

## **G11.06.03 CIPM-MRA Review**

**11<sup>th</sup> General Assembly  
16 May 2017**

Beat Jeckelmann, EURAMET Chairperson

## Resolution 5, 25<sup>th</sup> CGPM, which noted...

- that after 15 years of successful operation of the CIPM MRA, there is a need to **review its implementation and operation**,
- the improvements being made within the existing framework including the strategic planning of comparisons and ongoing streamlining of processes,
- a workshop planned for 2015 to engage in a broad discussion of the CIPM MRA, involving: Directors of National Metrology Institutes, Member States representatives, representatives of RMOs and other relevant stakeholders concerning the benefits of the CIPM MRA, as well as establishing views on what works well, and what needs to be improved regarding its implementation,

and invited

- the CIPM to establish a working group under the chairmanship of its President, with membership to be determined at the 2015 workshop, to conduct a review of the implementation and operation of the CIPM MRA.

# Key points



The WG identified as key points

1. The MRA should continue to maintain its high levels of quality and integrity so as not to undermine the effort invested over 15 years.
2. The MRA should continue to be inclusive and be built on the appropriately demonstrated and documented assessment of capabilities between the NMIs.
3. The MRA is an arrangement between NMIs; it is a tool to support them in:
  - “establishing the degree of equivalence of national measurement standards maintained by NMIs and DIs;
  - providing for the mutual recognition of calibration and measurement certificates issued by NMIs and DIs;”

## Key points (2)



4. **The total effort required to operate all aspects of the MRA should not rise above the present levels and should be reduced where possible.** Steps should be taken to spread the load more widely.
5. The KC/CMC processes should be **tailored according to the risk** and complexity of the issues being handled.
6. There is a need to upgrade the KCDB and the JCRB databases using new **modern IT tools**.

# Recommendation 1



## Managing the level of participation in KCs more effectively

- a. The strategy documents of the CCs must clearly define the long-term timetable 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 travelling 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**

- Develop comparison strategy
  - KC plan, criteria for SCs and plan
  - CMC coverage («how far the light shines?»)
- Apply EURAMET comparison guidelines
- Comparison toolbox, develop further TC specific tools where appropriate

# Recommendation 3



## Constraining the proliferation of CMCs

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

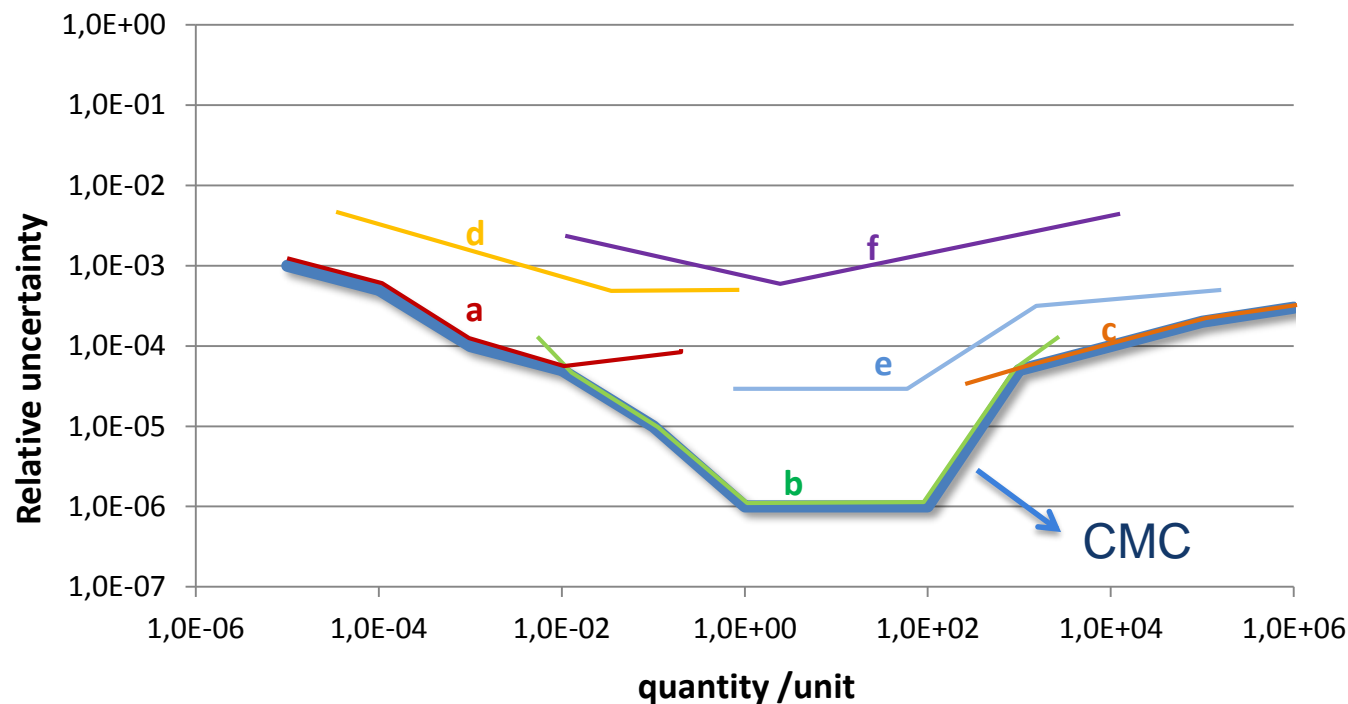
Action: CCs

- 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

c. ....

# «Broader Scope CMC»



- a) Method a, instrument type x and y
- b) Method b, instrument type y and z
- c) Method c, instrument type z
- d) Method d, instrument type x and y
- e) .....



# Concept «Broader Scope CMC»



## Starting point for discussion

- In the proposed scheme, one CMC entry per measurement quantity would be sufficient. This entry illustrates the best capability of the NMI/DI for the measurement quantity in question. It defines the boundaries in terms of range and uncertainty without giving the details of the underlying services.
- The proposed scheme is appropriate for the physical quantities. A different approach may be more appropriate for the chemical field.

- Calibration and measurement services offered by the NMIs/DIs under the CIPM MRA scheme for a given quantity must always be
  - Within the range defined by the CMC entry;
  - Have an uncertainty that is equal or greater than the uncertainty fixed by the CMC entry and its annexed matrix.
- There may be many different services per CMC entry. They may differ by:
  - The type of instrument to be calibrated;
  - The measurement method;
  - The applied calibration procedures;
  - ....
- The NMI/DI QS documents the relationship between the services and the CMCs. The quality review process in the RMOs (based on evidence by accreditation and/or peer review) monitors the compliance with the requirements.

## Next step



- EURAMET proposal for «Broader Scope CMC» to be worked out

**Thank you for your attention!**

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