



Generating impact: what impact is and why it is important

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Metrology is all about impact



€1 billion

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Together EMRP and EMPIR amount to

€1 billion

of public funding
for metrology research

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Why



EURAMET is required by the Commission to provide evidence of **impact** created via its investments

This is captured via programme evaluations by external experts

- Final evaluation of EMRP in 2017
- Final evaluation of EMPIR in Dec 2024
- EURAMET is always required to provide annual data on EMRP and EMPIR **outputs** to demonstrate progress towards impact

Impact for EMPR & EMPIR



**FP7 / H2020
Objectives**

European growth and jobs
Respond to societal challenges
Create an integrated European Research Area

**EMRP/ EMPIR
Specific
Objectives**

- **Boost industrial uptake of metrology research** supporting development of **new & improved products and services**
- **Improve standardisation / regulation**
- Underpin a coherent, sustainable and **integrated European metrology landscape**

Impact for EMPR & EMPIR



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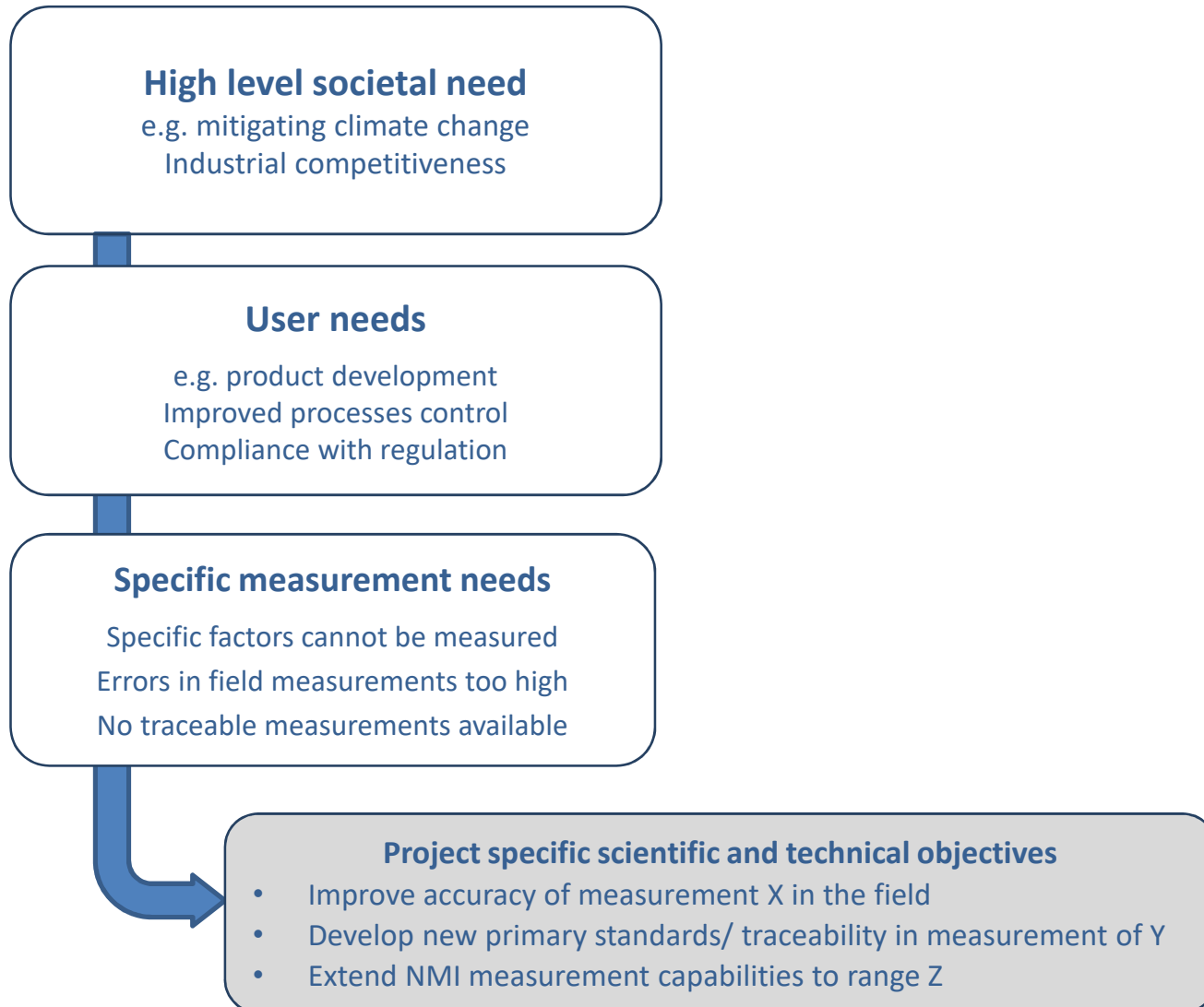
At least €400m of European turnover from new or significantly improved products and services that can be attributed to the research activities of EMPIR and its predecessors

What impact is **NEED**



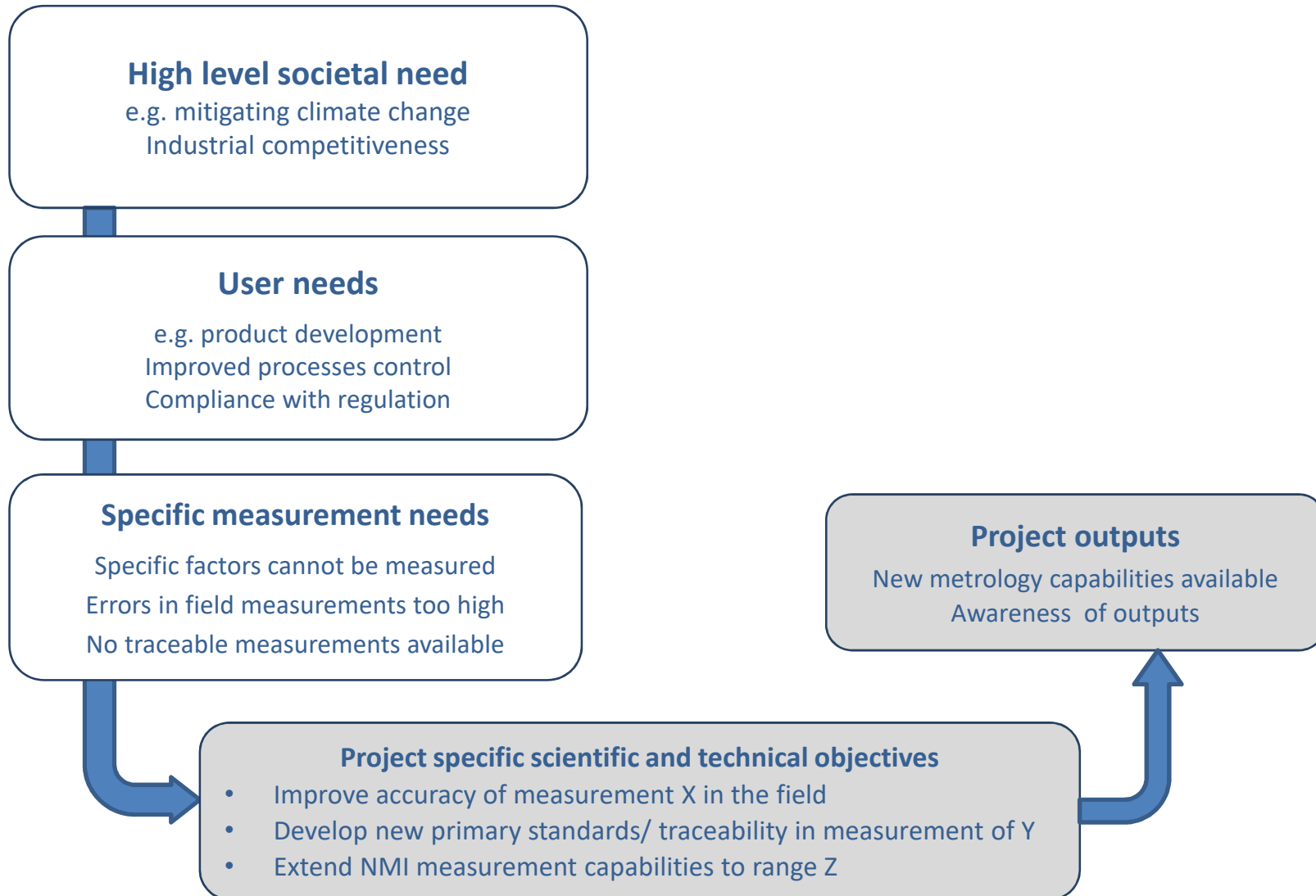
What impact is for us

NEED



What impact is for us

NEED



What impact is for us



NEED

High level societal need
e.g. mitigating climate change
Industrial competitiveness

User needs
e.g. product development
Improved processes control
Compliance with regulation

Specific measurement needs
Specific factors cannot be measured
Errors in field measurements too high
No traceable measurements available

Project specific scientific and technical objectives

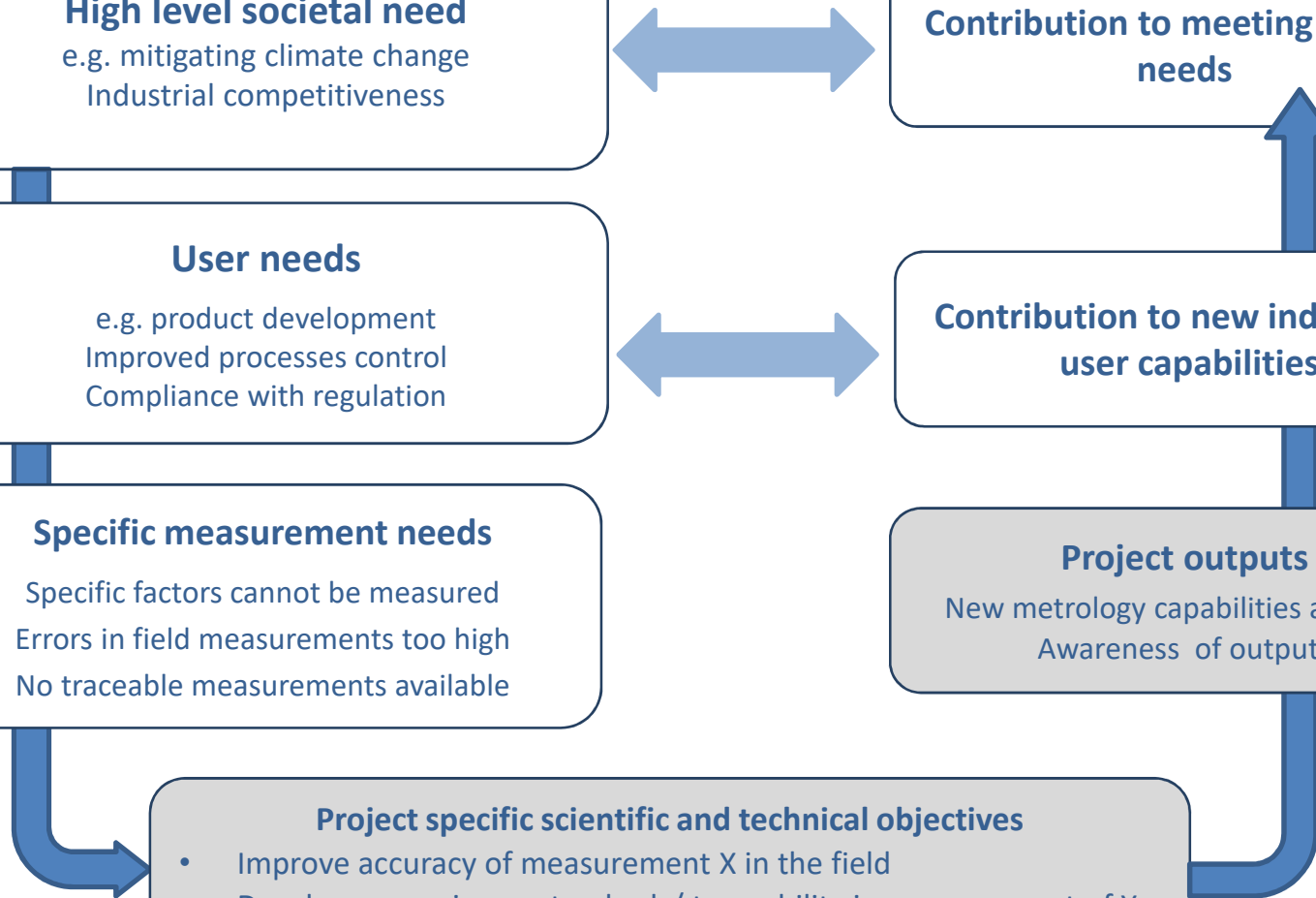
- Improve accuracy of measurement X in the field
- Develop new primary standards/ traceability in measurement of Y
- Extend NMI measurement capabilities to range Z

Route to IMPACT

Contribution to meeting societal needs

Contribution to new industrial / user capabilities

Project outputs
New metrology capabilities available
Awareness of outputs



What impact is for us



NEED

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Route to IMPACT

Contribution to meeting societal needs

Contribution to new industrial / user capabilities

Early impacts

- User uptake of outputs
- New /improved standards

Project outputs
New metrology capabilities available
Awareness of outputs

Examples of early impacts



Outputs

Technical outputs

New / improved measurement capabilities / facilities at NMIs/DIs

New / improved knowledge, methods, protocols, techniques, artefacts

Intellectual property

Dissemination outputs

Scientific papers , presentations, reports, guides

Contributions to standards committees & working groups

Newsletters, website, media, events

Trained personnel in NMIs/DIs and among users

Outputs and early impacts



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Early impacts

Uptake of project outputs by private & public sector

Calibrations & consultancy based on new capabilities

New accreditations in traceability chain

Uptake / commercialisation of new tools / techniques / methods

Further industrial R&D

IP exploitation

Tangible influence standards & regulation

Approved or draft standards

New WGs/ NWIP with strong metrology focus

Scientific impact: citations / collaborations with research community

Integration: Sustained and deepened networks and collaborations among NMI/DIs

Outputs and early impacts



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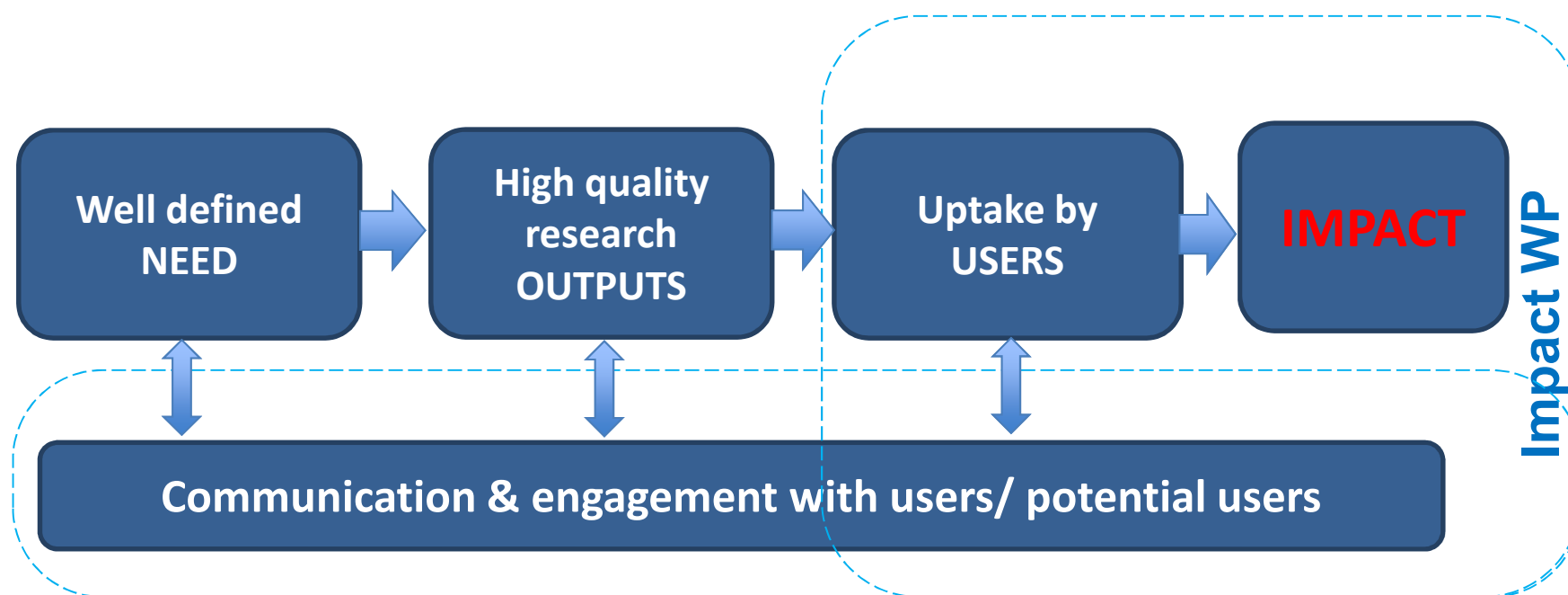
Integration: Sustained and deepened networks and collaborations among NMI/DIs

Sales of innovative products

New / updated standards

Metrology integration / coordination

How to maximise impact and opportunities for impact: Designing impactful projects



Impact case studies



European Metrology
Research Programme
Delivering Impact



Fast track to drug discovery

Identifying new drugs is an expensive business. Drug discovery takes time and may offer developers a relatively low payback, especially for new antibiotic compounds. New, rapid methods to identify potential drugs could reduce cost and accelerate the introduction of new treatments. This is particularly important for antibiotics where many of our current drugs are becoming ineffective as resistance to them develops in the microorganisms they are designed to attack.

Europe's National Measurement Institutes working together

The European Metrology Research Programme (EMRP) brings together National Measurement Institutes in 23 countries to address key measurement challenges at a European level. It supports collaborative research to ensure that measurement science meets the future needs of industry and wider society.

European Metrology
Research Programme
Delivering Impact



Diversifying Europe's energy supply

The recent increase in energy prices and instability of pipeline gas imports over the past few years have heightened concerns about the security, diversity, and competitiveness of Europe's natural gas supply. Coupled to this, alternative fuels are urgently needed to break the over-dependence of European transport on oil. Liquefied natural gas (LNG) could play a major role in diversifying Europe's energy supply and securing a stable, greener future.

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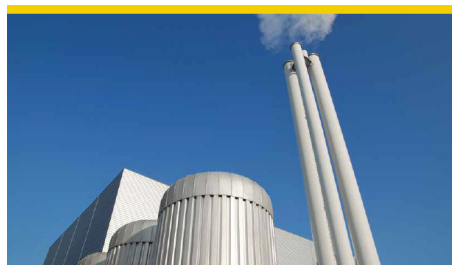


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Improving power plant efficiency

Despite increases in renewable energy generation, large-scale power plants based on nuclear or conventional fuel provide about 80% of the electricity generated in the EU and are expected to continue to form the backbone of Europe's energy supply over the coming decades. Alongside continued efforts to increase renewables, improving the efficiency of these plants will lower the cost of energy for consumers and reduce greenhouse gas emissions.

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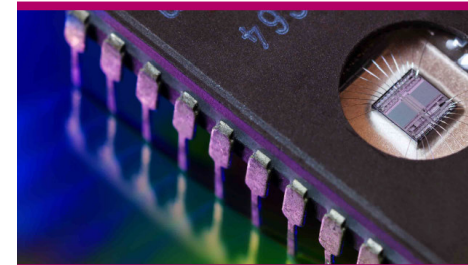


Smart meter reliability

Over 280 million smart meters are being installed in Europe giving consumers greater control over energy use. Accurate metering is based on testing small numbers from large production batches both pre and post installation. Complex computer modelling is used by regulators to set the re-test frequency, so minimising costs to energy suppliers and customers. Ensuring this retest system is fair requires improved optimised models for these new energy meters.

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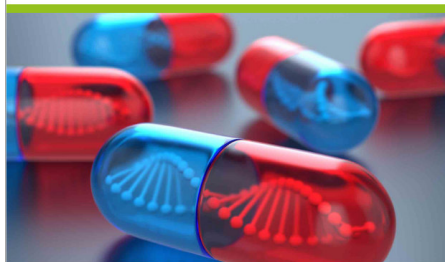


Nano-material properties

Nano materials are inspiring a new generation of products; chains of molecules acting as wires in ever smaller electronics, nano-films creating future flexible unbreakable phones, membranes with nano-holes filtering sea water into drinking water. However, their small scale means they behave in a fundamentally different way to the bulk material. To reap the benefits of new innovations, methods are needed for measuring nano-scale material properties.

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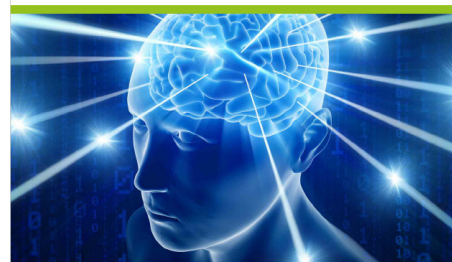


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High intensity ultrasound treatments

High Intensity Focused Ultrasound (HIFU) is a promising new cancer treatment technique. It uses multiple soundwave beams which travel to tumours without harming healthy cells on the way – enabling safer treatment and opening possibilities for treating cancers deep within the body and brain. But as a new technology, it so far lacks standards and measurement methods to ensure accurate delivery of the sound energy that destroys the cancer.

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Understanding our oceans

Oceans play a key role in regulating the global climate system. The interaction of oceans with the Earth's atmosphere is strongly linked to seawater properties such as salinity and pH, which must be accurately monitored to identify long-term climate trends. However, measurements of these properties are challenging without a traceability chain to link them to units defined in the SI, which would ensure they are comparable regardless of where and when they are made.

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Confidence in climate data

Central to our understanding of climate change are reliable Earth models. These models depend on complex measurements for validation of variables such as ice cover, cloud cover, sea level and temperature that can only be made from space using satellites. The Earth observation community needs to be able to compare and combine these satellite data, regardless of the conditions under which they were collected, to ensure robust climate forecasts.

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Impact reports



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Energy impact report

A summary of the outputs and impact of the finished EMRP joint research projects in Energy.

The aim of this theme is to establish the measurement infrastructure necessary to support Europe's sustainable energy goals. The research is focused on technologies that support reduced greenhouse gas emissions and the security of Europe's energy supply.

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Industry impact report

A summary of the outputs and impact of the first EMRP joint research projects in the Industry theme.

The aim of research in this theme is to develop metrological methods and techniques to improve the measurement infrastructure for industry in order to support product innovation, process improvement and quality assurance. The research is focused on advanced manufacturing processes in a wide range of industrial sectors.

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Environment impact report

A summary of the outputs and impact of the finished EMRP joint research projects in Environment.

The aim of this theme is to improve data quality for environmental policy making, underpin environmental research activities and stimulate technological innovation. The research is focused at both the local environmental level for air, water and soil quality and at the global level for challenges relating to climate change.

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Thank you

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