

According to EMRP chair Jörn Stenger of the Physikalisch-Technische Bundesanstalt (PTB) in Germany, “Metrology affects all areas of our lives.” For example, metrology ensures that the dose of radiation received during a computer tomography (CT) scan will be enough to generate the scan while remaining within safe limits. Similarly, if different parts of a car are built in different companies and countries, metrology ensures that the parts fit together in the assembly plant.

National metrology institutes exist throughout Europe, and they have a long history of international cooperation, as the mutual acceptance of standards and measures across borders is essential. For many years, this cooperation was fairly informal. However, that all changed when the institutes recognized what Stenger calls a “metrological dilemma.”

Advances in technology meant research was becoming increasingly expensive, yet national metrology institutes’ budgets were at best stable and at worst declining. Since primary measurement standards must be at the forefront of technology to be able to serve all stakeholder needs, metrology is very research intensive. “We agreed that only

a joint approach in metrology research could help us out of this dilemma,” Stenger said.

The group obtained funding from the EU for a project called IMERA (implementing metrology in the European research area). This project, financed under the ERA-NET scheme, allowed Europe’s metrology community to formulate a joint, coordinated research program and determine the procedures and structures needed to implement it.

When the first IMERA project ended, the metrologists carried on working through the EU ERA-NET Plus scheme. During this period, the group issued calls for proposals in four key areas: health, the international system of units (SI units), electromagnetism, and dimensional industrial applications.

Projects funded in the SI units field address the challenges of measuring constants of nature to redefine SI units such as the kilogram and the Kelvin. The medical projects focus on, among other things, ensuring that diagnostic tests are precise and reliable enough for a doctor to decide confidently whether treatment is needed.

The topic of dimensional matters

covers everything from what constitutes a nanoparticle to measuring the larger distances involved, for example, in manufacturing an airplane, where all components must be precisely fabricated. The electricity projects address various issues including the safe dose for electromagnetic radiation.

In 2009, the EMRP secured the future of the joint research program between the participating Member States and the European Union for a further seven years, with the intention that countries integrate their national research programs more deeply into a single European program.

The EMRP is also generating interest beyond Europe’s borders; countries that are particularly interested in the EMRP’s work include Australia, Japan, Russia, South Korea, Taiwan, and the United States. In addition, a number of researchers from outside Europe are involved in EMRP-funded projects.

Looking to the future, the EMRP is asking stakeholders in a number of sectors, including energy, the environment, and health, for feedback on the metrology problems that are specific to their sector.

**Joint R&D clean energy center established by India and U.S.**  
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An agreement has been signed between the United States Department of Energy and the Government of India in November 2010 to establish an Indo-U.S. Joint Clean Energy Research and Development Center (JCERDC) to Enhance Cooperation on Energy Secu-

urity, Energy Efficiency, Clean Energy, and Climate Change. The goal for the center is to spur collaborative research and development between U.S. and Indian researchers on potentially breakthrough clean energy technologies.

The Indian and U.S. governments

have committed \$5 million per year for five years (subject to yearly appropriations) for the Center and the consortia will match the government funding with its own funds. Under this arrangement, both governments have agreed to invite proposals through a joint India-U.S. Funding Opportunity Announcement in the three priority areas of building efficiency, solar energy, and advanced biofuels. □



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