

Implementing Metrology in the European Research Area

Status of the iMERA Project

EURAMET & EMRP

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 - Présentation sommaire de l'EMRP
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iMERA

iMERA Implementing the Metrology European Research Area



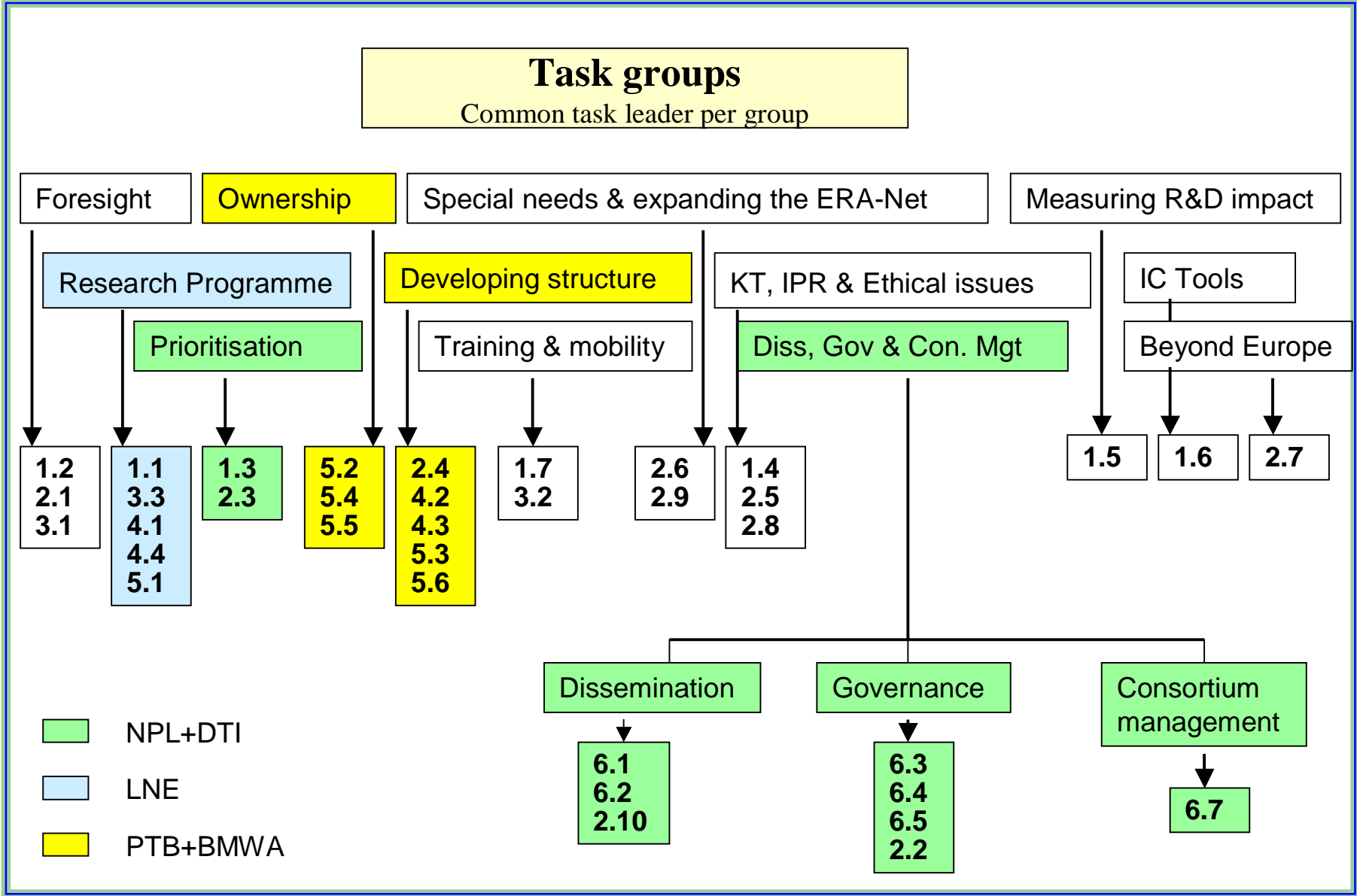
A European Commission “ERA-NET” Coordinating Action

- Consortium
 - 20 partners from 14 countries
 - 14 NMIs, plus JRC-IRMM
 - 5 Ministries as formal partners
 - 3 Years duration
 - Start date 1st April 2005

Countries with an R&D programme in
metrology



iMERA Themes





Tasks : research programme

- **T 1.1 - Landscaping on European financial resources for R&D**
 - evaluation of about 190 M€ for R&D in metrology
 - representing about 1 500 FTEs (Full Time Equivalent)
 - budget concentrated on 4 countries : DE, UK, IT and FR with 80 % of R&D metrology resources.
 - basis for EMRP : targeted programmes
- **T 3.3 - Joint Research Projects (JRP)**
 - 10 JRPs proposed
 - 2 only with official cooperation agreements
 - Improved thermodynamic temperature measurement capability for high-temperature blackbodies
 - Binary Josephson array power standard



T 3.3 - JRPs

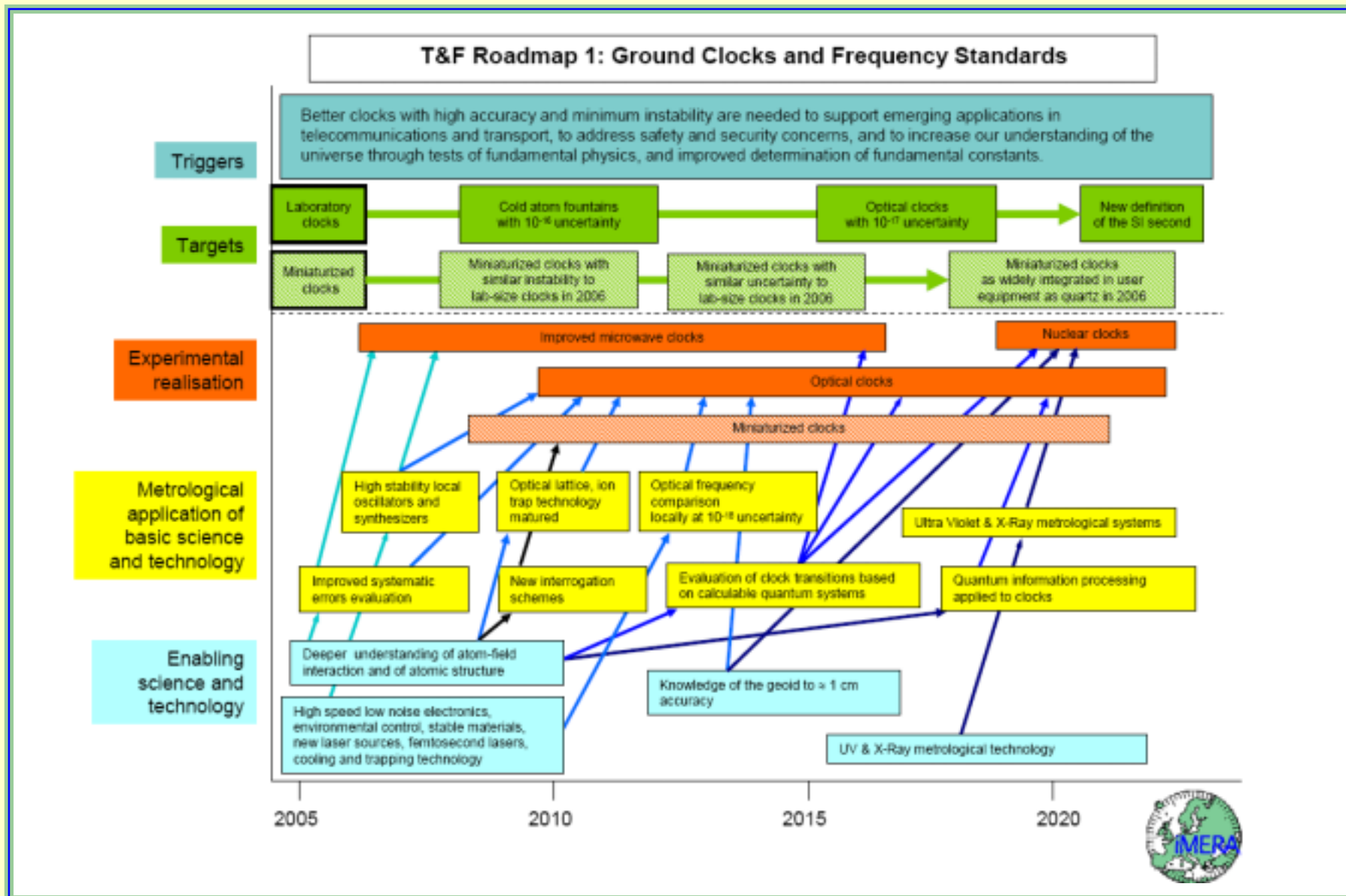
JRPs			
Title	Laboratory	Country	Theme
Toward more accurate temperature fixed points	LNE	FR	T&TP
Determination of an accurate T_p vs x (isotopic) relationship for neon	INRIM	IT	T&TP
Advanced mathematical and computational tools in metrology: a European collaboration in research	INRIM	IT	IntMet
Recommendations for the calibration and evaluation of pH on site measuring instruments	LNE	FR	MC
Use of the temperature amplifier as a new temperature standard for contact thermometry	INRIM	IT	T&TP
Measurement of acoustical impedance of artificial ears	NPL	GB	AUV
Tip and sample interactions in scanning probe microscopy	NPL	GB	L&DM
New determinations of the Boltzmann constant	PTB	DE	FM
Binary Josephson array power standard	PTB	DE	EM
Improved thermodynamic temperature measurement capability for high-temperature blackbodies	PTB	DE	T&TP



Tasks : research programme

- **T 4.1 – Roadmaps**

- 43 roadmaps elaborated by TC and working/focus groups
 - **Electricity and magnetism (5)**
 - **Time and frequency (3)**
 - **Metrology in chemistry and Bio-metrology (4 + 3)**
 - **Temperature, thermal properties of materials and Hygrometry (2+1)**
 - **Ionising radiation (3)**
 - **Length and dimensional metrology (4)**
 - **Mass and related quantities (3)**
 - **Flow (1)**
 - **Acoustics (6)**
 - **Radiometry-photometry (3)**
 - **New areas (5)** (*materials, life science and healthcare devices, IT, mathematics*)
- **input for European Metrology Research Programme**





Tasks : research programme

- **T 4.4 – Quick start projects**
 - JDAC for watt balance (*Study of a real time control unit for JDAC arrays : application to watt balance*)
 - **Project report available.**
 - Cockpit (*High temperature fixed points for contact thermometry*)
- **T 5.1 – EMRP**
 - schedule :
 - July – October 2006 : elaboration of a first proposal (drafting team)
 - November 2006 : comments from Euromet TC chairpersons and from Euromet Delegates
 - 4 December 2006 : final draft to be proposed to the EURAMET “EMRP Committee” (12 January 2007)
 - Contents



T 5.1 - EMRP

Activities

- Grand challenges
 - Multidiscipline metrology
 - **Health**
 - o virtual human (modelling system biology)
 - o reference measurements and materials (JCTLM)
 - o quantitative diagnostics (imaging, microscopy, etc.)
 - o diagnostic and therapeutic instrumentations (NMR, ultrasound, etc.)
 - **Energy**
 - o new and renewable energy resources
 - o conventional energy system
 - o smart energy network
 - **Environment**
 - o detecting change and monitoring climate
 - o flow and concentration of species under regulation
 - o carbon dioxide sequestration
 - o environmental noise
 - **New technologies**
 - o nanotechnology
 - o security related metrology



T 5.1 - EMRP

- Grand challenges on fundamental metrology
 - realisation of the SI
 - improvement of the SI : redefinition of some units
 - redefinition of kg and mol : via Avogadro, watt balance
 - redefinition of A : quantum metrology
 - redefinition of K : Boltzmann constant via Acoustic gas thermometer, dielectric constant gas thermometry, spectroscopic method
 - improvement of the second : optic clocks (ion or neutral atoms), clocks based on nuclear transitions
 - improvement of the candela : single photon source and detector



T 5.1 - EMRP

- Focused single discipline and applied metrology
 - IR
 - EM
 - TF
 - TTP
 - MRQ (including F + AUV)
 - LDM
 - Chem
 - R&D for emerging metrology areas
 - new materials
 - mathematics and ICT
 - Capacity Building
 - knowledge transfer
 - researcher fellowship



EURAMET & EMRP

- Inauguration d'EURAMET
 - EMRP Committee



EURAMET meeting

Participants français:

- Jean-Luc Laurent: signataire
- Maguelonne Chambon: délégué + deputy EMRP
- Luc Erard: EMRP



EURAMET e.V.

- Inauguration of EURAMET
 - 11 January 2007 PTB/Berlin
 - signatories from 26 countries

PTB

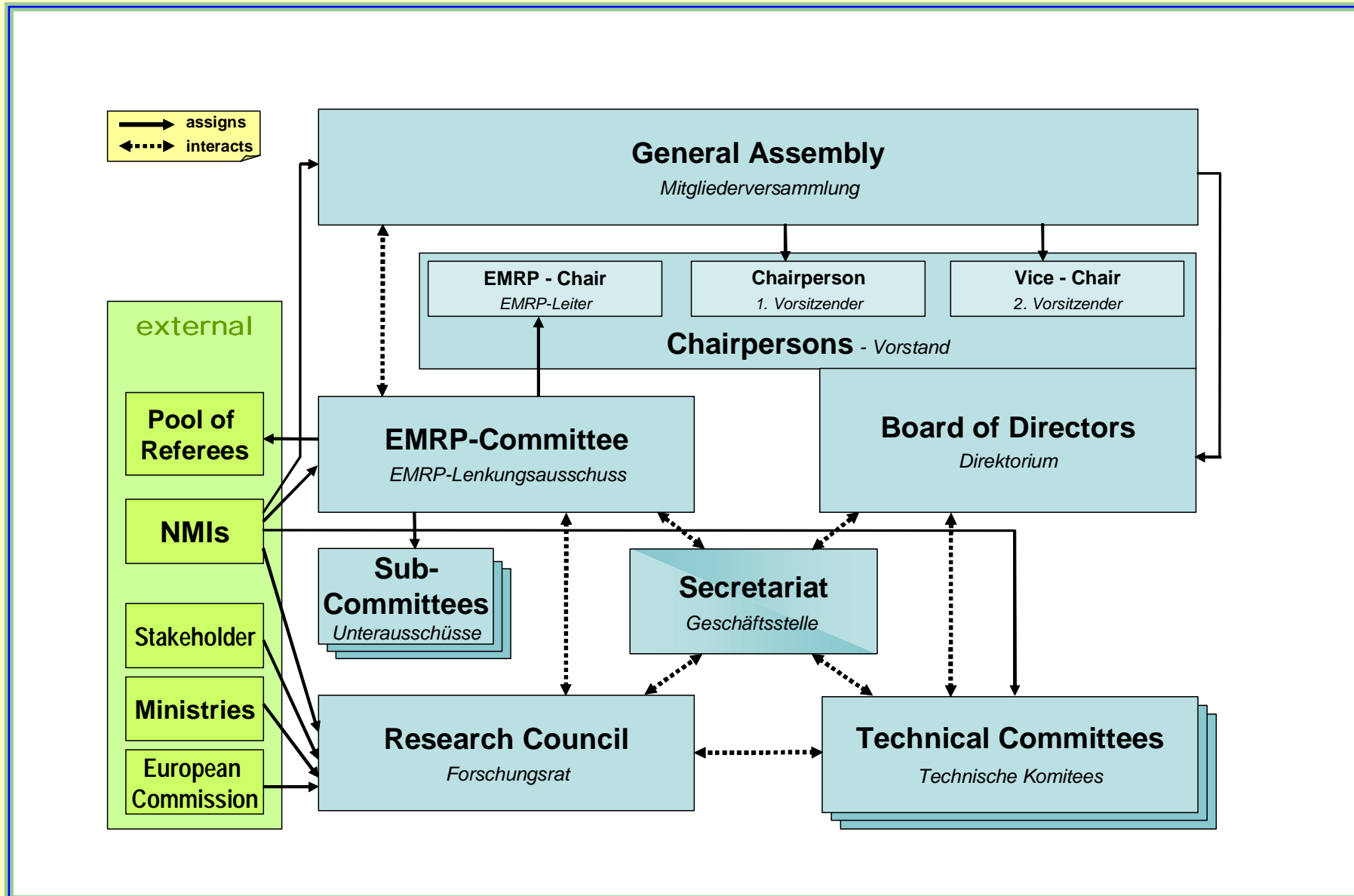


LNE





e.V. Structure





EMRP Committee preparation !!





EURAMET EMRP

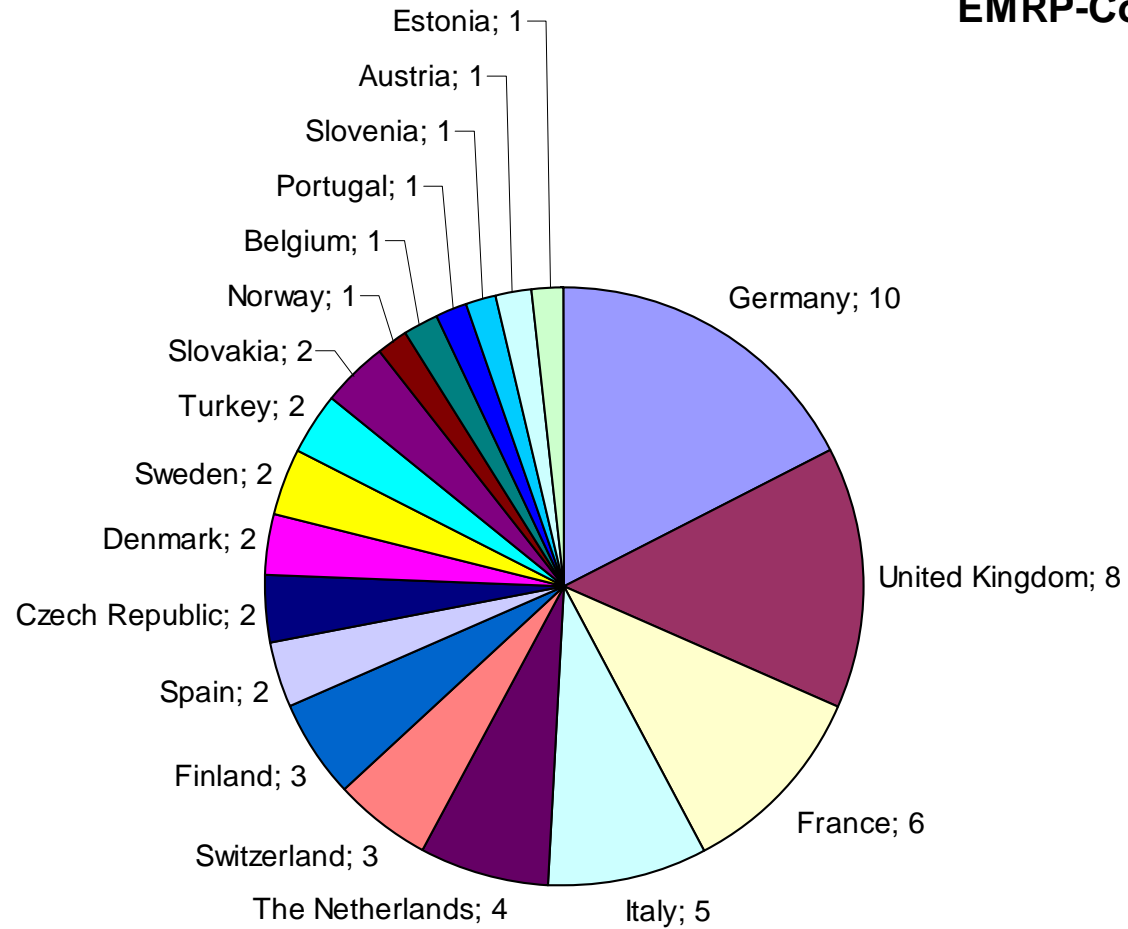
Documents approved

- Bye laws
- RoP EURAMET

- RoP for the EMRP-Committee
- Execution procedures for the EMRP

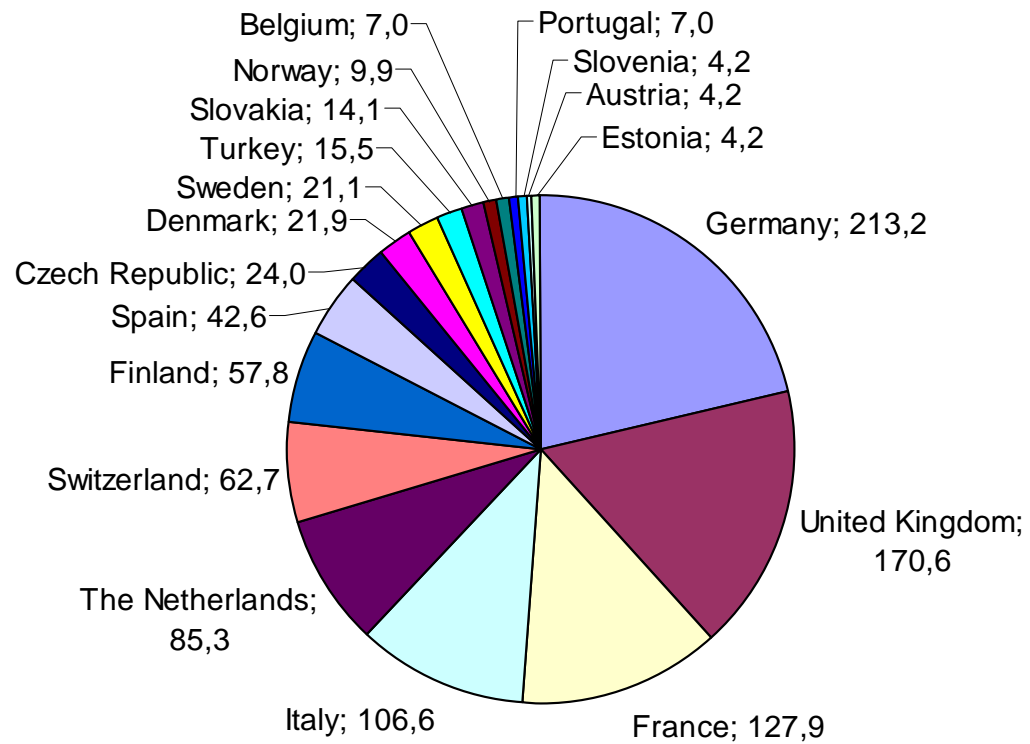


Voting in the EMRP-Committee





Annual Contribution to EMRP-Secretariat [kEuro]





Execution Procedures for the EMRP

The responsibility of the EMRP committee is described in § 14 (5):

3. to prepare and decide on funding conditions for the execution of the EMRP including the criteria for the selection of evaluators

5. to decide on funding research programmes and projects on the basis of the funding conditions as far as EURAMET is authorised by the European Commission

7. to prepare and announce calls for expression of interests and for proposals concerning the EMRP



Funding conditions

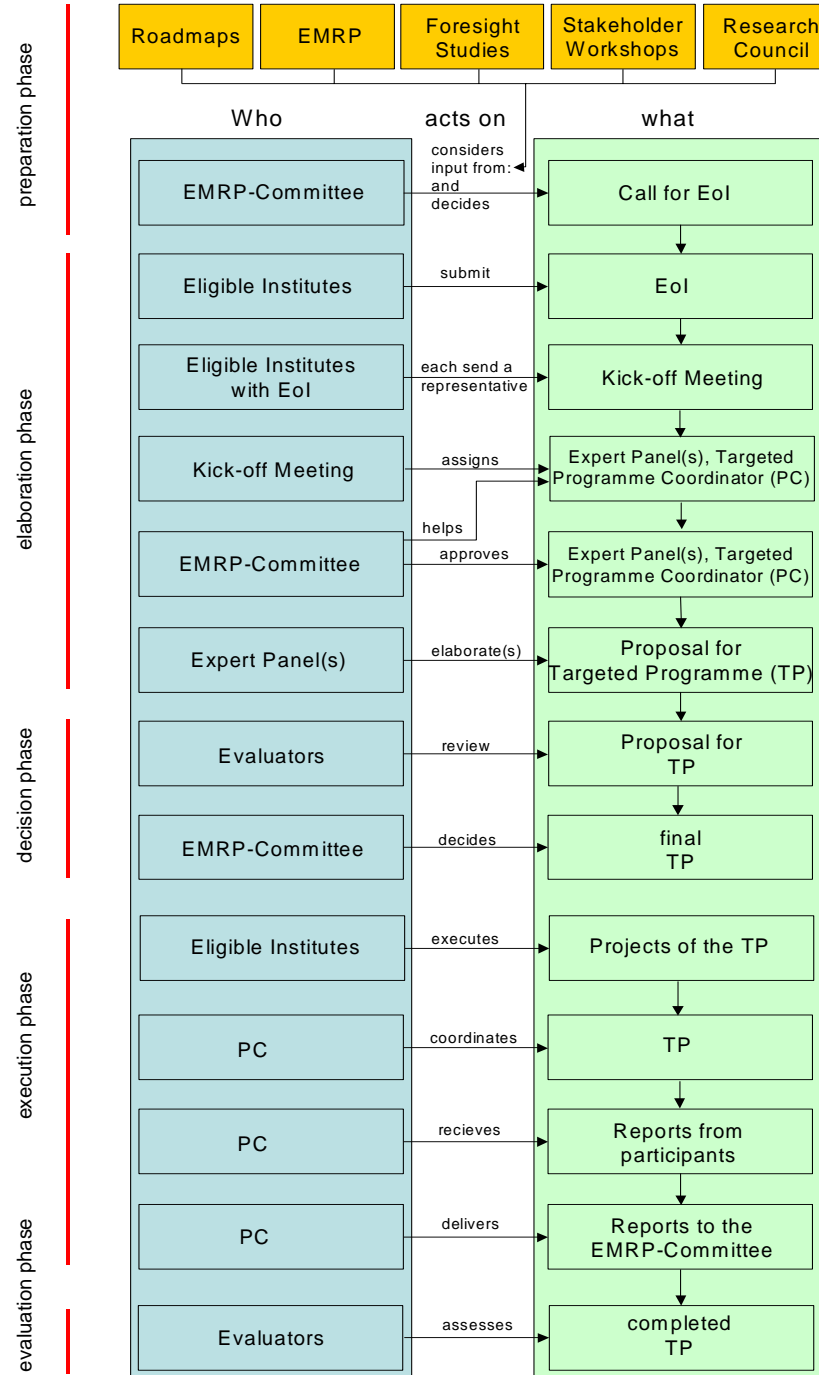
The funding conditions and therefore the execution procedures will depend on the funding programme of the European Commission

Our committee structures and the designed execution procedure is based on the assumption of an agreed Article 169 EMRP

However it is clear that a decision on Article 169 for the EMRP will not be made before 2008

The commission has therefore decided to provide bridging money of 21 M € in form of ERANET+ funds. This money will most likely be spent according to ERANET+ rules.

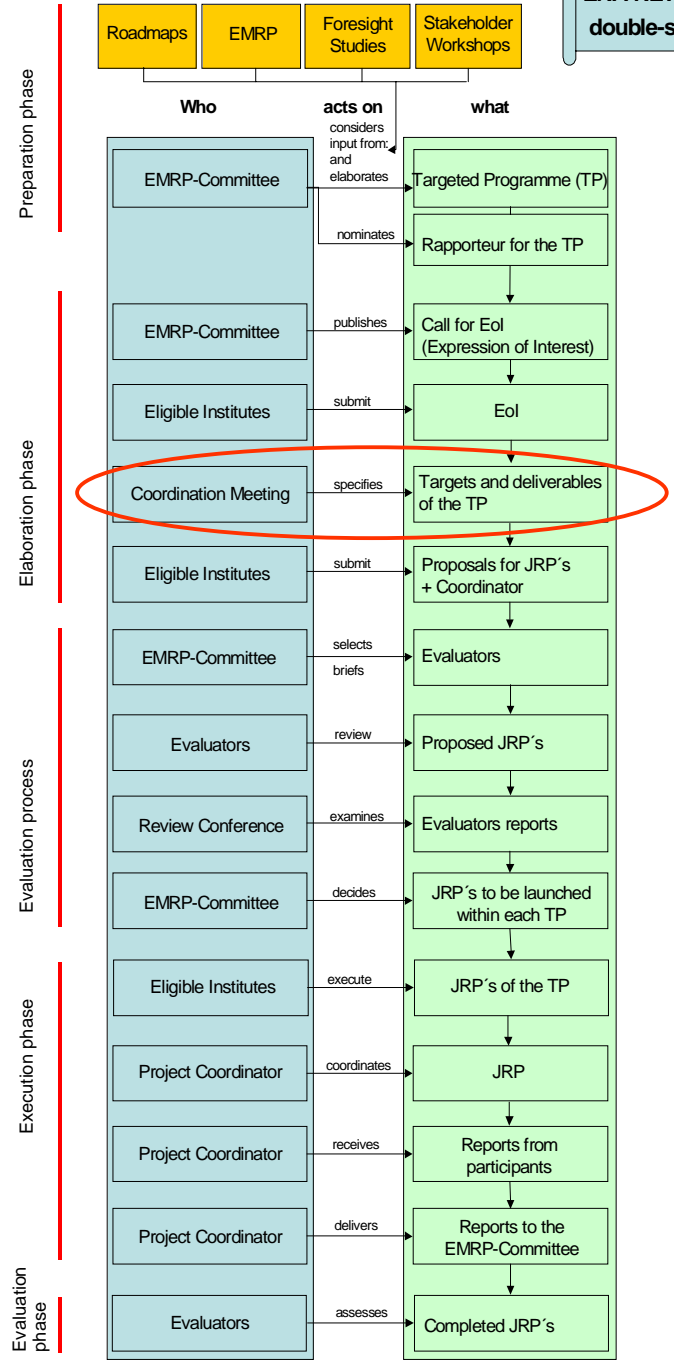
This has the consequence that we need to adapt our Article 169 execution procedure to the Commissions requirements!



Article 169

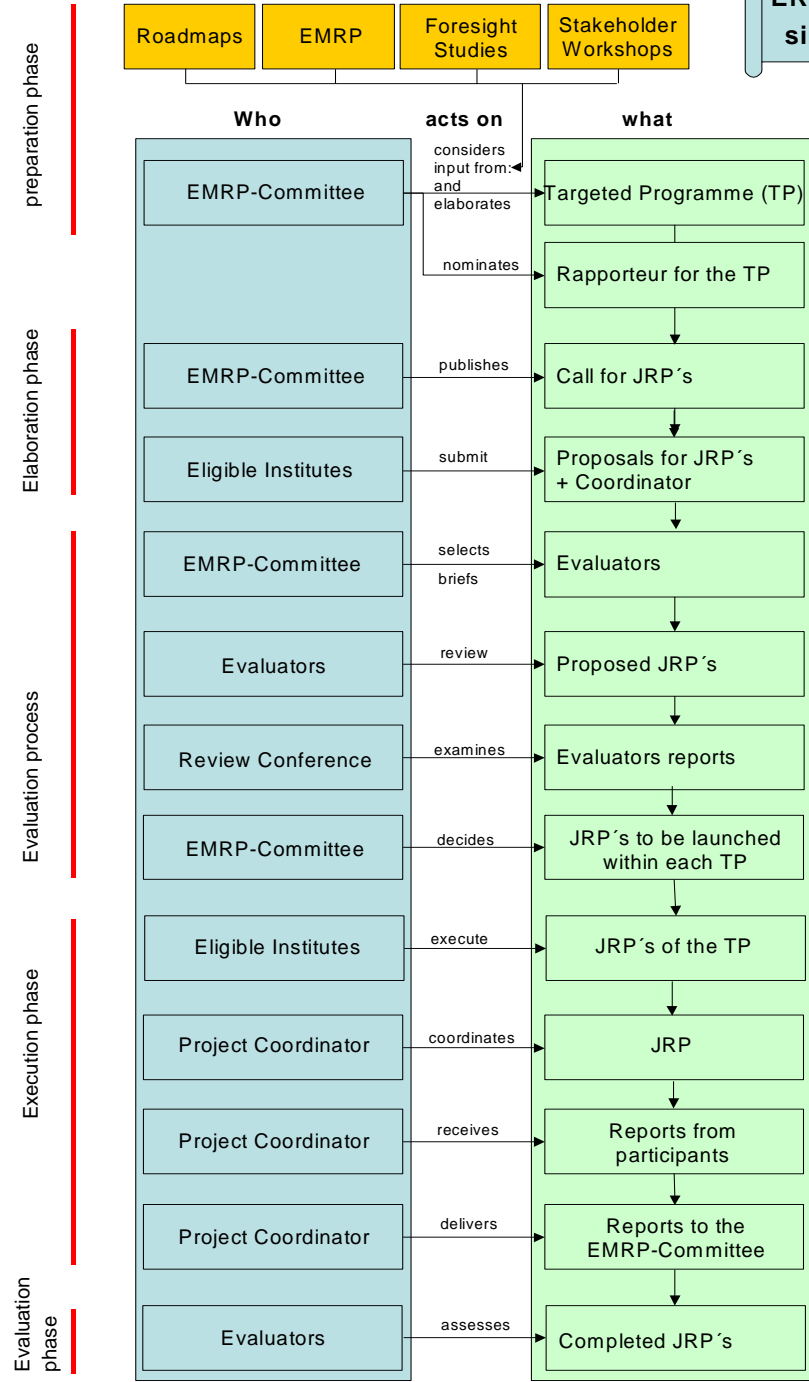


ERA-NET Plus
double-stage





ERA-NET Plus
single-stage





EMRP execution procedures

How to proceed?

- Confirm the procedures for Article 169
- Start negotiations with the Commission on execution procedures for ERANET+ and get their acceptance

Guideline for the negotiation:

We want to execute Targeted Programmes that consist of JRPs. In order to achieve a harmonized TP it is of extreme importance to harmonize the JRP in respect to each other. Otherwise we do not achieve our main target, the European coordination in metrological research.

Give mandate to EURAMET Chair and EMRP Chair to conduct negotiations with Commission on ERANET+ and Article 169 EMRP matters, jointly with Andy Henson, coordinator of iMERA.



EMRP secretariat

ERA-NET Plus phase:

Proposal for the EMRP Committee consideration:

- NPL is prepared to manage the ERA-NET Plus (there is funding for managing the Call stage only - but only at about half our real costs)
 - Subject to agreement of the EMRP Committee



Composition of the Research Council

7 Institutional members	9 personal members
1 outside Europe (e.g. BIPM)	9 representatives from industry and academia reflecting small and large enterprises, different branches and countries
1 Commission representative and advisors as appropriate	
1 European Research Council	
1 European Parliament (ITRE)	
1 EUROLAB	
1 European standardisation body + WELMEC	

Members appointed at the May 2007 GA



Research Council responsibility

- **Advisor to the EMRP on:**
 - **Thematic scope of calls: goals and targets**
 - **Execution of the Targeted Programmes**
 - **Scientific policy of the EMRP committee**
- **Fully operational for Article 169**
- **Meeting once a year with the EMRP committee (or subset of the EMRP committee)**
- **Name of personal members requested by all EMRP members before end of March 2007**
- **Coordination by the deputy EMRP chair**



Pool of referees

- Composition: 5 to 7 per EMRP Targeted programmes
- Members of all EMRP countries
- Specialist in their field: academia and industry
- Names requested by EMRP members and external call?
- Coordination by the deputy EMRP chair
- Nomination by the EMRP committee
- Modus operandi to be developed: selection, nomination, review conference, meetings, template for evaluation,...



State of the play

- Article 169
 - Lobby
- ERA-NET Plus
 - What is it
 - Constraints from the Commission
 - Call content
 - Selection criteria (Commission)
 - Selection Criteria (additional?)
 - Template for EoI
 - Time Line/Work Plan

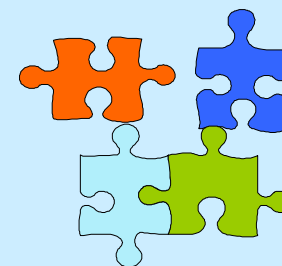


Coordination of national programmes Overview FP7

ERA-NET

Like in FP6: Coordination of programmes

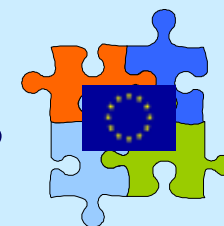
- ✓ MS agree and fund joint calls/programmes
- ✓ EU funding only for coordination



ERA-NET Plus

New in FP7: To up of a single joint call

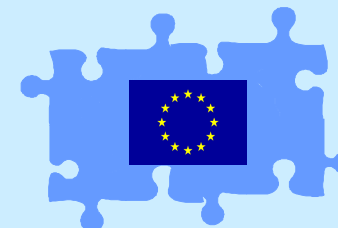
- ✓ MS contribute to a joint trans-national call 2/3
- ✓ EU funding for research: 1/3 of the joint call



Art. 169

Full integration of national programmes

- ✓ Scientific and financial: strong EU funding
- ✓ Single implementing structure





ERA-NET Plus actions

Objective is to organise joint calls for proposals between national and/or regional research programmes. Actions shall cover subjects which have **sufficient European added value, whereby:**

- **The joint call shall **pool the financial resources** between the participating programmes**
- **The Community shall provide a **financial top up****

[Applicable only in a limited number of cases]



Content of Call?

Having discounted some early discussions around €9M or so I proposed a series of options, ranging from around €15M to €21M

The Commission have supported the most ambitious of these - the €21M option – which was based upon:

- Research related to the redefinition of the constants and the SI
 - Research related to the redefinition of the constants and the SI, incl. mathematical/computational tools
- A horizontal TP on metrology underpinning “health”
 - “Health” incl. Relevant clinical analysis and health related ionising radiation
- **Research related to metrology in chemistry**
- Research in Dimensional metrology
 - Research in Dimensional/length, including the relevant sections listed under “new technologies “ in the EMRP
- Research in Electromagnetic metrology
 - Research in Electromagnetic metrology including the relevant sections listed under “new technologies “ in the EMRP
- + Support for the pilot JRPs
 - Support of the pilot JRPs that meet the appropriate criteria in terms of progress and profile
- Capacity building should be included in all TPs



Managing the ERA-NET Plus

Includes	Does NOT include
T&S for a single meeting of the Research Council	Time costs for members of the research council
T&S for the independent referees to attend the review conference	Time costs for the independent referees
T&S and limited time for the EURAMET Chair, EMRP chair and deputy chair to attend meetings and undertake tasks	Time or T&S for the EMRP Committee Members
T&S and time for the EMRP Secretariat to manage the call and arrange meetings	Time or T&S for the NMI experts
Time for the writing of the Call	



ERA-NET Timeline

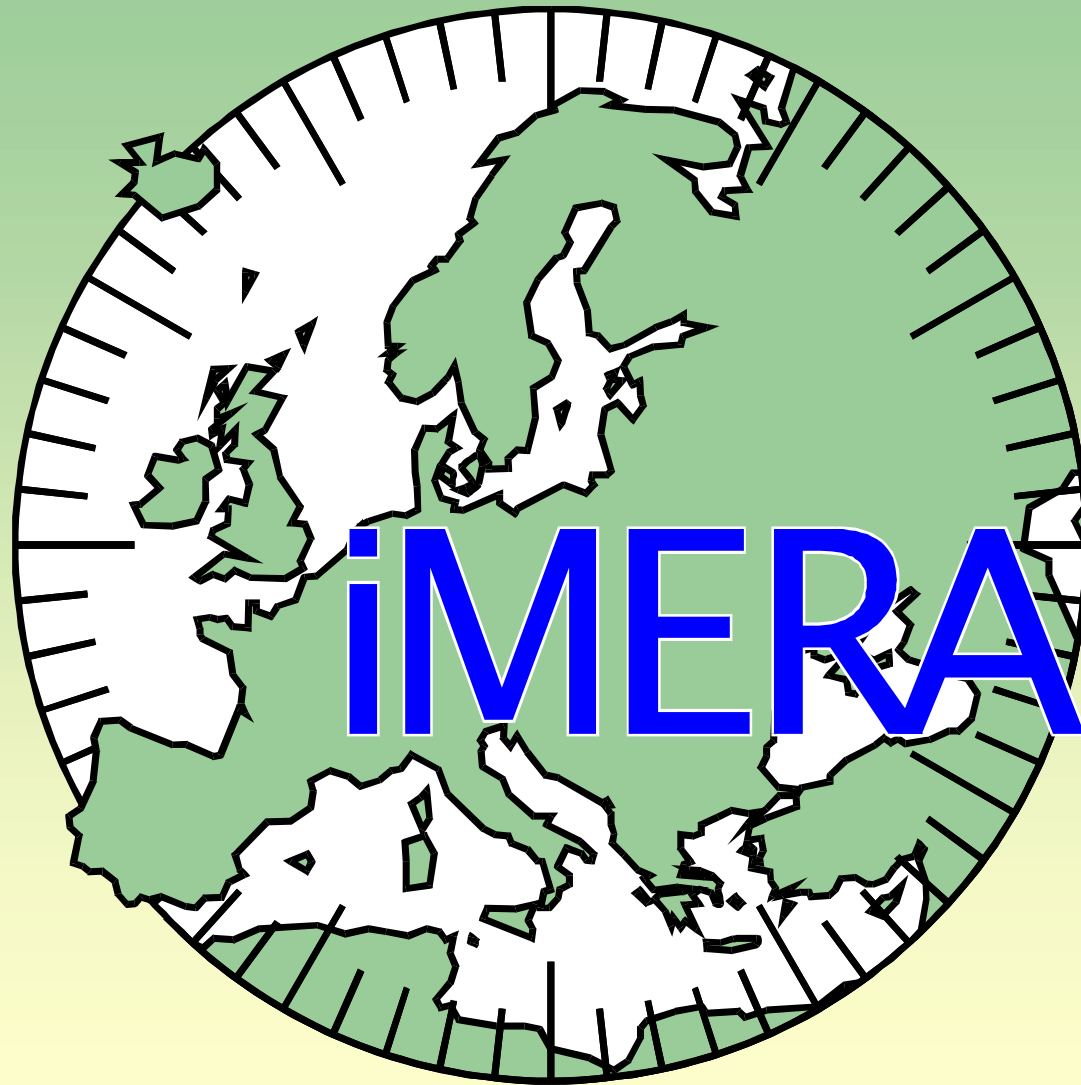
As we have not assessed fully the Commission requirements this is only indicative, all dates are 2007:

End Feb	TP number, choice, thematic scope, major targets & portfolio balancing	
End March	Review of RC/independent referee nominations	
April	RC(?)/ EMRP-C/ review meeting	Do we use RC for ERA-NET+?
End April	Launch Call	Issues on publication
May	Eols (scientific issues, resources, nomination of experts Expert panels meet	
July	Review conference on draft TPs	
September	Full development of JRPs	
October	Finalisation of referee review	
November	Finalisation of selection list	
End December	Deadline for submission of selection list to Commission	If this late unlikely we will receive funding as early as Jan 2008



EMRP programme draft

- Agreement of the draft
 - Final comments
 - Proposed modification (Leslie Pendrill, Ed de Leer, Andy Henson), if relevant
 - To be finalised before end of February





Informations diverses

- Politique qualité
- Critères de sélection des projets/études
- Projets EURO(A)MET/comparaisons interlaboratoires/collaboration: validation DRST
- CMC
- Coopération PTB