

# On the revision of the KCDB 2.0

## CCL June 2018

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| **P**oids et  
| **M**esures



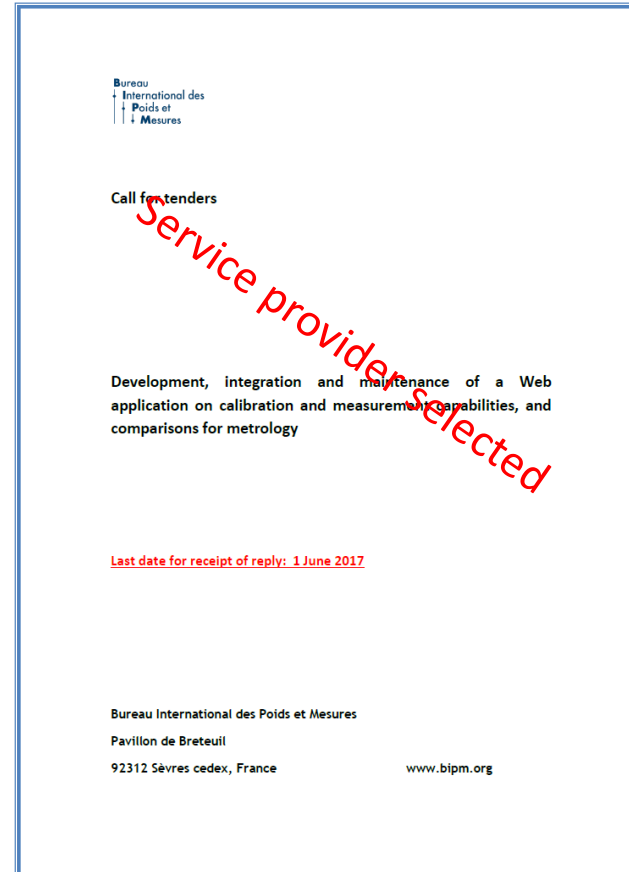
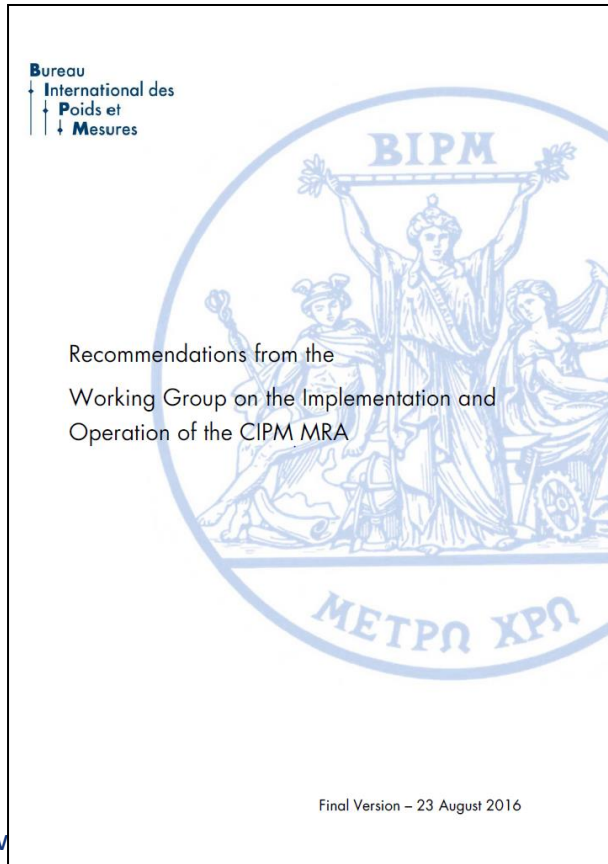
## CGPM 2014

### Resolution 5 On the revision of the CIPM MRA

#### invites

- the Consultative Committees and the JCRB to continue their ongoing efforts to streamline operations within the existing framework, and to prepare for and contribute to the wider review in 2015,
- 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,

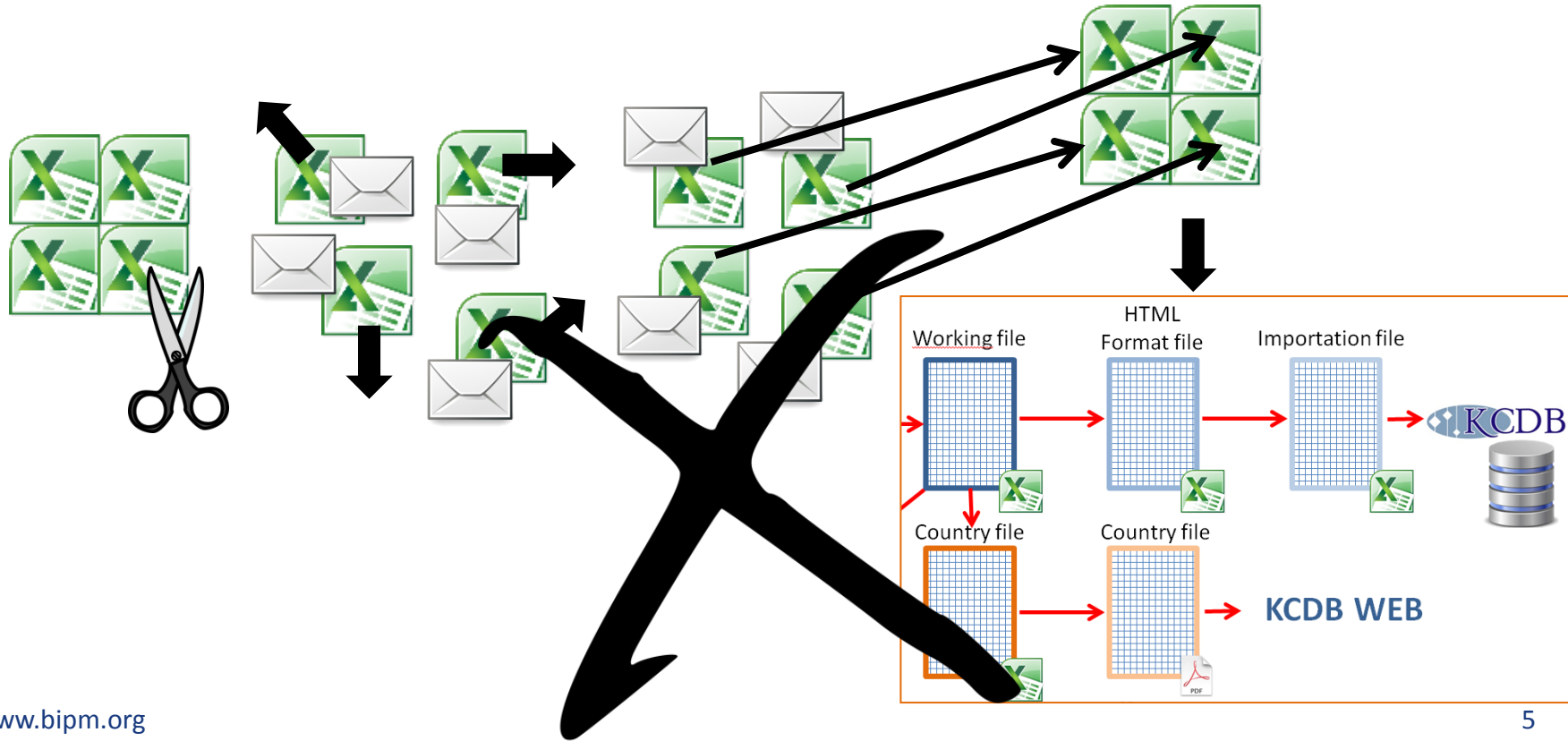
# Revision of the KCDB Background

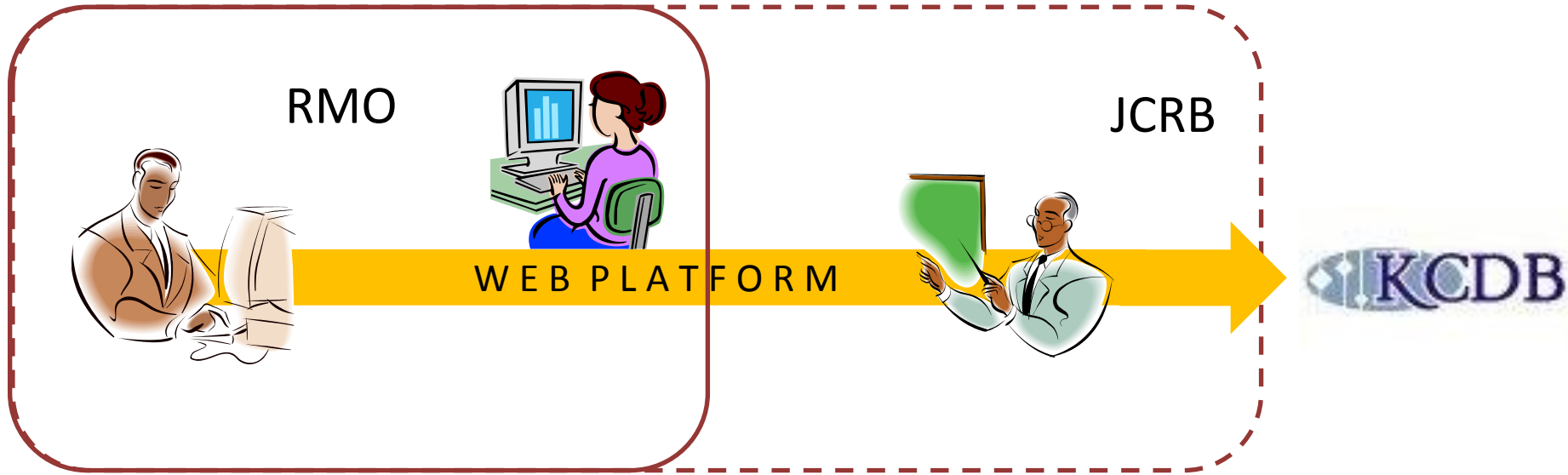


- Web based CMC submission and review
- Better search facilities
- Track comparisons
- Userfriendly web support [Realized by supported from UX design and tools and facilities available today.]

*The development triggers a complete renewal of the database and environment.*

*Legacy data will be uploaded to the new system.*





- Support to both intra- and inter RMO reviews
- Platform accessible via user account
- Sequential access

- **Comments from intra RMO review will be visible for the JCRB review**
- **Possibility for risk based evaluation**
  - TC chair may sort on uncertainties
  - WG Chair may distribute CMCs
- **No batches but one-by-one – CMCs having not collecting comments will be approved automatically**
- **Links to DoE of comparisons published in the KCDB**
- **Mandatory submission of the supporting evidence before review**

- Free key word (thesaurus) and advanced still available
- Possibility to sort data and refine filter of search via facets
- Possibility to make numerical search/filter on CMC measurand and uncertainty
- Additional features accessible, i.e. approval year, status (comparisons)



- Provision on a « statistical tools » with customized data with pre-programmed graphs
- Access to statistics on review performance

- CMCs may be visualized in blocks using free search key words

**Finland, MIKES (VTT Technical Research Centre of Finland Ltd, Centre for Metrology / Mittatekniikan keskus)**


[Complete CMCs in Length for Finland \(.PDF file\)](#)

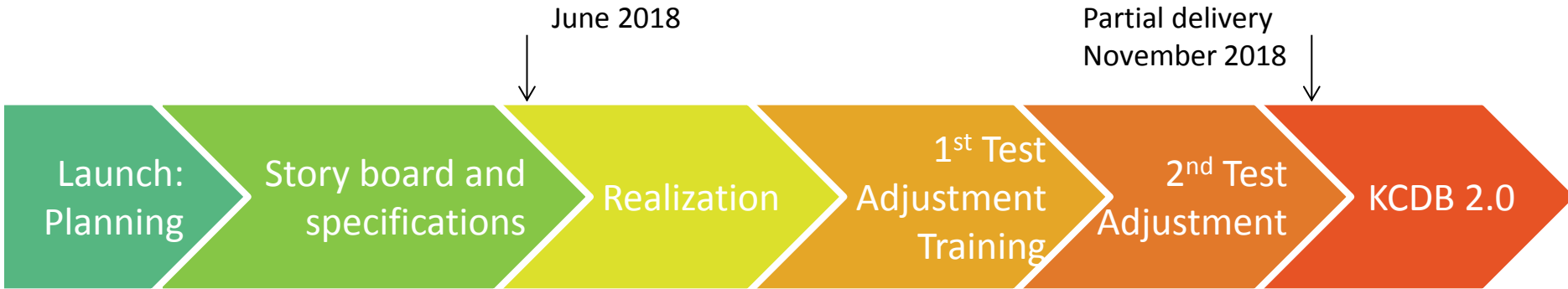
2-D, 3-D instruments. CMM: error of indicated size, location, shape, **0 m to 5 m**  
Absolute expanded uncertainty ( $k = 2$ , level of confidence 95%) in  $\mu\text{m}$ : **Q[0.5, 0.5L], L length in m**  
Laser interferometer, 2-d gratings, etc., measuring 21 different error components  
Internal NMI service identifier: MIKES/48

CMM artefacts. Ball (hole) plate: centre coordinates  $L$ , **5 mm to 900 mm**  
Absolute expanded uncertainty ( $k = 2$ , level of confidence 95%) in  $\mu\text{m}$ : **Q[0.13, 0.70L ], L in m**  
CMM, reversal with 4 position  
Approved on 08 October 2012  
Internal NMI service identifier: MIKES/63

Screw standards. Thread plug, plain, pitch diameter, **3 mm to 150 mm**  
Absolute expanded uncertainty ( $k = 2$ , level of confidence 95%) in  $\mu\text{m}$ : **2**  
3-wire method, length measuring machine  
Internal NMI service identifier: MIKES/43

- CMCs may be visualized in tables using advanced search (via a menu), sorted and compared

	Service Provider	NMI Service code	Comments	Branch	Service	Quantity	Instrument or Artifact	Instrument Type or Method	Value CMC	Expanded Uncertainty CMC	Parameters	Approval date
	GERMANY <a href="#">BAM</a>	<a href="#">DE456.8</a>	<a href="#">Comments</a>	DC voltage	DC voltage	Amount-of-substance fraction			[ 1 to 100 ] $\mu\text{mol/mol}$	[ 0.5 to 0.3 ] %  <a href="#">Equation</a>	Temperature : 20 °C	2018-03-08
	GERMANY <a href="#">BAM</a>	<a href="#">DE456.8</a>	<a href="#">Comments</a>	DC voltage	DC voltage	Amount-of-substance fraction			3 $\mu\text{mol/mol}$	0.2 %		



### Present status:

- Front office for CMCs completed
- First part on CMC platform and user accounts being developed
- Specifications on second part on CMCs, transfer of legacy data, comparisons and news & statistics in progress

CMCs

Comparisons

News and Statistics

**Implementation  
in 2019**

- ◆ Particularities for CCL
  - Request for advice on a few CMCs
  - Request for advice on units

Examples will be forwarded to

Dr Alessandro Balsamo CCL WG MRA Chair

for dispatch to Discussion Group concerned, for feedback

## ◆ Particularities for CCL

- Request for advice on a few CMCs
- Request for advice on units
- Numerical search: Request for revision of information on equations from NMIs

# KCDB 2.0 : Numerical search on CMCs

	CMCs	Eq	Mtx
AUV	1160	3	0
EM	4480	50	<b>1311*</b>
L	1620	<b>850</b>	0
M	2760	300	0
PR	1270	20	0
T	2550	40	5
TF	760	50	0
RI	4100	0	0
QM	6230	20	0

D	E
PTB	52
CFI	43
METAS	43
VSL	43
UME	40
NPLI	35
MIKES	33
CENAM	29
CMS	29
CEM	28
KRISS	28
NIM	28
RISE	28
NIMT	26
NMC, A*STA	26
NPL	26
INRIM	25
GUM	24
NMIJ	21
NMISA	21
NIST	18
MSL	16
MIRS/UM-FS	15
INM	14
NSC IM	13
BKFH	12
INMETRO	12

62 NMIs concerned

## ◆ Particularities for CCL

- Request for advice on a few CMCs
- Request for advice on units
- Numerical search: Request for revision of information on equations from NMIs

Revisions only for DimMet, « Get Published CMCs »

Guidance will be forwarded to

Dr Alessandro Balsamo CCL WG MRA Chair



## ◆ Particularities for CCL

- Request for advice on a few CMCs
- Request for advice on units
- Request for revision of information on equations from NMIs
- Uncertainty equation representation ?

# KCDB 2.0 : On uncertainty representation

## 1. Request from CCL to abandon ranges and instead use quantity equations

2012

Additionally, M. Kühne reported on CCLs proposal, adopted at its meeting on September 20-21, on the subject of changing the expression of uncertainty for CMCs in the area of length, which was the subject of Action 28/1, decided at the 28<sup>th</sup> meeting of the JCRB. According to the proposal, length CMCs in which uncertainty is expressed in terms of a numerical value equation would be changed so that their uncertainties would be expressed as a quantity value equation, a format that would be in compliance with VIM3 and in line with the requirements of some accreditation bodies for expression of uncertainty. The text adopted by the CCL requests that the BIPM Director consider the matter and take appropriate actions. In this context, as the BIPM Director, M. Kühne opened the discussion on the matter.

WG-MRA  
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We (WG-MRA) would also like to take this opportunity to re-raise the issue of *numerical value equations* (e.g.  $Q[1, 2L] \mu\text{m}$ ,  $L$  in metres) as opposed to *quantity equations* (e.g.  $Q[1 \mu\text{m}, 2 \times 10^{-6}L]$ ). Through a previous CCL report to the CIPM, the WG-MRA raised the issue that *quantity equations* are the preferred format used by accreditation bodies, but they were not possible with KCDB 1.0. Now that KCDB 2.0 is being planned, we would like to re-state the request to allow *quantity equations* in the KCDB. This would be part of the transition from uncertainty *ranges* to *equations*.

In summary:

2016

Thank you

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