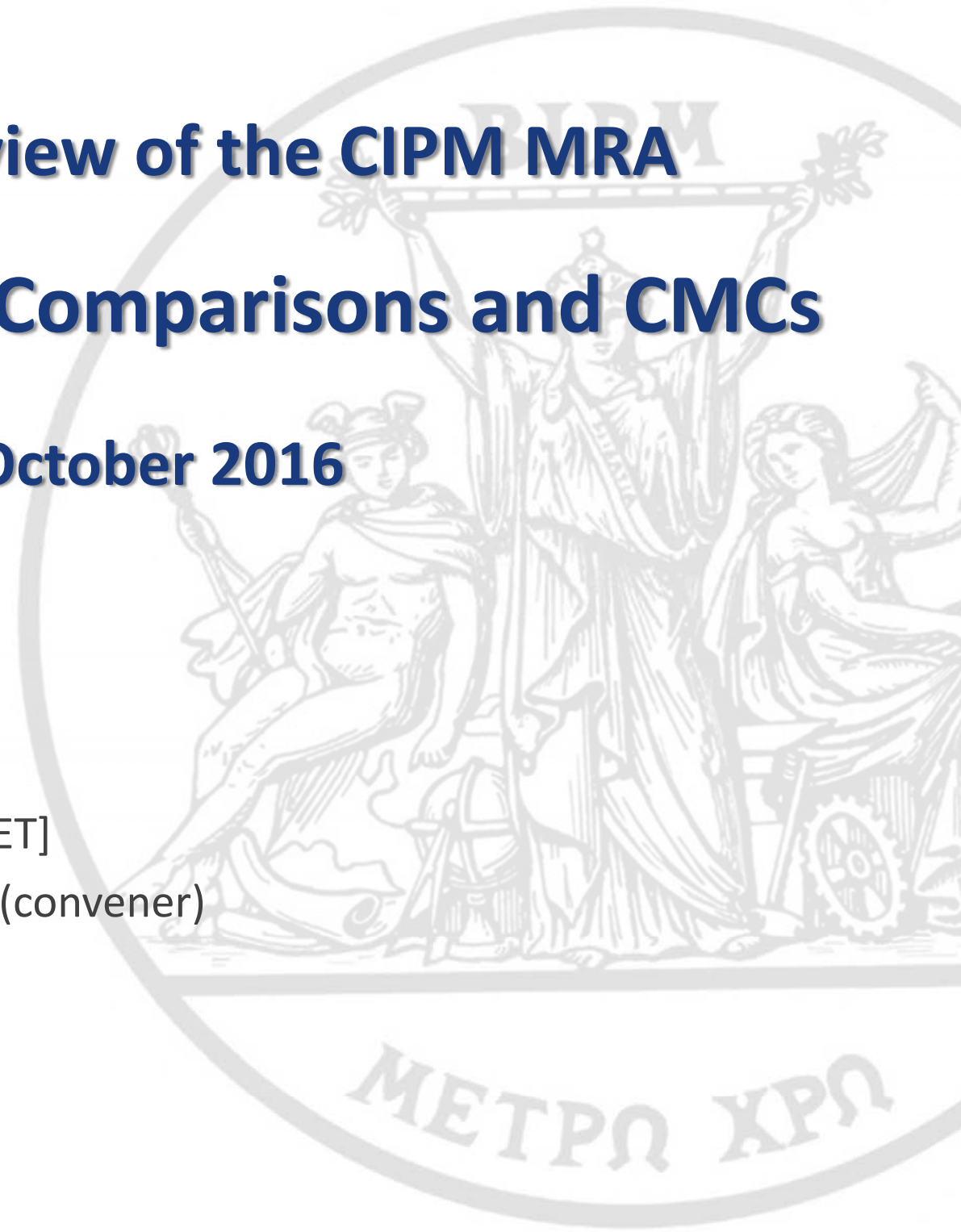


# WG on the Review of the CIPM MRA

## Subgroup A: Key Comparisons and CMCs

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Yuning Duan	NIM [APMP]
Héctor Laiz	INTI [SIM]
Philippe Richard	METAS [EURAMET]
Gert Rietveld	VSL [EURAMET] (convener)
Jörn Stenger	PTB [EURAMET]



# KCs, CMCs and services – role and mutual relation (1)

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- ◆ KQ: key underpinning quantities in a technical field
- ◆ MRA on KC: “provide evidence of the proficiency of NMIs in the *principal techniques and methods* in each field”
- ◆ MRA-D-4: A CMC is a “calibration and measurement capability *available to customers under normal conditions*”
- ◆ MRA-G-1:
  - “no one-to-one correspondence intended between CMCs and comparisons.” ,
  - “KC/SC may underpin uncertainty claims of a group of related CMCs.”

# KCs, CMCs and services – role and mutual relation (2)

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- ◆ KCs and services: suggestion to “underpin a variety of services by a CMC”
  - CMC: international review by TCs and CCs
  - Services: described in QM, reviewed by RMO

Most efficient:

KCs on global level ...

are multiplied through CMCs ...

into a maximum variety of services on national/regional level

*We should go deeper with the concept “how far the light shines”*

# Q1: How can the level of participation in KCs be managed more effectively?

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- a) The strategy documents of the CCs must clearly define the long-term time table for KCs (including the repeat cycle). The RMO TCs should also plan regional KCs and SCs strategically, to reflect the needs of the RMO. *Action: CCs, RMOs, JCRB*
- b) Where traveling standards are used sequentially, participation in CIPM KCs should typically be limited to the minimum number of institutes necessary to provide effective linkage in each region, (typically no more than three institutes per RMO). Criteria for participation should include: measurement uncertainty, geographical spread and willingness to coordinate in the subsequent RMO KC. *Action: CCs*
- c) The NMIs should be encouraged to share the roles involved in coordinating KCs (e.g. through mentorship, sharing toolkits and best practice). *Action: NMIs, CCs, RMOs*

## Q2: How can the KCDB provide better visibility of the services supported by the CMCs?

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- a) The BIPM should work with the JCRB and the CCs to develop the scope for KCDB 2.0

*Action: BIPM, JCRB, CCs*

- b) The BIPM should implement KCDB 2.0 with (for example) an improved web interface and an improved search facility.

*Action: BIPM*

- c) The CCs should work towards better consistency in the expression of CMCs (e.g. units, uncertainty ranges)

*Action: CCs*

## Q3: How can the proliferation of CMCs be constrained?

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- a) The results of KCs and SCs should be interpreted as widely as reasonably applicable to indicate coverage of CMCs.

*Action: CCs*

- b) The use of CMCs to cover as many services as is technically justified should be encouraged, so that CMCs become representative rather than comprehensive. It should be emphasized that the goal is for NMIs to develop services and that CMCs are tools for describing the capabilities maintained to underpin the delivery of those services. The NMI Qs should document the relationship between services and CMCs.

*Action: RMOs, JCRB, NMIs*

## Q3: How can the proliferation of CMCs be constrained?

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- c) The CCs and NMIs are encouraged to use uncertainty equations and matrices to reduce the number of CMCs where possible.

*Action: CCs, NMIs*

- d) CMCs shall reflect the services available to customers under normal conditions, in accord with the MRA, and shall not be artificially subdivided.

*Action: NMIs, RMOs, JCRB*

- e) NMIs should be advised to use the percentage of coverage of their services by CMCs as a metric of success rather than the number of CMCs (The number of CMCs alone should not be considered a metric of the success of an NMI).

*Action: CIPM, RMOs, NMIs*

## Q4: How can the processes of CMC review be made more efficient?

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- a) The CCs should develop a “risk-based” approach to CMC review procedures, that defines the need for intra- and inter-RMO reviews, with inter alia the aim to minimize, or even avoid, the inter-RMO review where justified.

*Action: CCs, RMOs, JCRB*

- b) The CCs and the JCRB should harmonize the use of evidence to support CMCs that does not arise from KC and SC participation.

*Action: CCs, JCRB, RMOs*

- c) The JCRB should ensure greater consistency in the implementation of the intra-RMO review.

*Action: JCRB, RMOs*



## Q4: How can the processes of CMC review be made more efficient?

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- d) More training should be provided, together with improved guidance material to help ensure 'right first time' CMCs and common understanding of expectations when reviewing.

*Action: RMOs, BIPM*

- e) BIPM should investigate the feasibility of a web-based tool for the complete CMC submission and review giving full tracking of the CMC review process, for example as part of the KCDB 2.0.

*Action: BIPM*

- f) Training should be provided at both RMO and CC levels to ensure that those with operational responsibility within the CIPM MRA understand the relevant processes and specifically their obligations within them.

*Action: JCRB, RMOs, CCs, BIPM*

# Summary – Key Comparisons and CMCs

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- ◆ A broad range of recommendations related to KCs and CMCs identified for moving towards a more efficient CIPM MRA
- ◆ Some common elements:
  - Building upon success and confidence achieved so far
  - Implementation of “How far the light shines”
  - Harmonisation of procedures, increased consistency
  - Better tools (KCDB 2.0)
  - Training and guidance
- ◆ Actions for all groups involved in the CIPM MRA:  
*CCs, RMOs, JCRB, NMIs, BIPM, CIPM*