics and engineering and it is rare to find all these competencies in a single, clearly identifiable NMI.

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NMIs and DIs within EURAMET



CIPM-MRA

introduces concept of "Designated Institutes" (DI) as responsible for national standards not covered by the "traditional" NMI


EURAMET


requests a formal registration of a DI as Associate before carrying out the measures related to the CIPM MRA

- participation in EURAMET KCs and SCs
- review of the QMS by the EURAMET TC-Q
- review of the CMCs by the concerned EURAMET TC

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Development of the DIs' role in EURAMET		
<u>Stages:</u>		
1) Transfer EUROMET to EURAMET		2007
2) Establishment of acceptance criteria for DIs in EURAMET		Dec. 2008
3) Landscaping on National Metrology Infrastructure and situation of DIs in EURAMET member countries		2009/2010
4) Conclusions and recommendations		work started
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Development of the DIs' role in EURAMET:		
1) Transfer EUROMET to EURAMET		
<ul style="list-style-type: none"> ➤ With the establishment of EURAMET all DIs participating in EUROMET became automatically Associates of EURAMET A-DI (after confirmation by Delegate) ➤ Several issues appeared: <ul style="list-style-type: none"> • inconsistencies KCDB – EURAMET (names, A-DIs not being DIs in the KCDB, etc.) • DIs or responsible TC-Q contact persons did not even know about their membership in EURAMET • unclear scope of designation • A-DI had no defined contact person to EURAMET ➤ EURAMET became more and more criticised at the JCRB for “not having control” on its DIs 		
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Development of the DIs' role in EURAMET:

2) Acceptance Criteria for DIs (Dec. 2008)



- Legal Entity (or part of a legal entity)
- Forms part of the national metrology system (i.e. responsible for national measurement standards)
- Participates actively in EURAMET
- Accepts duties, in particular annual fee 1000 €
- Designated to BIPM and registered in KCDB
- Written application for approval by the GA
 - providing relevant registration information
 - signature from DI representative and Delegate

Resolution
Acceptance Criteria for Associates
Version v1.2
Approved: General Assembly 2009-12-15

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According to the EURAMET Bylaws § 4 (2), "Only one institute per state can obtain EURAMET membership. For those states which have more than one institute responsible for maintaining national measurement standards, these institutes have to decide which of them will be the EURAMET member. Further institutes ... of this state ... can become Associates of EURAMET."

Although not stated as such in the bylaws, a principal reason for these Designated Institutes (DI) to become Associate of EURAMET is their participation in the EURAMET in addition to other important EURAMET activities. Being Associate of EURAMET is a precondition to get their CMC and their CMC entries reviewed by the corresponding EURAMET Technical Committees.

The General Assembly (GA) agrees on the following criteria for an institute to become Associate of EURAMET:

1. It is a legal entity, or forms part of a legal entity;
2. It forms part of the national metrology system and is responsible for the maintenance of national standards and offers associated services which can be included as CMCs in the KCDB;
3. It intends to participate actively in EURAMET activities;
4. It is prepared to pay its share of the annual contributions associated with participation in EURAMET activities, as stated in the EURAMET Bylaws and Rules of Procedure;
5. It is designated by the responsible national authority for metrology to the BIPM and is listed in the Appendix A of the KCDB;
6. It sends a written application to become Associate to the EURAMET Chairperson via the Delegate of the national EURAMET Member. The application has to be accompanied by the following information:
 - a. Copy of the formal designation by the national authority to the BIPM;
 - b. Short description of its legal status;
 - c. Description how the institute is embedded in the national metrology system;
 - d. Description of the national standards for which the institute is responsible (metrological field, quantity, scope) and the associated services;
 - e. Status of its QMS (in place, in preparation, not existing).

The decision on the application is taken by the EURAMET General Assembly (GA) according to the Bylaws §4(2).

The Delegates ask the BOD to review the structure of the annual contributions to EURAMET (membership fees per country), considering the possibility to include a contribution from DIs which are Associates of EURAMET, in order to cover the administrative costs generated by their participation in the CMC and QMS review process and other EURAMET activities. The decision on the annual contributions has to be taken by the General Assembly according to the Rule Part A, 4(1).

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Development of the DIs' role in EURAMET:

2) Acceptance Criteria for DIs



Registration process of A-DI – Results:

- 68 DIs properly registered as Associates
- All of them paid their membership fee 2010
- 5 DIs terminated their A-DI status (none of them had CMCs)
- 4 new DIs sent application to become Associate
- We have now complete information on
 - legal name, acronym, PIC code
 - legal status
 - contact data
 - number of employees (with some "uncertainty")
 - areas of designation (with some "uncertainty")

Status 31-12-2010

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Development of the DIs' role in EURAMET:

3) Landscaping on Ntl. Metr. Infrastructure

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Survey among Delegates

- to obtain a better understanding how the National Metrology System (NMS) is established in EURAMET member countries
- to learn from positive experiences, identify critical aspects, etc.
- to serve as basis for recommendations to the EURAMET members how identification, designation and integration of DI's into the NMS can be done in the most efficient and sustainable way.
- to serve EURAMET as a tool for more efficient management of it's membership

22 Delegates replied, representing 90 % of the DIs in EURAMET

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Questionnaire:
red: replies received
green: no feedback

Country	Number of DIs
Iceland	0
Ireland	0
UK	3
Portugal	1
Spain	6
France	9
Belgium	0
The Netherlands	0
LUX	0
Germany	3
Switzerland	2
Italy	0
Norway	3
Sweden	1
Denmark	6
Poland	2
Czech Rep.	4
Austria	2
Hungary	0
Slovakia	0
Slovenia	0
HR	4
Bulgaria	0
Romania	1
Montenegro	0
Bosnia	0
Serbia	0
Albania	0
Greece	2
Turkey	1
Cyprus	0
Finland	6
Estonia	1
Latvia	0
Lithuania	3

Development of the DIs' role in EURAMET:

3) Landscaping on Ntl. Metr. Infrastructure

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Questions of the survey:

- Who has the responsibility for national measurement standards?
- How is the national metrology system (NMS) governed / coordinated?
- Which criteria are relevant for designating a laboratory into the NMS?
- Knowledge transfer – how is the transfer of information from EURAMET to the DIs carried out?
- Which are the mechanisms for supervision and follow-up of NMI, DI in the country?
- How is the maintenance and establishment of national measurement standards in a DI financed?
- Where do you (Delegate) see strengths and opportunities for improvement in your NMS?

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3) Landscaping on Ntl. Metr. Infrastructure



Summary (1):

- The CIPM MRA introduced the concept of the “Designated Institute” (DI) as responsible for certain national standards and associated services that are not covered by the activities of the “traditional” NMI [CIPM 2005-07]. Each signatory to the CIPM MRA is entitled to designate such institutes of his country; BIPM will list them in the Appendix A of KCDB.
- In this respect, DIs and NMIs should be considered as being at the same metrological level, consequently having to fulfil the same criteria with respect to activities related to the maintenance of national standards.
- The reason for being DI is the active participation in the CIPM MRA. That means it is expected that a DI has achieved to publish CMCs in the KCDB, within a reasonable time after its designation.

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Summary (2):

- In approximately half of the EURAMET member countries DIs are established and integrated in the National Metrology System.
- The highest number DIs are in Ionising Radiation (IR) and Metrology in Chemistry (MC). The majority of the DIs are actively participating in the CIPM MRA and have CMCs published in the KCDB (with exceptions).
- In the majority of the countries with DIs the NMI plays a central role in designation and coordination of the system.
- In most countries strict criteria are established to assure the competent and sustainable operation of national standards and related CMCs by DIs:
 - traceability to the SI
 - successful participation in ILC
 - stability and competence of staff
 - availability of resources
 - operation of a QMS

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Summary (3):

- In most countries accreditation or Q-audits by the NMI are a formal requirement for designation and follow-up of the performance of the DI.
- DIs have to finance their national standards mainly from their own budget. A central national budget for national standards is generally not available.
- Knowledge Transfer from the NMI to the DIs (at national level) seems not to be a routine operation in many countries. Many DIs are not directly involved in the meetings of EURAMET TCs and SCs.
- The administration of A-DIs in EURAMET (Secretariat, TC-Q) presents a considerable burden, in particular in cases where the communication between EURAMET and the DI, directly or indirectly via the NMI of the country, is not as efficient as it should be.
- The information available at BIPM and EURAMET on institutional and metrological aspects (scope of designation) is not congruent in all cases.

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3) Landscaping on Ntl. Metr. Infrastructure



Summary (4):

- Controversial points of view (e.g. in discussions in the TC-Q and other EURAMET committees) are existing concerning the "scope" of the CIPM MRA, that means the question which kind of CMCs should obtain their international recognition via the CIPM MRA, or better via accreditation by an accreditation body being signatory of the ILAC MRA. The fundamental difference between testing and calibration services is not recognised from all parties.
- The expected profile of the representatives of the EURAMET members (either coming from NMIs or DIs) to the various committees (Delegates, Alternates, TCs, SCs, etc.) is understood and implemented differently by the members. This is leading sometimes to an inhomogeneous composition of the respective EURAMET bodies/committees and thus affecting the capacity of the member country interaction with EURAMET and absorbing the benefit from EURAMET as much as possible.

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Development of the DIs' role in EURAMET:

**4) Recommendations (1)**

- The number of DIs is expected to grow in the next years, in particular in the metrology fields not “traditionally” covered by an NMI.
- Clear rules must exist on the designation of an institute, the expectations to a DI, and the rights and duties of a DI concerning their participation in EURAMET. These rules should be congruent on the international and regional level. EURAMET should work on that more closely with BIPM and the other RMOs, in the JCRB, but also beyond the standard agenda of the JCRB meetings.
- BIPM should give clear messages to newly designated DIs on the expectations to them within the CIPM MRA (the only reason to be DI is to register CMCs).
- More systematic exchange of information between EURAMET and BIPM is required, on designation of DIs to the KCDB and registration of a DI to EURAMET as Associate (A-DI), or change of their status and registration information (fields of designation, name, etc.).

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**4) Recommendations (2)**

- A more centralised system without DIs or with a low number of DIs, avoiding at least an “atomisation” of the national standards to many small DIs, is in general considered as an advantage at national level (e.g. expressed by Delegates in the landscaping questionnaire). Also for the administration of the CIPM MRA by the BIPM and the RMOs like EURAMET it is clearly desirable not having to deal with too many very small units individually. EURAMET should inform on the “challenges” to manage a distributed system, but also provide information how to coordinate a on the national level and how to link it to the regional and international level in an effective form, making use of the positive experience in some member countries.
- In order to ensure an effective exchange of information and knowledge, A-DIs must be given the possibilities of adequate participation in all bodies, committees and working groups EURAMET. The existing rules should be reviewed in this respect.

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4) Recommendations (3)

- EURAMET should work with BIPM and the other RMOs on a clearer definition for what kind of quantities and measurements CMCs can be established. The difference between calibration and testing should be worked out clearly. EURAMET TCs and the CCs of the Metre Convention need to be consulted for this discussion.
- It is recommended that national authorities, responsible for metrology, designate the most knowledgeable, committed and experienced metrologists as representatives to EURAMET, coming from the NMI or a DI. The representatives in TCs/SCs should be the experts of the country in the respective metrological field. The representatives for the GA should combine demonstrated metrological competence and international experience (if possible) with the authority and willingness to represent national metrology system composed by NMI and DIs. This will optimise contributions to EURAMET as well as benefits received from EURAMET.

**THANK YOU
FOR YOUR ATTENTION**