

Capacity building in EURAMET

Tanasko Tasić
EURAMET Capacity Building Officer

EURAMET Information Day for INM Moldova
INM, Chisinau, 7 - 8 November 2018

Evolution of capacity building over the years



“Ad-hoc” activities

Training courses

Strategic approach

Workshops, “enabling environment”

EMPIR Research Potential projects (RPT)



EURAMET-WELMEC FG on Facilitating National Metrology Infrastructure Development (FG-FNMID)

Supported by Secretariat

Sponsoring by PTB, UME and other NMIs

BoD Working Group for Capacity Building (BOD-WGCB)

Capacity Building Officer

EMPIR providing funds for CB

Joint trainings events with the BIPM

South-East European focus

SEE + AT + DE

Europe-wide participation

(36 countries)

EURAMET BoD Working Group for Capacity Building (BOD-WGCB)



Established 2015, replacing Focus Group on Facilitating National Metrology Infrastructure Development (FG-FNMID)

Assists all EURAMET members, especially the new and/or emerging EURAMET members, in the development of a national metrology infrastructure

21 Members:

DPM (AL), BEV (AT), IMBiH (BA), BIM (BG), HMI/FSB-LPM (HR), METROSERT (EE), BoM (FYRM), PTB (DE), MIKES-VTT (FI), NSAI/NML (IE), FMTC (LI), INM (MD), MBM (ME), GUM (PL), DMDM (RS), SMU (SK), MIRS (SI), CEM (ES), METAS (CH), TUBITAK UME (TR), NPL (UK)

Observer:

WELMEC

Convenor: Ahmet Ömer Altan, TUBITAK UME (Turkey)

Guardian: Maria Luisa Rastello, Vice-Chairperson (GA)

Capacity Building Officer: Tanasko Tasić, EURAMET

All EURAMET members welcome to join!

Capacity Building in EURAMET



“To underpin the vision of a coherent, efficient, sustainable and integrated European metrology network by assisting all EURAMET members, especially new and emerging members, in the development of their national metrology infrastructures” — from ToR for BoD-WGCB

Aims:

- Prepare NMIs and DIs for full and effective participation in the CIPM-MRA,
- Strengthen capacity to undertake research activities and encourage participation in joint research projects
- Provide support through technical knowledge transfer aimed at building capability for new and/or improved services.

Input on specific needs for CB activities is solicited from entire EURAMET community.

Comprehensive EURAMET capacity building strategy is under development.

Capacity Building Instruments



1) Human and Institutional Capacity Building (HI-CB) training

- Training courses of 2-3 days: technical subjects, CIPM MRA, EMPIR processes, NMI management & communications, legal metrology
- Input / proposals from WGCB, TCs, Liaison Organisations
- Annual work plan (approved by EMPIR Committee)

2) Researcher Mobility Grants (RMGs)

- Researcher from EURAMET member/associate joins a JRP-partner (NMI/DI) to undertake research additional to the project for 1 - 18 months.
- Goal: develop employing NMI/DIs research capacity, enhance research of EMPIR projects, raise new researchers in metrology
- Calls based on adverts specific to JRPs and identifying area of research

3) EMPIR Research Potential Projects

- Specific JRPs supporting emerging NMIs to develop research capabilities in areas of national and regional strategic priority
- Annual calls

For more information: See EURAMET website
<https://www.euramet.org/knowledge-transfer/capacity-building/>

Eligible for participation:

- (1) & (3) open for NMIs beyond EURAMET
- (2) for EURAMET Members & Associates only

Capacity Building Instruments



1) Human and Institutional Capacity Building

- Training courses of 2-3 days: technical subjects, CIPM MRA, EMPIR projects, legal metrology
- Input / proposals from WGCB, TCs, Liaison Groups
- Annual work plan (approved by EMPIR Co-ordinating Committee)

Annual Financing 2018:

HI-CB training courses

&

Researcher Mobility Grants

communications,

2) Researcher Mobility Grants (RMGs)

- Researcher from EURAMET member/associated country to undertake research additional to the project for 1 - 18 months
- Goal: develop employing NMI/DIs research, to raise new researchers in metrology
- Calls based on adverts specific to JRPs and identifying area of research

Ca 250 k€ available, financed from EMPIR members „cash contribution“

to undertake

EMPIR projects,

3) EMPIR Research Potential Projects

- Specific JRPs supporting emerging NMIs to develop research and regional strategic priority
- Annual calls

RPT Annual Financing:

Ca 1 M€ EU funding

s of national

For more information: See EURAMET website
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OUTLINE



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- Research potential projects (RPT)
- CB Impact
- Participation of INM in Capacity Building
- Information sources

HI-CB trainings: Some examples



Technical trainings

- **Summer School of Thermal Metrology**
- **Calibration of volume equipment**
- **Measurement uncertainty in volume measurement**
- **Calibration and dissemination of mass unit at E1 level**
- Calibration and calculating MU of electrical energy standards
-

Metrology system trainings

- [EURAMET - BIPM Training on review of quality management systems](#)
- [BIPM – EURAMET TC Leadership Course](#)
- Training and workshop on NMI strategic management
- Comr
- ...

Legal metrology related trainings

- Verification of standard automatic level gauges ... (OIML R-85)
- Verifik
-

EMPIR/EMRP trainings

- Writing JRP proposals to achieve maximal impact
-

<https://www.euramet.org/knowledge-transfer/training-courses/>

Training courses Nov 2017 / Nov 2018



	host	timeframe	participants
EURAMET - BIPM training on review of QMS	INTA	7/8 Nov 2017	23
Training on measurement uncertainty in volume measurement	BEV	28/29 Nov 2017	16
EMPIR Research Potential Call Training and Workshop	SMD	6/7 Dec 2017	8
Training on calibration of volume equipment	IPQ	20-23 Feb 2017	11
Summer school in Thermal Metrology	EIM	17-21 Sep 2018	44
Writing JRP proposals to achieve maximal impact	PTB	5-6 Jun 2018	16
Calibration of measuring tapes and rulers	MBM	11/12 Sep 2018	11
Calibration of Long gauge blocks 100mm-500mm	MBM	13/14 Sep 2018	11
Verification of automatic level gauges (OIML R-85)	IMBIH	5-6 Sep 2018	14
Calibration and dissemination of mass unit E1 level	NPL	6-8 Nov 2018	12
total		28 days	166

Training courses Nov 2017 / Nov 2018



participants coming from 35 EURAMET countries and
10 external (non-EURAMET) participants coming from all RMOs.

40 EURAMET lecturers coming from 16 countries with
100 lecturers' man-days (in kind) and

6 non-EURAMET lecturers.

EURAMET is aligning its activities to the BIPM CBKT-programme:

- BIPM courses are supported with lectures,
- BIPM courses offered at international level are adapted to EURAMET needs and offered for EURAMET members, and
- EURAMET initiatives related to CIPM MRA are jointly prepared with BIPM and opened to other RMOs, as far as possible.

BIPM – EURAMET TC Leadership Course

7 to 10 February 2017



18 participants, 12 countries, 8 technical committees

19 lecturers from BIPM and EURAMET

Committed and valuable contributions from lecturers and participants

Lively and constructive discussions

For more information: See news on EURAMET website
[“How to lead and organise Technical Committees”](#)

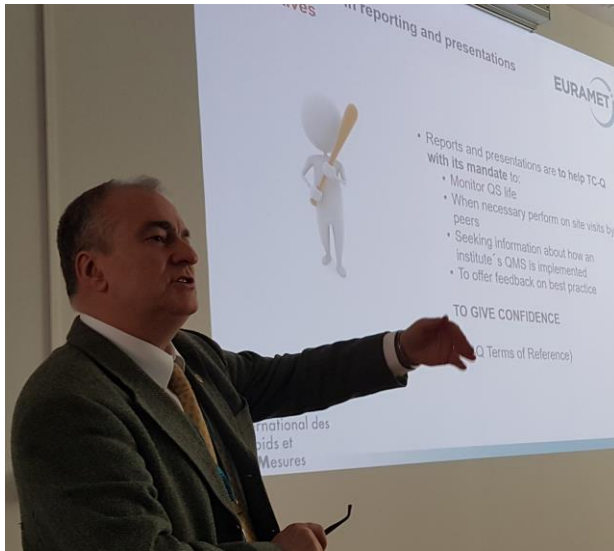
Follow-up of BIPM-course
„Leaders of tomorrow“
7 to 18 November 2016

First joint training course
by BIPM and EURAMET

Objective:
Preparation of future TC
leaders for their
responsibilities within the
CIPM MRA

EURAMET – BIPM training on review of QMS

7/8 November 2017



23 participants, 12 countries, 8 from NMIs, 15 from Dis

1 guest from COOMET, 1 from GULFMET

9 lecturers from BIPM and EURAMET

Practical/exercise part highly appreciated by participants

EURAMET initiative accepted by BIPM

Hosted by INTA, Spain

Objective:
Preparation of QMS reviewers,
focus on peer review



For more information: See news on EURAMET website
["Training course on the review of quality management systems is a success"](#)

Summer school of thermal metrology

EIM, Thessaloniki, 17-21 Sep 2018



17th Sep: Monday	Opening, General metrology, CIPM, CCs, CCT, EURAMET, TCT, RMOs, NMIs, DIs, Units redefinition, Introduction to uncertainties		
	Temperature fundamentals, contact and non-contact thermometry		
18th Sep: Tuesday	Humidity fundamentals		
	Thermophysical quantities fundamentals		
19th Sep: Wednesday:	Stream 1 -	Stream 2 -	Stream 3 -
	Contact thermometry, Non-contact thermometry	Humidity	Thermophysical quantities
20th Sep: Thursday	Laboratory sessions -		Laboratory sessions -
21st Sep: Friday	Open forum for discussing students' questions		
	Future developments in thermometry		

Summer school: theory



Structured programme – concentrated covering of all important sub-areas,

Enthusiastic lecturers and motivated students, especially with the lively discussions.

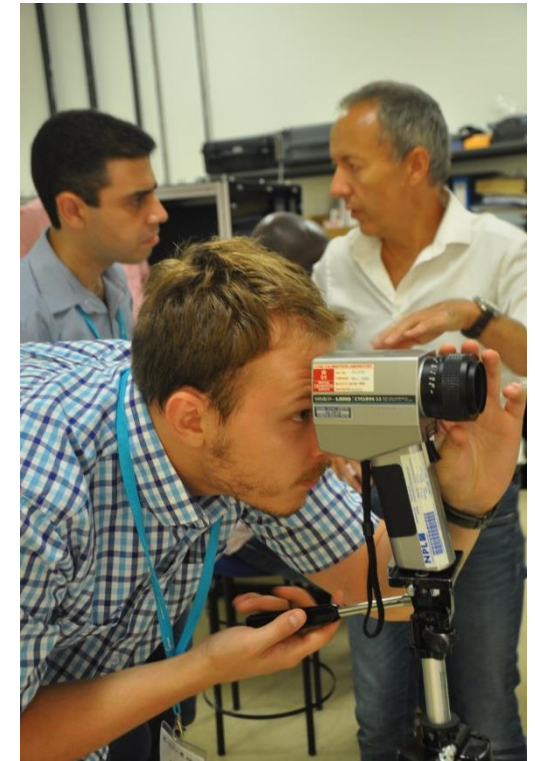
Summer school: hands on



I liked a lot that we could ask the teachers in the middle of their talks, allowing fluently conversations.

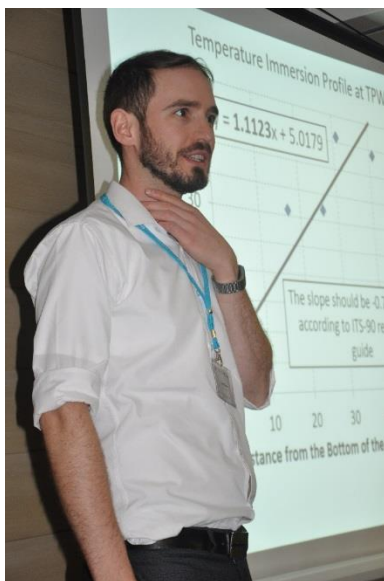


Students were great!



the laboratory hands on sessions were very important to make concrete the things taught by the lecturers.

Students' presentations: homework, presenting, questions



Over a number of days students developed friendships and established contacts which will stand them in excellent stead throughout their careers in metrology



Summer school; conclusions



- Great effort and contribution of TC-T community
- Great effort and hospitality of EIM
- Structured programme – concentrated covering of all important sub-areas
- Enthusiastic lecturers and motivated students, especially with the lively discussions
- Students really enjoyed the school, one could see it from the faces and from the survey performed
- Coverage of the whole EURAMET geographical area, invited participants from all other RMOs



Summer school; conclusions



The concept of the summer school has been proved as successful

We learned a lot and I am sure that the next summer school will be even better.

Such an event replaces maybe 5 short training courses.

When such events in future are planned on a long term basis, it could be of benefit:

- for NMIs, they can plan staff training on the long term
- for the host and EURAMET Secretariat, we can realise such events much smoother.
- for EURAMET TC-s they can periodically update and refine the programme

Present the Summer school to other technical committees !!

OUTLINE



- HI-CB training courses
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Researcher Mobility Grants (RMGs)



- Researchers from a EURAMET member or associate join internal partners (NMIs or DIs only) in a running EMPIR project for 1-18 months, performing research closely related to the EMPIR project but additional to the project objectives.
- Opportunity to build links with key metrology organisations, work with world leading scientists, produce joint papers and develop their own research skills. RMG researchers receive several allowances to cover living and travel expenses during their stay at the host institution.
- Up to 100 man-months (e.g. 20 x 5 months) worth of research may be funded at guest institutions within a call.
- Many good experiences until now (building professional networks – preparation for future collaboration, previous RMG researchers now coordinate EMPIR projects...)

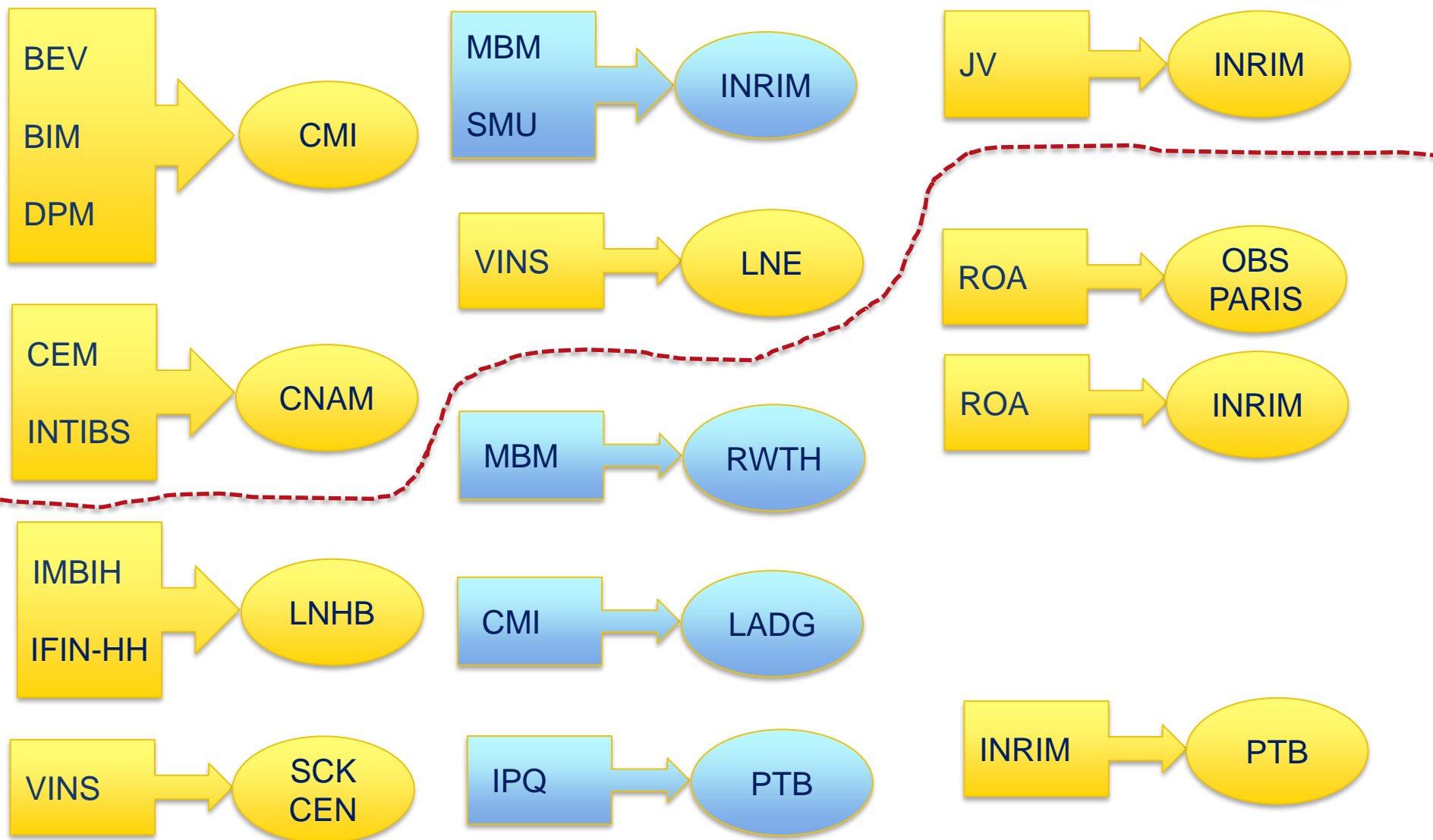
Researcher mobility grants, usage 2016 - 2018



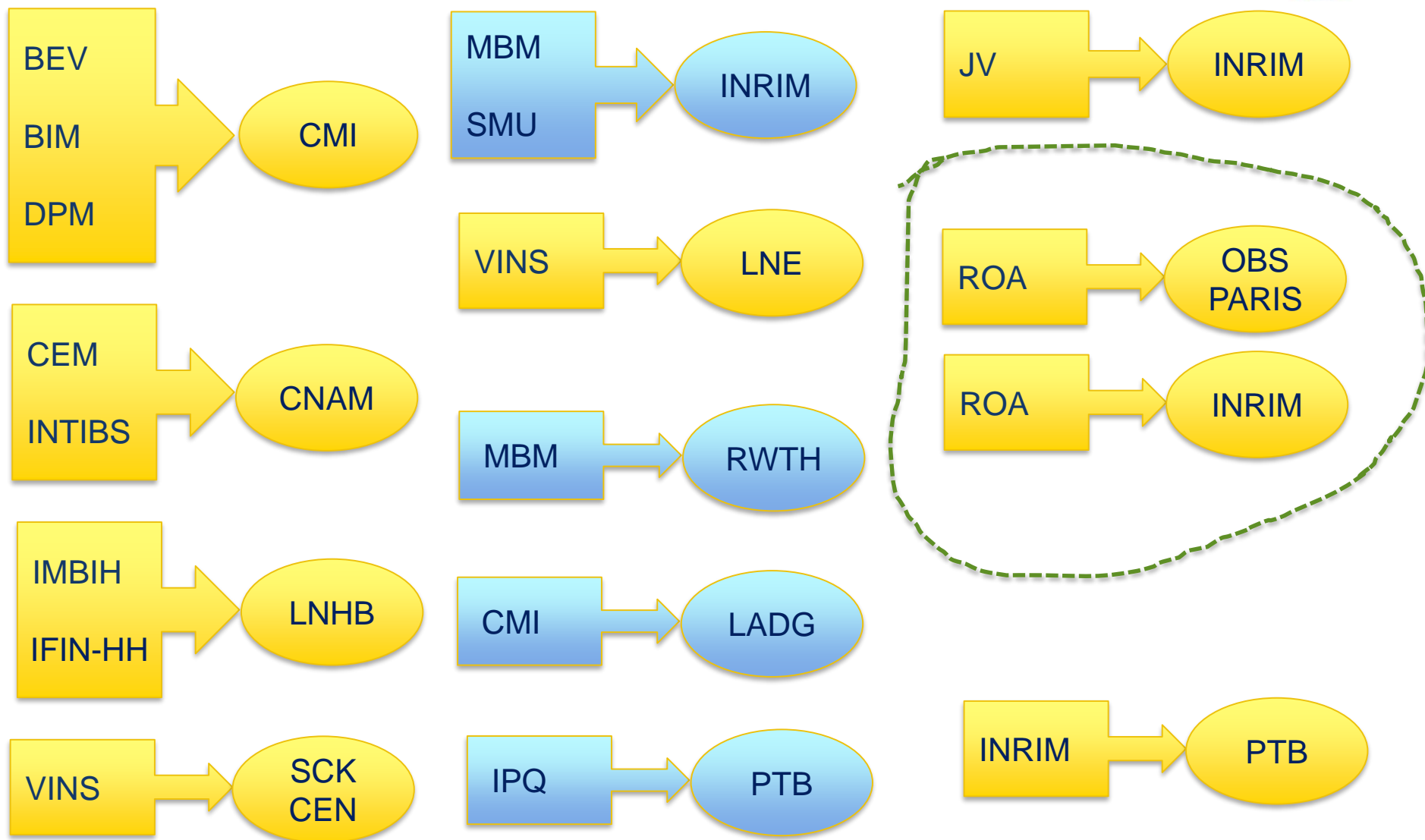
	2016	2017	2018*)
Adverts	22	14	18
Applications	19	14	14
Contracts	13	10	14
Months	71	41	44
Estimated Value per Call k€	157	91	132

* estimation

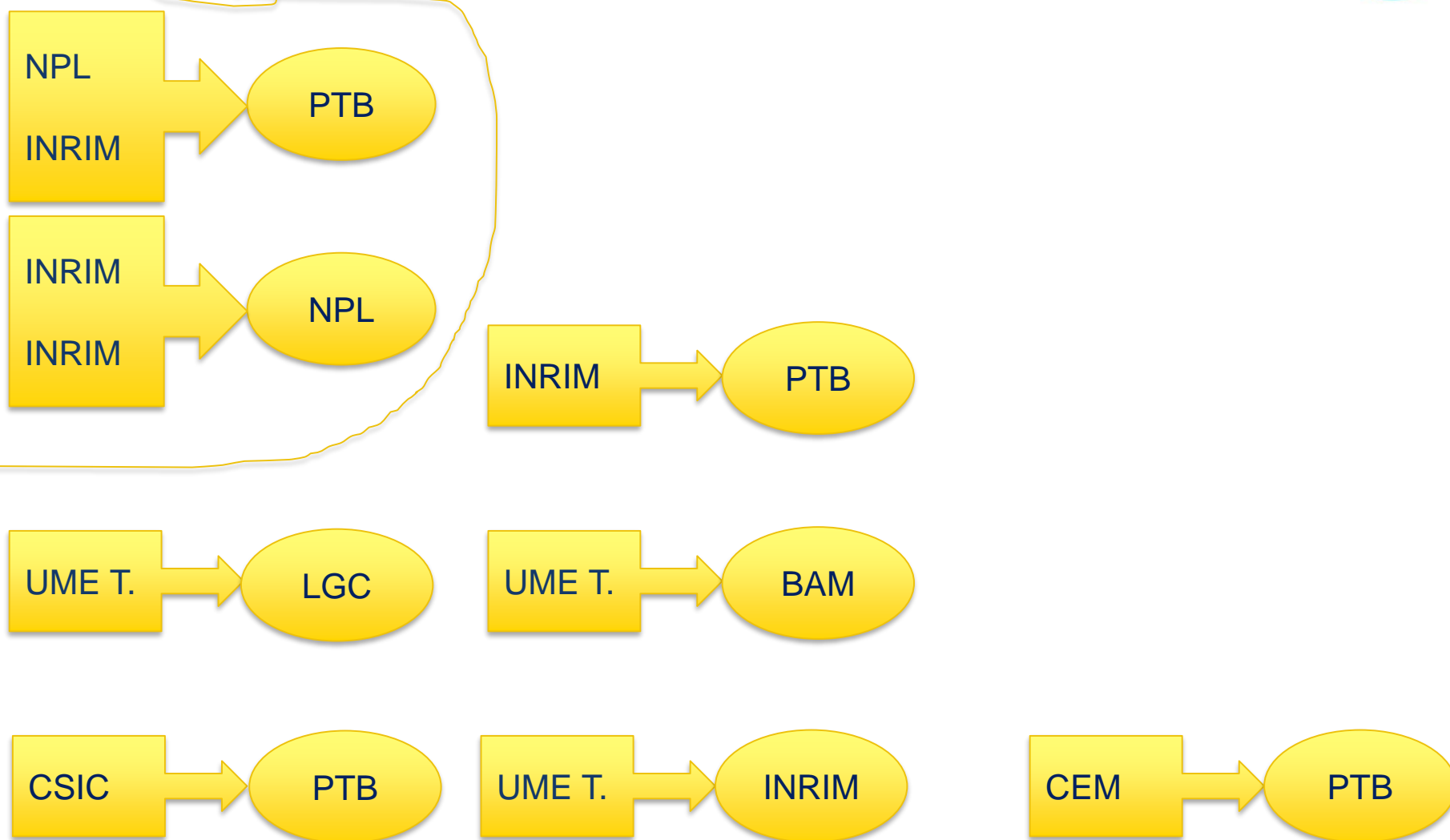
RMG Call 2016



RMG Call 2016



RMG Call 2017, mobility (anticipated)



RMGs 2018 call



	Applications	Project	Emp. Org.	GW Org.	Duration (FTE)	k€ (est)
1	15SIB02-RMG4	InK2.	SMU	LNE-CNAM	4	
2	15SIB02-RMG5	InK2.	INRIM	CNAM	4	
3	16ENG02-RMG1	PV-Enerate	TUBITAK	PTB	2	
4	16ENV04-RMG1	IMPRESS 2	VINS	PTB	3	
5	16ENV08-RMG1	WRITE	IMBiH	NPL	3	
6	16RPT01-RMG1	ChemMet-Cap	BIM	LNE	6	
7	16RPT01-RMG2	ChemMet-Cap	INRAP	LNE	1	
8	16RPT02-RMG2	ALCOREF	IMBiH	BAM	2	
9	17FUN01-RMG1	BeCOMe	DFM	VSL	2	
10	17FUN08-RMG1	TOPS	INRIM	PTB	2	
11	17IND12-RMG1	Met4FoF	IMBiH	PTB	3	
12	17IND12-RMG2	Met4FoF	IMBiH	PTB	3	
13	17IND14-RMG1	WRITE	IMBiH	INRIM	6	
14	17NRM05-RMG1	EMUE	IMBiH	NPL	3	
			Total (months)		44	110
	No applications	project	Emp. Org.	GW Org.	Duration (FTE)	k€ (est)
1	16ENV01-RMG1	MercOx	TUBITAK	IJS	18	
2	16NRM08-RMG1	BiRD	INM	IO-CSIC	3	
3	17FUN08-RMG2	TOPS	PTB	INRIM	2	
4	17FUN08-RMG3	TOPS	PTB	INRIM	2	
					25	62,5

Available funding was up to 250 k€

RMGs 2018 call



	Applications	Project	Emp. Org.	GW Org.	Duration (FTE)	k€ (est)
1	15SIB02-RMG4	InK2.	SMU	LNE-CNAM	4	
2	15SIB02-RMG5	InK2.	INRIM	CNAM	4	
3	16ENG02-RMG1	PV-Enerate	TUBITAK	PTB	2	
4	16ENV04-RMG1	IMPRESS 2	VINS	PTB	3	
5	16ENV08-RMG1	WRITE	IMBiH	NPL	3	
6	16RPT01-RMG1	ChemMet-Cap	BIM	LNE	6	
7	16RPT01-RMG2	ChemMet-Cap	INRAP	LNE		
8	16RPT02-RMG2	ALCOREF	IMBiH	BAM		
9	17FUN01-RMG1	BeCOMe	DFM	VSL		
10	17FUN08-RMG1	TOPS	INRIM	PTB		
11	17IND12-RMG1	Met4FoF	IMBiH	PTB		
12	17IND12-RMG2	Met4FoF	IMBiH	PTB		
13	17IND14-RMG1	WRITE	IMBiH	INRIM	5	
14	17NRM05-RMG1	EMUE	IMBiH	NPL	3	
			Total (months)		44	110
	No applications	project	Emp. Org.	GW Org.	Duration (FTE)	k€ (est)
1	16ENV01-RMG1	MercOx	TUBITAK	IJS	18	
2	16NRM08-RMG1	BiRD	INM	IO-CSIC	3	
3	17FUN08-RMG2	TOPS	PTB	INRIM	2	
4	17FUN08-RMG3	TOPS	?	INRIM	2	
					25	62,5

Good experience with IMBiH this year:

IMBiH has sent me their interest already in April

Available funding was up to 250 k€

Researcher Mobility Grants (RMGs) 2019 Call (dates to be confirmed)



Tentative timeline:

- January- April (sooner is better): interested researchers and guest working institutions contact EURAMET CBO
- End of May: research topics and timelines known (for the adverts);
- 1 Jul to 2 Sep 2019 the call is open (dates to be confirmed);
- Oct to Dec 2019: administrative activities
- Late Dec 2019 or beginning of 2020: earliest start of the RMGs.

More information will be available at the

<https://www.euramet.org/knowledge-transfer/capacity-building/>

Encourage your researchers to take advantage of this opportunity!

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Research Potential Projects (RPT)



should enable emerging NMIs to develop their scientific and technical research capabilities in areas of national and regional strategic priority.

- Stakeholders needs
- Impact
- Coordination, sustainability
- Enabling later participation in other TPs

No funds for required infrastructure and capital equipment

PRT can focus on national needs,
JRP must combine the strategic priorities of several states, coordinated response (“smart specialisation”) at the European or regional level.

Until now (2014-2017) 16 projects

Research potential projects



2014

14RPT01	ACQ-PRO	Towards the propagation of ac quantum voltage standards	EM	Javier Díaz de Aguilar (CEM)
14RPT02	AWICal	Traceable calibration of automatic weighing instruments operating in the dyn. mode	M	Matej Grum (MIRS)
14RPT03	ENVCRM	Matrix reference materials for environmental analysis	MC	Alper Isleyen (UME)
14RPT04	Absorb	Absorbed dose in water and air	IR	Jean Marc Bordy (LNE-LNHB)
14RPT05	Eura-Thermal	Developing traceable capabilities in thermal metrology	T	Jean-Remy Filtz (LNE)

2015

15RPT01	TracePQM	Traceability routes for electrical power quality measurements	EM	Věra Nováková Zachovalová (CMI)
15RPT02	HUMEA	Expansion of European research capabilities in humidity measurement	T	Nedžadeta Hodžić (IMBiH)
15RPT03	Underwater	Underwater acoustic calibration standards for frequencies below 1 kHz	AUV	Alper Biber (MRC MI-UAL)
15RPT03	RF Microwave	Development of RF and microwave metrology capability	EM	Murat Celep (TUBITAK UME)

2016

16RPT01	ChemMet -Cap	Development of scientific and technical capabilities in the field of chem. analysis	MC	Paola Fisicaro (LNE)
16RPT02	ALCOREF	Certified forensic alcohol reference materials	MC	Rosemarie Phillip (BAM)
16RPT03	inTENSE	Developing research capabilities for traceable intraocular pressure measurements	M	Dominik Pražák (CMI)

2017

17RPT01	DOSEtrace	Research capabilities for radiation protection dosimeters	IR	Amra Šabeta (IMBiH)
17RPT02	RhoLiq	Establishing traceability for liquid density measurements	M	Andreia Furtado (IPQ)
17RPT03	DIG-AC	A digital traceability chain for ac voltage and current	EM	Damir Ilić (FER HMI)
17RPT04	VersICaL	Versatile electrical impedance calibration laboratory based on digital impedance bridges	EM	Oliver Power (NSAI)

Research potential projects



RPT SRTs 2018

SRT-r01	Developing an infrastructure for improved and harmonised metrological checks of blood-pressure measurements in Europe	M
SRT-r02	Traceability for contact probes and stylus instruments measurements	L
SRT-r03	Measurements for outdoor air quality	MC
SRT-r04	Traceable measurement capabilities for monitoring thermocouple performance	T
SRT-r05	Traceability of automatic level gauges in fuel reservoirs for legal metrology purposes	L

EURAMET Webinar on Research Potential Call Scope 2019, 12th December 2018



Inform Proposed Research Topics (PRT) authors about the changes of the RPT Call Scope, discuss some existing proposals which are in line with the amended scope and enable identification of further PRTs +
Discuss with the Representatives of EMNs.

2019 RPT Scope: PRTs should

- build on developments in larger JRPs and / or to
- develop capabilities to participate in European Metrology Networks (EMNs).

EURAMET: current developments, EMN

RPT history, what has been achieved so far?

RPT call scope 2019

Examples of projects ideas

Q&A

Speakers:

Dagmar Auerbach (EURAMET Programme Manager)

Ömer Altan (TUBITAK UME, BOD-WGCB Convenor)

Erkki Ikonen (EURAMET EMPIR Chair)

Haris Memić (EURAMET regulation support, IMBiH)

Tanasko Tasić (EURAMET Capacity Building Officer)

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Impact of CB and EMPIR



Countries joined at EMPIR stage:

Ireland, Greece, Serbia, Bulgaria, Croatia – new participants in JRP projects,

New countries coordinating JRPs:

Slovenia, Bosnia & Herzegovina, Portugal, Croatia, Ireland

NMIs from non EMPIR countries (never participating in a JRP before) joining as external partners: Lithuania, FYR Macedonia, Montenegro, Moldova

Researchers mobility in EMPIR - 156 man-months within calls 2016, 2017 and 2018 (est).
Development of the researchers, significant improvement of EURAMET-wide networking among young metrologists

Emerging institutes started hosting training courses (DMDM, MBM, IMBiH, DPM)

New institutes started piloting intercomparisons within last 10 years:
DMDM, BIM, EIM, HMI, HMI/FSB-LPM, HMI/FSB-LPMD, IMBiH.

Many CMCs in preparation, some claims already submitted, some already approved

Impact of CB and EMPIR



15RPT02 HUMEA project: key output from each participant is the production of a national strategy for humidity measurement. NMI development of their scientific and technical capabilities + coordination for their country and region.

Establishment of new measurement services:

NSAI in Ireland - new calibration activity in noncontact thermometry as a direct results of its involvement in the 14RPT05 Eura-Thermal project.

IMBiH in Bosnia and Herzegovina has significantly improved environmental protection related measurements, thermometry (including construction of instruments) and, power quality measurements.

AS METROSERT (Estonia) is developing a calibration facility for automatic weighting instruments for vehicles, timely responding to customer requests.

GUM (Poland) is improving AC Voltage meas. capabilities and ionising radiation dosimetry.

EMPIR ENVCRM project: developing certified reference materials addressing environmental measurements and supporting implementation of relevant EU directives. A supplemental comparison within the context of this project will allow 10 NMIs/DIs to submit new or improve existing CMCs

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INM Moldova participation in EURAMET CB activities



Training courses

Calibration of volume equipment

Summer School on Thermal Metrology

Training Course on Calibration of Long Gauge Blocks

Training Course on Calibration of Measuring Tapes and Rulers

Researcher Mobility Grants

Research Potential projects

17RPT01	DOSEtrace	Research capabilities for radiation protection dosimeters
17RPT02	rhoLiq	Establishing traceability for liquid density measurements

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Information on CB, KT and impact



Publications and media centre (Calibration Guidelines, Technical Guides, EURAMET Guides, EURAMET's fundamental documents and publications, Newsletter, Videos & Podcasts)

<https://www.euramet.org/knowledge-transfer/guides/>

Knowledge tranfer

<https://www.euramet.org/knowledge-transfer/>

Capacity building

<https://www.euramet.org/knowledge-transfer/capacity-building/>

Training courses (actual) – announced and in preparation

<https://www.euramet.org/knowledge-transfer/training-courses/>

Training material prom previous trainings

<https://www.euramet.org/knowledge-transfer/training-material/>

Information on performed trainigs after 2015

<https://www.euramet.org/knowledge-transfer/past-training-courses/>

Information about training offer of EURAMET NMI/Dis

<https://www.euramet.org/knowledge-transfer/externaltrainingresources/>

Impact of the European Metrology Research Programmes

<https://www.euramet.org/metrology-for-societys-challenges/>

A view in the future



Preparation of EURAMET CB Strategy (due beginning 2019)

Long-term planning of HI_CB training courses

- When such events in future are planned on a long term basis, it could be of benefit:
 - - for NMIs, they can plan staff training on the long term
 - for the host and EURAMET Secretariat, we can realise such events much smoother.
 - for EURAMET TC-s they can periodically update and refine the programme

More flexibility for RMGs

Thank you for your attention!



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