What changes to the CIPM MRA should be expected to increase the value?

(NMIJ’s perspective)

Apparently, CIPM MRA has a value to be continued. When we think about improving the value of the CIPM MRA, "maintenance of reliability" is important as a fundamental aspect. Maintaining the reliability is crucial for growing in usage of the CIPM MRA. What we need is lowering the cost for the "maintenance".

Introduction of the mechanism where each NMI should pay suitable cost to register CMCs is important; e.g., importance of third-party accreditation of NMI should be more recognized. The first beneficiaries of CIPM MRA are NMIs. It’s because they can validate their calibration services in a frame of CIPM MRA. However, the problem is that the costs for operating CIPM MRA depend heavily on the labour of CMC review and pilot laboratories of key/bilateral comparisons. Reviewing the practical operation of CIPM MRA is essential and the process of CMC review should be shifted from proof-bases to confidence-bases, and then NMIs which receive a benefit of validation should cost peer review and third-party accreditation (or equivalent confidence). Though both the intra- and inter-RMO review processes are necessary, the peer-review report and the third-party accreditation should be utilized as much more important evidences in the processes, and consequently the labour for CMC review by other NMIs should be reduced.
From proof-bases to confidence-bases, suitable cost payed by the NMI who submits CMCs

Current proof-bases system

NMI submits CMC list and supporting evidence

Intra RMO review

Inter RMO review

Publication of CMCs

Review costs are supported by members

Future confidence-bases system

NMI submits CMC list and supporting evidence

Both supporting evidence must be equivalent.

On-site review* and accreditation, or equivalent confidence

RMO’s confirmation

Publication of CMCs

Review costs are payed by the submitter

* On-site reviewer must have relevant technical competence and be invited from NMI.
Cost for MRA at NMIJ

Number of participated inter comparisons (started year base) and its cost

<table>
<thead>
<tr>
<th>Year</th>
<th>No of KC, SC (RMO KC, SC)</th>
<th>Cost (K €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>22 (1)</td>
<td>44</td>
</tr>
<tr>
<td>2003</td>
<td>21 (3)</td>
<td>42</td>
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<td>2004</td>
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<td>2005</td>
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<td>2006</td>
<td>21 (8)</td>
<td>42</td>
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<td>2007</td>
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<tr>
<td>2008</td>
<td>24 (13)</td>
<td>48</td>
</tr>
<tr>
<td>2009</td>
<td>18 (8)</td>
<td>36</td>
</tr>
</tbody>
</table>

It is supposed as a steady state

• Total 20 comparisons and costs 40 K € per annum (10 RMO comparisons, 20 K €)
Cost for MRA and its benefit at NMIJ

• NMIJ spent 15M Yen (approx. 120K €) for CMC supporting cost (travel expenses for reviewers, 3rd party accreditation, etc.) in 2009.
• Explicit costs for MRA (comparison and QS) per annum is 160K € (40K+120K).
• Invisible costs for comparison (extra effort to measure, reporting, pilot, etc)
• Other additional costs (APMP member fees, bourdon of member activities, etc.)
• Benefits: mutual recognition among the signatories, benchmarking of measurement capability by comparisons, information by reviewers, etc.

• So far the cost for MRA at NMIJ can be justified as institutional benefit.
Some success stories on CIPM MRA: comments from Japanese industry
Example A (Manufacturer):
Company A is an electronic measuring instruments manufacturer, which has R&D branches all over the world. The traceability system of the products is usually established in the country where the products are developed. For example, as for LCR meter developed in Japan, calibration of the capacitance as a reference standard is mainly carried out at the calibration laboratory in Japan, and then it is returned to an overseas branch with JCSS*1 certificate marked ILAC-MRA logo, and LCR meters in overseas are calibrated with its reference standard. Calibration certificates with ILAC-MRA logo issued in the country where the products were developed are effectively utilized for the calibration of the products in each country. This brings to the result of the issue of calibration certificates in accordance with ISO/IEC 17025 in each country of the world. It allows Company A not to obtain the accreditation of the reference standards respectively in each country and this is a huge advantage for Company A.

*1: JCSS
Japan Calibration Service System (JCSS) is the logo for calibration laboratories accredited by IA Japan.
Some success stories on CIPM MRA: comments from Japanese industry (continued)

Example B (Manufacturer):
Most of the Company B’s products are manufactured abroad as to India. In this circumstance, ILAC-MRA is well known during many of the companies in India and calibration certificates with ILAC-MRA logo are interoperated. In local production factories, they may use any country’s measuring instruments if the instruments are traceable to any country’s NMI and have calibration certificates with ILAC-MRA logo. This system is well known and leveraged fully during private companies in India, and it is quite helpful in developing business services internationally.

Example C (Accreditation body):
All kinds of calibration programs are not always developed for the measuring instruments in Japan. In such cases, assessors of laboratory accreditation can approve overseas calibration programs as evidences of SI traceability if those provide with certificates marked ILAC-MRA logo. This is a great advantage for accreditation services of Accreditation Body C.
Some success stories on CIPM MRA: comments from Japanese industry (continued)

Example D (Manufacturer):
The testing devices of cell phones should be calibrated based on ISO/IEC 17025 in accordance with GCF (Global Certification Forum) / PTCRB (PCS Type Certification Review Board), and a certificate with ILAC-MRA logo is required when the testing devices are delivered to calibration laboratories. In fact, a certificate with ILAC-MRA logo of the A2LA is used. It is internationally acceptable and becomes a huge advantage in business development activities for Company D.

Example E (Calibration laboratory):
Calibrations of high voltage, high current, voltage divider and AC flow divider are required by industry of the world but they have not achieved under JCSS (Japan Calibration Service System) in Japan. However, the certificates in accordance with ILAC-MRA are still required when devises are shipped to overseas. So, Calibration Laboratory E is considering to start JCSS calibration in local under cooperation of NMIJ in order for helping the realization of the local calibration.

Example F (Accreditation body):
In Accreditation Body F, the values of overseas calibration laboratories are acceptable in the cases of proficiency test and validation. At which time, the certificate with ILAC-MRA logo is very useful for Accreditation Body F.