

## **METROLOGY FOR SUSTAINABLE ENERGY TECHNOLOGIES AND THE ENVIRONMENT IN THE WESTERN HEMISPHERE (M4SET)**

### **M4SET Project Proposal and Application Package**

Guidance for SIM and OAS Member States (National Metrology Institutes and Designated Institutes)

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#### **Project Description**

Developing the Western Hemisphere's sustainable energy technologies requires adequate metrology infrastructure, accurate traceability, calibration and measurement capabilities, and adherence to internationally recognized measurement standards. This project has been designed to support capacity building, research opportunities and collaborative activities to bridge the gap between technical capabilities and energy and environmental policies.

The M4SET project will improve the understanding and application of metrology in the fields of energy infrastructure, energy technologies, energy efficiency and environmental science through training and awareness of relevant high-ranking government officials and technical stakeholders. Training and technical support will be delivered through knowledge sharing, short-mid-term technical exchanges (minimum one week, maximum six month) and regional cooperation. These efforts will contribute to greater involvement of the metrology community in developing measurements needed to support energy technologies, and ultimately to contribute to economic growth in the Americas.

#### **Project Proposals**

Those seeking support through this project should demonstrate a well-developed understanding of the challenges or capabilities they are seeking to overcome or improve. Proposals should also explain how the project will be organized, how financial support will be utilized, the expected outcomes and how the activity will strengthen existing or develop new essential measurement services. The implementation of proposed activities should be coordinated with NIST and OAS, the latter will pay the costs related to the activities. Funds will not be transferred to the proposers.

Joint proposals, or proposals that bring together multiple beneficiaries, will be prioritized. Project organizers hope to encourage potential applicants in the National Metrology Institutes (NMI) to engage with their national counterparts in the ministries of energy, environment, normalization and accreditation bodies in ways that broaden the project's impact at the country level. Similarly, applicants are encouraged to work with other SIM colleagues. Partners should discuss the roles and responsibilities of each Institute and detail these within the application (pg. 2 – 3).

#### **Application Guidance**

Applications will be received and reviewed on a rolling-basis. Once received, project organizers will review the proposal to ensure the objectives of the activity align with the project's goals. Following this review, an evaluation will be completed by technical experts and project managers to determine if the project is feasible based on resource requirements. Project organizers may ask that applicants clarify components of the proposal before a final determination is made. If deemed appropriate and resources are available, project leaders will contact the application representatives to discuss arrangements and begin coordinating with the application representatives. **Application period until June 30<sup>th</sup> 2018.**

If you have any questions regarding the application or the programs objectives, please email Bibiana Serna ([BSerna@oas.org](mailto:BSerna@oas.org)), Magdalena Navarro ([magdalena.navarro@nist.gov](mailto:magdalena.navarro@nist.gov)) and Andrew Conn ([andrew.conn@nist.gov](mailto:andrew.conn@nist.gov)).

## M4SET

### Annex I: Project Application

Please submit your completed application to Bibiana Serna ([Bserna@oas.org](mailto:Bserna@oas.org)), Magdalena Navarro ([mnavarro@nist.gov](mailto:mnavarro@nist.gov)), and Andrew Conn ([andrew.conn@nist.gov](mailto:andrew.conn@nist.gov)). Please include the phrase "M4SET project" in your subject line.

<b>Project Title:</b>	<b>SIM MWG-9 MEETING AND WORKSHOP</b>
<b>Project Type:</b> <input checked="" type="checkbox"/> Conference/Workshop <input type="checkbox"/> Training Course(s)/Webinar <input checked="" type="checkbox"/> Short term-technical exchanges <input type="checkbox"/> Other* <i>*If your proposal does not fit within one of the defined activity types above, please select 'other' and explain the activity in the summary section below.</i>	
<b>Metrology Area of Impact:</b>	Acoustics, Ultrasound and Vibration
<b>Proposing Country or Countries:</b>	Brazil, United States of America, Canada, Mexico, Argentina, Peru, Costa Rica, Colombia
<b>Proposing Institute(s):</b> <i>Please indicate all institutes that will benefit from the proposed project</i>	INMETRO, NIST, NRC, CENAM, INTI, INACAL, LACOMET, INM - Colombia
<b>Responsible:</b>	Gustavo Palmeira Ripper, Michael Gaitan, Lixue Wu, Andrés Perez Matsumoto, Federico Serrano, Henry Díaz, Adrian Solano Mena, Nelson Bahámon Cortés
<b>Expected start date (if applicable):</b>	November 8 <sup>th</sup> , 2017
<b>Expected completion date (if applicable):</b>	November 10 <sup>th</sup> , 2017
	<p>The activities to be developed during this event will include:</p> <ol style="list-style-type: none"> <li>1. Awareness sessions about outcomes of recent CCAUV, IMEKO, ISO and IEC meetings</li> <li>2. Workshop about CMCs in AUV</li> <li>3. Technical presentations given by each NMI</li> <li>4. Technical visit to AUV laboratories of INMETRO and discussion about calibration systems</li> <li>5. SIM MWG-9 Annual Meeting</li> <li>6. Planning of future joint activities relate to AUV metrology</li> </ol>

### Activity Objectives and Organization

*In this section, please describe the expected impact the proposed activity will have on the participating NMIs and/or participating organizations. Please explain how the activity will be organized and the technical components to the activity.*

- 1) Relevance:** What problem does this proposal seek to address? How will this activity improve the services provided by those Institutes benefiting from the activity in the areas of energy and the environment? How does this project enhance your

measurement capabilities to support your country's environmental efforts on air quality, renewable energy development, energy efficiency performance, sustainable energy technologies, or others related?

The use of wind energy is increasing worldwide and very strongly in American Countries. Currently many wind farms are under the responsibility of manufacturers but they will be transferred to local administrators soon. Measurement of vibration is one of the main sources of identification used in predictive maintenance and is also highly important for the optimization of operation conditions of Eolic plants. Wind power generators are driven by winds of varying forces and speed, which can excite resonances if not properly monitored and controlled. Therefore, vibration conditions of blades, tower and power train must be measured constantly and the parameters of the generator need to be adjusted accordingly. Low frequency vibration measurements is a challenge for this sector and metrological traceability is needed to ensure compliance between commercial relationships and attendance to regulations established between manufacturers, operators and services providers and the countries government. Low-frequency and infrasound measurement in Acoustics are important for assessment of the environmental impact generated by this source of Clean Energy. The proximity of wind generators or wind farms to cities and farms place a demand for studies of their effect on the human being and animals. Therefore, an improvement of traceability of low-frequency acoustics measurements is needed to support researches and the evaluation of these sound pressure levels on the population. Vibration and Acoustics metrology can help the development of local projects of better wind blades, generators, etc. and support an easier integration of renewable energy and the community.

**2) Technical Objectives and Expected Outcomes:** Please explain the technical aims of the project and how those objectives will be met. How would the activity organizers define a successful outcome?

The SIM MWG-9 members want to develop joint activities related to training, technical exchange and improvement of measurement standards that are used to support the Energy Sector as many others.

The newer NMIs need support from the more experienced ones to build up their national standards, implement their first Calibration and Measurement Capabilities in the field, demonstrate technical competence and ask for international recognition. The awareness session and the workshop intend to establish a common understanding of the requirements to attend the MRA and obtain a first CMC in AUV. As the smaller NMIs do not usually have dedicated personnel working exclusively with AUV, it is important to speed up the learning curve and help the dissemination of technical knowledge that is needed. The establishment of a network of contacts within SIM members will contribute to achieve this goal, increasing the flow of information that will contribute to all stages required to the development of new standards and services in the region.

Technical aims:

Common understanding of the needs to have an internationally recognized service in the field of AUV

Network of contacts established with higher interaction in a near future

Establishment of future joint activities and metrology projects organized between SIM members related to Sustainable energy

Training of technical personnel

Successful Outcomes:

Workshop concluded with active participation and discussions between SIM members

Eye-to-eye contact between metrologists with interest in AUV and elimination of barriers for future interactions

1<sup>st</sup> draft of a Plan for future training activities to be carried out within SIM members

**3) Organization and Arrangements:** How will the activity be executed? If the project includes multiple partners and beneficiaries, please explain what role each benefiting member will play in the success of the activity.

The Workshop and meeting will take place at the INMETRO campus in Xerém, Rio de Janeiro.

INMETRO will provide meeting room and facilities to support the activities, including datashow and flipchart.

Visit to four laboratories of the Division of Acoustics and Vibration Metrology (Diavi) at Buildings 1 and 3 and technical discussions with calibration system developers and technicians will take place during the workshop. Visits to the Vibration Laboratory (Lavib), Electroacoustics Laboratory (Laeta), Acoustics Testing Laboratory (Laena) and Ultrasound Laboratory are included in the program. Each participant is expected to present a report of the current status of AUV metrology in their institute and contribute to the exchange of information between SIM members.