

*XVII IMEKO World Congress
Metrology in the 3rd Millennium
June 22-27, 2003, Dubrovnik, Croatia*

EUROMET: ITS OBJECTIVES AND ACHIEVEMENTS

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Abstract – EUROMET, the European organisation of National Metrology Institutes, promotes the coordination of metrological activities and services in order to achieve higher efficiency. A key task of EUROMET is to provide the necessary framework to allow for the mutual recognition and acceptance of calibration certificates. This paper describes the objectives, structure and key tasks of EUROMET.

INTRODUCTION

Measurement plays a vital role in economic development, innovation and consumer protection in all modern economies. Because of this, most countries have their own national metrology institutes (NMIs) that are responsible for the realisation and the maintenance of the national measurement standards and the dissemination of quantities requested by science, economy, industry and by public activities like health, safety and environment within their country.

Trade and international cooperation not only require a mutually recognised measurement system, but also confidence in each other’s measurement capabilities.

The Meter Convention, was signed in 1875 with the aim of unifying the different measurement systems. The aim of the CIPM Mutual Recognition Arrangement (MRA)¹⁾ which was signed in 1999 is to strengthen the mutual confidence in the measurement capabilities of each Member State.

As early as 1987 the representatives of the NMIs of most European countries were convinced that a strong collaboration of the NMIs was necessary for the future development and to foster this collaboration, founded EUROMET – the European Collaboration in Measurement Standards.

OBJECTIVES OF EUROMET

The objective of the NMIs that signed the Memorandum of Understanding (MoU) of EUROMET²⁾ is to promote the coordination of metrological activities and services with the purpose of achieving higher efficiency. The following aims are formulated in the EUROMET MoU:

- Developing of a closer collaboration between members in the work on measurement standards within the present decentralised metrological structure.
- Optimising of the utilisation of resources and services of members and emphasising the deployment of these towards perceived metrological needs.

- Improving of measurement services and making them accessible to all members.
- Ensuring that the national facilities developed in the context of EUROMET collaboration are accessible to all members.

STRUCTURE OF EUROMET

EUROMET has 25 members who have signed the MoU and 25 Corresponding Organisations, comprising 5 other Regional Metrology Organisations, 6 European Organisations, 2 Corresponding NMIs, BIPM, OIML and 10 Corresponding Applicants for full membership.



Figure 1: Outline map of Members and Corresponding Applicants of EUROMET.

The Delegates of EUROMET meet once a year at the General Assembly (GA), where the aims and specific tasks of EUROMET are reviewed and discussed. They elect the EUROMET Chairman, whose term of office lasts two years, and the seven members of the Executive Committee who advise and support the Chairman. The Secretary assists the Chairman in the administration of EUROMET.

EUROMET has defined 11 Subject Fields covering the European metrology needs.

- Acoustics, ultrasound and vibration
- Electricity and magnetism
- Flow
- Ionising radiation
- Length
- Mass and related quantities
- Metrology in chemistry
- Photometry and radiometry
- Thermometry

- Time and frequency
- Interdisciplinary metrology

For each Subject Field the member NMIs have designated Contact Persons that form the Technical Committees (TCs). The Delegates elect the TC Chairmen. In some of the Subject Fields Sub-Fields have been established which are managed by Convenors. The TC Chairmen, the Convenors, the Contact Persons of the NMIs and experts help to set-up and run an active and effective framework of collaboration and promote the various projects which are divided into four collaboration types:

- Cooperation in research
- Comparison of measurement standards
- Traceability projects
- Consultations on facilities.

TASKS OF EUROMET

The actual tasks accomplished by EUROMET are done via projects. The spectrum of these projects is rather broad. It includes key comparisons, traceability projects, developments of new standards, setting-up metrology laboratories and many others. There are projects with only 2 parties involved but also projects including all EUROMET members and other NMIs. EUROMET also acts as a contact to the European Commission and to other European or international organisations. It collects and distributes information of interest to its members.

Confidence in each other's measurement results is the main condition for the mutual recognition of calibration certificates. This confidence exists if there is the certainty that NMIs issuing certificates have the necessary measurement capabilities, which are equivalent to those of other NMIs.

The CIPM Mutual Recognition Arrangement is the instrument to build up this confidence. Participating NMIs present their Calibration and Measurement Capabilities (CMCs) for review and publication. Key and supplementary comparisons are used to establish the degree of equivalence of national measurement standards. The operation of an appropriate quality system (QSs) (required by the MRA) ensures that NMI services are delivered with the appropriate level of quality over time.

The Regional Metrology Organisations (RMOs) play a key role in the implementation of the MRA. It is the responsibility of the RMO to review all the CMCs of their member institutes before they are forwarded to the Inter-RMO review stage and ultimately for publication on the BIPM database. It is their task to organise Key and Supplementary Comparisons that are used to determine the degree of equivalence of the national measurement standards maintained by the NMIs. The third key task of the RMO is to undertake a review of the quality system been implemented by all of its member NMIs and therefore ensure that all declared CMCs are supported by a quality system.

ACHIEVEMENTS OF EUROMET

In 1987 18 members signed the MoU. Now EUROMET has 25 members with about 70 institutes and 10 Corresponding Applicants for full membership. EUROMET collaborates closely with other European organisations like the European Cooperation in Legal Metrology (WELMEC), the European Federation of National Associations of Measurement, Testing and Analytical Laboratories (EUROLAB), the European Organisation of Analytical Chemistry (EURACHEM) and the European cooperation for Accreditation (EA).

Over the last 14 years more than 300 projects have been completed. Today over 200 projects are still active.

Within the context of the MRA EUROMET has undertaken the review of over 12000 CMCs from its member NMIs, of which 8000 have been published on the BIPM database to date. Within the QS Forum mechanism EUROMET has undertaken the review of quality systems from over 80 NMIs.

REFERENCES

- 1) Comité International des Poids et Mesures, "Mutual Recognition Arrangement (MRA) for national measurement standards and for calibration and measurement certificates issued by national measurement institutes", BIPM, Sèvres CEDEX, 1999.
- 2) National Metrology Laboratory, Enterprise Ireland (NML), "EUROMET Directory 2002", Dublin, Ireland, July 2002.

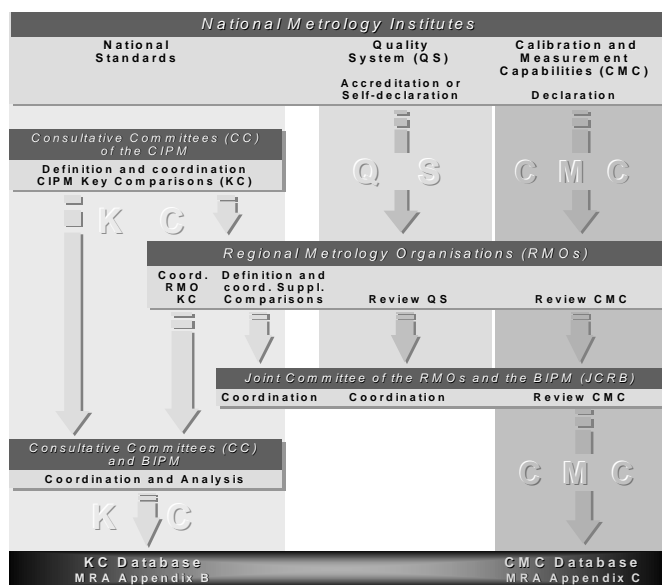


Figure 2: Scheme of the three pillars of the mutual confidence: Key Comparisons (KCs), Quality Systems (QS) and Calibration and Measurement Capabilities (CMCs).

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