Consolidation of local structures for the application of quality criteria in the environmental and food sector in Latin America

IAAC – PTB Workshop "Proficiency Testing"

Bogotá - Colombia
August 16th – 18th, 2011

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1. PRESENTATION

The Proficiency Testing Workshop was carried out with determining the needs of the Accreditation Bodies (ABs) of the region as the main objective. As a result it should be clearly pointed out, in which fields it would make sense to generate proficiency testings. It was also considered to identify the typical challenges the ABs have about determined products and/or tests.

This workshop was also a support to the Proficiency Testing Working Group (PTWG) of the IAAC Laboratory SubCommittee (LSC)

2. OBJECTIVE

The objective of this workshop was:

- Gather information about the situation in proficiency testing in each country.
- Identification and prioritization of the demand in proficiency testing (planned activity by the PTWG of IAAC LSC).
- Internalization by practical activities of the working scheme for generating proficiency testing (PT) in coordination with PT providers
- Accompany the PTWG in its Terms of References and Action Plan determination
- To consolidate the existing community of practice and enable experts to disseminate the expertise for the development and operation of PT schemes in accordance with international standards e.g. through training activities.

To support the Work plan of the Interlaboratory Comparison Working Group.

- Strengthen basis for a community-of-practice on regional level
- Agree on work mode and operational plan
- Exchange on technical issues according to established priorities regarding PT

3. WORKSHOP DEVELOPMENT

The workshop was held in Bogotá, in the “Superintendencia de Comercio” (SIC) auditorium, August 16th and 17th, 2011. On August 18th, the participants visited the laboratories of the National Metrology Institute of Colombia also located in the SIC building.

The organization of the event was in charge of ONAC personnel.

After the workshop the PTB experts participated in the meeting of the PTWG for discussing the Terms of Reference (ToR) and Action Plan of the PTWG of the LSC.

3.1 CONCEPT

At first, the concept of the workshop was to get an overview of the situation about proficiency testing in each country, in each accreditation body, highlighting the achievements, the challenges and necessities.

The following data is based on self-assessments by the participants:

- by questionnaire,
- by MS Powerpoint presentation per country and
- by additional interviews during the workshop.

These presentations helped the participants to find out common difficulties and alternatives for their solutions, regarding the technical and governmental situation in which each accreditation body is involved in these subjects.

In consequence, a questionnaire was sent to gather more general information about these experiences before the workshop.
Based on the feedback, a matrix was prepared which specifically describes the demand in proficiency testing for each AB considering the following areas:

- food safety,
- water testing,
- environmental testing,
- energy sector,
- healthcare sector (clinical and forensic laboratories, pharmaceutical),
- textile testing,
- testing of minerals,
- testing of construction products and
- calibration sector.

The grade of implementation was defined considering the following criteria:

- (***) Well implemented
- (**) In process
- (*) Planned
- (!) There is demand
- (?) No information

IAAC PT Bogota	Food Alimentos	Water Agua	Environment Ambiente	Energy Energia	Health Salud	Textiles Textilos	Minerals Minerales	Construction	Calibration Calibracion
ARG	xxx !	xxx	x ?	! ?	xxx ? !	(xxx) ?	?	?	xx !
BOL	xxx !	xxx	xx	?	!	?	xxx	x !	!
CHI	xxx !	xxx	?	! ?	xxx	?	xxx	xxx / xx	xxx xx
COL	!	x !	?	! ?	x !	?	?	xx !	xx !
COR	xxx !	xxx	xx !	!	(xxx) xx	?	?	xx	xx
ECU	xxx !	xxx	xx ?	!	!	x	!	xx !	xx !
GUY	!	!	!	?	!	!	!	! ?	!
HON	xxx !	xxx !	xxx !	?	(xxx) !	(xxx) !	!	!	!
JAM	(xxx) x !	x !	!	?	xx !	-	-	!	(xxx)
MEX	xxx	xxx	xxx !	xxx	xxx	xx	-	xxx	xxx
PAR	!	!	!	!!	(xxx)	?	?	?	(xx) ?
PER	xxx !	xxx	xx !	!	?	(xxx)	!	!	xxx !
SAL	!	!	?	?	!	?	? !	!	!
TTO	!	!	!	!	xxx	(xxx)	-	!	!

Sorted by the degree of implementation of PT schemes, resources and demands by countries became visible. ABs indicated gaps of information about needs in specific branches.

In the main areas for each region, the resources and demands of participating countries were identified and visualized in this matrix:

IAAC PT Bogota	Food Alimentos	Water Agua	Environment Ambiente	Energy Energia	Health Salud	Textiles Textilos	Minerals Minerales	Construction	Calibration Calibracion
well implemented xxx	ARG BOL CHI COR ECU HON JAM MEX PER	ARG BOL CHI COR ECU HON MEX PER	HON MEX	MEX	ARG CHI COR HON MEX PAR TTO	ARG HON PER TTO	BOL CHI	MEX	CHI JAM MEX PER
in progress xx			ARG BOL PER		COR JAM	MEX			ARG CHI COL COR PAR
planned x		COL JAM	ARG		COL	ECU		BOL COR	
demands !	ARG BOL CHI COL GUY HON JAM PAR PER SAL TTO	COL GUY HON JAM PAR SAL TTO	COL COR GUY HON PAR PER SAL TTO	ARG CHI COL COR ECU PAR PER TTO	ARG BOL COL ECU GUY HON JAM SAL	HON	ECU GUY HON PER SAL	BOL CHI COL COR ECU GUY HON JAM PER SAL TTO	ARG BOL COL ECU GUY HON PER SAL TTO
no information ?			CHI COL SAL	ARG BOL CHI COL GUY HON JAM SAL	PER	BOL CHI COL COR PAR SAL	ARG COL COR PAR SAL	ARG GUY PAR	PAR

In ten countries the accreditation of PT providers

- has already started (Argentina and Mexico),
- is in progress (Bolivia, Chile, Ecuador, Honduras and Jamaica) or
- is planned (Costa Rica).

Demands for ISO 17043 accreditation are mentioned in Colombia and Paraguay.

Three working groups were formed with common interests. In order to be applied in future PTs the prioritized areas in the countries of the participants were identified:

- for making a market research,
- for designing a working scheme and
- for generating a proficiency testing jointly with a potential PT provider.

IAAC PT Bogota	Food Alimentos	Water Agua	Environment Ambiente	Energy Energia	Health Salud	Textiles Textilos	Minerals Minerales	Construction	Calibration Calibracion
xxx	9	8	2	1	7	4	2	1	4
xx			3		2				5
x		2	1		1			2	
!	11	7	8	8	8	1	5	11	9
?			3	8	1	6	5	3	1
SCORE	1,2	0,9	4,0	8,0	1,1	0,3	2,5	11,0	2,3
RANK	4	5	3	2	5	7	6	1	4

The score is calculated by the relation of demands (!) to well implemented (xxx) PTs

The evaluation of the self-assessment of participants resulted in a following ranking of the priorities in their countries:

1st priority: Construction
2nd priority: Energy
3rd priority: Environment
4th priority: Food and Calibration
5th priority: Water testing / Healthcare
6th priority: Minerals
7th priority: Textiles

In detail:

Construction:

- Technique: Chemical Testing, Non-Destructive Testing, Physical Testing
- Matrixes: Metal (as steel), Asphalt, Concrete, Cement, Aggregates, Rebars, Cables, Soil (Metals)

Energy:

- Technique: Inflamation Point, Distillation Point, Viscosity.
- Matrixes: Batteries (different kind), Efficiency Energy, Light Office, Hydrocarbons: Fuel, Biodiesel, Oil, Natural Gas.

Environment:

- Matrixes: Air, Emissions (C02, N02, S02, VOC, Suspended Particles). Soil (PAH, Pesticides, Metals, Chemical Testing), Acoustic (Noise) Light Intensity,

Food testing

- Technique: Microbiological Testing, Determination of pesticides (Nitrofurano, Invectina), Sensorial Analysis
- Matrixes: Alcoholic Beverages (Rum, Beer), Wine, Soft Drinks (Sodas, Juices), Fish and Seafood (Pesticides Microbiology), Coffee (Sensorial Analysis), Flour, Biscuits, Stevia, Cereals, Heavy metals in food, Vegetables

Water testing

- Technique: Microbiological Testing (quantitative testing, aerobios, mohos, levaduras, coliformes, salmonella, e.coli), physico-chemical testing

Healthcare

- Technique: Pharmaceutical Testinicrobiological Testing (quantitative testing, aerobios, mohos, levaduras, coliformes, salmonella, e.coli), physico-chemical testing
- Matrixes: Pharmaceutical Testing (final product and raw material, antibióticos, antiinflamatorios no esteroidales)

Clinical Testing:

Parasitología, Serología (Enfermedades Tropicales), Enfermedades para el comercio en aves

Minerals

Technique: DRX, FRX, AA for determining Ag, Cu, Pb, Zn and Sn, techniques for Au and Ag.

The scheme, related to the quality circle of ISO 9000 the WGs followed, was:

1. Market Research
2. Concept
3. Design
4. Production
5. Verification
6. Distribution
7. Sample Analysis
8. Reporting Results
9. Statistical Evaluation
10. Final Report

The next drafted table visualizes:

- the ISO 9000 quality circle with the Deming Cycle (Plan-Do-Check-Act),
- the value adding chain based in a SPO-analysis,
- the connection to ISO 17043.

Deming Cycle		Value Adding Chain							
		Structure - Process - Outcome - Analysis				Standard	Risk Analysis		
	Step	Component	Activity	Supporter	Outcome	ISO 17043 CD	Risk	Likelihood	Severity
	1	Laboratory	Interest	AccBody	Request	Annex C, Clause 5.4	Misunderstandings	medium	medium
Plan	2	Technical Committee PT	Definition of PT scope	AccBody, external experts	Scope description	Clause 4.2, Annex A	Incompetence	low	high
	3a	WG of TC	Design of PT	AccBody, external experts	Concept	Clause 4.4, 4.5	Uncovered market needs	low	medium
	3b	WG of TC	Matrix definition	AccBody, external experts	PT Matrix	Clause 4.4.1	Unknown matrix effects	low	high
	4	RM producer	Sample production	AccBody, external experts	PT samples	Clause 4.4.2, Clause 5.5	Contamination, high uncertainty	low	high
	5	Reference lab	Verification	AccBody, external experts	Homogeneity, stability, reference	Clause 4.4.3	Incompetence	low	high
Do	6	PT provider	Distribution	Transportation agency	packed samples	Clause 4.6	Damaged packages	low	high
	7	Laboratory	Sample testing	WG of TC	PT test report	Clause 5.7	Inadequate test methods	high	medium
	8	WG of TC	Collection of reports	AccBody, external experts	Collected reports	Clause 4.7	Loss of data	low	high
Check	9	WG of TC	Statistical evaluation	AccBody, external experts	Statistical PT analysis	Clause 4.7, Annex B	Incompetence	medium	high
	10	Technical Committee PT	Final reporting	AccBody, external experts	Final PT Report	Clause 4.8	Incomplete information	low	medium
Act		Technical Committee PT	Discussion of results	AccBody, external experts	Follow-up workshop	Clause 4.9, Clayuse 5.10	Incomplete root cause analysis	medium	high

The risk analysis is based on experiences of the previous five IAAC PT workshops.

The first column represents the main hazard, the second parameter describes the likelihood of appearance and the third column estimates the severity of damage in the case of appearance.

The basic principle of this risk analysis method is described in ISO 1441.

The idea is to sensibly the accreditation bodies for the main challenges in PT schemes.

3.2 WORKING GROUP ACTIVITY

During the workshop three WGs were formed, which developed three different PT program concepts as examples. The common characteristic of these cases was that there is no known commercial offer for PT services. This exercise is related to the objective “Internalization by practical activities of the working scheme for generating proficiency testing (PT) in coordination with PT providers”. The participants were challenged to solve unexpected problems in the PT organization. The scopes of the WG tasks were prepared before the results of the ranking were known.

Experienced participants who have also attended the past IAAC PTB Workshops led the discussions in the group and gave support in typical stages of the PT organization as determination of the scope, parameters for verification and so on.

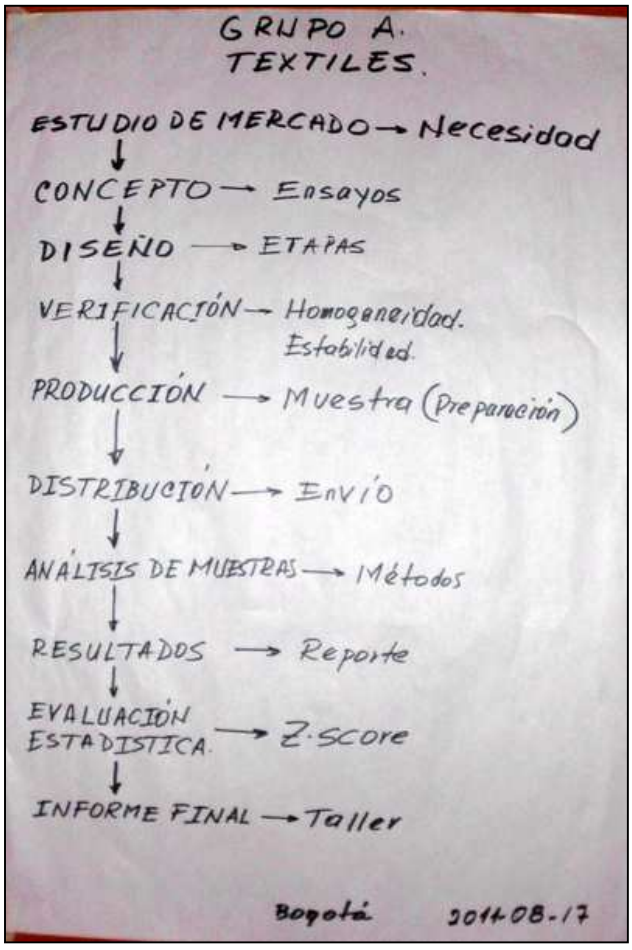
Moreover, in each case, some particular subjects were discussed within each group; some of those were the following:

South America Group A:
TEXTILE PT

This WG was formed by Argentina, Colombia, Chile, Paraguay and Peru.

First of all, this group proposed to put in contact with stakeholders as industry associations, ministries, universities, technological centers and National Metrology Institutes (NMIs).

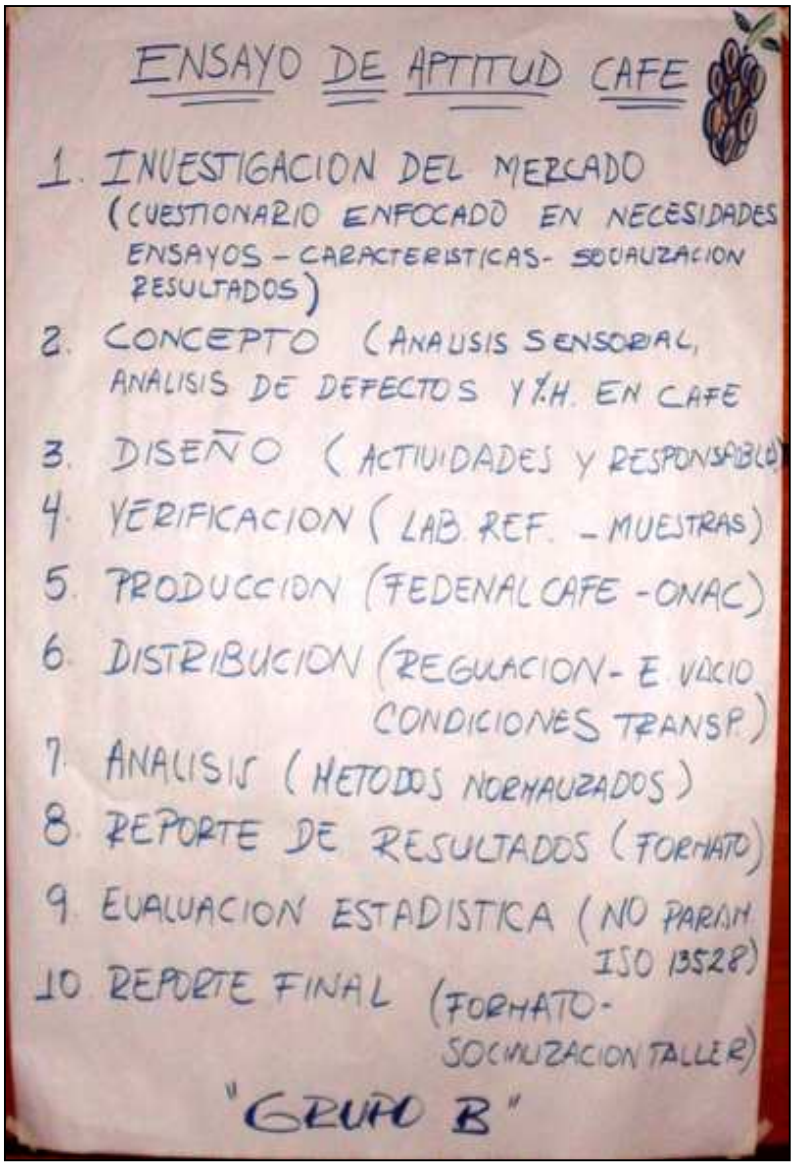
Then they defined the scope of the proficiency testing and how to obtain the reference material, which is typical material of some countries.



Centro America Group B:
GREEN COFFEE PT

This WG was formed by Bolivia, Costa Rica, Colombia, Honduras and El Salvador. They proposed to find out the necessities about green coffee sensorial tests in order to determine the scope of the proficiency testing.

For this determination they considered the type of grain, harvest, its conservation and so on. They make a proposal for determining the reference value with the support of a reference laboratory, previously identified.



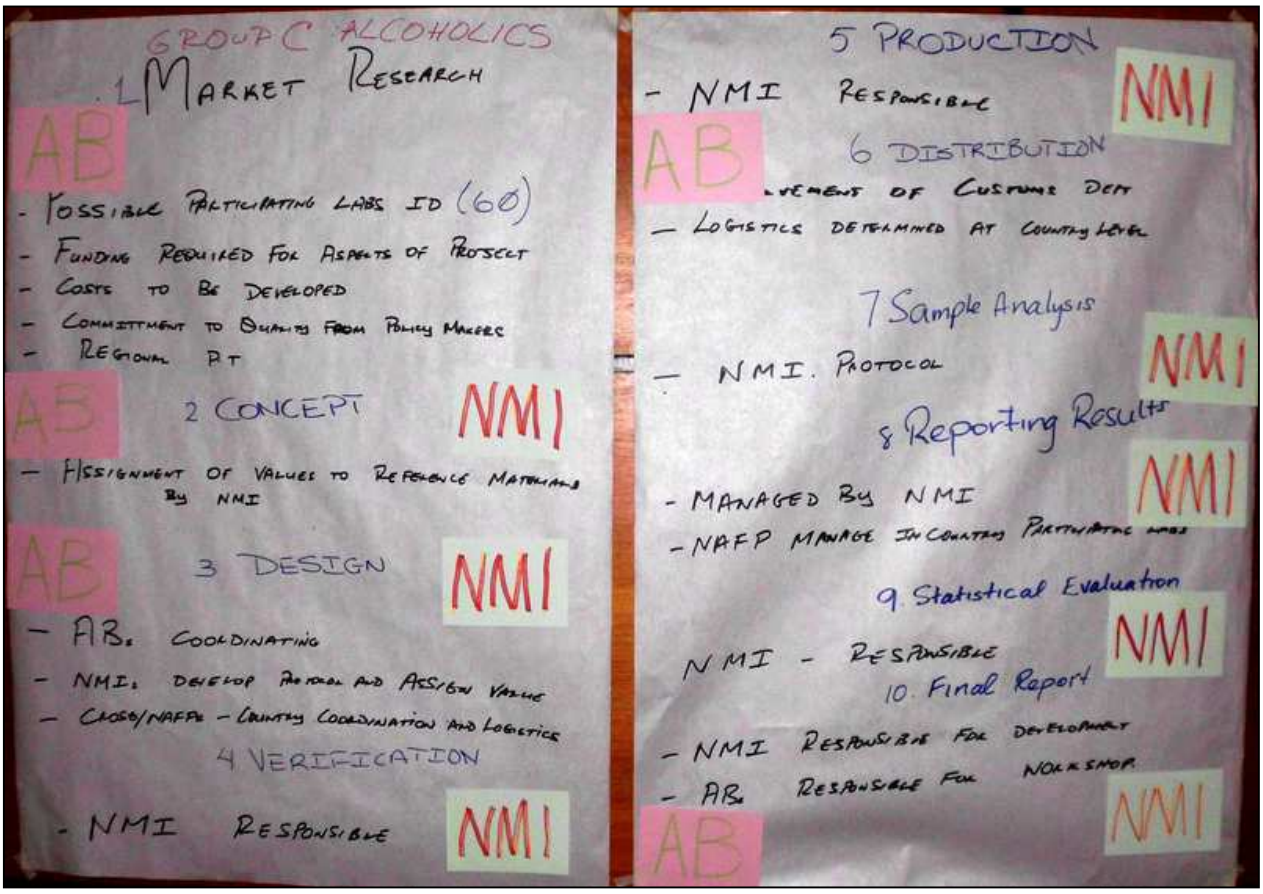
Group C: RUM PT

As scope of the proficiency testing, this WG elaborated - considering testing of alcohol - a common necessity of the Caribbean Region. The example is based on a concrete demand of TTLABS from Trinidad&Tobago.

The WG was formed by Colombia, Ecuador, Guyana, Jamaica, Mexico and Trinidad & Tobago.

This group presented the challenging poor number of accredited laboratories in the Caribbean Region. Therefore alternatives were discussed to select the common tests in the region and support the PT with an appropriate reference material of rum (characterized by an NMI)

This exercise represented particular situations that emerged in each case, depending on the product, the sector, the number of participating laboratories, among other factors.



3.2 PTWG OF THE IAAC LSC

The members of the IAAC working group are:

- Convenor: Aída López (ema)
- Members: Laura Pastore (OAA), Blanca Viera (OAE), Alejandra Puga (INN), Cheryl Morton (AIHA-LAP), Peter Unger (A2LA); Patti Williams (ASCLD-LAB) and Estela Contreras (SNA-INDECOPI).

The members of the WG who participated in the meeting were:

- Aída López
- Laura Pastore
- Blanca Viera
- Mauricio Cachigna (OAE)
- Alejandra Puga
- Estela Contreras

also as workshop resource persons:

- Imilce Zuta
- Manfred Kindler

During the meeting the Terms of Reference and the Action Plan of the PTWG of the LSC were revised.

Considering the Action Plan, it became evident to the group that activity N°5 (analyzing the development of PTs in the region and identification of priorities of ABs in proficiency testing) were undertaken.

Further the activity N° 6 of the Action Plan was discussed. It concerns actions to promote the establishment of PT providers with collaboration of NMIs and other entities in order to

- cover the identified needs,
- specify and in consequence
- to have clear how to arrive to that action.

After the discussion the PTWG developed this sub-plan:

N°	ACTIVITY / SUB-ACTIVITY	Responsible	Date
6	Actions to promote the establishment of proficiency testing providers or collaboration with NMI of each country to cover the identified needs.	WG	
6.1	Consult with the NMI the collaboration to cover the identified needs establish from the workshop.	WG	September 30th 2011
6.2	Consult with the competent institutions or proficiency testing providers the collaboration to cover the identified needs establish from the workshop.	WG	September 30th 2011
6.3	***Identified related projects in areas of interest.***	***WG***	September 15th 2011
6.4	***Select the PTs to develop by conference (for example CENTRA SESSION)***	***WG***	October 14th 2011

Some formulations of the ToR of the PTWG were also discussed. Some participants pointed out proposals about coordinating organizations considering PTs.

4. RESULTS

The main results of the workshop are:

a) The representatives of the accreditation bodies are more aware of:

- the relationship with the private sector in order to add efforts for achieving a common objective for mutual benefit;
- the continuous efforts needed to keep contact with governmental and private entities, in order to be aware of the advantages of the proficiency testing and potential supports from the stakeholders;
- the fact that a perfect PT does not exist. So there are some possible alternatives to fill in the gaps that arise in the PT organization, for instance reference material, traceability, estimation of uncertainty, validation of test methods, homogeneity and stability of samples, etc.

b) To know the prioritized demand of PTs by the ABs of the region as a based information for next steps.

c) ABs know more about their own proficiency testing situation and the needs of the national and regional markets.

d) Working group results …(revised ToRs, ideas for how to implement the working plan, etc…)

5. FUTURE ACTIVITIES

According to the results mentioned, future activities were agreed by the participants, to be done till to the next workshop:

a) Revision of the identified prioritized demands and - if it is necessary - complete or specify the information about situation. (Expert PTB, A.Jiménez)

b) ABs would have to identify potential PT providers in their countries, regarding the comments / recommendations exposed in the workshop and their own criteria.
A formal proposal should be made for generating a PT jointly or in co-ordination with a local PT provider in the fields identified as priority areas. (IAAC ABs)

c) Identify current projects in which the PTs could be included (IAAC ABs, Expert PTB)

d) Use of PTB CENTRA Session or other media to discuss subjects and monitor the activities planned.