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Federal Institute of Metrology METAS



# CCM Strategy 2013 – 2023

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# Agenda

1. History of the CCM Strategy 2013 – 2023
2. CCM Strategy 2013 – 2023
3. CIPM mandate to simplify the CCM Structure
4. The changes in 2013
5. The changes in 2014

## History of the CCM Strategy 2013 – 2023

- Decision by the CIPM and nomination of the chairman, July 8, 2012
- Creation of the CCM WG Strategy (WGS) and initiation of the work, July 19, 2012
- Webmeeting on the Strategy, September 19, 2012
- *Nomination of the CCM President, October 19, 2012*
- First meeting of the WGS (BIPM), November 20, 2012
- First draft of the **CCM Strategy 2013 – 2023** submitted to the CIPM, January 11, 2013.
  
- **Very short time available and excellent contribution of the CCM WG chairs and other members**

## Members of the CCM WG Strategy

- All CCM WG chairs
  - Horst Bettin
  - Chris Sutton
  - Kenichi Fujii
  - Rolf Kumme
  - John Wright
  - Leonid Vitushkin
  - Alessandro Germak
  - Jorge Torres-Guzmann
  - Karl Jousten
  - Henning Wolf
- Roman Schwartz and Walter Bich
- CCM President

# CCM Strategy 2013 – 2023

- Working document for the 14<sup>th</sup> CCM
- Content
  - General information on the CCM WGs
  - CCM Terms of Reference
  - Achievements up to 2012
  - Stakeholders
  - Future scan (2013 – 2023)
  - Rationale for various activities 2013 – 2023
  - Key comparisons (2013 – 2023)
  - Resources for key comparisons

## General information on the CCM WGs

- Details of the present 14 CCM Working Groups
  - Name
  - Date established
  - Chair (Institute, years in post)
  - Members
  - Participants at the last meeting
  - Date of last meeting
  - Periodicity of meetings
- All details are given in Appendix 1 for the WGs and in Appendix 2 for TGs

## CCM Terms of Reference

- Present activities concern matters related to the comparisons of mass standards with the international prototype of the kilogram, considerations affecting the definition and realization of the unit of mass, establishment of international equivalence between national laboratories for mass and a number of related quantities (density, pressure, force, *fluid flow*, *viscosity*, *hardness*, *gravitational acceleration*) and advice to the CIPM on these matters.
- The CCM website needs to be updated with this completed formulation.

## Achievements up to 2012

- Baseline of activities and achievements up to 2012
  - KCs completed, KCs in progress and CMCs for each Working Group
  - Major activities, publications and achievements
  - For details, see section 3 and WG reports

## CCM WGs and CMCs

▪ WGAV	-
▪ WGD	201
▪ WGF	248
▪ WGFF	582
▪ WGG	4
▪ WGH	125
▪ WGHP & WGLP	482
▪ WGM	751
▪ WGV	392

# Stakeholders

- The metrology community itself
  - CGPM, CIPM, BIPM, CCM and other CCs
- Outside the metrology community
  - Industry
  - Legal metrology
  - Standards and conformance bodies
  - Research
- Specific stakeholders for each activity (WG)
  - See section 4.2.

## Future Scan (2013 – 2023)

- The possible redefinition of the kilogram will dominate the scene for the next few years
- The sector specific issues for the next ten years are described in section 5.2.
- Some highlights:
  - Realize the unit of mass with XRCD method at the level of  $1 \times 10^{-8}$  or better
  - Realize and disseminate the redefined kilogram with a sufficient number of watt balance experiments at the level of  $2 \times 10^{-8}$  or better
  - Develop commercial instruments for the realization of the kilogram

## Future Scan (2013 – 2023)

- Some more highlights:
  - Density measurements under high pressure and high temperature for energy saving and environment technology
  - Cryogenic flows, micro-flows, dynamic and transient flows
  - Viscosity of non-Newtonian liquids
  - ...

## Rationale for various activities

- The CCM has a sufficient set of comparison that cover the current scope of activities
- The light shine wide enough to cover most of the declared CMCs
- There is only a small room for improvement to define the right set of KCs
- The specific rationale are given in sections 6.1.1 to 6.1.8

## CCM Vision

- The CCM WG Strategy wants to:
  - **Simplify and increase the operational efficiency** of the CCM,
  - Simplify, standardise and accelerate all steps of KCs (from the protocol to the publication of results),
  - Use common resource for KCs and streamlining (protocols, data analysis, reporting) at least within each WGs,
  - Share validated calculation tools,
  - Encourage common views across the CCs to analyse KC data and aim at an improved coordination work across the CCs,
  - Review or create directives for the technical work.

## Simplification of the CCM structure

- CCM has 14 working groups (absolute record for a CC)
- The CIPM want an efficient and simple structure
- The NMI directors want to reduce costs
- Mandate given to the CCM President to strongly simplify the CCM structure
- **Changes in two phases**
  - Phase 1: obvious organizational changes, fast change possible (WGs chaired by the CCM President), 2013.
  - Phase 2: establish general criteria for the operation of CCM WGs and further simplification of the CCM structure, 2014.

## The changes in 2013 (first phase)

- The **new WG Strategy** includes now:
  - The present WG Strategy
  - The WG on CMCs
  - The CCM chairpersons meeting
  - The WG on KCs
- Chaired by the CCM President
- Official start: February 20, 2013.

## The changes in 2013 (first phase)

- The **new WG on the Realization of the kilogram (WGR-kg)** includes:
  - The WG on changes to SI kilogram (WGSI-kg)
  - The WG on Avogadro (WGAV)
- Chaired by Horst Bettin (to be confirmed by the CCM)
- Official start: February 19, 2013.
- Responsible of:
  - the *mise en pratique* of the definition of the kilogram
  - KC of primary realizations before and after redefinition

## The changes in 2013 (first phase)

- The **new WG on the Dissemination of the kilogram (WGD-kg)** includes:
  - The WG on mass standards (WGM)
  - The TG1 and TG2 of the WGM
- Chaired by Chris Sutton (to be confirmed by the CCM)
- Official start: February 19, 2013.
- Responsible of:
  - All maintenance and dissemination issues (including vacuum and uncertainties)
  - KC of dissemination of the kilogram (similar than today)

## The changes in 2014 (second phase)

- Phase 2: establish general criteria for the operation of CCM WGs and further simplification of the CCM structure in 2014.

## Conclusion

- New CCM Strategy
- Simplification of the CCM structure  
11 WG instead of 14 (reduction of more than 20 %)
- Strong collaboration between WGR-k<sub>g</sub> and WGD-k<sub>g</sub> in the view of the redefinition of the kilogram
- Document open for discussion and improvement



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Thank you very much