



A Methodology for Capacity Building in Technical and Scientific Organizations Using Regional Knowledge and Experiences

An Example of Its Application for Strengthening the Relationship Between National Metrology Institutes and Their Users



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Preface

Sharing knowledge creates an invisible network of infinite possibilities and helps to build the road towards a better place for everyone.

In 2008, the Organization of American States (OAS), the Inter-American Metrology System (SIM)¹ and the Physikalisch-Technische Bundesanstalt (PTB)² began a process, the goal of which was to encourage and strengthen the interaction between the National Metrology Institutes of Latin America and the Caribbean and metrology Users. Although the goal was clear, a strategy needed to be developed.

A concept based on cooperation and learning was developed, oriented towards new realities and needs within the Technical Cooperation and Development Assistance in Latin America and the Caribbean. It was apparent that the traditional concept of North-South transfer of knowledge and experience was not the most appropriate. More and more, there is enriching knowledge and experience in the region itself, more in some countries or organisations, less in others. At the same time, there is a high level of willingness to share it with their peers. The concept of cooperation and learning developed in the context of the joint Project entitled “NMI-Metrology User Relations”³ (referred as “NMI-MUR”) takes advantage of the diversity of experience and knowledge available within the region as well as the willingness to cooperate among the institutions of the region.

The main characters of this Project are the National Metrology Institutes⁴ (referred to as the Institutes), known for being technical-scientific organisations providing services to a country’s economy and society. The Institutes are crucial players in promoting technological innovation and development in a country. In recent years, many Institutes of the region have significantly developed their technical measurement capabilities⁵. From the viewpoint of Technical Cooperation, the challenge the Institutes face is not only to increase their capabilities substantially but also to be able to use and take advantage of the latter to overcome quickly and effectively the challenges of their own country and of the region (such as sustainable economic development, ensuring energy and health provision, protection of the environment and adaptation to climate change).

For the capabilities of the Institutes to be used and taken advantage of, it is paramount to encourage and strengthen the aim of the offer of products and services towards their Users. As a result, it is expected that the traditional services of the Institutes will be better oriented to servicing the needs of industry, of other organisations providing technical-scientific services to society and economy, and of society in general.

1 “The Inter-American Metrology System (SIM) resulted from a broad agreement among national metrology organisations from all 34 Member Nations of the Organization of American States (OAS). Created to promote international, particularly Inter-American, and regional cooperation in metrology, SIM is committed to the implementation of a Global Measurement System within the Americas, which all users can rely on.”
<http://www.sim-metrologia.org.br/index.php>

2 The PTB is the National Metrology Institute of the Federal Republic of Germany. For more than 40 years, PTB has been dedicated to Technical Cooperation as requested by the Federal Ministry for Economic Cooperation and Development (BMZ) and by other international agents (e.g. European Union). With its projects, it supports the creation of quality infrastructures that facilitate a greater integration of developing countries to world trade, by means of increasing their competitiveness. In recent years, the projects developed by PTB have included even more specific sectors, such as energy and water.

3 NMI = English acronym for: National Metrology Institute

4 The National Metrology Institutes are public organisations, technical-scientific in nature, wherein the state delegates the duty of developing standards and measurement systems of the highest reference, with the purpose of providing certainty and reliability to the measurements made in the country.

5 The Bureau International des Poids et Mesures (BIPM) publishes the Calibration and Measurement Capabilities, CMCs, of the NMIs. In recent years, several of the NMIs of Latin America and the Caribbean have reported a growing number of CMCs. See: <http://kcdb.bipm.org/appendix/>

The Project “NMI-Metrology User Relations” had two phases, each of which lasted two years, taking place consecutively during the period from 2009 to 2014. During this period, the Institutes of the region developed new services and strengthened their relationship with their Users.

The quality of the results obtained by the participating Institutes led us to draw up this publication, through which we intend to share the concept of cooperation and learning, as well as the process of developing the concept, the experience undergone at regional and national level and the results obtained in each country.

The following pages present a flexible tool, the purpose of which is to strengthen national capabilities using regional knowledge and experience. Its application is not restricted to metrology, rather, it may be applied in any other context or field where a public institution seeks to reinforce, secure or expand its competences, taking advantage of the knowledge of the other institutions within the region.

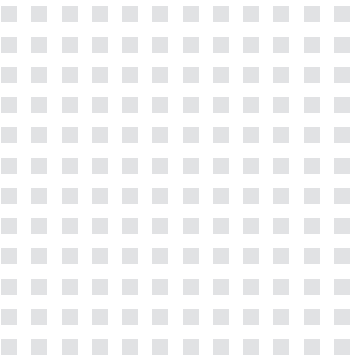
One more reason to share our experience is that the concept of cooperation and learning that was developed is a concrete example of the global cooperation that will be demanded by the “Post-2015 Sustainable Development Agenda” of the United Nations in order to jointly achieve national and global goals.

This is why we address this publication mainly to three target groups:

- (1) National Metrology Institutes,
- (2) Organisations providing technical and scientific services to society and economy, and
- (3) Technical Cooperation and Development Assistance community.

The document is organised as follows:

- a) Chapter 1 describes the tool. As the description progresses, the reader is offered access to experiences of the Project “NMI-MUR” through boxes presenting concrete examples of its application.
- b) Chapter 2 lays out considerations for the application of the tool as well as critical factors for success.
- c) Lastly, the Annexes provide a deeper insight into the Project “NMI-MUR”, such as, for instance, the experiences of participants throughout the development of the Working Groups.



César Parga
Chief of the Competitiveness, Innovation and Technology Section
Organization of American States, OAS



José Dajes Castro
President of the Inter-American Metrology System, SIM



Alexis Valqui
Head of Technical Cooperation in Latin America and the Caribbean
Physikalisch-Technische Bundesanstalt, PTB

Chapter 1

The Tool

1.1. Conceptual Framework

The basic concept of this tool is that exchanging regional knowledge and experience makes it easier to solve challenges countries are faced with at a national level. The tool consists of a Programme⁶ that works simultaneously at the regional and the national level. It is based on the productive exchange of experiences and resources, which is achieved by working in groups made up of representatives from the Institutions that adhere to the initiative.

The tool proposes and encourages a joint working method that allows each participating Institution to make progress towards solving any of their national issues, with the support of a range of resources. While doing so, the Institution is in turn transformed into a support resource for other Institutions.

The Project “NMI-MUR”, supported by OAS, SIM and PTB, contributed to the development of instruments that allowed strengthening the Quality Infrastructure in Latin America and the Caribbean. The specific goals of the Project were:

1. To strengthen the relationship between each National Metrology Institute and its Users, such as industry, trade and society in general.
2. To raise awareness among Users and society in general regarding the importance of the National Metrology Institute for the country’s development and for improving the population’s quality of life.

The Programme – which lasts two years – is implemented through a methodology that pools institutional efforts in an orderly manner. It is based on a structure that enables and shapes a process encouraging innovation, while adopting measures and achieving results at both national and regional levels.

⁶ In the context of this publication, the terms Programme, Project, Institute/s, Institution/s, User/s, Technical Committee, Coordination and Follow-up, Working Group/s and Plenary are written in upper case to help the reader form a layout of the tool.

1.1.1. Fields of action of the Programme

1.1.1.1. At the regional level

At the regional level, the proposal focuses on addressing collective challenges of the group of countries through their participating Institutions. For this, the existing issues are analysed, an area of work is chosen, and priority topics are defined, which will result in the Working Groups among which participants will be distributed and within which they will set their goals.

The participants, representatives of different Institutions/countries, will focus on the topics of their Working

Group, each of them acting in their national environment on the basis of regional cooperation, attempting to think globally and act locally. This process, developed throughout the Programme, strengthens the relations among institutions in the regional group. Likewise, the aggregate of actions of the participating Institutions enhances the importance of the role they fulfil in the development of their regions.

The regional field of action in the “NMI-MUR” Project was twofold:

Exchange of group experiences: It occurred intensely during the “face to face” Workshops and the online sessions that took place regularly.

Institutional cooperation: Experiences where two or more National Metrology Institutes supported each other in order to achieve the goals of their national projects.

The following examples from Phase 1 can be highlighted:

- The cooperation between Peru and Guyana, whereby the Peruvian National Metrology Institute, INDECOPI, trained members of the Guyana National Bureau of Standards, GNBS, in the calibration of multimeters and provided support for the first Group Calibration.
- The cooperation between Panama and Costa Rica, whereby the participants of the National Metrology Institutes, CENAMEP and LACOMET, provided mutual support in preparing materials for metrology courses.

The following examples from Phase 2 can be highlighted:

- The cooperation among the Institutes from Chile, Uruguay and Costa Rica regarding the organization of Proficiency Tests by means of interaction among the participants of INN, LATU and LACOMET.
- The task force that was formed by participants from Caribbean Institutes to translate materials for distance education supplied by INMETRO (Brazil), with the purpose of developing their own offer of courses.
- The preparation of joint working programmes among representatives of the National Metrology Institutes from Haiti and Guyana to influence the education sector.
- The collaboration between the Institutes from Uruguay and Mexico whereby CENAM (Mexico) supplemented the offer of LATU (Uruguay) to train Users, by means of a distance course.

1.1.1.2. At the national level

At the national level, each participating Institution designs and implements a project aimed at addressing and solving specific national issues within its mandate.

The application of the tool does not imply any kind of prior assessment or selection of the projects to be implemented by the Institutions at a national level. They are free to operate on the need or issue which is deemed most urgent or appropriate in their country, the only requirement being that their project be aligned with the topic of its specific Working Group, articulating their actions and results to create the synergies orienting the Programme.

The work at the national level enables the Institutions to broaden their response, improve and extend their network of contacts, and strengthen their relationship with key players as well as their image at the national level.

At the national level, the “NMI-MUR” Project worked with the following metrology Users:

- Industry and chambers or associations
- Secondary laboratories
- Regulatory Bodies
- Educational institutions

The following were some of the actions developed in the projects:

- Seminars/workshops/awareness raising activities
- Pilot consultancy projects
- Campaigns for metrological assurance in measuring equipment for final Users (petrol pumps, scales, thermometers, sphygmomanometers)

- Progress in the development of national regulations in the field of metrology (for instance, the drafting of the Metrology Act in St. Kitts and Nevis)
- Training programmes for metrology Users
- Training and updating for teachers in formal education in the field of metrology
- Strengthening competencies of secondary laboratories through training
- Proficiency Testing programmes

1.1.1.3. Integration of the two levels

The topics or areas of opportunity that are given priority by the regional group give origin to and will be the focus of activity of each Working Group and its members. For this, the Institutions in the Programme choose priority topics they would like to work on, join the corresponding Working Group and undertake to present and carry out a nationwide project which will be reviewed every six months by the group, receiving permanent follow-up and support.

In the first phase of the “NMI-MUR” Project (2009-2011) a total of 12 national projects were launched and completed. The services identified as a priority for improving and strengthening the relationship of the National Metrology Institutes with their Users were the following: **consultancy, training, and group calibrations**. Eleven Institutes participating in the initiative chose the service they would like to work on, joined the corresponding Working Group, and developed projects with national reach.

For the second phase (2012-2014), fifteen National Metrology Institutes worked on strengthening their relationship with three types of Users: **regulatory bodies, secondary laboratories** and the **education sector**. During these two years, a total of 24 national projects were implemented.

The list of participants of each of the Working Groups may be seen in Annex A, for both aforementioned phases.

As will be seen below, throughout the Programme a series of resources and inputs are made available to each Institution/participant to facilitate and support the management of the national project.

From an operational point of view, the process initially involves the Director or maximum authority of each guest institution, who defines or approves the project to be included in the initiative and appoints a representative to join the Programme and the corresponding Working Group.

A letter of commitment signed by each Director clarifies the national project to be carried out by the Institution as well as the name of the person who has been appointed to participate, in order to register formally the Institution's commitment within the Programme, its rules and methodology.





The following are a series of aspects identified as critical factors of success/risk associated with the participating Institutions and which will have an impact on the development and use of the Programme:

- Choice of the institutional representative
- Choice of the national project that will be implemented through the Programme
- Planning of resources and budget associated with the execution of the national project
- Commitment of the Institution's management to the Programme and its national project

The institutional representative is responsible to the Working Group and the Programme; he or she leads the specific institutional project and participates in the various proposed stages. In addition to carrying out the proposed national project, the commitment assumed by each Institution through its representative further includes submitting work plans and regular reports, and actively participating in the exchange forums to which they are summoned.

Listed below are the success/risk factors associated with the institutional representative (i.e. the participant) who will join the Programme and the Working Group:

- Commitment to his/her institutional role
- Personal interest in the topic of his/her Working Group and the project
- Competencies for project management at the national level in a regional framework
- Interest and personal qualities conducive to integrating and interacting with interdisciplinary, inter-institutional and multi-cultural working groups
- Willingness to acquire and/or transfer competencies related to project management and technical duties
- Availability for and commitment to work standards, group goals and participation in the Programme's exchange forums (including trips outside of his/her country/place of residency)

At each phase of the “NMI-MUR” Project three Working Groups were engaged. **Extracts reporting the experiences of one participant from each Working Group** are shown below. The full reports are available in Annex C.

Claudia Santo from LATU (Uruguay)

Participant of the “Consultancy” Working Group:

“The Technological Laboratory of Uruguay (LATU) through the Scientific Metrology Directorate together with the Chamber of Industry of Uruguay (CIU) has developed a “Metrological Consultancies” service [...]. This service was applied through pilot tests where the first stage of the service was done at no charge, including diagnosis and recommendations. An impact study of this service was made [...]. The assessment of the consultancy by the three client companies interviewed was very positive, and one of them even estimated an economic benefit derived from implementing the recommended actions, which amounted to total savings of US\$ 65,000 a year.”

Hiram Williams from SKNBS (St. Kitts and Nevis)

Participant of the “Training” Working Group:

“The main outcome of the two Workshops was an increase in awareness and training in basic metrology and estimation of measurement uncertainty. Twenty-six participants attended the Workshops, representatives from different sectors of industry. [...] The greatest success was the improvement in the relationship between SKNBS and the interested parties; as well as the increase in the capability of SKNBS to provide training services to metrology users. As SKNBS continues to build additional capabilities to address industries in the metrology field, it is expected that the manufacturers will raise greater trust among consumers and to improve their capability for foreign trade.”

Jermaine Softley from GNBS (Guyana)

Participant of the “Group Calibration” Working Group:

“The Group Calibration has certainly impacted GNBS in many ways. First of all, GNBS has now the capacity to offer calibration of multimeters in Guyana. Furthermore, GNBS is now being recognized by the counterparts to conduct such demand-oriented activities, the staff is now competent thanks to the training received prior to the Group Calibration exercise and GNBS can now generate more revenue from the new service offered. In addition, there is now greater awareness among counterparts with regards to calibration and its positive impacts on the competitiveness of their companies.”

Javier Arias from CENAMEP AIP (Panama)

Participant of the “Regulators” Working Group:

“Negotiation techniques and all the help and information received from the coaches and group colleagues during the meetings gave us ideas on how to prepare ourselves to convince the National Regulators why and how to make the change to the International System of Units (SI). Even the doubts voiced by colleagues from other groups during general meetings, helped us understand the Users' needs [...]. Without the pressure and the support of the Project colleagues, maybe we might not have been able to achieve the awareness and partial implementation of the law that we have accomplished today.”

Jessica Chavarría from LACOMET (Costa Rica)

Participant of the “Secondary Laboratories” Working Group:

“The Project we implemented in LACOMET had a strong national impact since it helped to strengthen the national metrological structure and the National System for Quality in Costa Rica. This was achieved by means of running Proficiency Tests pursuant to regulatory requirements, which are acknowledged by other peers and within the conformity assessment structure.”

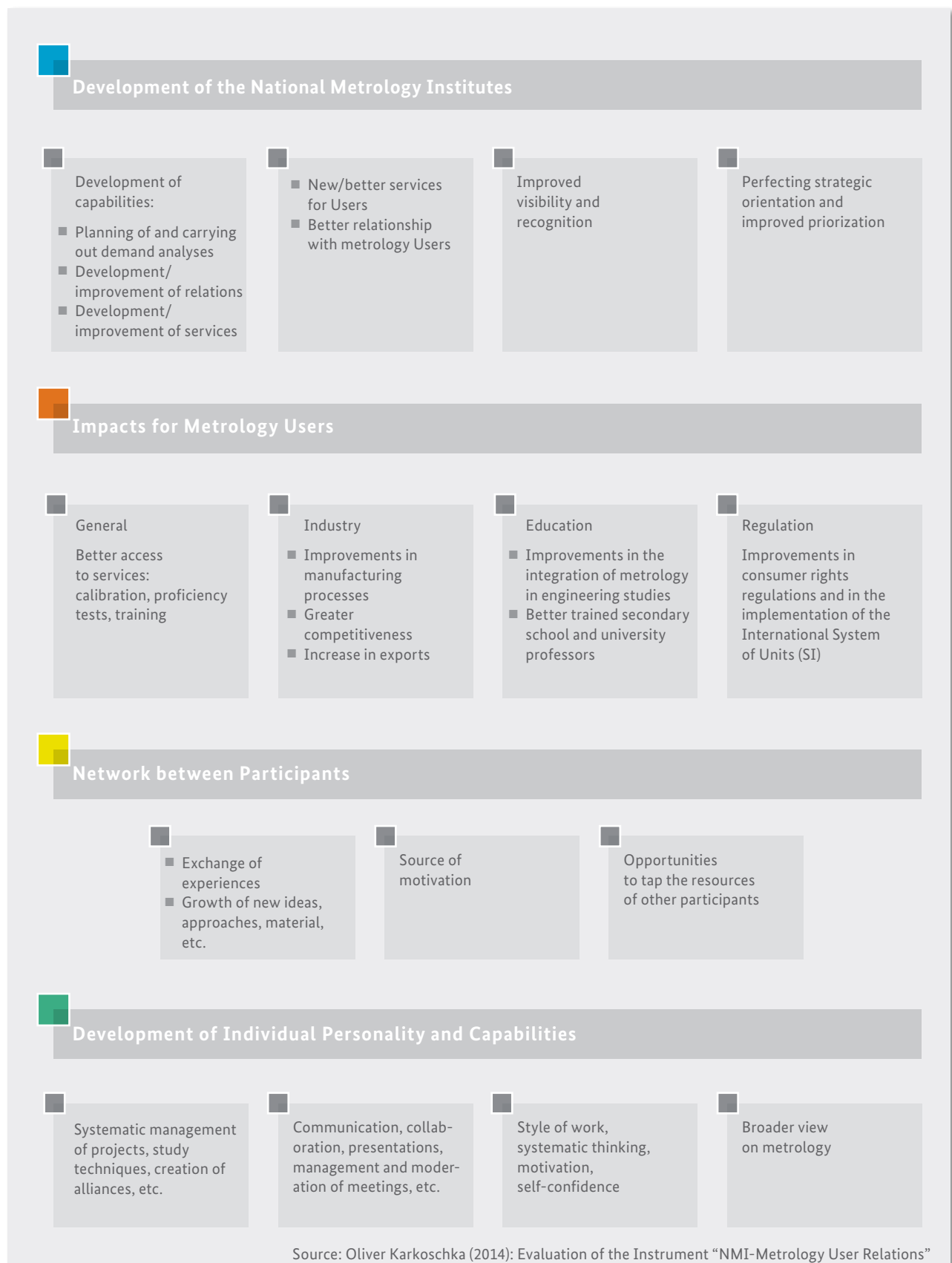
Silvana Demicheli from LATU (Uruguay)

Participant of the “Education” Working Group:

“The methodology developed by the Project allowed us to plan and carry out concrete measures to widen and improve our offer of services to current and potential Users in a systematic, orderly, analysed and assessed manner, in significantly shorter periods than those in which we would have accomplished them on our own. [...] The spaces and channels to meet the other members, with the coordinators of the initiative and with those who acted as coaches, in particular during the “face to face” Workshops, allowed us to see what solutions were being offered in other countries to address demands similar to those we received; we were provided with alternatives and good practices previously tested by others to solve our obstacles and take shortcuts; we had access to material, documents and proposals that could be adapted to our local logic and dynamic, and we embarked on joint activities taking advantage and boosting the resources that were multiplied in the group.”



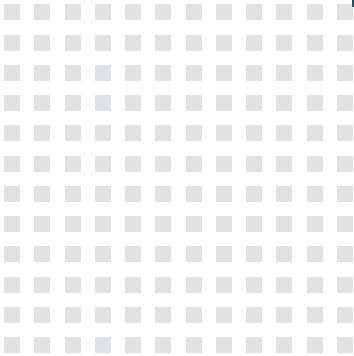
Overview of the results and impact of the “NMI-MUR” Project



1.2. The Process

During the Process, a series of steps are followed, which can be grouped in different stages that will vary in complexity, depending on the national character and structural dynamics of each group.

- These are:
- 1. Preparation
 - 2. Needs Assessment
 - 3. Planning
 - 4. Implementation
 - 5. Evaluation



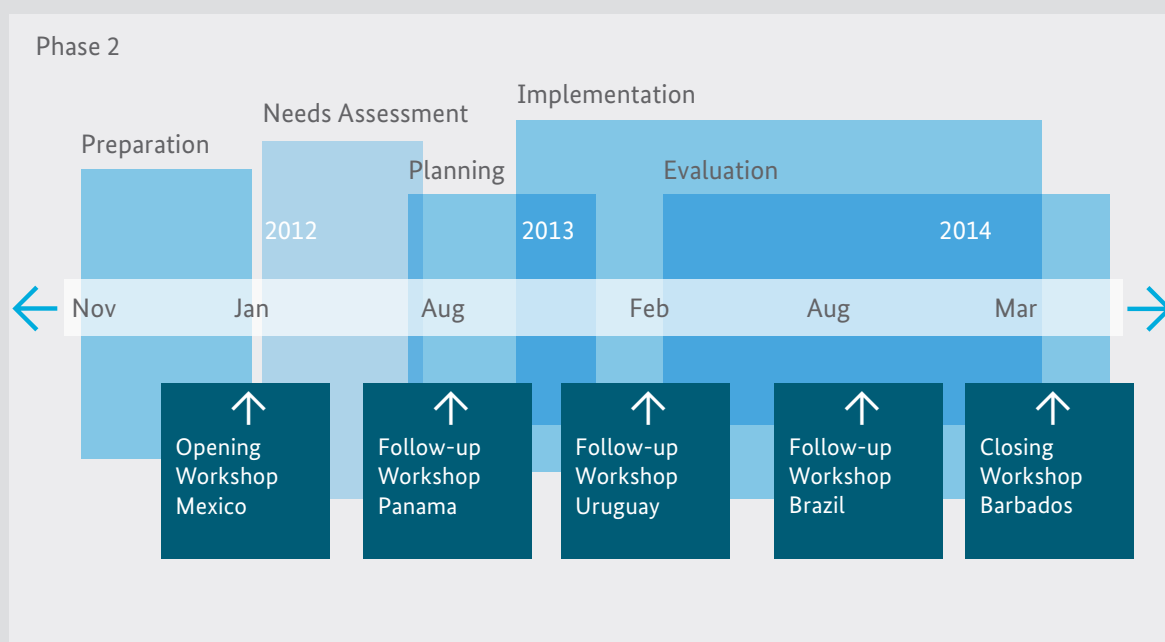
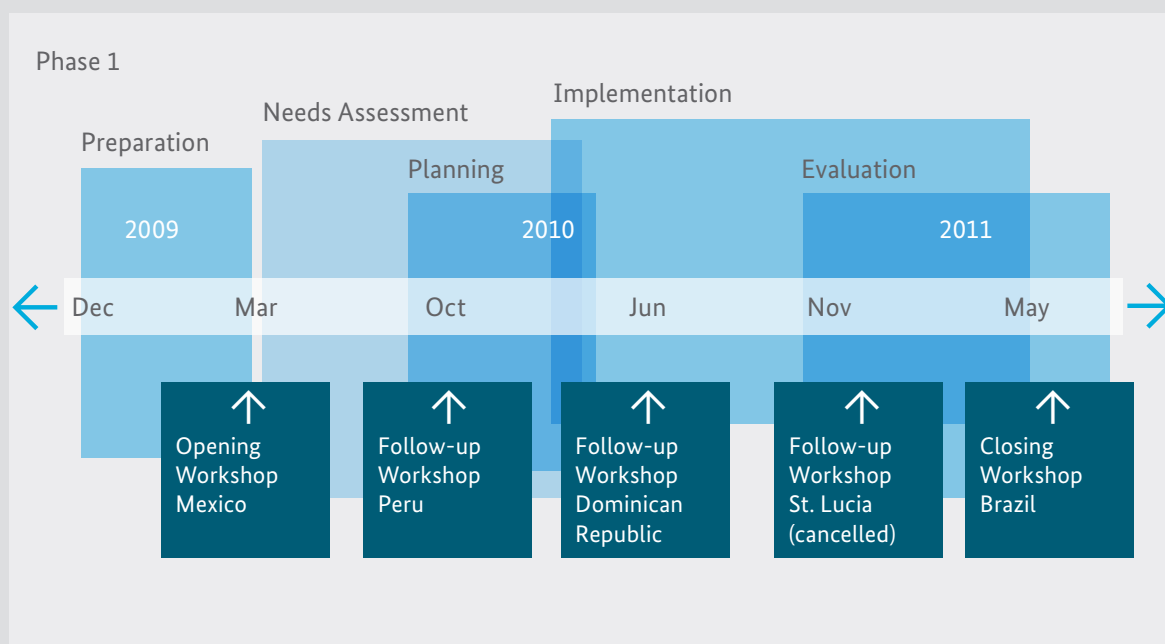
The preparation stage is an initial stage where the general guidelines of the Programme are set. The four subsequent stages take place over the course of two years and each of them begins with a “face to face” Workshop. The following table shows the focus of the activity during each stage:

Stage	Focus of Activity
1. Preparation	<p>The summoning Institutions prepare and approve the Programme and its preliminary budget.</p> <p>The priority topics to be addressed by the Working Groups are defined.</p> <p>The Institutions which could potentially join the Programme are invited and the methodology and general aspects are presented to them.</p> <p>The Institutions interested in taking part in the initiative and the Working Groups they would like to join are identified.</p> <p>Each Institution submits:</p> <ul style="list-style-type: none"> ■ A preliminary project stating what will be developed and appointing the representative who will lead the project and actively participate in the Programme ■ A letter of commitment, in which the Institution commits to participating in the stages of the Programme, presenting its proposal and the name of the appointed representative
2. Needs Assessment	<p>Needs at the national level are identified.</p> <p>The participants, as representatives of their Institutions, survey and analyse their clients' or Users' requirements (both current and potential, public and private) and determine:</p> <ul style="list-style-type: none"> ■ What sectors are the most important/strategic ■ What services must be rendered ■ What services are already offered but need to be reinforced ■ For what available services there is no demand from the clients/users ■ What services are demanded and not yet offered
3. Planning	<p>Schedules, exchange forums, inputs and communication channels for the Programme are defined.</p> <p>Members of the Working Groups are confirmed and the Programme is launched.</p> <p>Every Institution prepares and submits:</p> <ul style="list-style-type: none"> ■ The project to be developed at the national level, specifying goals, strategies, results and expected impacts. ■ The semi-annual work plan specifying actions, participants, counterparts, schedule and associated budget.
4. Implementation	<p>Meetings and spaces for exchange/follow up are maintained.</p> <p>Contacts with key counterparts are developed.⁷</p> <p>Planned actions are implemented.</p> <p>Every Institution submits:</p> <ul style="list-style-type: none"> ■ Progress reports ■ Subsequent semi-annual work plans
5. Evaluation	<p>The results and impacts are evaluated.</p> <p>Potential work fields and action lines for the future are analysed.</p> <p>Every Institution presents:</p> <ul style="list-style-type: none"> ■ Final Report

The preparation stage of the “NMI-MUR” Project was done during the first phase by PTB, CENAM and the Coordinator of the Professional Development Committee of SIM. For Phase 2, the Preparation Stage was done by the Technical Committee.

In Diagrams 1 and 2 two different aspects are shown in connection with the length of the stages:

- Some were extended to over six months, since not all the participants made progress at the same time and
- Some were shorter than foreseen since the participants made quicker progress.



Diagrams 1 and 2: Stages of the process during both phases of the Project “NMI-MUR”

1.3. Structure of the Programme

From the organizational point of view, the structure that supports, orders and connects all the initiatives that are carried out simultaneously consists of: (1) the Technical Committee, (2) the Working Groups, (3) the Plenary.

1.3.1. Technical Committee

The Technical Committee is formed by representatives of the participating Institutions that contribute with resources of different kinds (human and financial) to Programme planning and implementation and that take an active role throughout the process. It has the following main duties:

- To plan, organise and coordinate the Programme as a whole
- To steer the course of action of the Working Groups
- To prepare, coordinate and evaluate the work carried out in the Workshops, pursuant to the goals of the Programme
- To provide inputs for strengthening the participants' hard and soft skills
- To follow up on national projects as they move forward, ensuring their contribution to the achievement of regional goals
- To offer permanent support and tutoring for the development of the participants' projects

When choosing the members of the Technical Committee, the following aspects must be considered as success or risk factors for the development of the Programme:

- Commitment to their institutional role
- Commitment to and personal interest in the general goal of the Programme
- Commitment to and personal interest in group experiences
- Personal qualities and competencies conducive to interacting with and coordinating interdisciplinary, inter-institutional and multi-cultural working groups
- Competencies and capabilities for knowledge transfer (knowledge management) and time management
- Command of most of the languages spoken in the Working Group
- Willingness to comply with the duties and work standards of the Programme (including regular trips outside of their country/place of residency)

During Phase 1 of the "NMI-MUR" Project, the Technical Committee was formed by 6 professionals from PTB (Germany), INMETRO (Brazil) and CENAM (Mexico). During Phase 2, given the interest in the Project, the Technical Committee grew to 11 professionals, with the addition of one professional from INTI (Argentina), one from LATU (Uruguay) and three more from CENAM (Mexico). The names of the members of the Committee for each phase can be seen in Annex A.

1.3.1.1. Coaches

Some members of the Technical Committee act as coaches, thus assuming, as a supporting resource person, the guidance and assistance offered by the Programme to the institutional representatives in the framework of the Working Groups. Each Working Group will have at least one coach that will accompany it from the beginning to the completion of the Programme.

The role of the coach is intended to promote and facilitate the exchange of knowledge and resources in the framework of the Working Group and he/she is the executive arm of the Technical Committee. While the Technical Committee ensures group cohesion and suggests strategies to achieve the goals of the Programme, the coach stimulates the group and its members to make the most of the Programme and the available resources to achieve individual projects.

In addition to the success/risk factors associated with the members of the Technical Committee, the following aspects are to be considered when designating the coach:

- Commitment, interest and experience in the topics and goals of the Working Groups
- Competencies and capabilities conducive to motivating and moderating both individual proposals/participation as well as heterogeneous and simultaneous group dynamics

During Phase 1 of the “NMI-MUR” Project, one coach was assigned to each Working Group. The selection was made considering the experience and interest of the National Metrology Institutes who were part of the Technical Committee in the topics to be worked on by each Working Group. For instance, CENAM’s experience with regard to consultation services by the MESURA® Programme contributed to the selection of one of their professionals as the coach of the “Consultancy” Working Group; the experience of PTB in coordinating Group Calibration in Latin American countries contributed to the appointment of one of their representatives as coach of the “Group Calibration” Working Group and INMETRO’s experience in continuing education led to their representative being chosen as coach of the “Education” Working Group.

The role of the coaches during Phase 1 was enriching, particularly for the lead person of each group. They received the coaching directly and individually, since the coach provided a complete follow-up during the work programmes.

During Phase 2, considering that the number of participants in each Working Group was twice that of Phase 1, it was decided that two coaches should be assigned to each group. In this case, no leader was chosen from within the Working Groups, since the intention was that all the participants would receive attention from the coaches. Thus the roles of the coaches were conceived as a channel to access the information that each participant might require. For instance, in the “Regulators” Working Group the coaches supported the participants who requested information on rules, laws or regulations; in the “Education” Working Group the coaches supplied information on programmes and educational material that their Institute had implemented; and in the case of the “Secondary Laboratories” Working Group, the coaches pointed the participants in the direction of effective results depending on the specific details of their project (for example, forming a Network of Laboratories or performing Proficiency Testing).

1.3.1.2. Coordination and Follow-up

Within the Technical Committee, one or two persons are responsible for Coordination and Follow-up.

At the operational level, they stay in permanent contact with the coaches and participants; request the delivery of documents; order and process the information produced; ensure that each participant and each Working Group adjusts to the schedule set, and act as memory aids for the whole group.

During the organisation of the Workshops, they are responsible for securing the required logistics, and manage the financial resources allocated to this task.

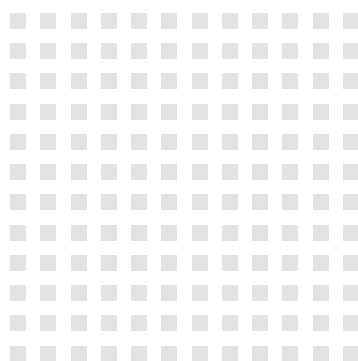
In addition to the success/risk factors associated with the members of the Technical Committee, the following aspects are considered paramount for the tasks of Coordination and Follow-up:

- Commitment, interest and experience in systematising programmes and projects
- Prior competencies (or willingness to acquire them) in the application of information and communication technologies (TICs)
- Persistence

Within the Technical Committee of the “NMI-MUR” Project, two responsible persons were appointed to the tasks of Coordination and Follow-up: one person from PTB’s Technical Cooperation in Latin America and the Caribbean and another person hired by said Institute exclusively for this purpose.

Most of the participants responded with a high level of commitment to the various requests that were presented to them, which facilitated compliance with the work plans and the achievement of the expected impacts.

The coordinator from PTB was in charge of managing the resources allocated by Germany’s Federal Ministry for Economic Cooperation and Development to the Project. In addition to the fundamental financial contributions performed by the Ministry, most of the Institutes that acted as hosts of the “face to face” Workshops, contributed to their organisation.



1.3.2. Working Groups

Each of the Working Groups consists of representatives from the Institutions of various countries. Each representative develops a national project, aligned with the focus topic of his/her Working Group.

For the Programme, grouping the projects under this format makes it possible to organize and plan the support and inputs that will be made available to each Working Group, achieving greater articulation and impact with regard to the institutional efforts and resources. The number of members per Working Group may vary according to the interest raised by the challenges and topics selected, though it is advisable that no Group should exceed 10 people.

At the beginning of Phase 1 of the “NMI-MUR” Project, when the structure of the process was still in the creation phase, the opening Workshop which took place in March of 2009 at CENAM, in Mexico, fulfilled a variety of roles: Successful experiences of 8 different services or instruments were presented. These had been developed at National Metrology Institutes of the SIM region and the presenters were previously selected by PTB. The topics were: Calibration and Group Calibration; Verification; Supply of Proficiency Tests; Training Programmes; Awareness Raising Programmes; Metrological Evaluation or Consultancy Services and Demand Inventory.

After the presentations of the eight services or instruments and other activities planned for the Workshop, a selection process was initiated to select the three most important ones. The selected services were Consultancy, Training and Group Calibration. Each participating Institute decided which service they wanted to work on, thus giving birth to the Working Groups. Initially, some participants were part of more than one Working Group, but as progress was made in the development of the Project they focused on only one to give it the required attention, or rather, when the Institute decided to have representation in both, it assigned

another representative to continue with the other project. We can conclude by recommending that one participant be responsible for each project.

At the end of Phase 1, the Institutes were interested in continuing with more projects. For this reason, at the SIM General Assembly in November of 2011, after presenting the results of the Project, requests were received from the Directors of the Institutes to continue with new projects, and they suggested working on three new areas: Regulation, Secondary Laboratories and the Education Sector. Letters of commitment were requested during the following months, with a petition that the Directors appoint a representative to implement the project. Thus, when the opening Workshop of Phase 2 was held, the new Working Groups were already formed. After the opening Workshop of Phase 2, as a consequence of their Institutes' interest in the projects, two new participants joined the Working Groups. In total, there were two representatives that were unable to continue with the Programme after the opening Workshop.

The Institutes and the representatives who made up the Working Groups are shown in Annex A.

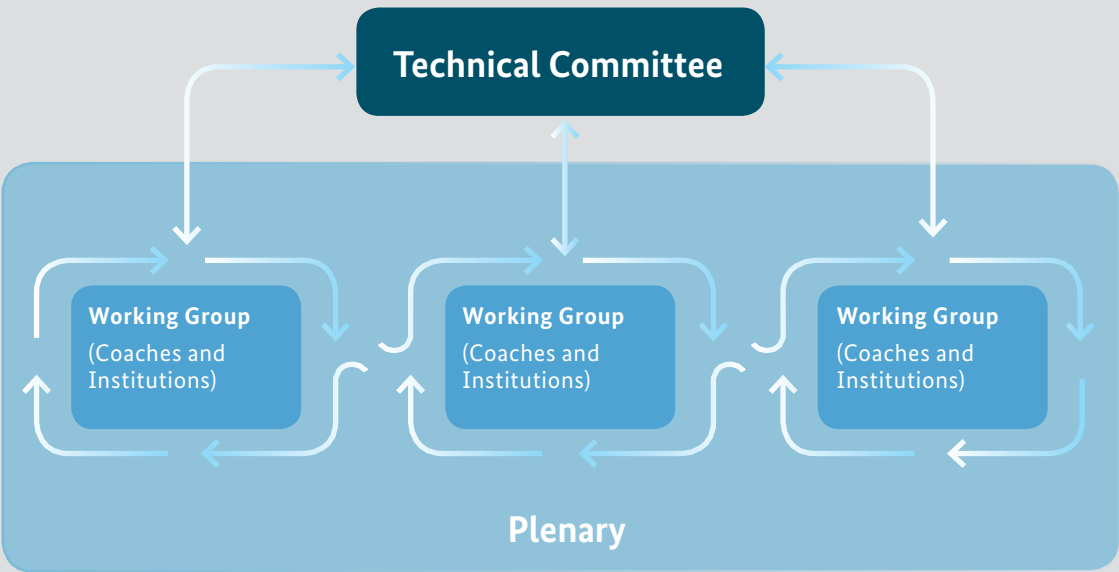
1.3.3. Plenary

The Plenary includes all the participants of the Programme. In the Plenary, there is an exchange of information on issues of general interest. Although it is recommended that the number of participants does not exceed 40 people, the tool can address a larger group, as long as there are sufficient financial and human resources to coordinate, moderate and offer support to all the participants.

1.3.4. Proposed flow of information

Throughout the process, knowledge is transferred to the Working Groups, especially during the Workshops. The flow of information also goes from the Technical Committee towards the Working Groups and vice versa. Knowledge is also transmitted from the coaches to the participants and from one Institution to another. Lastly, there is a transfer of information from the Working Groups/coaches and the Technical Committee to the Plenary and vice versa.

Diagram: Flow of information among the actors within the Programme



1.4. Methodology

1.4.1. Group work

During the course of the Programme, each participant carries out his/her project while interacting with his/her Working Group.

The dynamic of each Working Group is flexible and depends on the level of activity, commitment and cooperation of its members. Within each Working Group, forums for regular exchange are fostered and maintained, during which participants present and share their projects, work plans and progress.

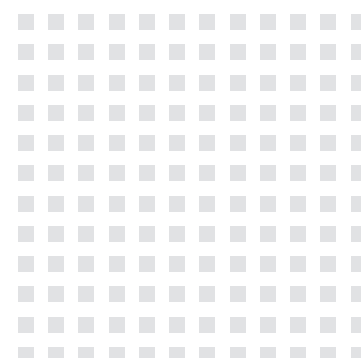
The first thing each participant presents is a preliminary project, describing what he/she will develop at national level over the course of an estimated period of two years. At this point, each Institution is free to submit its proposal at any stage of development, even though they are required to specify general guidelines, goals and suggested strategies to achieve them.

When grouping these projects, a general map can be drawn to show the issues that will be worked on at regional level, allowing quick identification of those aiming at common or supplementary goals. Participants thus have a range of opportunities to cooperate or adopt joint actions.

The integration of the participants and their projects into the Working Groups allows them to share the difficulties faced and the potential solutions to achieve what they proposed. The group itself then acts as a valid interlocutor to review and adjust the strategies of each participant at his or her individual level and of the group at the group level.

Once a productive group atmosphere is reached, everyone can identify what each Institution requires, where the resources are and which of the other Institutions may offer them and provide answers. Those who have gone through similar processes and are willing to share the experience, good practices and risk and success factors appear spontaneously, acting as models for the search and implementation of solutions.

The methodology includes sharing the information that is generated by all the Working Groups, thus broadening interaction. During the process, spaces are provided where each Working Group may present its achievements, obstacles and results to the other groups of the Programme, in regular meetings known as “face to face” Workshops.



At each phase of the “NMI-MUR” Project the work was carried out within three Working Groups. **Extracts of the reports on the experiences of coaches of each Working Group** are shown below. The full reports may be read in Annex C.

Salvador Echeverría from CENAM

Coach of the “Consultancy” Working Group:

“Metrological consultation as a service of the Institutes arises as an opportunity to take advantage of and transfer knowledge and experience in metrology and to solve greater issues in the sectors of industry, trade or services. Part of this knowledge is implicit and difficult to “pack”, hence the best way to make use of it is by communicating and mixing it with practical knowledge of the Users in an open scheme.”

Taynah Lopes de Souza from INMETRO

Coach of the “Education” Working Group:

“The central point of the Working Group on “Education” was to bring the Institutes closer to Users and clients by providing training services, in furtherance of their fundamental role of developing human resources in the field of metrology. It is worth noting that metrology is a science of a very specific nature and that the specialized training required is hard to find in the academic sector of our countries, which is why there is a lack of said professionals in the labour market of the region.”

Clemens Sanetra, hired consultant by PTB

Coach of the “Group Calibration” Working Group:

“In many cases the developing Institutes cannot supply the whole range of metrological services demanded by their Users, especially those calibrations which require an infrastructure of laboratories with equipment and expensive standards. One way around this problem is to work with a more developed Institute to offer the required metrological services in a joint manner.

To offer these calibrations in the cheapest possible way, the Users with similar needs are grouped and a Group Calibration is organised, to be developed by the Institute that does have the required capabilities and services.”

Emilio Löbbe from INTI

Coach of the “Regulators” Working Group:

“The Working Group on “Regulators” was created with the purpose of bringing the Institutes closer to the regulatory bodies as well as bringing the new regulations in line with metrology. Activities were developed in this Group that ranged from raising awareness of regulatory bodies to the creation of regulations or laws of metrology.”

Arquímedes Ruiz from CENAM

Coach of the “Secondary Laboratories” Working Group:

“It is important to mention that new services were developed and consolidated, to be offered to existing and new Users, national and international. By strengthening the capabilities of the Institutes there was a contribution to internal and external recognition, promoting the competitiveness of companies and institutions that are Users of the service, raising their awareness and improving their reliability.”

Carmen Marina Trejo from CENAM

Coach of the “Education” Working Group:

“An extremely important point addressed by most of the participants in this working group was the establishment of bonds and relations with the government authorities in the field of education of their respective countries, as well as with authorities of education institutions at the basic, middle and higher (university) levels, whose common goal is that metrology be included in the right amount in the educational process of the student, so that upon graduation he/she will be an excellent professional in the field, with an extra point in his/her education: formal knowledge of metrology.”

1.4.2. “Face to face” Workshops

“Face to face” Workshops are held at the beginning of the Programme and approximately every six months. The two-year Programme allows for five Workshops of this kind: the opening or launch Workshop; three Workshops for follow-up and presentation of progress, and a final Workshop, for closing and evaluation.

These meetings are ideal opportunities to provide the inputs required by the group, address the common needs of the participants and promote other types of exchange and group work.

Group work is strengthened during Workshops. In each Workshop there are sessions where each Working Group gathers separately and in Plenary sessions where all the participants work together.

The Plenary sessions are fundamental for sharing the results achieved by each Working Group and to develop soft skills and put them into practice.

The initial Workshop focuses on “launching” the Programme, organising the presentation of the members of the Technical Committee, of the participants and of the project that each will carry out at his/her Institution. During this Workshop, spaces for exchange and analysis are encouraged in each Working Group – on specific aspects that need to be solved so as to move their projects forward – and other spaces where work is conducted jointly to identify obstacles or common requirements.

Throughout the initial Workshop, the first inputs to bring support to the participants are presented. Additionally, the participants set the general guidelines of their Work Plan for the next semester and become familiar with what the other participating Institutions and countries are working on. The review and planning are approached individually, with regional inputs.

During follow-up Workshops each participant and Working Group present and review the progress they have made. There is an exchange of experiences, obstacles, good practices; inputs contributing to project management are presented; and individual, group and joint strategies are outlined to make the adjustments needed to comply with the schedule.

The closing and evaluation Workshop encourages a review of jointly achieved results and impacts, and makes it possible to identify new problems and challenges to be addressed in the future. This review is made during the Plenary, with a prior internal review by each Working Group.

“Face to face” Workshops require the participants to travel to the Institute appointed as host of the event, hence it is advisable that Workshop hosts rotate and that they take place in the countries of the participating Institutions.

Workshops last from three to four days. They are full-time events, where the participants focus on achieving the established goals.

“Face to face” Workshops are to be considered as the main drivers of the Programme. Their success and effectiveness require time and commitment.



In the “NMI-MUR” Project, the motivation of the participants increased with each meeting when sharing their experiences and learning from others. Additionally, the inputs provided for different topics, such as strategic planning, SWOT analysis, project monitoring (results chain) and development of soft skills (communication, preparation of interviews, leadership, work team management), were recognised by the participants as very useful.

The members of the Technical Committee cooperate actively in preparing and carrying out the “face to face” Workshops that bring together all the participants. During the workshops, the Technical Committee must ensure compliance with the agenda and work programme. For this, it must hold meetings prior to the event (for its organisation), define and prepare the inputs to be presented to the participants, and hold work sessions during each day of the Workshop as well as a final feedback meeting among the members of the Committee to evaluate the results and plan the following steps. The logistics require addressing various topics simultaneously in addition to the Workshop’s actual activities, which in practice demand availability and a high level of commitment in order to hold very long working days.

The Technical Committee at this stage moderates the group dynamics and provides inputs to strengthen the participants’ capabilities. The critical importance of these spaces should not be overlooked, as they help to generate fluid communication, and also contribute to establish feelings of belonging, commitment, cooperation and respect for differences, which are indispensable for enabling productive and innovative processes among the participants and the Institutions involved. The members of the Technical Committee are key players at this stage.

Further, the “face to face” Workshops are the ideal moment for the host Institution to take advantage of the presence of the international group to organise a large scale awareness raising event, centered around the aspects of its project that it would like to highlight. The foreign participants may take part in this event more or less actively, providing depth and contributing – with their presence, participation or by presenting actual cases – towards the achievement of the proposed goal. These opportunities enhance the host Institution’s image in the same way as the Programme aids the organisation of the event by supplying the required know-how. Additionally, these awareness raising events allow the participants of the Programme to become more infused with the realities of the other Institutions, to broaden regional analysis and often to gain access to third parties which would otherwise have been difficult to attain. The possibility of the host institution holding an awareness raising event must always be considered when organizing the agenda of these Workshops, devoting half a day to it.



Interaction and cooperation among institutions arise naturally from participating in the Workshop, which also enables contact with other players not directly related with the process. An example of inter-institutional cooperation has already been made available to the reader when presenting the “Regional field of action of the Programme”.

The immersion activities required by the “face to face” Workshops, with all the participants lodged in the same city, further promote moments of “productive informality”. Group meals, strolls or tours to sites of interest recommended or guided by the host during the brief free times of the Programme, the waiting time while commuting or the long shared travels to attend the Workshops, are all moments to strengthen professional bonds, to discover other available resources, to exchange information and to inspire projects.



1.4.3. Online meetings

Online meetings are a very useful resource to follow-up the projects and maintain the motivation and the level of productivity of the participants. They complement but do not replace the “face to face” Workshops. They allow meetings of the Working Group without the members travelling to other countries, contributing to the creation and consolidation of the Group and the institutional network with a lower cost in logistics.

Online meetings are organized regularly for each Working Group and their coaches and they are convened and moderated by those responsible for Coordination and Follow-up. It is convenient to hold them on some platform that allows on-screen reviewing of documents and an ordered dialogue among participants.

This resource is also useful for Technical Committee meetings, in particular in the preparation of “face to face” Workshops.

The coaches and the greatest possible number of participants took part during online sessions held in the framework of the “NMI-MUR” Project. The platform Saba Centra (provided by PTB) was used, which allowed the reviewing of documents and the interaction of attendants. The tool was first used by the middle of Phase 1 of the Project, and it was soon well-received by participants.

It also occurred that a participant of the Working Group on “Secondary Laboratories” took advantage of the tool to hold an online training programme with laboratories in the network created in his project.



1.4.4. Coaching

The Programme offers participants two types of coaching:

- Individual coaching: orienting and guiding individual participants of the Working Group that require it, to contribute to solving the challenges of their specific projects;
- Group coaching: assistance and support to the Working Group as a whole, promoting actions for mutual benefit among members, providing a space to exchange and share information that can contribute to the group work

Depending on what is defined by the strategy of the Programme, either type may be applied. The results of the coaching are shared with the participants during the Plenary sessions.

In the case of the “Consultancy” Working Group, the coach, the participant from LATU and the Chamber of Industries of Uruguay planned and carried out 3 pilot consultancy experiences with companies from the food and pharmaceutical sectors. The results had a major impact on the serviced companies and the Chamber of Industries of Uruguay.

In the case of the Working Group on “Education”, the coach, the participant from SKNBS and all the Working Groups shared information by email and during online meetings to plan awareness raising workshops that were implemented for the first time in the country by the Institute of St. Kitts and Nevis.

The coaching was received for the first workshop and the Institute later arranged a second workshop, where they applied the knowledge acquired during the first one.

In the case of the Working Group on “Group Calibration”, the Institute from Guyana received two types of coaching: one on strategy, given by the coach of the Working Group, and another on technical aspect given by the Institute from Peru, which provided support throughout the process of preparing procedures and training, and during the Group Calibration itself.

1.4.5. Inputs

This methodology includes providing participants with inputs to help them develop and strengthen their skills so as to better manage their national projects.

Inputs the participants receive during the Programme may be classified into two types:

- Inputs for improving technical competencies (hard skills)
- Inputs for improving cross-cutting competencies (soft skills)

The first type of inputs is oriented towards developing and strengthening the participants' knowledge and skills related to the basic technical aspects of their projects. In general they are provided by members of the Technical Committee or by outside experts hired specifically to cater to specific needs or requests from a Working Group or arising from the Plenary, as well as from the participants themselves while exchanging experiences and materials.

The second type is oriented towards aspects that are generally not included in the most common professional activities and that are not always considered, but that are extremely useful in implementing projects. They are inputs that help the participants to broaden their knowledge and improve their capabilities to work in groups, communicate better, hold productive meetings and interviews, lead and coordinate work teams, plan and negotiate, among other things.

These inputs, oriented towards developing cross-cutting competencies, are also important to better understand and implement technical aspects acquired during the Programme, and to contribute to the participants' self-assessment processes regarding their strengths and limitations as project leaders.

It is important that during the course of each Working Group and of the Plenary sessions, the participants identify which competencies they consider fundamental and need to improve. The Technical Committee integrates its view with this analysis and decides what inputs it will provide and what order they will be addressed throughout the programme.

Taking advantage of these inputs and their use as an effective resource for their project will depend on each participant's personal characteristics and the institutional dynamic within which he/she operates.



The development of soft skills was particularly important in the “NMI-MUR” Project, since establishing or strengthening relations with the Users of metrology requires effective implementation of these capabilities: In the closing Workshop of Phase 1, the participants analysed and identified the soft skills they considered fundamental to better implement their projects. Some of these were chosen from the resulting list to be addressed in the Workshops of Phase 2, and were dealt with in an exhibition of theoretical aspects and practical exercises for individuals and groups, designed specially for the participants’ profile and needs. When evaluating the “NMI-MUR” Project, the participants recognised that one of the most valued lessons was precisely the development of their soft skills. In this aspect, some comments from the participants are:

- “The treatment and relations with the various stakeholders involved in the project have actually been improved”
- “The communication of results at the organisational level has improved”
- “During interviews with authorities, the tools were very important, since in all cases the impact made was as expected”
- “The development of knowledge in the working groups has been considerable”

Below is a brief description of some of the competencies addressed:

Communication skills - Interviews:

In the first follow-up Workshop of Phase 2 (Panama 2013), training was done on competencies related to presentations and interviews. The information was very useful to participants, who have to hold many interviews with parties interested in their projects. Some of the main aspects addressed were:

- Planning and preparing an interview
- Types of interviews
- Goal, purposes and adequate strategy
- The art of raising questions
- The framework focus of interest (format, length, flexibility)
- Preparing and selecting the interviewer
- The language and use of specific terminology

- Atmosphere, rapport
- The mechanism of perception
- Recording interviews
- Analysis and reading of results

Leadership and planning skills, strategic alliances:

During the second follow-up Workshop of Phase 2 (Uruguay 2013) the participants strengthened their competencies in communication and leadership. The main aspects addressed were:

- Leadership and influence
- Skills and increasing the circle of influence
- Dialogue vs. argument
- Lever for starting and pulling
- Five styles of influence
- Assertiveness
- The resounding leader

During the same Workshop, the topic of strategic planning and strategic alliances was addressed, where the following items were analysed:

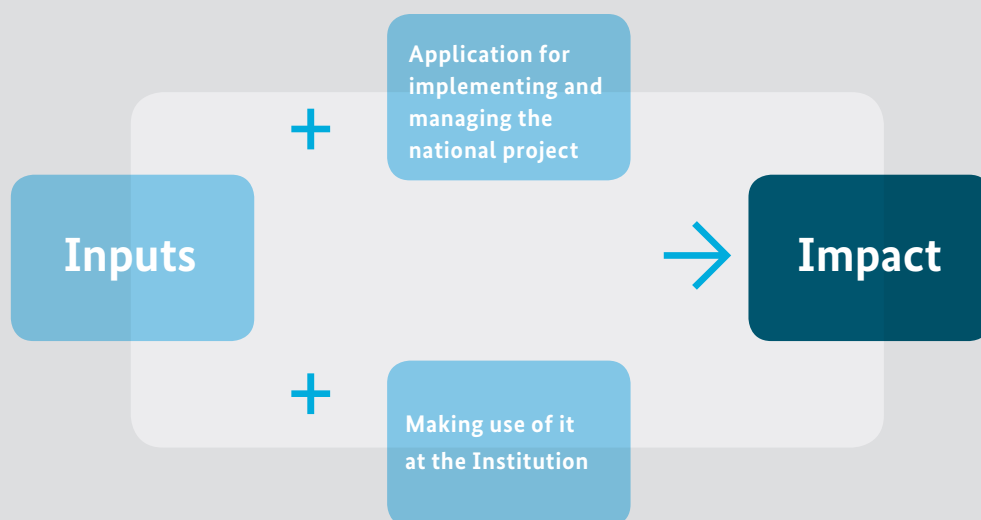
- Conceptual framework
- Stages in formulating a plan
- The role of the strategist
- External and internal critical variables
- Strategic thinking - Six Thinking Hats (based on the methodology by Edward Bono)
- Skills for strategic alliances

During later workshops, the topic of strategic planning was addressed with a systemic approach including the importance of indicators and the visibility of project results.

Team work:

In the third follow-up Workshop (Brazil 2013), the participants worked on the competencies related to being a part of and coordinating teams. From brief theoretical expositions, the main variables for making, moderating, and evaluating the working groups were analysed, and practical exercises were done from which to evaluate the progress of their own groups regarding factors such as: communication, sense of belonging, relevancy, results and cooperation.

Diagram: Relation between the inputs of the Programme and its impact



1.5. Systematisation

Systematisation of the Programme requires compiling, ordering and processing the information that is generated by the Working Groups and the Programme in general. This not only ensures that everything that occurs during the two years is documented; it also guarantees access to a key source of knowledge to improve the tool in the future.

Systematisation is carried out mainly by those responsible for Coordination and Follow-up, but the participants also have an active and indispensable role in this aspect of the process, preparing reports, posters and presentations that systematise and synthesise their experiences and which must be delivered on time and in an appropriate manner as required.

During the development of the “NMI-MUR” Project, information was generated which had to be compiled and processed consistently. Those responsible for Coordination and Follow-up provided guidelines for documenting and safekeeping the documents generated.

1.6. Online sites and platforms

Having an online platform is important to provide support for all the information that is compiled and processed by the responsible persons for Coordination and Follow-up. All the documents and products generated during the Programme are published on this platform and the participants have access to it.

The work plans, the reports from each participant and the activity reports of what was worked on at each of the Workshops, among others, become permanently available reference resources.

The Project used an online platform belonging to PTB's Technical Cooperation in Latin America and the Caribbean, known as "extranet"⁸. In the "extranet", information from the Project and various documents from the Groups may be found, such as semi-annual work plans, activity reports and documents from "face to face" Workshops. To access the website, each participant had a user name and a password.

The "extranet" also provides access to the Guide, a compilation of tools documented by the participants themselves, where they share their experiences with the metrological community.

In the Working Group on "Education" there was also an online platform to share material and information useful to the education sector. A public platform was used, suggested by the participants themselves.



⁸ <https://www.ptb.de/lac/index.php?id=home>

Chapter 2

Considerations for the Application of the Tool

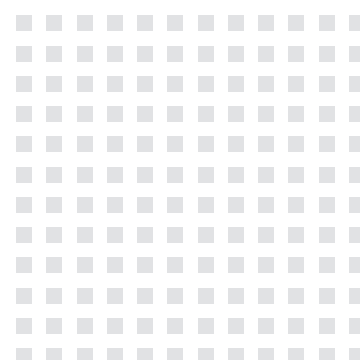
This tool has been developed and applied successfully in the metrology community to strengthen the relationship of the National Metrology Institutes and their Users as well as to develop new and/or better services. This instrument may also be applied to other fields of interest of the Institutes, such as: strategic planning, development of human resources, development of institutional networks, among others. That is to say, topics or challenges that are of interest to several National Metrology Institutes and that require one to two years of development and implementation.

But this instrument should not be limited to the metrology community; rather, it could also be applied in other contexts and fields, so long as an institution wishes to improve its competencies taking advantage of the knowledge and experiences gained by other institutions in the region. If these regional networks have members with different levels of knowledge and varying experiences, this instrument may fittingly take advantage of this variety in favour of the development of each national project.

The technical competence and experience of the institutions in Latin America and the Caribbean continues to develop. This is why the concepts and the approach of Technical Cooperation must adapt to these realities and take advantage of existing experiences. Strengthening the national competencies by taking advantage of regional knowledge and experience means a change of paradigm for Technical Cooperation.

The knowledge and technical competence of the participating Institutions ensure that the bases for this learning process are well designed. But applying this instrument means that it is not only the participating Institutions' own knowledge and experience that is being transmitted in this process. They must accept that the knowledge created and appropriated through the experiences and exchange among participants is essential knowledge for each one of the national projects they develop. What's more, the participating Institutions must be open to becoming themselves part of the learning process.

The Institutions that take part must be aware that it is no longer an outside expert transmitting knowledge to an Institution. It is the participant chosen and appointed by the Director of the Institution who is creating knowledge through exchange at a regional level based on his/her own experiences and that of the other participants and it is through them that the Institutions capture this knowledge. For the Institution, this means that as the representative is the most adequate and as the process for capturing knowledge is better organised, it will be better able to take advantage of the instrument.



There are certain aspects that have a decided influence on the Programme as a whole. These must be permanently considered and they are:

- 1) Including participants with a varied experience so as to enrich the processes
- 2) Creating forums for exchanging experiences
- 3) Creating joint learning processes
- 4) Achieving a balance between standardisation and flexibility in the processes (standardisation helps follow-up and systematisation; flexibility helps to adapt the Programme to the individual processes and needs of participants)
- 5) Ensuring that all the stages of the process have sufficient space and resources
- 6) Efficiently organising the exchange of information and knowledge among the Technical Committee, the Working Groups and the Plenary

7) Adequate participants and coaches:

a. The characteristics required of participants:

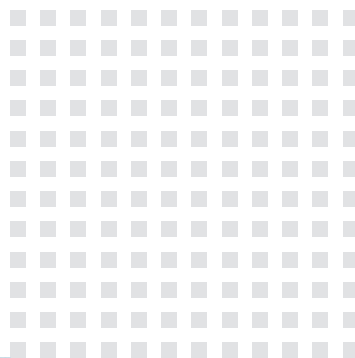
- i. Commitment
- ii. Proactivity
- iii. Communication skills
- iv. Willingness to collaborate
- v. Leadership

b. With regard to the characteristics required of the coaches:

- i. Actual experience in the field of their Working Group
- ii. Communication
- iii. Group leadership
- iv. Motivation of participants
- v. Enabling exchange among participants

8) Commitment of the Institutions

We encourage you to use this tool. We are willing to walk with you to the extent of our possibilities and we are likewise interested in you sharing your experience with us. Contact us at: q-53@ptb.de



Annex A

Project “NMI-Metrology User Relations” - List of Participants

Working Groups Phase 1

Working Group	Institute	Name
Consultancy	BNSI Barbados National Standards Institute	Hadyn Rhynd
	GDBS Grenada Bureau of Standards	Robert Medford
	INDECOPI National Institute for the Defence of Competition and the Protection of Intellectual Property	Henry Postigo Linares
	LATU Technological Laboratory of Uruguay	Claudia Santo
	MIC-Haití Ministère du Commerce et de l'Industrie	Junior Doran
Consultancy	CENAMEP Panama National Metrology Centre, AIP	Saúl García T.
	LACOMET Costa Rican Metrology Laboratory	Jessica Chavarría Sánchez
	LATU Technological Laboratory of Uruguay	Silvana Demicheli Bonilla
	SIC-Superintendence of Industry and Commerce currently the National Metrology Institute of Colombia	Antonio García Tarquino
	SKNBS St. Kitts and Nevis Bureau of Standards	Hiram Williams
Group Calibration	GNBS Guyana National Bureau of Standards	Jermaine Softley
	DBOS Dominica Bureau of Standards	Simon Nyaaba

Working Groups Phase 2

Working Group	Institute	Name
Regulators	BHN Bureau Haitienne de Normalisation	Monorde Civil
	CENAMEP Panama National Metrology Centre, AIP	Javier A. Arias Real
	DCCA Department of Commerce and Consumer Affairs of Barbados	Ronald Brewster
	GNBS Guyana National Bureau of Standards	Keemo Fyffe
	IBMETRO Bolivian Metrology Institute	María del Carmen Vega Amonzabel Luddy Pilar Huarcacho Huarachi
	INDECOPI National Institute for the Defence of Competition and the Protection of Intellectual Property	Henry Postigo Linares
	INN National Standards Institute	Mariela Trujillo
	LATU Technological Laboratory of Uruguay	Marta Airaudo
	SKNBS St. Kitts and Nevis Bureau of Standards	I-Ronn Audain
Secondary Laboratories	CEHM Honduran Metrology Centre	Wendy Lilieth Chinchilla
	INDOCAL Dominican Institute for Quality	Patricia Pereyra
	INEN Ecuadorian National Standards Institute	María del Carmen Altamirano Mónica Gualotuña Juana Rodríguez
	INN National Standards Institute	Oscar Garrido González
	INTN National Institute of Technology, Standards and Metrology	Diana Carolina Cantero Díaz
	LACOMET Costa Rican Metrology Laboratory	Jessica Chavarría Sánchez
	LATU Technological Laboratory of Uruguay	Simone Fajardo Ferraz

Working Groups Phase 2

Working Group	Institute	Name
Education	BNSI Barbados National Standards Institution	Hadyn Rhynd
	BSJ ⁹ Bureau of Standards Jamaica	Junior Gordon Richard Lawrance
	CENAMEP Panama National Metrology Centre, AIP	Saúl Garcia T.
	GNBS Guyana National Bureau of Standards	Jermaine Softley
	INDECOPI National Institute for the Defence of Competition and the Protection of Intellectual Property	Edwin Guillen Mestas
	INTN National Institute of Technology, Standards and Metrology	Derlis Medina R.Ricardo Ramirez
	LANAMET National Metrology Laboratory	Juan Gabriel Pérez Olivas
	MCI Ministère du Commerce et de l'Industrie	Junior Doran
	LATU Technological Laboratory of Uruguay	Silvana Demicheli
	TTBS ¹⁰ Trinidad and Tobago Bureau of Standards	Theodore Reddock

⁹ BSJ participated exclusively in the very first activities of the Working Group (participation in the opening workshop and handing in of the first Work Plan).

¹⁰ TTBS participated exclusively in the very first activities of the Working Group (participation in the opening workshop and handing in of the first Work Plan)

Technical Committee

Name	Institute	Participated in Phase 1 and/or 2
Alexis Valqui	PTB , Germany	1 and 2
Anja Kopyra	PTB , Germany	2
Arquímedes Ruiz Orozco	CENAM , Mexico	2
Clemens Sanetra	PTB (consultant), Germany	1 and 2
Carmen Marina Trejo Morales	CENAM , Mexico	2
Emilio E. Löbbe	INTI , Argentina	2
Gabriel Lugo Luevano	CENAM , Mexico	2
Mahdha Flores Campos	PTB (consultant), Mexico	1 and 2
Melanie Grad	PTB , Germany	1 and 2
Salvador Echeverría Villagómez	CENAM , Mexico	1 and 2
Silvana Demicheli Bonilla	LATU , Uruguay	2
Taynah Lopes de Souza	INMETRO , Brazil	1 and 2



Annex B

Project “NMI-Metrology User Relations” - Locations and Dates of Workshops

The dates and locations of the Workshops are shown in the table below:

Workshops during Phase 1	Workshops during Phase 2
Starting: March 2009, Mexico	Starting: January 2012, Mexico
Follow-up: October 2009, Peru	Follow-up: August 2012, Panama
Follow-up: June 2010, Dominican Republic	Follow-up: February 2013, Uruguay
Follow-up: November 2010, St. Lucia (cancelled due to hurricane)	Follow-up: August 2013, Brazil
Closing: May 2011, Brazil	Closing: March 2014, Barbados



Annex C

Project “NMI-Metrology User Relations” - Experiences of the Working Groups

This annex provides the reader with a range of experiences. The diversity of the descriptions of these experiences is a reflection of pluralism and is one of the factors that make this Programme an enriching tool in every aspect.

1. “Consultancy” Working Group

Presented by: Salvador Echeverría from CENAM (Mexico) as Group coach

Metrology consultancy is one of the most complex services that an Institute can implement. When the metrology User knows what he/she wants, it is because it already exists in some form as a concrete and explicit service. It may be a calibration, measurement or verification; it may be a course, workshop or a training stay; it may be a technical proficiency test, an evaluation or a group calibration. In some cases, the required service is clearly defined and in others, partially defined. However, in consultancy, the service is undefined, because the User does not know what he/she needs nor does the Institute know what it can offer.

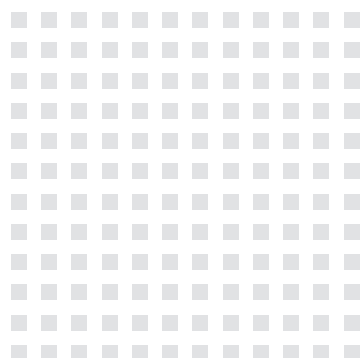
Metrological consultancy as a service from the Institutes arises as an opportunity to take advantage of and transfer knowledge and experience in metrology and to solve

greater issues in the sectors of industry, trade or services. Part of this knowledge is implied and difficult to “pack”, hence the best way to make use of it is by communicating and mixing it with the Users’ practical knowledge in an open scheme. The freest and most accessible way to take advantage of this knowledge is consultancy.

The “Consultancy” Working Group of the Project was taken as an input of the MESURA® Programme of CENAM, as a way to systematise consultancy as a service so that it may be accessed by a greater number of Users and with more predictable processes and results.

A consultancy service results from the User’s curiosity and from that of the Institute. No more and no less is required. The initial phase is necessarily the diagnosis and it is fundamental. It is followed by a specialised metrological analysis, prescription or scheduling of activities and their implementation. All these are standard metrology services and each Institute must carry them out within their own capabilities.

The critical success factor for a consultancy service is the diagnosis phase. And for the diagnosis phase, the critical success factors are the consultant’s capability, experience and judgement on one hand and, on the other, the recipient’s openness and commitment. This is why it is necessary for there to be, in addition to metrologists, technologists of the highest level and breadth of opinion to start a metrology consultancy service successfully. It is equally important for the consultants to have a high level of self-determination to structure solutions that fit the User’s needs and the capability to favour its implementation.



The “Consultancy” Working Group is shown in Annex A. The experience lived by the representative from LATU as leading participant of this Working Group is presented below:

Experience of Uruguay within the “Consultancy” Working Group

Presented by: Claudia Santo from LATU (Uruguay)

The Technological Laboratory of Uruguay (LATU) through the Scientific Metrology Directorate together with the Chamber of Industry of Uruguay (CIU) has developed a “Metrological Consultancies” service similar to the one implemented in Mexico (MESURA® Programme) but adapted to the national reality.

The process that led to defining and implementing the service was very productive since it:

- Strengthened relations with other Institutes, making it possible to take advantage of ideas, knowledge and experiences.
- Strengthened relations between LATU and the CIU, and also with the industry, the addressee of the services.
- It was useful to raise awareness inside the Industry and the CIU about the importance of metrology in industrial processes and not only as a provider of calibrations.

The activities defined for metrology consultancy may be grouped into three phases:

PHASE 1: Diagnosis

The goal of this phase is to identify areas of opportunity to improve the use and management of metrology. As a result of this first phase, the consulting team delivers an executive report to the client with the following components: Relevant aspects, Process Map, Metrological Needs, Areas of Opportunity, Definition of Priorities.

PHASE 2: Action Plan

The goal of this phase is to define and implement the Action Plan with an in-depth study by the metrology consultants. As a result of this phase, the client is provided with an Action Plan with its respective technical grounds.

PHASE 3: Follow-up during implementation

With a predetermined frequency based on its content, the consulting team makes a regular follow-up of the actions defined in the plan, providing feedback to the client company’s management about complying with it. As a result of this phase, the client receives follow-up reports on the implementation.

This service was applied through pilot tests where the first stage of the service was done at no charge, including diagnosis and recommendations. An impact study of this service was made, based on information surveyed in a personal, qualitative interview with a technical representative (or team) for each client. The assessment of the consultancy by the three client companies interviewed was very positive, and one of them even estimated an economic benefit derived from implementing the recommended actions, which amounted to total savings of US\$ 65,000 a year.

2. “Training” Working Group

Presented by: Taynah Lopes de Souza from INMETRO (Brazil) as Group coach

The central point of the “Training” Working Group was to bring the Institutes closer to the Users and clients by providing training services, in furtherance of their fundamental role of developing human resources in the field of metrology. The preparation and training of people educated in metrology is necessary not only to be hired by laboratories and by industry in general, but also by the Institute itself. It is worth noting that metrology is a science of a very specific nature and the required specialised training is hard to find in the academic sector in our countries, that is why there are few of these professionals in the labour market in the region. This is precisely why the education/training services offered by the Institutes are so important.

During the Project, the “Training” Working Group included 5 Institutes (see Annex A) and enjoyed the company of a coach who was a member of INMETRO (Brazil).

Surveys were conducted based on the interactions among participants about the need for national training to contain more elements for analysis and on the basis of this data, to adjust the offer of education/training of each Institute. The Institutes as a whole were able to develop twenty (20) new services and activities for training, and,



at the same time, to improve the existing ones. Fifteen (15) of the training activities have been evaluated and three (3) teams of instructors were able to improve their competencies. Five (5) new data bases were prepared or improved and over 900 people were trained in metrology during this period.

The main challenges identified by the “Training” Working Group were:

- 1) to develop or update their services, programmes and activities for training customised to the needs of the national industry,
- 2) to ensure that the team of the Institute is prepared to address those needs – in relation to time, interest and specific technical capabilities – to act as trainers of human resources in the field of metrology.
- 3) to secure the budget required in order to plan and develop training and educational activities, as well as to improve regional cooperation to increase the supply of courses on metrology.

The results obtained by the group generated impacts that may be grouped into 3 levels:

- (1) regional (SIM)
- (2) the Institute
- (3) the Users.

At the regional level (SIM), a strengthening of the relations in the metrology community and an expansion of the institutional networking may be observed. At the national level, the following aspects may be highlighted: the strengthening of the Institute's image before the national authorities related to metrology; a greater number and variety of activities and services aimed at raising awareness and involvement of people with metrology; the improvement of capabilities of the team of instructors from the Institute pursuant to the needs and planning of the Institute and lastly, an increase in the Institute's financial resources from supplying training services.

With regard to the impact at the level of Users and clients, it may be said that the technical competence of the persons trained and their specific companies improved; the participating secondary laboratories improved their knowledge to reach and maintain recognition and accreditation. Users can now claim to be receiving education/training services more suited to their needs and requirements.

Cooperation among Institutes and their Users has been strengthened and reinforced by means of the training activities, establishing new contacts and consolidating relations with current Users.

The good practices recommended by the participants of the "Training" Working Group that may be applied by any Institute interested in improving its services and activities for training and education of human resources were the following:

- Design, adapt and update the training products and services according to demand
- Prepare a team of teachers to develop training activities pursuant to the needs identified among Users (topic, level of depth, actual experience requirements, etc.)
- Evaluate the opinion and satisfaction of the participants after each activity
- Share strengths, weaknesses and opportunities with colleagues and management from the Institute
- Analyse the ideas, actions and results jointly with their colleagues
- Help to develop and take advantage of the networking and community work

The following box shows the experience of the leading participant of this group, who points out how the activities developed in the Working Group were actually implemented.



Experience of St. Kitts and Nevis within the “Training” Working Group

Presented by: Hiram Williams from SKNBS (St. Kitts and Nevis)

Based on the needs of SKNBS we focused on developing training programmes that provided a way for personnel to acquire experience as facilitators and introducers, in addition to providing training for metrology Users.

Planning meetings were organized; the budget and training materials were prepared; the outside instructors were identified and selected in order to give support to SKNBS staff, and two Workshops were developed for training and to raise awareness during the course of the Project.

The main outcome of the two Workshops was an increase in awareness and training in basic metrology and estimation of measurement uncertainty. Twenty-six representative participants attended the Workshops from different sectors of industry. The participants and companies they represented benefited by raising their awareness of the importance of measurements and of the role of metrology, which plays a major part in facilitating trade.

The greatest success was the improvement in the relation between SKNBS and the interested parties; as well as the increase in the capability of SKNBS to provide training services to metrology Users. As SKNBS continues to build additional capabilities to address industries in the field of metrology, manufacturers are expected to generate more trust among consumers and to improve their capability for foreign trade.



3. “Group Calibration” Working Group

Presented by: Clemens Sanetra (hired consultant by PTB) as Group coach

To strengthen the relationship between Institutes and their Users, it is indispensable to render reliable services. The developing Institutes in many cases cannot supply the whole range of metrological services demanded by their Users, especially for those calibrations requiring an infrastructure of laboratories with expensive equipment and standards.

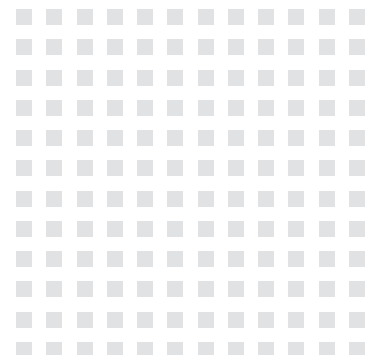
One way around this problem is to work with a more developed Institute to offer the required metrological services jointly. To make these calibrations as inexpensive as possible, Users with similar needs are grouped and a Group Calibration is organised, to be developed by the Institute that does indeed have the required capabilities and services.

The logic or sequence of the joint work is as follows:

- The local Institute does not have its own technical capabilities to calibrate or disseminate traceability to Users in its country.
- The local Institute identifies a demand for calibration of specific instruments.
- The local Institute identifies another Institute with experience in the region (if possible, with CMCs¹¹ or proven traceability in the required field) and negotiates terms to obtain support, coaching or even the calibration itself for the Users.
- The local Institute negotiates the rates, dates and the calibration sequence with their own Users, grouping them in Group Calibrations.
- The Institute with experience travels with its metrologists and standards to calibrate the instruments of the group of Users, depending on the logistics organised by the (local) equivalent Institute and issues the recognised calibration certificates.

This concept – joint supply of services – may be further combined with training, events for raising awareness, etc.

The Guyana Institute (GNBS) performed an analysis of the demand and identified the demand for multimeters calibration to organise a Group Calibration. In the region, the Institute of Peru (INDECOPI) was willing to collaborate. GNBS prepared the logistics with the Users in Guyana. During the preparation of the Group Calibration “Multimeters in Guyana” some adaptations were made. Instead of moving the standard from Peru, a newly-purchased calibrator by GNBS was sent to INDECOPI to be calibrated and this was combined with the training of a GNBS metrologist at the INDECOPI laboratory. When the expert from INDECOPI travelled to Guyana to make the Group Calibration, the previously trained metrologist from GNBS was able to assist him and then continued to offer this service at his Institute. In order to build trust in the newly-offered calibration, a campaign for raising awareness was conducted for the Users of the group.



11 CMC: English acronym for Calibration and Measurement Capabilities, see: <http://www.bipm.org/>

The case in Dominica has been different. Here the concept was adapted. A client from the oil industry needed a calibration of its bulk meter and a rapid hydrocarbon analysis. Since there were no calibration instruments or traceable standards in the country, the client invested in purchasing the equipment and the Institute of Dominica (Dominic Bureau of Standards) offered the facilities and set up the procedures and competencies. Thus competent, impartial and transparent services were developed. The following were the results obtained in both cases:

- the Institutes achieved more knowledge and recognition in their countries
- more information, awareness and dissemination about metrology, calibration and traceability were generated for the Users
- new services were offered
- new sources of income were secured for the Institutes

Further, the Institutes with roles of regulation were able to show their client-orientation and change their reputation and image from a controlling entity to a provider of services, learning to work creatively to solve needs of the country by means of regional collaboration.

The participants who took part in the “Group Calibration” Working Group are listed in Annex A. The experience of the leading participant of the group who received the coaching in the Working Group is presented below.

Experience of Guyana within the “Group Calibration” Working Group

Presented by: Jermaine Softley from GNBS (Guyana)

The Guyana National Bureau of Standards (GNBS) benefited greatly from the participation in the Working Group “Group Calibration” within the Project “NMI-Metrology User Relations”. The Group Calibration that was carried out within this framework was one of five days and included the calibration of five multi-meters belonging to two different companies. This was made possible with the technical and logistical assistance provided by INDECOP, PTB and other NMIs in the region. This collaboration has now developed into a special working relationship among NMIs within the region in the field of metrology.

The Group Calibration has certainly impacted GNBS in many ways. First of all, GNBS now has the capacity to offer the calibration of multimeters in Guyana.

Furthermore, GNBS is now being recognized by the counterparts to conduct such demand-oriented activities, the staff is now competent thanks to the training received prior to the Group Calibration exercise and GNBS can now generate more revenue from the new service offered. In addition, there is now greater awareness among counterparts with regards to calibration and its positive impacts on the competitiveness of their companies.

I have personally benefited a lot over the two years organizing and implementing the Group Calibration project. The information gathered during the survey was vital to identifying our counterparts’ needs. The coaching received from the experts in the area of Group Calibration helped us to overcome our challenges whenever they occurred, and the cooperation and knowledge shared by other NMIs also assisted in making this project a reality.

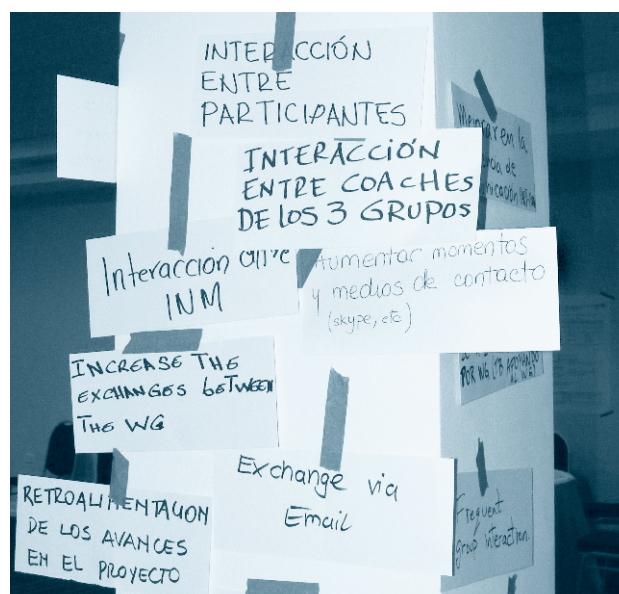
4. “Regulators” Working Group

**Presented by: Emilio Lóbbe from INTI (Argentina)
as Group coach**

The “Regulators” Working Group was created with the purpose of bringing the Institutes closer to the regulatory bodies as well as bringing the new regulations in line with metrology. Activities were developed in this group that ranged from raising awareness of regulators to the creation of regulations or laws of metrology.

The members of the Group may be seen in Annex A. Some of the results achieved are the following:

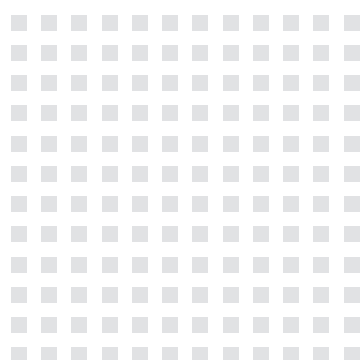
- Raising awareness and training for the regulatory bodies (Chile, Guyana, Panama, and St. Kitts and Nevis)
- Placement of national products in other markets by means of mutual recognition (Haiti and Dominican Republic)
- Establishment of the State authority to demand compliance with the regulations. The presence of the State was strengthened achieving compliance with the legislation (Panama and Haiti)
- Implementation of the use of the International System in the retailer market; more informed and protected consumers (Panama)
- Drafting of a Metrology Act (St. Kitts and Nevis)
- Raising awareness/disseminating information regarding the creation of the Bureau Haitien de Normalisation (BHN) and the Metrology Laboratory of Haiti (Haiti)
- Drafts of new technical rules and regulations for measurement equipment, including model approval (Bolivia, Peru and Uruguay).



On the other hand, it may be said that the Working Group contributed to the following aspects:

- Development and/or improvement of regulations in new services and/or scopes: petrol stations (Haiti); clinical thermometers and sphygmomanometer (Peru), commercial scales (Panama) and weighing instruments (Bolivia and Uruguay)
- Tools for the improvement of analysis, evaluation and dissemination of information
- Knowledge of new management tools, strategic planning, marketing techniques and improved interviewing
- Encouragement of interdisciplinary groups, working jointly with other areas of the State, drafting regulations and other instruments jointly
- Improved relationship with other Institutes, exchange of experiences

The experience of one of the participants of this Working Group is presented on page 46.



Experience of Panama within the “Regulators” Working Group

Presented by: Javier Arias from CENAMEP AIP (Panama)

Two years have passed since we began PTB’s “NMI-Metrology User Relations” Project. At the outset, we set the goal of improving the relationships of our Institute, CENAMEP AIP, with our regulatory bodies, since we decided to promote the Metrology Act passed in 2007 in a year, but next to nothing had been done to make it public and implement it. This implied that although we were merely an Association with no regulating power, we would have to develop a project and strategies so that the regulating entities, media, businesses and Users could learn about metrology, the work of CENAMEP AIP, gaining awareness of the importance of this Act and that the use of the SI would be implemented throughout the country. All this in one year and with no State budget to do so.

Without a doubt, the fact that the PTB Project started right when the government decided it was CENAMEP AIP, on account of being the National Metrology Institute, the one who should lead the implementation of the metrology legislation, helped us to achieve the partial implementation we have accomplished today.

The negotiation techniques and all the help and information received from the coaches and group colleagues during the meetings gave us ideas on how to prepare ourselves to persuade the National Regulators why and how to make the change to the International System of Units (SI). Even the doubts voiced by colleagues from other groups, during general meetings, helped us understand the Users’ needs and thus we managed to understand we could not force a change; rather, we had to try to make the regulators and businesses themselves understand the importance of the SI and to make them promote the law on their own. This way, the Users would also accept the change more easily.

Later we received a visit from the evaluator of the “NMI-Metrology User Relations” Project and after meeting with several members of the National Metrology Council (CNM), hearing their opinions about the role played by CENAMEP AIP leading the meetings of the CNM with various public and private entities, and seeing the result of the implementation of the Act and of the SI in part of the country, I must admit that the Project not only helped CENAMEP AIP to obtain a better relationship and the recognition of our regulatory bodies, but it also helped the metrological development of Panama and, therefore, of the region. Without the pressure and the support of the Project colleagues, we might not have been able to achieve the awareness and partial implementation of the law that we have accomplished today.



5. “Secondary Laboratories” Working Group
Presented by: Arquímedes Ruiz from CENAM
(Mexico) as Group coach

The Working Group was formed by 7 Institutes whose participants are listed in Annex A. The projects and goals were similar, which made it possible to group them in the Working Group of Secondary Laboratories with 2 levels of segregation: Suppliers and coordinators of Proficiency Tests and training of human resources for laboratories. In the first level, the project was developed by: Honduras, Dominican Republic, Ecuador and Paraguay. In the second level: Costa Rica, Chile and Uruguay.

It is important to mention that new services were developed and consolidated, to be offered to existing and new Users, national and international. By strengthening the capabilities of the Institutes there was a contribution to internal and external recognition, promoting competitiveness of the companies and institutions that use the service, raising their awareness and improving their reliability.

The experience of Costa Rica is presented below:

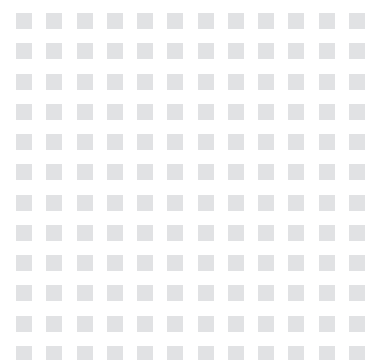
Experience of Costa Rica within the “Secondary Laboratories” Working Group
Presented by: Jessica Chavarría from LACOMET
(Costa Rica)

The Project we implemented in LACOMET had a strong national impact since it helped to strengthen the national metrological structure and the National Quality System of Costa Rica. This was achieved by means of running the Proficiency Tests pursuant to regulatory requirements, which are acknowledged by other peers and within the conformity assessment structure. We can confirm an increase in the number of proficiency tests performed during this period of the Project. Ten laboratories participated and benefited from the tests.

At a regional level, there was enrichment by means of the feedback provided by other colleagues from regional Institutes of metrology, like those from Uruguay and Chile, based on the implementation of similar Projects in their countries.

At the institutional level, the follow-up carried out by the Project Coordinator and the tools that were provided were important for documenting the process within LACOMET.

On the other hand, the talks about and practice of soft skills within the workshops were useful in developing new skills internally, not only technical, which helped the Project and other tasks to be implemented successfully.



6. “Education” Working Group

Presented by: Carmen Marina Trejo from CENAM (Mexico) as Group coach

The issue of training, in the field of metrology, is a major challenge faced by the Institutes mainly to address the growing demand in the industry in all the productive sectors. Likewise, in every-day life there are metrological needs that have a direct impact on society, such as i) trade operations, ii) food safety, iii) health; iv) safety of the environment, among others. From this, it is evident that insofar as a country has a better informed society in the field of formal metrology, it will be able to face the challenges where measurements are of primary importance, whether in the national economy or in international aspects such as the arbitration over trade barriers. No doubt the professionals that are needed in each of these areas are better-trained professionals in metrology and other closely related topics such as standardization and conformity assessment.

Training, practice and education in metrology share the common goal of preparing people with knowledge in the field of measurements, as well as their correct application. The participants of the “Education” Working Group, just like the other two groups of this Project, contributed their share in order to raise awareness, in their respective countries, of the importance of the Institute for the Users of metrology, such as industry, trade and society in general.

An extremely important point addressed by most of the participants in this Working Group was the establishment of bonds and relations with the government authorities in the field of education of their respective countries, as well as with authorities of Education Institutions at the elementary, middle and higher (university) levels, whose common goal is that metrology is included in the right amount in the student’s educational process, so that upon graduation he or she will be an excellent professional in the field, with an extra point in his/her education: formal knowledge of metrology.

The “Education” Working Group was formed as detailed in Annex A.



Below is a brief summary of the activities performed by the participants in their countries:

1. CENAMEP AIP - Panama.

In Panama, an Act was passed on the use of the International System of Units (SI) in the country, the implementation of which was due to end at the end of 2011. CENAMEP was involved in the support of this implementation focusing on two major topics: a) curricular update (books) and b) training professors who trained other professors.

2. INDECOPI - Peru.

INDECOPI summoned teachers, which involved preparing quality material of interest for them, and the issue of the ISO 17025 Standard was also included. To carry out this training, groups were made of different universities, and various marketing tools were used to ensure good attendance. The workshop for teachers lasted 8 hours and dealt with concepts of basic metrology, SI and estimation of measurement uncertainty. This training was offered at no cost to teachers, as they were covered by INDECOPI.

3. INTN - Paraguay.

The goal of the INTN was to develop materials to disseminate metrology in the educational sector so that the metrology subject would be included in careers at university level and at intermediate technical-professional level. During the development of their project they detected the need for an agreement between the INTN and the Ministry of Education and they worked towards making it a reality.

4. LATU - Uruguay.

The goal of their project was to place metrology transversely across different educational levels, working with educational authorities, teachers and students. For this, they developed audio-visual materials about metrology, implemented a blended course aimed at training teachers with technical-professional education, organised a national seminar for the players of education, developed training sessions on metrology for teachers of primary level and professors of secondary level, and created an

interactive Workshop about “Metrology and Mate” for groups of students from secondary school, which students attend through their study centres. In two years they reached a total of 1200 education actors, at the same time strengthening LATU’s programme of “Metrology for industry” that was developed during the first phase of the Project.

5. MINISTRY OF TRADE AND INDUSTRY - Haiti.

The goal of their project was to develop a metrology programme in the technical institutes of Haiti. For this, they developed various actions such as a forum with authorities and the negotiation of an agreement, although the latter is still pending. The main obstacle they have faced is the translation of metrology material they have obtained from the group colleagues, since it is either in Spanish or Portuguese and they need it in English and French. They are currently still working hard with their colleagues from Latin America.

6. GUYANA NATIONAL BUREAU OF STANDARDS - Guyana.

The goal of their project was to introduce basic metrology concepts to at least one area of some technical institute in Guyana. For this, they met with the Ministry of Education and managed to raise awareness about the importance of metrology being a part of the study curricula of the technical institute. They have also met with the directors of the institutes for various careers and have made progress towards adding metrology at the schools of Guyana. Currently they are exploring the methodology of online training applied by INMETRO.

7. LANAMET - Nicaragua.

The goal of LANAMET was to increase the metrological culture in all the sectors of industry, in the 16 Departments of the country, for which they worked with town halls and companies (SMEs and large companies). They had the support of the Minister and Vice minister of Internal Trade in order to secure financing for training workshops. They hired an expert who ran these workshops, which were held in 14 of the 16 Departments initially intended.

Experience of Uruguay within the “Education” Working Group

Presented by: Silvana Demicheli from LATU (Uruguay)

The process we had the opportunity to experience during 4 years together with PTB and SIM, accompanied by members of other Institutes of Latin America and the Caribbean, has been a priceless experience to counter-balance the difficulties we are faced with day-to-day. The methodology developed by the Project enabled us to plan and carry out in a systematic, orderly, analysed and assessed manner concrete responses to broaden and improve our offer of services to current and potential Users, in significantly shorter periods than we could have accomplished them on our own.

The proposal of the Project resulted in an infrequent mixture of technology, talent and time placed at the service of each one of us in order to achieve our purpose. A breeding ground of ideas and constructive bonds that surpassed all our initial expectations and which, above all, appealed to and strengthened our own enterprising potential.

The spaces and the means to meet the other members, the coordinators of the initiative and those who acted as coaches – in particular during the “face to face” Workshops – enabled us to learn about offered solutions in other countries to address demands similar to those we received; we were provided with alternatives

and good practices previously tested by others to overcome our obstacles and take shortcuts; we had access to materials, documents and proposals adaptable to our local logic and dynamic and we embarked on joint activities taking advantage and boosting the resources that were multiplied in the group.

During the first two years of the Project, within the Working Group “Training”, we at LATU focused on addressing the needs of training in the industry and secondary laboratories, in particular of those with exceedingly short periods of time to obtain accreditation. Based on a survey among Users, priorities were identified and short courses, workshops and internships were held, most of which we still offer under the umbrella of the Annual Training Programme in Metrology. Even though we have managed to provide a good response to the pre-selected demands in these two years, our resources were not enough to replicate the experience at a greater scale.

The opening of a second phase was the perfect opportunity to bring order to our ideas and to come up with a work plan and a strategy with our sights on the medium and long term. Our target group this time were actors in education and by participating in the respective Working Group, we endeavoured to “transversalise” the importance of metrology working with the different educational levels. During the following two years, we completed actions of different complexity, reaching a total of 1200 actors in education.



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38116 Braunschweig
Germany

Authors

Alexis Valqui
Anja Kopyra
Arquímedes Ruiz Orozco
Clemens Sanetra
Carmen Marina Trejo Morales
Emilio E. Löbbe
Gabriel Lugo Luevano
Mahdha Flores Campos
Salvador Echeverría Villagómez
Silvana Demicheli Bonilla
Taynah Lopes de Souza

Translation

Claudio Seelig

Final revision

Martha Beltrán Martínez
Anja Kopyra

Editorial staff

Anja Kopyra
Evelin Ambrosino
Mahdha Flores
Silvana Demicheli Bonilla

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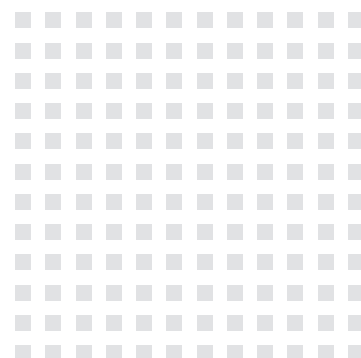
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We would like to make use of this space to publicly thank those who participated in and contributed with their efforts to the success of the Project “NMI-Metrology User Relations”. We are grateful to the organisations that facilitated this process dedicating time, resources and human capital; to their authorities and all those members who in less visible ways actively contributed to achieving results; to the counterparts – users, entities, chambers, organisations and companies – who opened their doors in order to adopt new initiatives and proposals; and to all the members of the Project, who have now become friends and permanent partners for facing the collective task that calls on us now and always: the well-being and progress of our communities.



Contact

Physikalisch-Technische Bundesanstalt

Technical Cooperation

Dr. Alexis Valqui

Tel +49 531 592 8230

Fax +49 531 592 8225

alexis.valqui@ptb.de

www.ptb.de/q5/en