

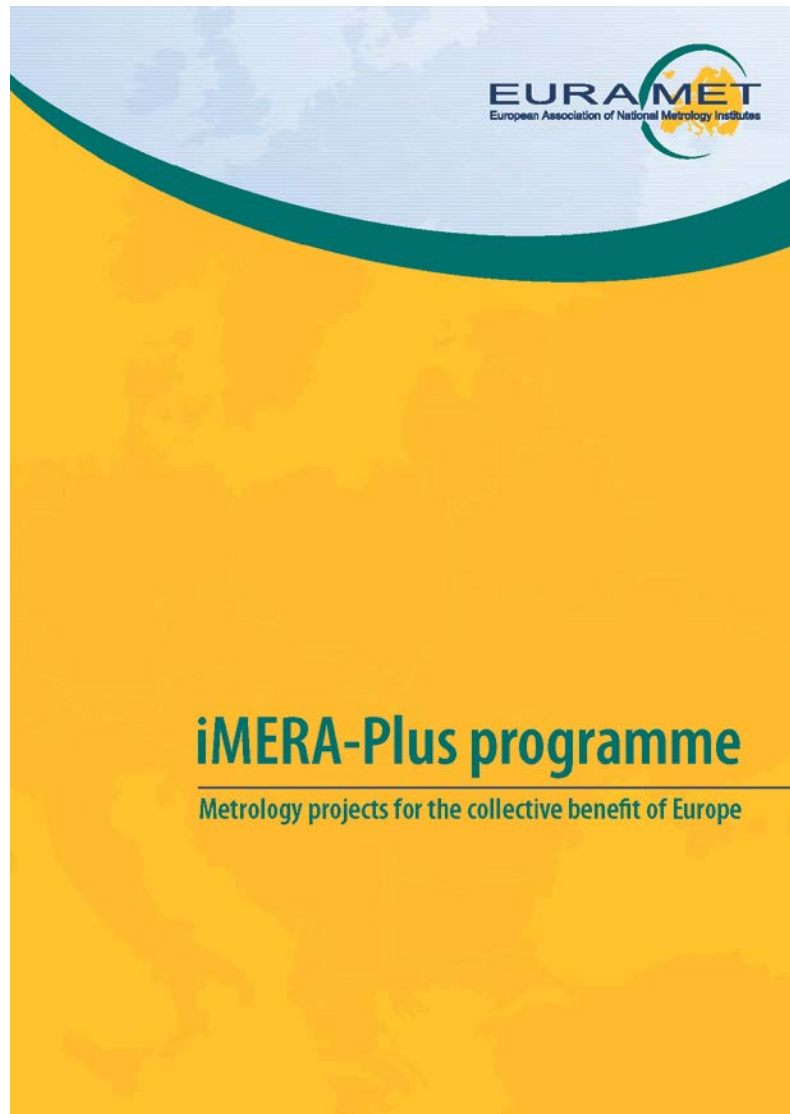
EMRP Status

Activities of the last year and outlook

G07.04.01

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iMERA-Plus completed



- Programme completed last year with final report to EC and public report
 - 500 papers and articles
 - 300 presentations
 - 90 posters at conferences
 - 45 workshops and 25 conferences organised
 - 2 new calibration services
 - 2 good practice guides
 - Contributions to 14 documentary standards

96 Joint Research Projects (286 M€)

European Metrology Research Programme

Sustainable Energy

An overview of the funded projects from the EMRP Call 2009 - ENERGY

Greener alternatives to natural gas <i>Characterisation of Energy Gases (ENG09)</i> Enabling alternative and reusable gas pipelines The current standards of measurement for natural gas will be tested for their suitability for measuring the properties of alternative gases, such as biogas. Required measurements include gas composition, density, viscosity, energy content and humidity, which are all needed to ensure efficient trade, safe use and transportation.	Harvesting waste energy <i>Metrology for Energy Harvesting (ENG02)</i> Developing sources of sustainable energy from human activity and natural processes The harvesting and utilisation of waste energy (energy wasted as heat and vibration from human and environmental processes) could contribute to a reduction in CO ₂ emissions. This project aims to develop new technologies, devices and measurement methods that enable the exploitation of waste energy to provide small, but reliable and sustainable, sources of power.
Modernising electricity grids <i>Smart Electrical Grids (ENG04)</i> Making smart grids smarter While the hardware required to implement smart grids is available, the theoretical and practical knowledge required to ensure their stability is not. This project aims to improve the reliability of on-site measurements, vital for maintaining the quality of electricity supply and developing smart grids, capable of dealing with decentralised electricity production.	The future of lighting <i>Metrology for Solid State Lighting (ENG08)</i> Enabling the uptake of low energy Solid State Lighting (SSL) This project will support the implementation of SSL, such as LED lighting, throughout Europe with the validation of new guidelines and standards. This will enable the benefits of the technology to be quantified and clearly communicated, with specific attention paid to measurements of colour rendition and visual comfort, important for end-users.
Feeding electricity grids <i>Metrology for High Voltage Direct Current (ENG07)</i> Enabling the efficient transmission of electricity generated by remote renewable energy sources This project will develop a new measurement framework, calibration capabilities and equipment, such as prototype DC energy meters, that will assist in the widespread implementation of High-Voltage Direct Current (HVDC) transmission, necessary to ensure the efficient transport of electricity over large distances from where it is generated to where it is needed.	New nuclear <i>Metrology for New Generation of Nuclear Power Plants (ENG06)</i> Enabling a new generation of nuclear power reactors This project aims to address the measurement challenges posed by new "Generation IV" nuclear reactor designs by testing temperature measurement methods and instruments for suitability and ensuring sufficient nuclear data and radiation measurement techniques are available. This is vital because the new designs will operate at higher temperatures than current reactors.

Europe's National Measurement Institutes working together
 The European Association of National Metrology Institutes (EURAMET) has implemented the European Metrology Research Programme (EMRP), a programme with a value of over 400 M€, organised by 22 NMIs and supported by the European Union.
 Full details can be found at: www.euramet.org
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European Metrology Research Programme

Industrial Innovation

An overview of the funded projects from the EMRP Call 2010 - Industry

Measuring optical curved surfaces <i>Optical and tactile metrology for absolute form characterisation (IND10)</i> Characterising free form 3D surfaces Measurements of 3D forms are important for characterising surfaces in the optics and precision engineering industries, as well as in automotive and science. This project will create standards and perform measurement comparisons to validate the two most commonly used 2D measurement types - imaging methods and single-point scanning.	Advanced assessment of engineered surfaces Metrology to assess the durability and function of engineered surfaces (IND11) Reducing wear and friction in components Excessive noise exposure is a major cause of hearing loss, which costs the EU around 20 billion euros per year and reduces the quality of life of sufferers. This project will improve our understanding of how we measure noise and how we can reduce it by establishing effective and reliable methods.
Stable and reliable measurement systems Thermal design and time-dependent dimensional drift behaviour of sensors, materials and structures (IND15) Measurement consistency with time and temperature Material properties change with temperature and over time, reducing the reliability and performance of measurement devices. This project will use thermal modelling of a prototype measurement device to improve temperature control and thermal design and increase our understanding of measurement drift.	Improving diagnostic devices Metrology for the characterisation of nanoscale interfaces for diagnostic devices (IND14) Outlining new interfaces, point-of-care testing Diagnosing and managing disease is increasingly reliant upon the effectiveness and accuracy of measurement of biomarkers. This project will meet the needs of providing reliable, standardised and portable diagnostic devices for point-of-care testing, point-of-care monitoring and personalised medicine.
Understanding chemical interactions of surfaces Traceable quantitative surface chemical analysis for industrial applications (IND15) Improving the speed and efficiency of industrial processes Accurate chemical measurements at surfaces are vital for developing corrosion resistant materials, assessing the toxicity of medical implants and designing industrial catalysts. This project will develop reference materials and methods for the highest priority industrial applications, leading to benefits in industrial costs and time.	Increasing frequencies for communications technologies Metrology for ultrafast electronics and high-speed communications (IND16) Enabling the efficient use of higher frequencies for communications High-speed communications have developed rapidly, but as more systems go online, we need to increase the frequencies available for use. These higher frequencies need to be accurately measured, so that additional bandwidth is used efficiently. This project will develop these measurements.

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European Metrology Research Programme

Health

An overview of the funded projects from the Targeted Programme Health

Protecting human hearing Metrology for a sustainable ear simulator and the perception of non-audible sound (HLT01) Preventing excessive noise exposure Excessive noise exposure is a major cause of hearing loss, which costs the EU around 20 billion euros per year and reduces the quality of life of sufferers. This project will improve our understanding of how we measure noise and how we can reduce it by establishing effective and reliable methods.	Microsieve biomarkers Microsieve characterisation of micro-vehicles from body fluids to non-invasive diagnostic biomarkers (HLT02) Early diagnosis of disease Microsieves are present in body fluids such as blood and urine and can be used as biomarkers for disease such as cancer, diabetes and cardiovascular disease. This project will develop reliable, comparable and quantitative analysis of microsieves, as current techniques are not accurate enough to make a reliable diagnosis.
Improving diagnostic devices Metrology for the characterisation of nanoscale interfaces for diagnostic devices (IND14) Outlining new interfaces, point-of-care testing Diagnosing and managing disease is increasingly reliant upon the effectiveness and accuracy of measurement of biomarkers. This project will meet the needs of providing reliable, standardised and portable diagnostic devices for point-of-care testing, point-of-care monitoring and personalised medicine.	Measuring drug flow rate Metrology for drug delivery (HLT07) Improving the safety and efficiency of drug delivery Accurate knowledge of flow rate - how fast a quantity of drug is delivered - is one of the most important aspects of drug delivery for safe and efficient treatment. This project will develop measurement services for low flow rates, where current measurements are short, and assess the performance of commercial flow meters and drug delivery devices.
MRI safety Metrology for next-generation safety standards and equipment in MRI (HLT05) Improving safety and reducing the use of MRI Magnetic resonance imaging (MRI) is an indispensable tool in modern medicine but some advances have not yet made it into hospitals because of uncontrolled safety issues. This project will improve MRI test assessment and safety standards, provide complete and robust safety data for patients and medical staff.	Measurements to molecular medicine Metrology for biomolecular origin of disease (HLT09) First design principles for molecular medicine Molecular medicine could one day address global health issues such as rare diseases, but first we need to better understand the molecular and cellular mechanisms and to develop reliable measurement methods and standards to increase our understanding of the molecular and cellular mechanisms and to develop reliable measurement methods and standards to increase our understanding of the molecular and cellular mechanisms.

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New Technologies

An overview of the funded projects from the Targeted Programme New Technologies

New measurements for new electronics Traceable characterisation of nanoscale devices (NEW01) Supporting the European semiconductor industry The growth in micro and nano electronics has led to new architectures and organic materials at the device level, but it is a relatively new technology. This project will improve measurement reliability, establish traceability to the SI units, and develop reference samples for metrology and industry.	Improving Raman spectroscopy Metrology for Raman spectroscopy (NEW03) Reliable identification at the nanoscale Raman spectroscopy uses scattered light to identify and map the distribution of chemical and physical properties of materials, but it is a relatively new technology. This project will improve measurement reliability, establish traceability to the SI units, and develop reference samples for metrology and industry.	Nanomaterials in biological environments Chemical and optical characterisation of nanomaterials in biological systems (NEW04) Supporting nanotechnology with physical, chemical and optical characterisation Nanomaterials are used in a wide range of products but there is concern over the potential risk to health, as their properties can change at the nanoscale and interact with biological systems. This project will develop methods to characterise nanomaterials in biological environments.
Evaluating uncertainty Novel mathematical and statistical approaches to uncertainty evaluation (NEW05) Better measurement uncertainty analysis The evaluation of uncertainty in a measurement is a fundamental to measurement science. Without it, results cannot be compared, and evaluation uncertainty evaluations can have huge negative impacts on research and commercial impacts. This project will develop new approaches to measurement uncertainty evaluation in order to help improve product testing, medical diagnosis and drug testing.	Exploiting nano-object properties Traceable measurement of mechanical properties of nano-objects (NEW06) Setting new products to market Nanoscale can be used to improve products and services, but their small size makes it difficult to measure their properties. This project will develop measurement services for low flow rates, where current measurements are short, and assess the performance of commercial flow meters and drug delivery devices.	Computers in coordinate metrology Traceability for computationally-intensive metrology (NEW08) Building trust in measurement software Metrology software is used in many areas of measurement, and the accuracy of the results depends on the quality of the software. This project will develop methods to ensure the reliability of measurement software, and to ensure that measurement results are traceable to the SI units.
Measurement for homeland security Microwave and terahertz metrology for homeland security (NEW09) Improving microwave and terahertz scanners for security Detection of increased use of microwave and terahertz technology in security applications, the development of new scanners and apparatuses requires the development of new measurement methods and standards. This project will develop measurement methods and standards to increase our understanding of the molecular and cellular mechanisms and to develop reliable measurement methods and standards to increase our understanding of the molecular and cellular mechanisms.	Supporting nano-electro-mechanical devices Metrology with force (NEW10) Innovative measurements for nanotechnology Nano-electro-mechanical systems (NEMS) integrate electrical and mechanical functionality at the nanoscale, but they are a relatively new technology. This project will develop measurement methods and standards to increase our understanding of the molecular and cellular mechanisms and to develop reliable measurement methods and standards to increase our understanding of the molecular and cellular mechanisms.	Reliable measurements for functional materials Metrology of electro thermal coupling for functional materials technology (NEW11) Efficiency in transport, power generation and solid state cooling The electronics, energy, and medical industries all require high performance functional materials. This project will develop measurement methods and standards to increase our understanding of the molecular and cellular mechanisms and to develop reliable measurement methods and standards to increase our understanding of the molecular and cellular mechanisms.

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See http://www.euramet.org/index.php?id=emrp_calls_and_projects

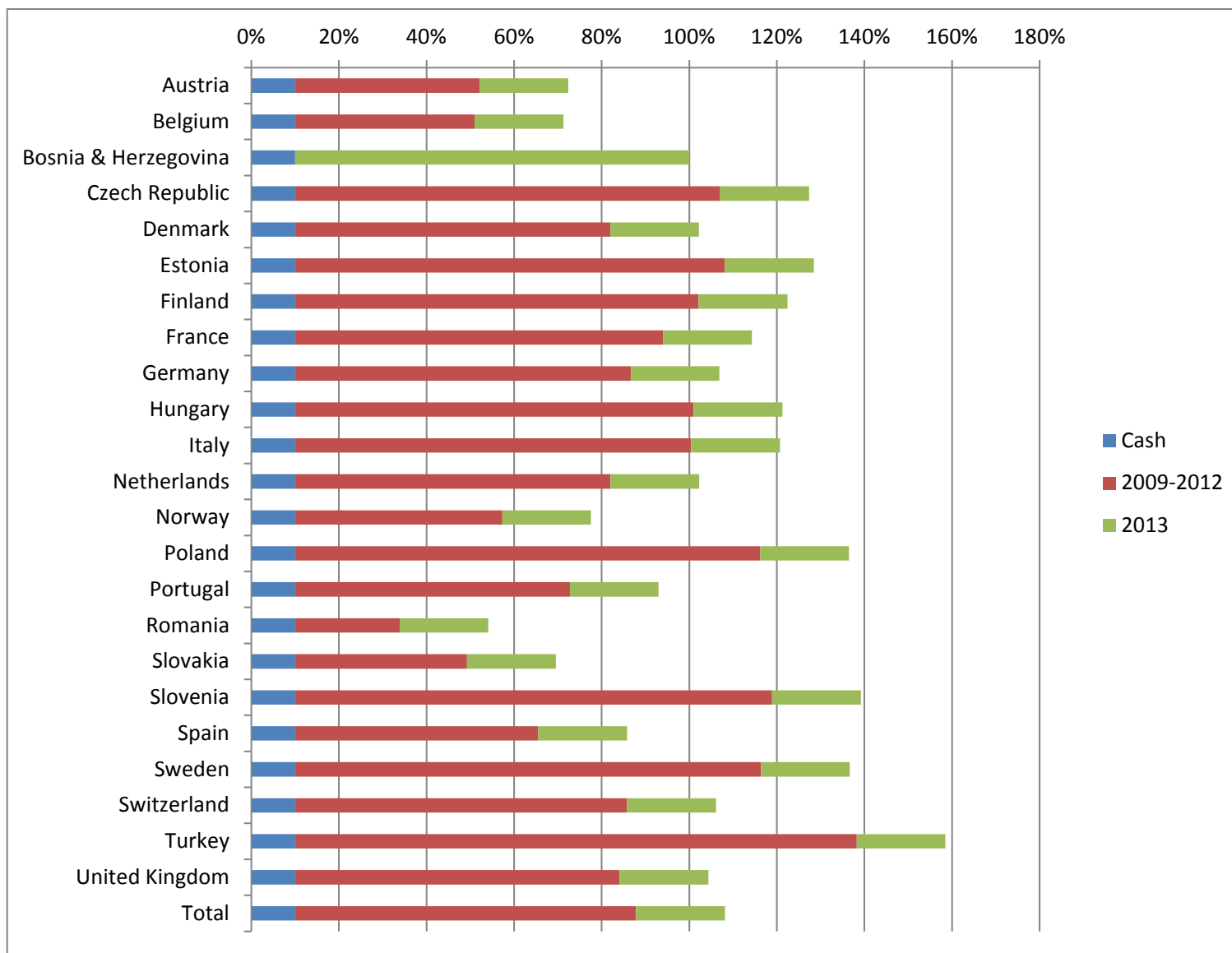
294 Researcher Grants (33 M€)

- 246 Researcher Excellence Grants (REGs) fund universities and industrial organisations to work alongside the Joint Research Projects.
- 35 Researcher Mobility Grants (RMGs) fund staff from NMIs and DIs (especially those not in the EMRP) to work alongside the Joint Research Projects.
- 13 Early Stage Researcher Mobility Grants (ESRMGs) fund staff from NMIs and DIs to work alongside the Joint Research Projects in the first few years of their career.

22 becomes 23

- Bosnia-Herzegovina has joined the EMRP following a unanimous vote in the EMRP Committee to accept them.
- They will take part in the 2013 Call as funded partners, using all their national funding in this last call.

National funding (predicted/commitment)



- In 2012, of the 30 contracts selected from the 2011 Call, 21 were issued and 4 working ahead within 6 months (83 %). All remaining contracts were issued in the following 2 months (by end of August).
- In 2013, of the 31 contracts selected from the 2012 Call, 10 were issued within 4 months. We may get all issued within the 6 month target.

- Symposium on Environmental Metrology held at PTB in January – 5 stakeholders presented
- Symposium on Metrology for Energy held at PTB in January – 6 stakeholders presented
- WMO and CEN/CENELEC both outlined their priorities in documents that were published with the stage 1 call
- 3 other briefing papers on Europe's priorities and the potential response of the metrology community were written by EURAMET and published with the stage 1 call

- Three significant meetings to promote the programme and its successor have been held:
 - The Commission organised a stakeholder consultation meeting at their offices in January
 - EURAMET held a meeting for the supporting ministries at SMD in March
 - a breakfast was held for MEPs in the EU Parliament in May.
- Project related events can be seen at http://www.euramet.org/index.php?id=emrp_events. There have been 32 in the past year and 20 are upcoming.

EURAMET Impact Prize



EURAMET GA, May 2013, Iceland