

# THE CIPM MRA TODAY AND TOMORROW:

How might it evolve to support metrology needs in other sectors?



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**Paris, October 2009  
10 Years of the CIPM MRA:**



## After the Directors' meeting and the first day of our seminar

- **We can (rightly) congratulate ourselves.**
- **We learned that it was the initiative of key individuals who created the motivation and the framework. People made it happen. It wasn't easy. Some NMIs/States had real political difficulties but saw the benefits of the long term and anyway made the and then threw themselves into meeting the challenge (Bob Watters helped create the kcdb with Claudine Thomas)**
- **Remember that the large NMIs generally take the burden of piloting key comparisons... INRiM, LNE, NIST, NMIJ, NPL, PTB....as well as the BIPM. All deserve full credit. We continue to need your commitment**
- **So pat ourselves on the back...take pleasure from the successes...and think about the next steps.**



- We have heard about the creation and current use of the CIPM MRA.
- Now the challenge is to take ourselves forward for the next decade.
- Let's first remind ourselves of the structure of the "World Metrology System" and the "problem". Have we fixed it?
- Think about a few of the successes about which we've heard
- Then let's look at what we have heard and maybe draw a few conclusions



# The problem, the challenges.

At the time.....

- How do NMIs prove they are as good as they say?
- Can an international/multilateral agreement take the place of many bilateral ones?
- How can others...our customers.... trust us?
- Were we really serving customers who wanted to show that their product conforms with such and such a standard and so that it could be exported/imported without double testing or more calibrations and costs...so avoiding TBTs?

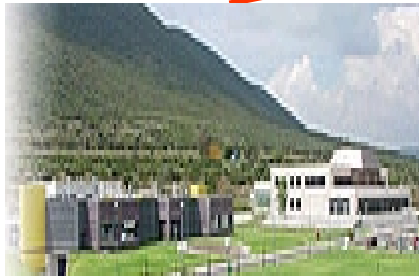


# THE INTERNATIONAL MEASUREMENT SYSTEM

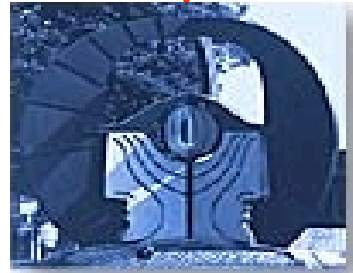
**BIPM**



**Accuracy**



**CENAM, MEXICO**



**PTB, Germany**



**VNIIM RUSSIA**

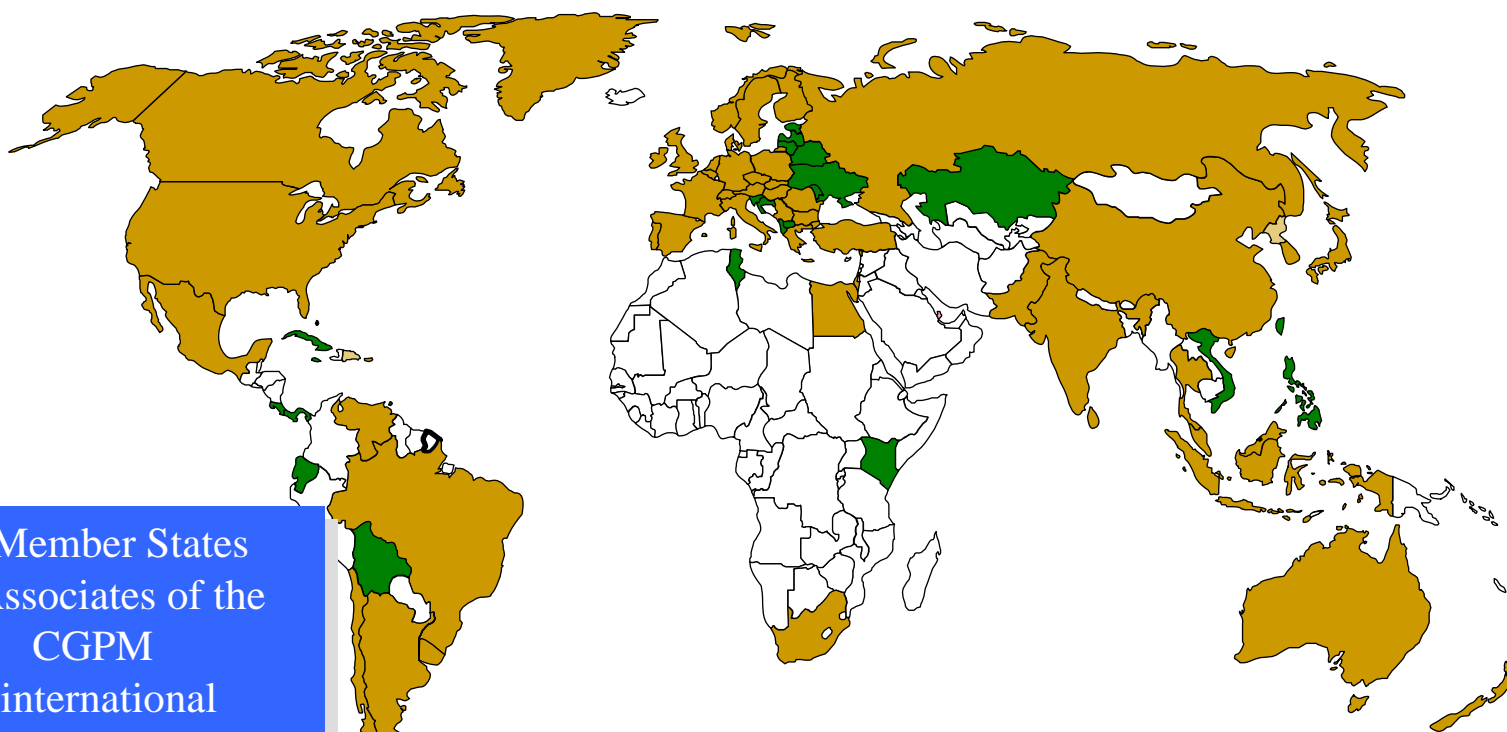
**WORLD TRADE, INTERNATIONAL HEALTHCARE etc etc**

**Measurements for Industry, science, health and commerce**

**Number of measurements**

**BIPM**

# SUCCESS: Participation in the CIPM MRA



45 Member States  
27 Associates of the  
CGPM  
2 international  
organizations  
(180 NMIs + DIs)  
2006 GDPs: \$46T  
(96%)

**90 % OF WORLD TRADE!!**



# SUCCESS: uptake and impact

- The KCDB is dominated by physics, engineering and with a good start in chemistry and laboratory medicine.
- We partner with a number of Intergovernmental Organizations which have been, or are about to be, Signatories...IAEA, WMO....WMO
- With the world of accreditation
- With some companies...Boeing, DSME/Daewoo...
- With a Regulator - FAA



# BUILDING ON SUCCESS: IGO AGREEMENTS

## BIPM -OIML-ILAC Common Statement

- a declaration on the relevance of various international agreements on metrology to trade, legislation and standardization.
- recognizes that the MRA is complemented by similar Arrangements drawn up by OIML and ILAC supporting equivalence of traceable measurements world-wide.

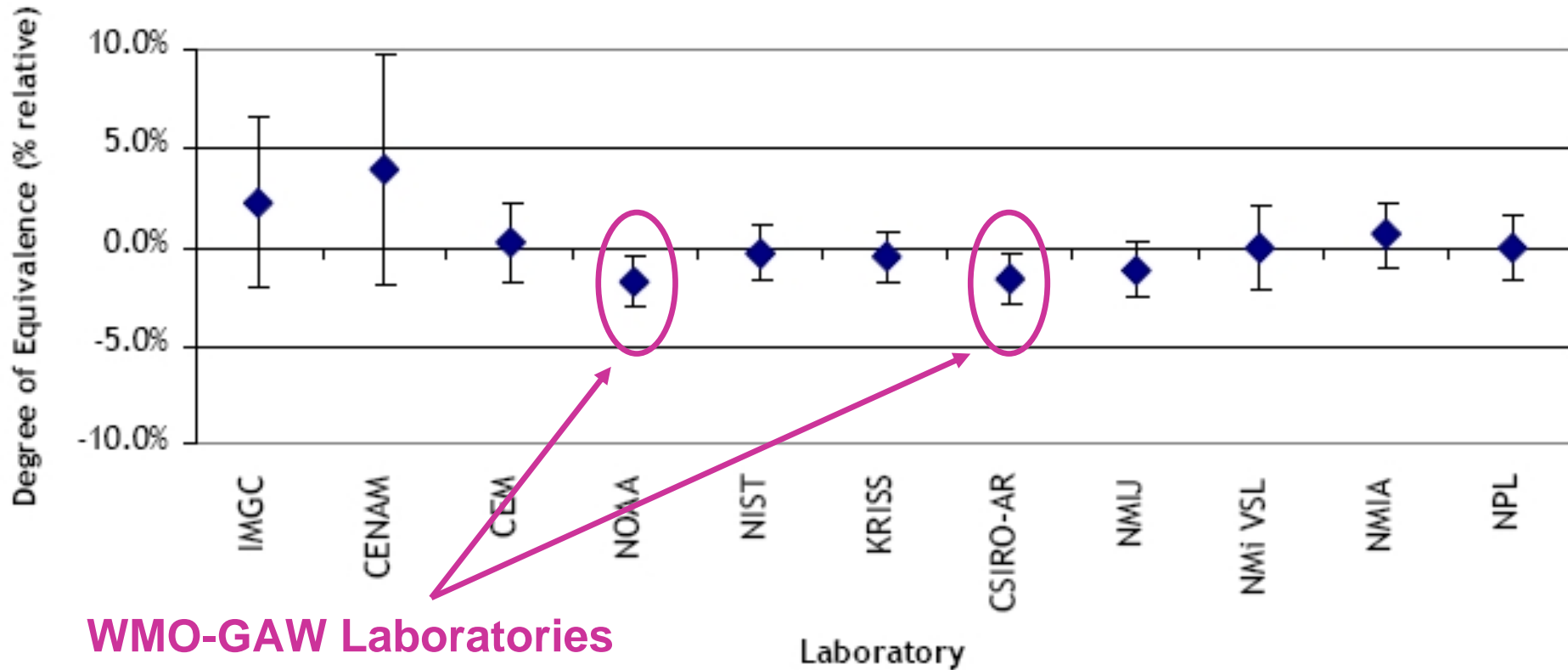


## CIPM-ILAC Joint Statement

draws attention to the respective roles and responsibilities of the two communities, metrology laboratories and accreditation bodies.



# SUCCESS :greenhouse gas comparisons with WHO



WMO-GAW Laboratories

1.7 % difference from gravimetric value

WMO scale is being revised

CCQM-P41, Methane 1.8  $\mu\text{mol/mol}$



## WHAT DO WE OFFER TO OTHER IGOs etc?

- A system which works and which is supported by the full resources, and authority, of the BIPM and over 200 laboratories world-wide.
- A system which meets the needs of users at all levels of accuracy and which can be adapted to all known user domains.
- A system which draws the attention of users to the importance of confidence in traceable measurements so as to implement best practice and reduce costs to participants if their measurements are done in accredited laboratories with traceability to the SI



# THE NEXT CHALLENGE: PERSUADING MORE IGOs and REGULATORS TO USE THE RESULTS

- Initiatives with **FAO/Codex Alimentarius**;
- Collaboration with **World Anti-doping Agency**;
- Visits to BIPM by the US **Pharmacopeia** - Europeans to follow;
- Meetings with the **World Meteorological Organization** so that it can become a signatory to the CIPM MRA.
- Continued discussion with the **European Commission** on references to the JCTLM to demonstrate compliance with the requirements of the IVD Directive



**USERS:  
ACCREDITORS,  
COMPANIES.**



## SUCCESS WITH AN ACCREDITOR: ILAC TRACEABILITY POLICY

“ILAC has taken note that the information necessary for accreditation bodies to **demonstrate the traceability** of their accredited laboratories is **published in the CIPM MRA**”

*Source: ILAC policy on the traceability of measurement results  
ILAC-P10:2002*



# SUCCESS WITH AN AN INDUSTRIAL USER:BOEING

“The use of NMIs is formally recognized in the top Boeing Commercial procedure for calibration. It **specifically identifies the CIPM MRA...**and so the KCDB serves the function of the accreditation scopes in the process for approved suppliers (in this case NMIs).

One **access to the KCDB at Boeing is on the metrology sites** page which is referenced across Boeing in various pages and a search for BIPM internal to Boeing will bring back the KCDB newsletter.”

Source: Derek Porter, Technical Principal, Puget Sound Metrology,  
Boeing Commercial Group



# INDUSTRIAL SUCCESS STORY

## The CIPM MRA saved DSME up to \$ 10 million

“A company in the **Republic of Korea**, Daewoo Shipbuilding and Marine Engineering Corporation (DSME), ... saved up to \$ 10 million by virtue of the CIPM MRA.

DSME received an **order** from BP to construct an offshore plant in 2002, requesting that **all 130 instruments be traceable to NIST...**

But **KRISS and NIST are both signatories to the CIPM MRA...**

Finally **BP accepted accreditation of DSME by KOLAS (Korea Laboratory Accreditation Scheme, which is a member of APLAC and ILAC MRA) and calibration certificates issued by KRISS...**”

# SUCCESS WITH A REGULATOR: THE USA'S FEDERAL AVIATION AGENCY

The US “Repair Stations” Act which governed acceptance by the FAA of work done on US aircraft outside the US, required “traceability to NIST”

NIST now recommends that.. **the FAA accepts:**

- calibration certificates issued by NMIs which are **signatories to the CIPM MRA**
- the NMI's competence is..substantiated through the CIPM MRA
- calibration certificates issued by a laboratory..accredited..by a signatory to the ILAC Arrangement ...which has **traceability to a competent NMI which is a signatory to the CIPM MRA**



# SPECIAL THANKS

To the NIST team led by Stephen  
Carpenter



# SUCCESS WITH A LEGISLATOR: JOINT US-EU DECLARATION ON METROLOGY IN SUPPORT OF TRADE

This declaration....sets out ...steps to reduce unnecessary duplicative measurements...[including]:

- Recognition of the measurement capabilities of NMIs that are signatories to the **CIPM's MRA**;
- establishment of the equivalence of national measurement standards based on the **CIPM MRA**.

*SOURCE: EU-US Summit 18 December 2000*



## WHERE COULD WE START?

In other areas where there is scope, and a need for, harmonization at the world level....nuclear.. the carbon economy ....more multinational companies involved who need to save costs and also be good local citizens, using local infrastructures....environmental/climate monitoring



# To what might we attribute these successes?

- To a user, the system is (relatively) easy to use and transparent
- It is the only peer - reviewed, trusted, database on NMI capabilities
- it's being increasingly used as a complementary tool by the accreditors to “close the loop” on traceability of measurement results to the SI and not to named institutions (which constitutes a technical barrier to trade)
- Common terminology through use of the term CMC rather than BMC was a difficult negotiation but should help avoid any confusion in the market place
- Experience with the early days of the MRA enabled us to launch a similar network in laboratory medicine ( JCTLM)
- The ILAC and OIML partnerships were key to success and to the development of complementary policies



## DON'T FORGET OURSELVES: EVALUATION OF THE ECONOMIC BENEFITS OF THE MRA TO NMIs

- 75% of NMIs have a “positive or very positive” impression of the benefits due to mutual recognition of calibrations by a greater number of countries.
- Each participating NMI saves \$75 k per bilateral mutual recognition.
- Total notional **saving to the community of NMIs is about \$85 M**
- Conservative estimates of the **impact of the MRA in reducing technical barriers to trade is over \$4 billion**

Source: KPMG Consulting



# WHAT IS STOPPING US IN OUR AMBITION TO EXTEND THE CIPM MRA?

- Metrology is rarely thought of in legislation and regulation.
- Regulators are (rightly) cautious with national responsibilities to address.
- But continued globalization must start to drive a broader view
- BIPM has no mandate to operate at the national level, so persuading national legislators to refer to traceability and world-wide acceptance becomes a national responsibility
- WTO has been unable to respond to the BIPM's requests for observer status on the TBT committee, can he do more so that it can recognize the value and relevance of the CIPM MRA to trade?



**WHAT DID I HEAR FROM YESTERDAY THAT  
IS IMPORTANT?**



# The problem, the challenges.. and our solution?

Now....

- Is this a system in which the (increasing) problem of developing countries' need to show that a product conforms with international standards? ( Wijkström)
- Policy makers don't understand (Goonatilake, Steele)
- Do we do enough to help developing countries who “have no choice (to show compliance) if they want to trade in the world” (Goonatilake)
- “The CIPM MRA is a major building block” (Goonatilake)



# The problem, the challenges.. and our solution?

- **Millennium goals nearly all need measurements...and we have to show we conform and make progress ( Steele)**
- **“Do we talk enough to our final users...and to those we want to use our system. We must talk outside of the secret societies” ( Steele)**
- **How can you take decisions when (large uncertainties) exist in measurements relate to climate change” ( Zhang)**
- **“ We don’t know how to achieve the desired level of accuracy” ( Zhang)**
- **CIPM MRA is the route/basis for metrology (Magana)**
- **The “beautiful” CIPM MRA has saved us money and made us more effective (Tinseth and KRISS case studies)**



## And for the NMIs and the RMOs

- **“Government now presses us to take part in Key Comparisons”.**(Duan)
- **New Zealand China Trade Agreement refers to the CIPM MRA**
- **“Without the CIPM MRA, international metrology has a piece missing”.**  
**(Jornada)**
- **“The CIPM MRA helps me explain my activities to Government and increase my budget”.** (Jornada)
- **CIPM MRA created the awareness and the opportunity to talk to Governments in the smaller countries”.** ( Louw)
- **It’s marketing ( Louw)**
- **The CIPM MRA stimulated the processes and structures needed to unite Africa in AFRIMETS for intra-African and global trade ( Louw)**



# Possible initiatives

- Rethink the (restrictions on) the BIPM's role in relation to developing countries/outreach. Collaborate with ISO and ILAC. Partner with WMO, WTO etc
- Take a major initiative to develop commitment to an international carbon measurement framework,,NMI's ...IGOs....
- I know what I'm going to do:
  - follow up with ISO - global partnership)**
  - try to comment on WTO documents**
  - **work with UNIDO on creating compelling cases for developing countries for MAS**
  - finalise the BIPM/WMO workshop**
- And now over to you.....



# REMEMBER

Nothing succeeds like success!  
Let's forward to the next ten years ....and  
more.

