

**EURAMET e.V.**

**European Association of National  
Metrology Institutes**

**Leslie PENDRILL, EURAMET Chairperson**

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# Regional Metrology Organisations (RMOs) EURAMET

European Association of National Metrology Institutes



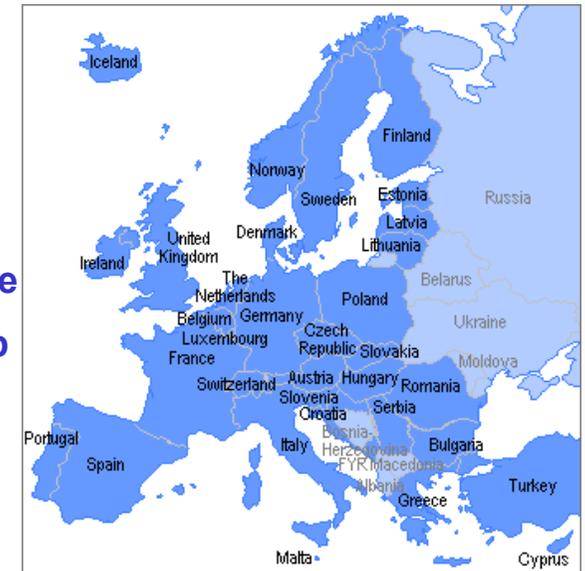
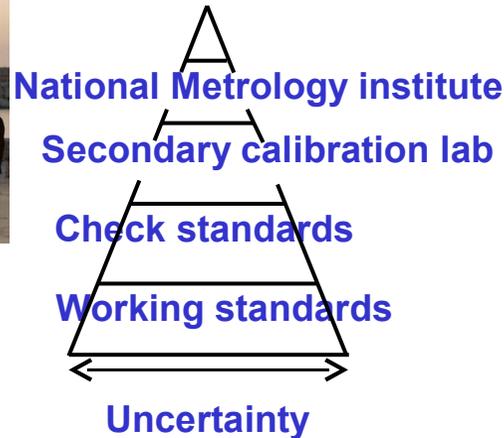
**AFRIMETS**

**GA 2009**

# European Association of National Metrology Institutes



EURAMET General Assembly Malta  
2009



**Cooperation** quality-assured measurement

*Coordinates cooperation of National Metrology in Europe:*

**A) Traceability of measurements to SI**

**B) International recognition:**

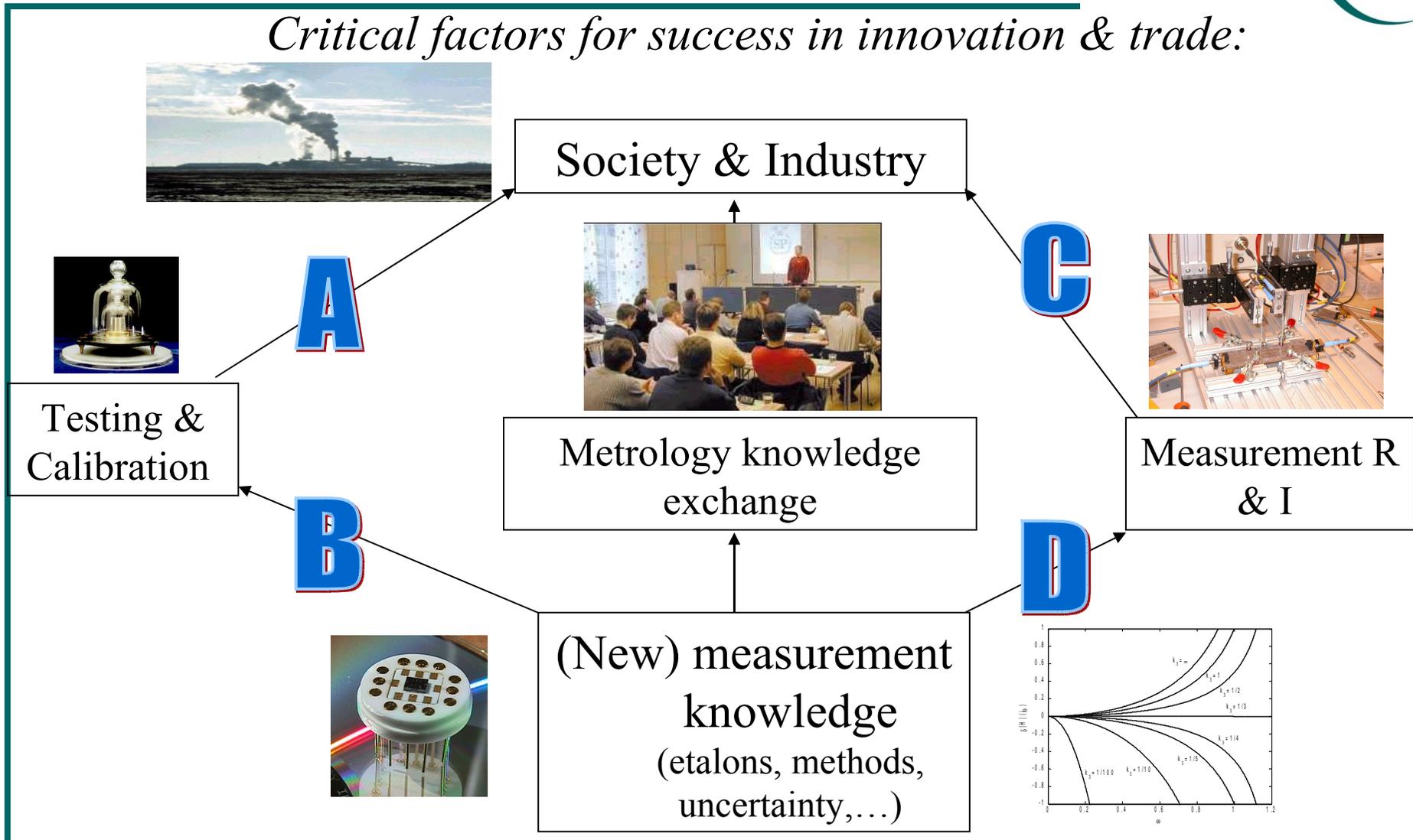
- National measurement standards
- Calibration and Measurement Capabilities (CMC) of members.

**C) Knowledge exchange & infrastructural support in Metrology**

**D) Research in metrology**

- European Metrology Research Programme (EMRP)

*Critical factors for success in innovation & trade:*



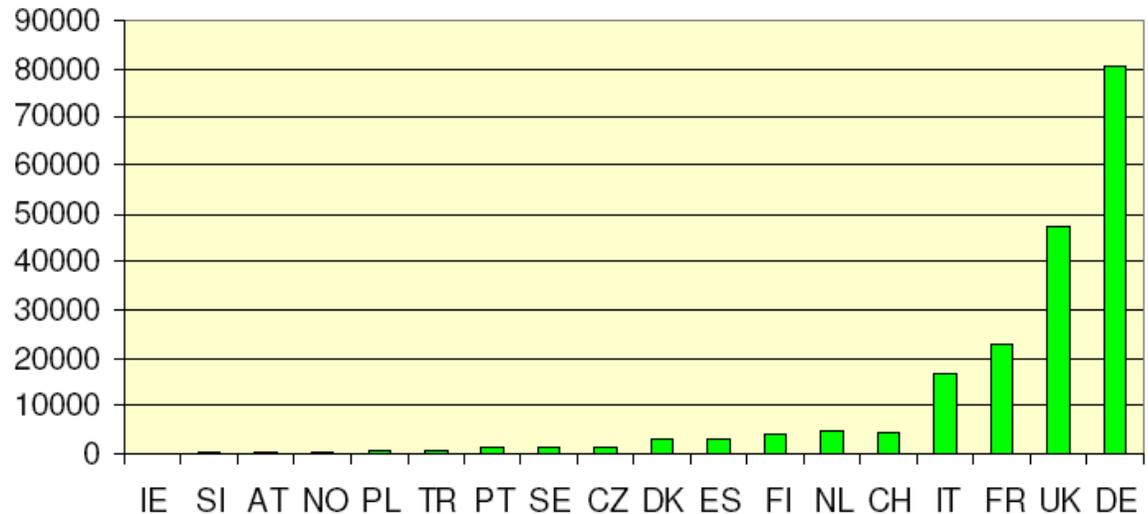
# Potential for coordinated EURAMET Research

## *EURAMET members:*

- employ about 4000 persons
- circa 2000 persons work on R&D activities
- spending about 200 M€ per year (50% of total budget) on R&D activities



Metrology R&D budget - k€



# Chairpersons and BoD

Period	20..	07/08	08/09	09/10	10/11	11/12	12/13	13/14
L. Pendrill	SE		Ch.E.	Chair			P.Ch.	
A. Leitner	AT	Vice-Chair						
L. Erard	FR	EMRP-Chair						
J. Drnovsek	SI	2nd	3rd					
H. Isotalo	FI	1st	2nd					
J. Bartolo	MT	1st						
K. Hossain	UK			1st				
P. Hetherington	IR	1st						
P. Klenovsky	CZ	1st						

## Re-election of BoD members for further term of office:

- Joe Bartolo, Malta, 2nd term
- Paul Hetherington, Ireland, 2nd term
- Pavel Klenovsky, Czech Republic, 2nd term

[PTB](#) > [What's new](#) > [Archives](#) > [Archives Press releases](#) > [Lectures](#)

## PTB scientist Prof. Dr. Michael Kühne has been elected the new Director of the Bureau International des Poids et Mesures (BIPM)

State Secretary Wuermeling: "The appointment emphasizes the leading role of Germany in international metrology"



Bundesministerium  
für Wirtschaft  
und Technologie

12.12.2007



## EURAMET Chairpersons

**Chairperson:**  
**Leslie Pendrill**

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E-Mail: [chairperson@euramet.org](mailto:chairperson@euramet.org)  
Internet: [www.sp.se](http://www.sp.se)



**Vice-Chairperson (GA)**  
**Arnold Leitner**

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Internet: [www.bev.gv.at](http://www.bev.gv.at)



**Vice-Chairperson (EMRP)**  
**Luc Erard**

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Internet: <http://www.lne.fr/>



# Technical Committees

Period		20..	07/08	08/09	09/10	10/11	11/12
<b>AUV</b>	Enver Sadikoglu	TR	2nd				
	Salvador Barrera	DK			1st		
<b>EM</b>	Beat Jeckelmann	CH	1st				
<b>F</b>	Richard Paton	UK	1st				
<b>IM</b>	Attilio Sacconi	IT	1st	2nd			
<b>IR</b>	Istvan Csete	HU	2nd				
	Hans Bjerke	NO			1st		
<b>L</b>	Michael Matus	AT	1st				
<b>M</b>	Stuart Davidson	UK	2nd				
	Walter Bich	IT			1st		
<b>MC</b>	Bernd Guettler	DE	1st				
<b>PR</b>	Peter Blattner	CH	1st				
<b>Q</b>	Luc Erard	FR	1st	2nd			
<b>T</b>	Jovan Bojkovski	SI	2nd				
	Wolfgang Buck	DE			1st		
<b>TF</b>	Gregor Dudle	CH	2nd				
	Philip Tuckey	FR			1st		
	Andreas Bauch	DE			1st		

## EURAMET Liaison Organisations

### **RMOs:**

- **APMP**
- **COOMET**
- **AFRIMETS**
- **SIM**

### **Corresponding NMIs:**

- **DSSU, Ukraine**
- **INPL, Israel**
- **NIS, Egypt**

### **Corr. Organisations:**

- **BIPM**
- **EA**
- **EURACHEM**
- **EUROLAB**
- **NCSLi**
- **WELMEC**

## **EURAMET “new” member**

Cyprus becomes 33<sup>rd</sup> EURAMET Member 1<sup>st</sup> January 2009

All former EUROMET countries now part of EURAMET

## **Cooperation with WELMEC & EURACHEM**

Both have become Liaison Organisation with EURAMET

## **Cooperation with EA**

EA Advisory Board, EURAMET is one of 2 Organisations representing Metrology (together with WELMEC)

EURAMET active in 4E + C, PLG, EA LC, EA ILC, QMS etc

## **CIPM MRA robustness**

Greater use of on site peer review within EURAMET likely in future

## Cooperation with European Measurement & Testing Organisations

EURAMET active in:

- *4E + C*
- *Permanent Liaison Group (PLG)*



**4E + C Meeting LNE (Paris) 2009**

# Strategy A (Traceability)

## A) Traceability of measurements to SI units

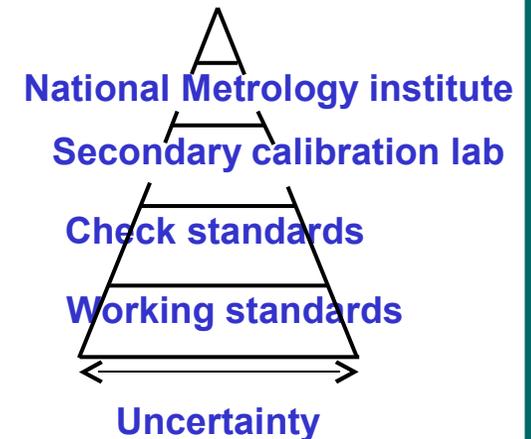
EURAMET is a platform for coordination of arrangements for provision of traceability to SI.

*Aim:*

- 'Benchmarking' of different countries metrological services



SP's reference equipment for vacuum metrology (static expansion) transferred from NPL (UK)



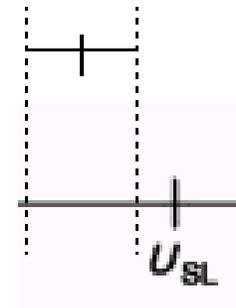
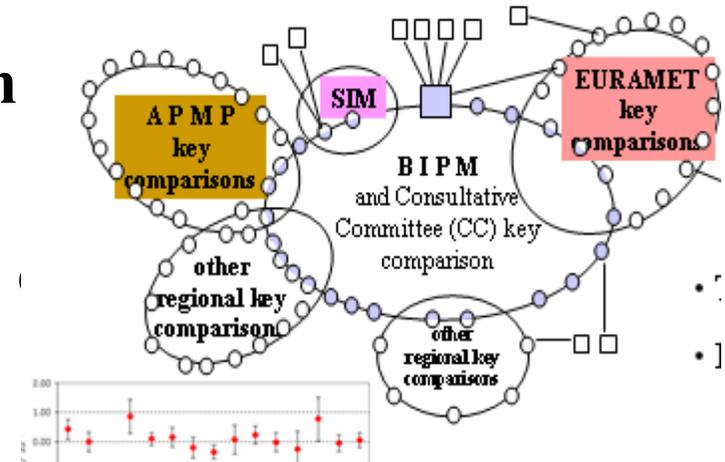
# Strategy B (International recognition)

## B) International recognition of national measurement standards and calibration measurement capabilities (CMC)

Quality/management systems for EURAMET and its 100+ members and associate organisations

Quality-assured measurement role in conformity assessment

- Traceability, uncertainty, decision-making, risks
- Standards & norms
- Stakeholders (CEC, EA, CEOC, WELMEC...)



# Strategy B (International recognition)

## EURAMET procedures and review criteria for CMCs

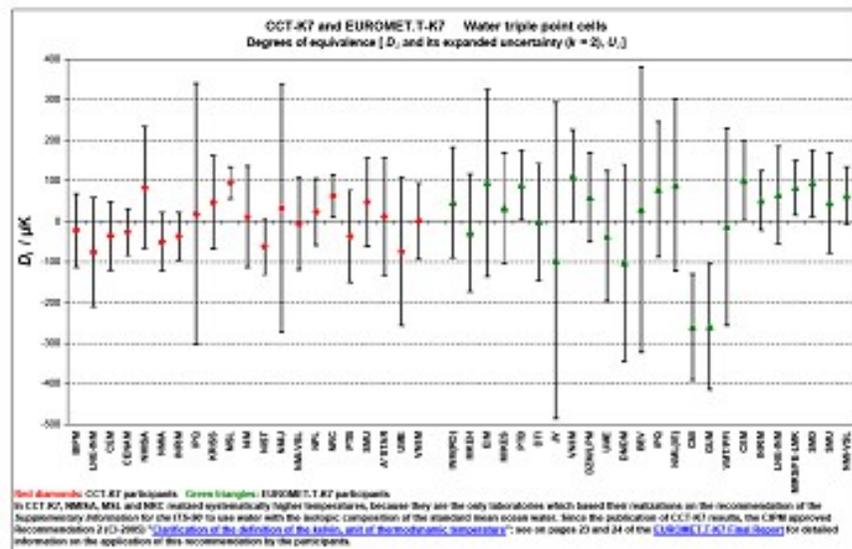
**EURAMET Guide no. 8**  
Issued: 02-06-2008  
Version: 1.0

EURAMET Guide



## EURAMET.T-K7 comparison of water triple point cells

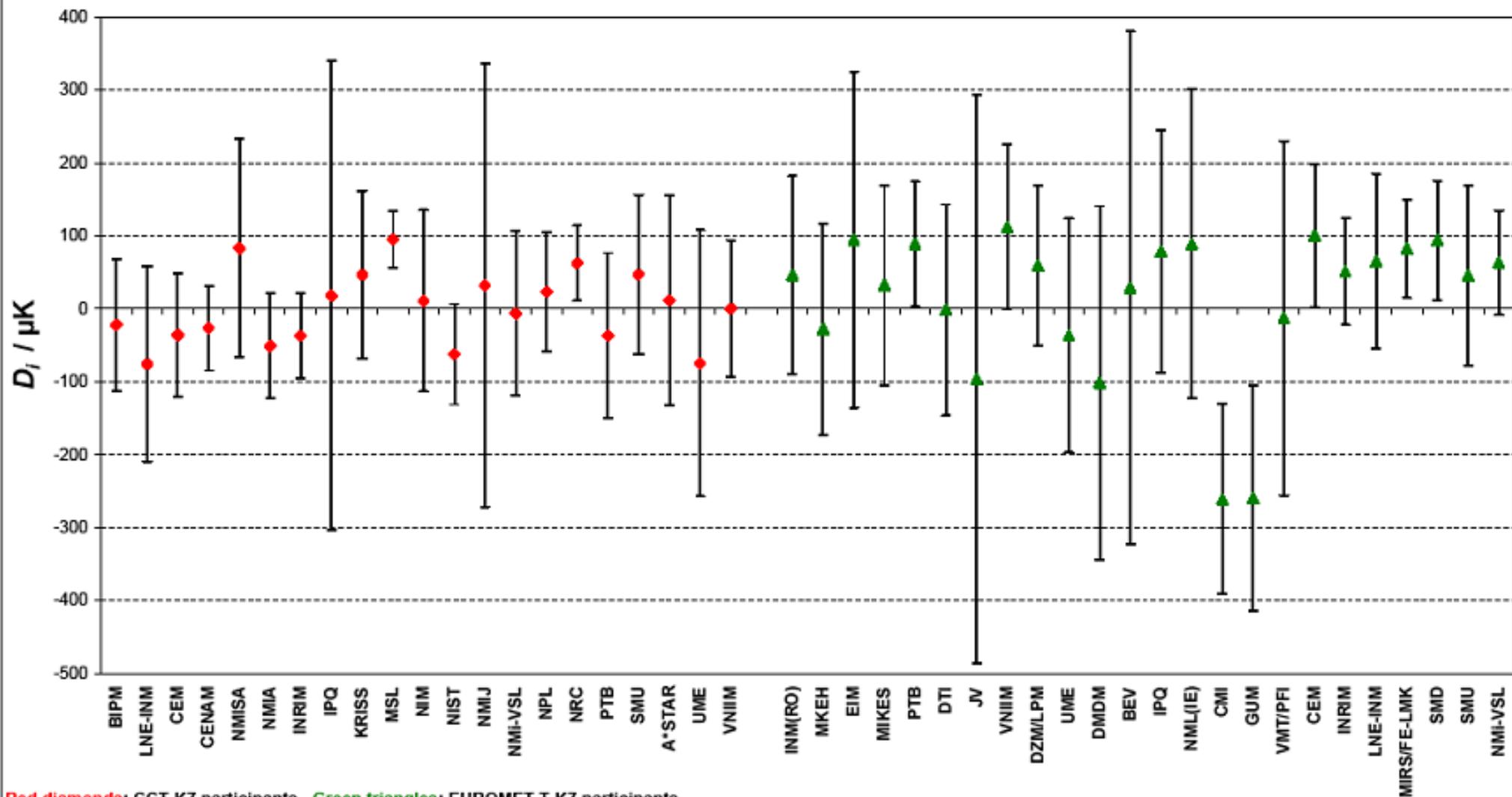
- Regional extension of CCT-K7 (2002-2004)
- **24 participant NMIs** (9 of them had participated in CCT-K7)
- Robust linkage to CCT-K7
- Powerful tool to evidence the impact of the recently refined definition of the water triple point temperature in terms of VSMOW
- EURAMET.T-K7 reference value 65  $\mu\text{K}$  higher than CCT-K7 KCRV (thus agreeing within few  $\mu\text{K}$  with the best estimate of the SI unit)



The BIPM has comparison dates: January 2009



**CCT-K7 and EUROMET.T-K7 Water triple point cells**  
 Degrees of equivalence [ $D_i$ , and its expanded uncertainty ( $k = 2$ ),  $U_i$ ]



**Red diamonds:** CCT-K7 participants    **Green triangles:** EUROMET.T-K7 participants

In CCT-K7, NMISA, MSL and NRC realized systematically higher temperatures, because they are the only laboratories which based their realizations on the recommendation of the *Supplementary Information for the ITS-90* to use water with the isotopic composition of the standard mean ocean water. Since the publication of CCT-K7 results, the CIPM approved Recommendation 2 (CI-2005) "[Clarification of the definition of the kelvin, unit of thermodynamic temperature](#)": see on pages 23 and 24 of the [EUROMET.T-K7 Final Report](#) for detailed information on the application of this recommendation by the participants.



## EURAMET 924

"Development of a sustainable traceability and dissemination system providing Europe-wide comparable measurement results in water monitoring under the Water Framework Directive (2000/60/EC) (WFD) "

Organized by PTB, BAM, LNE and IRMM

### WFD:

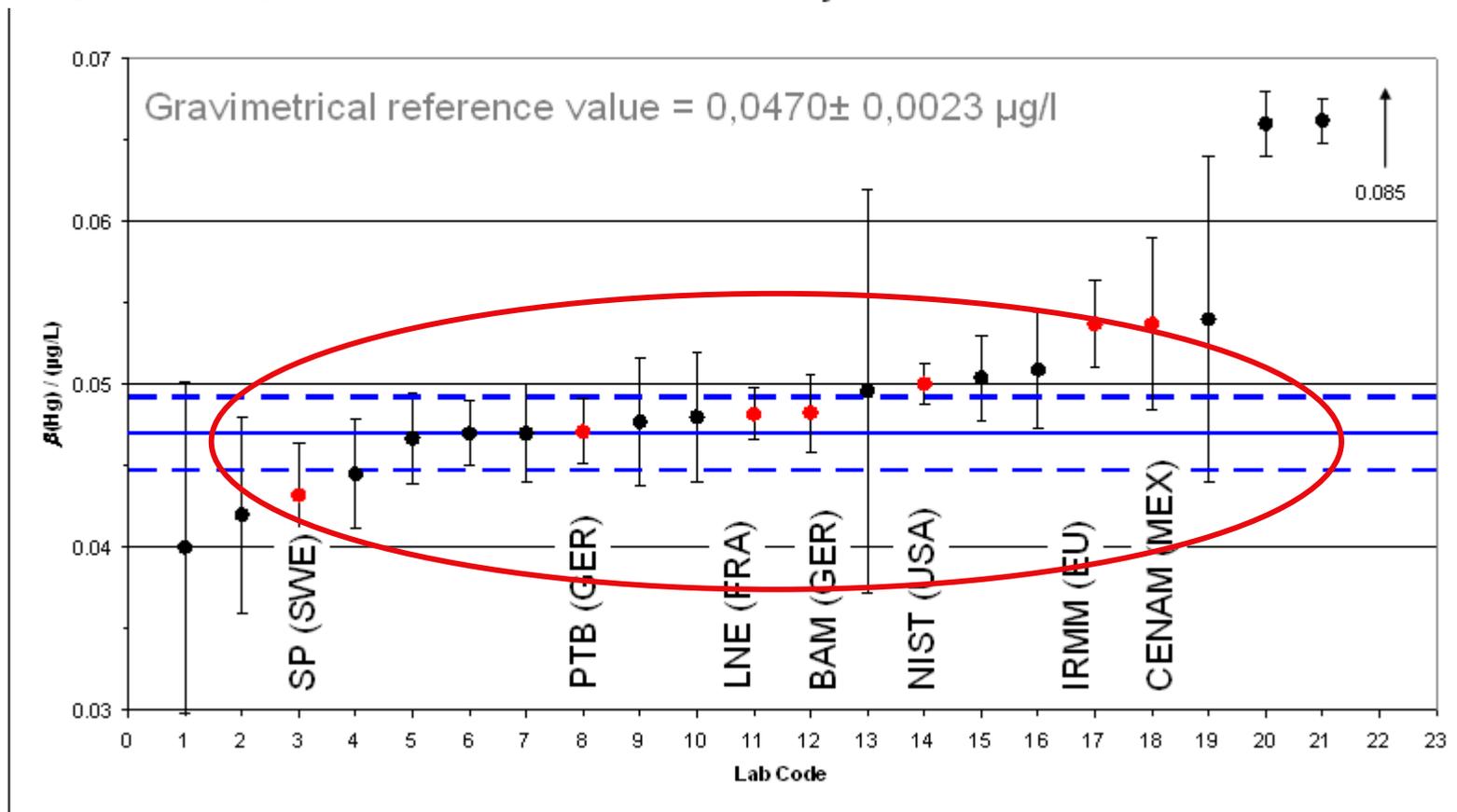
- Good quality of surface, ground and coastal water in the EU by 2015
- WFD requires comparable measurement results for assessments
- Priority list of substances (Ni, Cd, Pb, Hg)
- Environmental Quality standards (  $c_{EQS}$  (Hg) = 50 ng/l)



# Strategy B (International recognition)

*mercury in ultrapure water*

CCQM-P100.1 / Euramet 924  
Results Mercury



# Strategy C (KT)

## C) Metrology knowledge transfer and infrastructural support in quality-assured measurement

- EURAMET website up-dated
- Coordination of metrology education & training material
- EURAMET Focus Group "Metrological Infrastructure"



**EURAMET**  
European Association of National Metrology Institutes

search

**Focus Group on Facilitating National Metrology Infrastructure Development**

The Focus Group on facilitating national metrology infrastructure development is concerned with facilitating cooperation and acceleration of the integration process of new and emerging EURAMET members and associates into existing EURAMET structures. The major tasks and activities within this focus group are as follows, to

- organize joint training and comparisons
- facilitate joint use of facilities and collaboration between NMIs
- support networking and awareness
- assist corresponding applicants in their intention for membership in EURAMET

The focus group aims at the promotion and facilitation of the metrology infrastructure and contributes in raising awareness about development in metrology and quality infrastructure in the countries of the participating NMIs.

<b>Chairperson</b>	<a href="#">Arnold Leitner</a> (BEV, AT)
<b>Co-Chair for Organization</b>	<a href="#">Zijad Džemić</a> (IMBiH, BA)
<b>Facilitator for the Board of Directors</b>	<a href="#">Janko Drnovšek</a> (BoD)

**Current status**  
This is your current status:  
Username: bod  
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**Public Access**

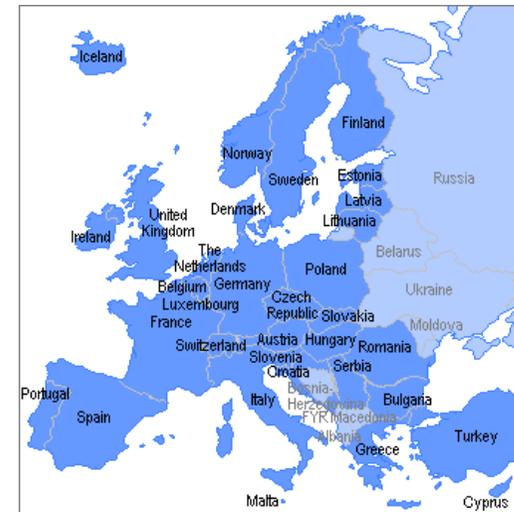
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[Annual/Follow Up Meetings](#)  
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**News and Events**



# Strategy C (KT)

## Elaboration of Guidance Documents



EURAMET procedures  
and review criteria for CMCs

EURAMET G  
Issued: 21  
Version: FI

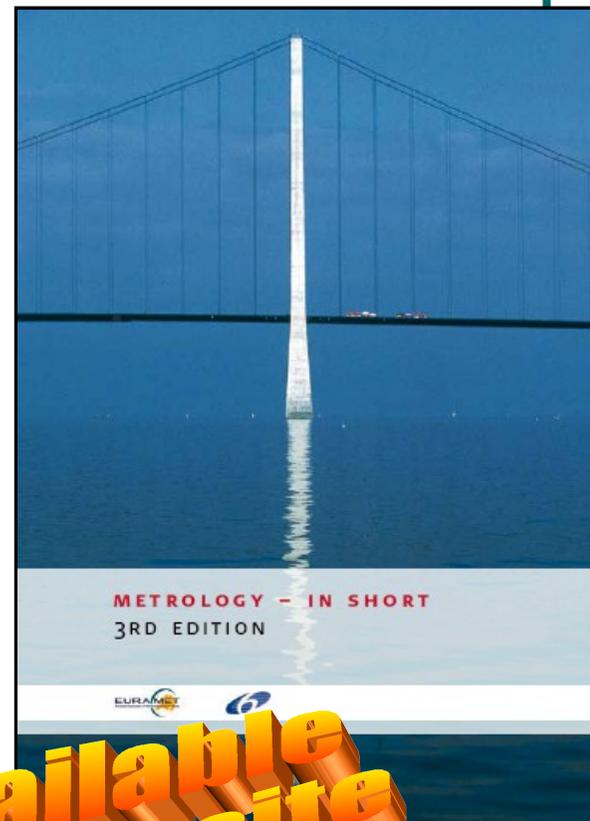
EURAMET Guide



EURAMET  
and the operation of NMIs

EURAMET Guide no. 10  
Issued: 01-05-2008  
Version: FINAL DRAFT

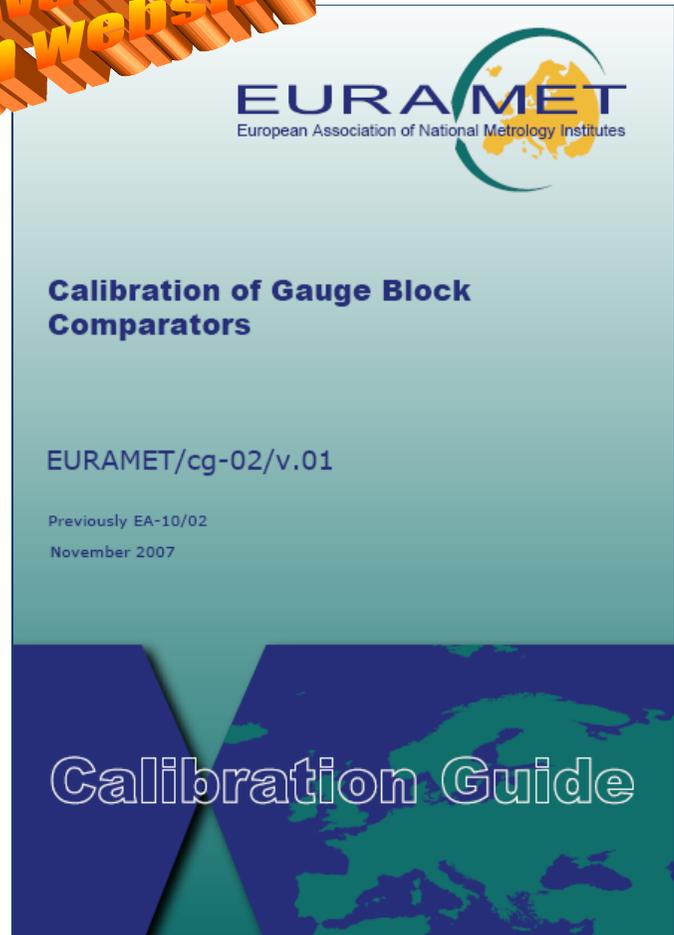
EURAMET Guide



Available  
on website

# Strategy C (KT)

Available  
on website



N°	Calibration Guides	TC
01	Calibration of Stylus Instruments for Measuring Surface Roughness *	L
02	Calibration of Gauge Block Comparators	L
03	Calibration of Pressure Balances *	M
04	Uncertainty of Calibration Results in Force measurements *	M
05	Co-ordinate Measuring Machine Calibration *	L
06	Extent of Calibration for Cylindrical Diameter Standards	L
07	Calibration of Oscilloscopes *	EM
08	Calibration of Thermocouples	T
09	Measurement and Generation of Small AC Voltages with Inductive Voltage Dividers	EM
10	Determination of Pitch Diameter of Parallel Thread Gauges by Mechanical Probing	L
11	Guidelines on the Calibration of Temperature Indicators and Simulators by Electrical Simulation and Measurement	T
12	Guidelines on the Evaluation of Vector Network Analysers (VNA)	EM
13	Guidelines on the Calibration of Temperature Block Calibrators	T
14	Guidelines on the Calibration of Static Torque Measuring Devices	M
15	Guidelines on the Calibration of Digital Multimeters	EM
16	Guidelines on the Estimation of Uncertainty in Hardness Measurements	M
17	Guidelines on the Calibration of Electromechanical Manometers	M
18	Guidelines on the Calibration of Non-Automatic Weighing Instruments	M

# Strategy C (KT)

## SIM adopts and publishes EURAMET Guide 18



# Strategy C (KT)

## Measurements in Commerce

World Metrology Day – 20 May 2009



Metrology Underpinning Economic Development

**World Metrology Day 2009**  
**May 20th**

<b>Metrology</b> Measurements in Commerce	<b>NIST</b> National Institute of Standards and Technology Technology Administration U.S. Department of Commerce
	<b>Energy</b> energy supplies are carefully measured to promote efficiency and ensure proper billing
<b>Healthcare</b> the composition and dosage of medications are carefully measured to ensure their safety and effectiveness	<b>YOUR NATIONAL METROLOGY INSTITUTE SUPPORTS ALL THE MEASUREMENTS THAT KEEP YOUR ECONOMY GROWING</b>
	<b>Goods</b> products and services are carefully measured to ensure their value and safety
	<b>Underpinning Economic Development</b> World Metrology Day – 20 May 2009 <a href="http://www.worldmetrologyday.org">www.worldmetrologyday.org</a>

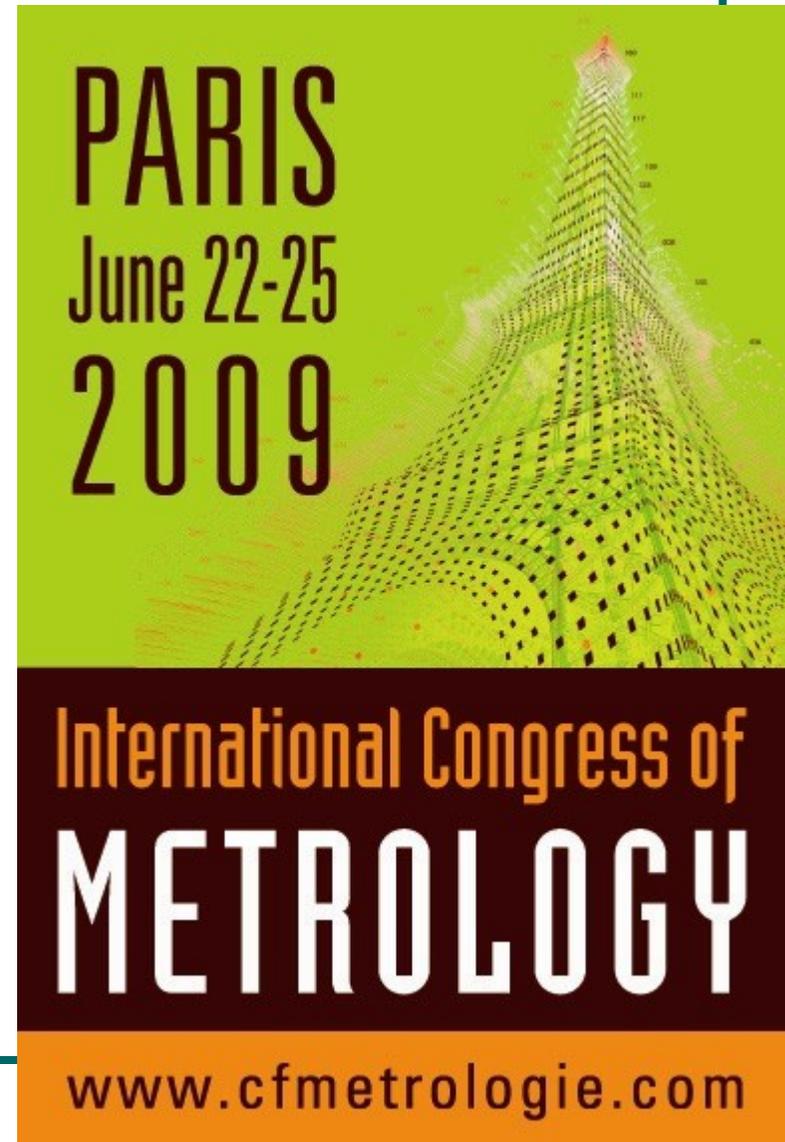
# Strategy C (KT)

## International Congress of Metrology 2009

Organiser: College Francais de Metrologie

Coorganisers: EURAMET, BIPM, EA, OIML

[http://www.metrologie2009.com/index\\_en.php](http://www.metrologie2009.com/index_en.php)



# Strategy C (KT)

## Comparing and contrasting studies of Metrology Education & Training in Europe and the US

NCSLi 2007 St Paul (MN, USA)

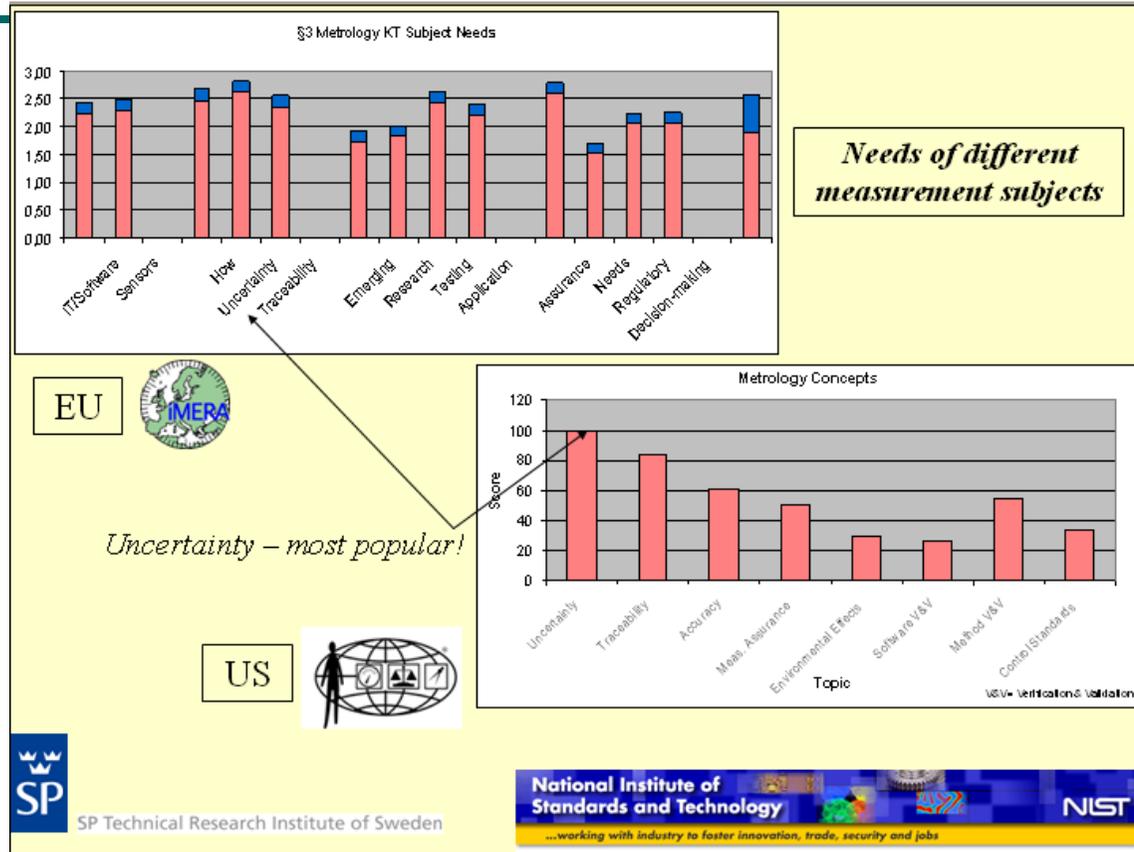
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**Harris G and Pendrill L R 2008 “Comparing and Contrasting  
Studies of Metrology Education and Training in Europe and  
North America”, *NCSLi Measure*, Vol. 3, no. 2, pp 38 – 45**

# Strategy C (KT)



**Harris G and Pendrill L R 2008 “Comparing and Contrasting Studies of Metrology Education and Training in Europe and North America”, *NCSLI Measure*, Vol. 3, no. 2, pp 38 – 45**

# Strategy C (KT)

## Comparing and contrasting studies of Metrology Education & Training in Europe and the US

*Number of critical drivers* (outreach, human resources, KT subjects and modes, and infrastructure) in future development of Metrology KT identified in the NCSLi study may be compared with key aims of coordinated programme in the corresponding European arena.

Concerning *infrastructure for education & training*, NCSLi and iMERA studies have in common:

- need for coordinated forum for ensuring that right people and resources are brought together to ensure that metrology staffing needs are met at all levels.



SP Technical Research Institute of Sweden

National Institute of Standards and Technology

NIST

...working with industry to foster innovation, trade, security and jobs

**Harris G and Pendrill L R 2008 “Comparing and Contrasting Studies of Metrology Education and Training in Europe and North America”, *NCSLi Measure*, Vol. 3, no. 2, pp 38 – 45**

# Strategy D (R&D)

## European Metrology Research (EMRP)



### Grand Challenges

- Health
- Energy
- Environment
- New technologies for nanosciences and security

European Metrology Research Programme

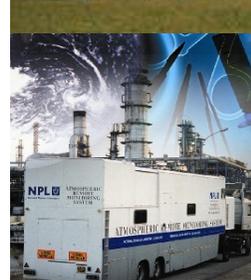
Outline 2008

### R&D for fundamental and applied metrology

- Fundamental metrology
- Focused single discipline and Applied metrology

Mobility, Capacity Building, KE

[www.euramet.org](http://www.euramet.org)



# Strategy D (R&D)

## “Metrology” from FP6 to FP7

Art. 169 Preparation period

400M€ (50% from EU 7 years)

**EMRP 169**

Evaluation &  
negotiation period

**iMERA ERA-NET +**

63 M€, 1/3 from EU 3 years

**iMERA ERA-NET**

6<sup>th</sup> FP

7<sup>th</sup> FP

2005

2006

2007

2008

2009

2010

# Things we are thinking about

## **Strategy B (International recognition)**

**At EURAMET level:**

- **Greater role contributing to policy issues within Europe**

## **Strategy C (KT)**

**At CIPM MRA/ RMO level:**

- **Supporting new RMO Afrimets**
- **BIPM initiative: Forum on Coordination of NMI International Activities**

# Key meetings

## 3<sup>rd</sup> EURAMET General Assembly

**Location:**

**Malta**

**8 – 10 June, 2009**

## 4<sup>th</sup> EURAMET General Assembly

**Proposed:**

**Portugal**

**May/June 2010**

**Invitations to:**

BIPM, APMP, COOMET, **SADCMET/AFRIMETS**, SIM, EA,  
EUROLAB, NCSLI, EURACHEM, CEOC, NIS(Egypt), INPL(Israel),  
DSSU(Ukraine), NIST, JRC, WELMEC, OIML, ...

**Thank you for your attention**