Terms of Reference

Guidelines for Establishing Conformance and Interoperability Regimes for Developing Countries (released in 2014)

Objectives of the Guidelines

These guidelines aims to provide guidance and knowledge sharing for developing countries which plan to build an advanced Conformance and Interoperability (C&I). Regime for ICT products and become self-sufficient in meeting their own needs in this important area.

The ultimate goal is the achievement of effective global communications since the availability of high quality performing products will accelerate widespread deployment of the infrastructure, technologies and associated services allowing people to access to the Information Society regardless of their location or chosen device and contributing to attaining the Millennium Development Goals.

Procedures and Table of Contents

The implementation of C&I Programmes in a single country a Guidelines for establishing a Conformity Assessment regime, may address the following Procedures according to following Table of content:

Procedures

A. Query for new products to be homologated

B. Issuing and/or validating a Certificate of Conformity

C. Issue of the Homologation (or acceptance)

D. Import procedures for testing proposals

E. Reference Standards for conformity assessment

F. Recognized Laboratories and Test Reports

G. Marking

H. Monitoring, Enforcement, and Sanctions and Post-Market Surveillance

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iv. Definition of procedures to accept Self-Declaration and testing results which were issued by Testing Laboratories (TL) which are recognized.

5. Prevision and use of Mutual Recognition Agreement (MRA): harmonized standards; test specifications and reports (integrated with the ITU guidelines on MRA).

6. Budget strategy for establishing of a conformity assessment test lab. (* Shall be integrated with the ITU publications: a) ITU Feasibility Study on Testing Laboratories; and b) Establishing Conformity Assessment Test Labs in Different Regions).

7. Training needs for the staff to review testing reports based on the requirements of the C&I regime and issue of the Certificate of Conformity.

1.0 WAY FORWARD FOR ESTABLISHING COMMON CONFORMITY AND INTEROPERABILITY REGIME AND MUTUAL RECOGNITION AGREEMENTS

A two phase approach is recommended for establishing a common C&I regime including MRAs.

1.1 Short-term Approach

In the short-term, workshops should be organized for the concerned region/group of countries to aid in establishing C&I regulatory frameworks. There should also be workshops for test reports analysis, development of technical requirements for C&I and the development of MRAs regime among concerned member countries. Capacity building workshops with practical exposure can also be held for relevant personnel for the concerned region/group of countries. ITU in collaboration with concerned secretariats should initiate this process.

1.2 Medium-term Approach

In the medium term, concerned member countries should harmonize C&I programmes or develop MRAs to better manage the process and to facilitate the process of setting up a test lab for the sub-region. Regulators and other stakeholders in the sub region should persuade their governments to prioritize the setting up of a test lab by clearly highlighting its benefits. They could also consider the setting up of a test lab through a public-private partnership.

1.3 Possible Scenarios for establishing a Conformity and Interoperability project Regime

1.3.1 Implementation of C&I Regimes

The following scenarios are envisaged:

Scenario	Regulatory	Accreditation	Laboratories	Certification Bodies
Single Country	all structure must be selected and adopted by a	Depending on the obligation for type	Depending on the obligation for	Each case is unique

	country	approval or Accreditation of Certification Bodies or others	type approval	
Bilateral	Harmonization	Yes, at list in one country	Yes, at list in one country	Yes, at list in one country
Unified Regime	1 Steering Committee	Any country	Any country	Any country

The investment in regulatory and Infrastructure for C&I shall be considered in all scenarios. The option to adopt Mutual Recognition Agreements allows the suppression of redundant activities allowing maximizing efficiency in the overall conformance assessment process.

A. Single country

The implementation of C&I Programmes in a single country must take into consideration the following aspects:

1. Definition of the C&I regimes in place (Certification, Supplier`s Declaration of Conformity - SDoC, etc.): operational processes, procedures, requirements and organizational structure which is suitable with the country's needs.

2. Development/ review of the regulatory framework, the implementation procedure and roadmap of C&I programmes that shall cover the following subjects:

   a. Telecommunication Act previsions: placing products in the market; institutions: rights and responsibilities; identification of approved products;
   b. Define methods to calculate the fee of Type Approval process, including issue and renewal of certification.
   c. Law enforcement and surveillance: trail procedures and safeguards; Post-market surveillance; Sanctioning and other legal previsions and procedures.

d. Investigation of possibilities to use the C&I programme for combating the counterfeit ICT equipment on the market.
e. Coordination of responsibilities with other national regulatory agencies, as the Quality and Metrology institute (if any).

3. Definition and publication of the reference standards, interface specifications, essential requirements (EMC, Safety, SAR, etc.) for type approval of ICT equipment;

a. Define a list of national and international standards which should cover the basic requirements (health and safety, EMC, protocols, interfaces and so on), and additional standards which might be applicable.
b. Make the ICT market survey on the equipment is suitable for type approval (certification). Develop the list of equipment, under the type approval system, with references to the relevant national and international standards, publicizing the technical requirements and test procedures. Define the procedure of Harmonized System Codes (HS Code) assignment.

4. Accreditation, recognition and acceptance of laboratories and qualified professional;

a. Designation of Accreditation and Certification Bodies; Define the procedure of how Test Labs (TL) should be recognized.
b. Policy for developing quality of the national laboratories; international standards certification (ISO 17025, ISO Guide 65, etc.).
c. Definition of how to become accredited by International accreditation bodies (ILAC, IAF, APLAC, IECEE…) in the relevant scope.
d. Define the procedure to accept the Self-Declaration and testing results which were issued by Testing Laboratories (TL) which are recognized.

5. Prevision and use of Mutual Recognition Agreement (MRA): harmonized standards; test specifications and reports.

6. Specify the budget for establishing the conformity assessment test lab. The use of the ITU publications are good reference: a) ITU Feasibility Study on Testing Laboratories; and b) Establishing Conformity Assessment Test Labs in Different Regions.

7. Training needs for the staff to review testing reports based on the requirements of the C&I regime and issue of the Certificate of Conformity.

B. Bilateral Agreements

The implementation of C&I Programmes in bilateral fashion must take into consideration the following aspects:

1. Harmonization of C&I regimes in place according to the product`s scope (mobile, network, etc.).
    a. Agreement on the publication of common reference standards, interface specifications, essential requirements (EMC, Safety, SAR, etc.) for type approval of ICT equipment.

2. Rules for recognition of the accreditation of laboratories, certification bodies and qualified professional.

3. Approval of Mutual Recognition Agreement (MRA) between participants.

4. Usage of the ITU publications as reference, e.g Guidelines on Mutual Recognition Agreements (MRA).

5. Training needs for the staff on C&I regimes and MRA procedures.

C. Unified Regime

A unified Regime promotes integration. The difference with Bilateral Agreements is the relevance of a Steering Committee created with sufficient power to rule among the participant countries in the C&I aspects.

1.3.2 Mutual Recognition Agreements simulation

Considering the analysis of data collection on regional basis (general, regulatory, Accreditation, Laboratories, Certification Bodies), this section will describe the three possible scenarios taking as example the countries, Botswana, Namibia and South Africa for which an assessment study have been conducted:

Scenario A. Each country shall look for its own conformance assessment scheme.

Scenario B. South Africa has already well implemented a C&I infrastructure. And both Botswana and Namibia are improving theirs. So the following paths might be identified:

B.1 South Africa can establish partnership with Botswana or Namibia where they can benefit from accessing resources (labs, certification bodies, etc.) where they lack. South Africa institutions will perceive gains of scale that will help to maintain their laboratories.

B.2 Botswana and Namibia should look for commonalities and differences, and afterwards they can propose partnership in investments that will fill the gaps.

Scenario C. A General set of regulation shall be approved by all participants/ countries; and a Steering Committee shall rule over (ensure) the common interests of C&I.

C.1 South Africa as the main hub for the conformance assessment of ICT products: Again, South Africa institutions will perceive gains of scale that will help to maintain their laboratories but shall be well aware of national requirements in Botswana and Namibia and be able to run the test according with their particularities.

C.2 Botswana and Namibia should look for commonalities and differences, and afterwards they can propose a collaboration that will fill their gaps and complement it with South Africa capabilities.

1.4 Procedures for Establishing a Conformity Assessment Regime

1.4.1 Background

This part of the report is indicating best practices for procedures and related steps for establishing a conformity assessment regime at notional/regional level. Such procedures/steps may serve as general guidelines to be then deeply defined for assisting developing countries for the introduction of ICT products in the national/regional market and increasing reliability and interoperability of equipment manufactured by different vendors.

Typical procedures and best practices worldwide used are herewith recalled. Any concerned Administration may want to use the following procedures as guidelines and tailoring/adapting them to the existing national regulation and rules.

The section 6.4.2 presents definitions of terms used in this part of the report.

Procedures for establishing a Conformity Assessment regime, described in section 6.4.3, may include the following :

A. Query for new products to be homologated

B. Issuing and/or validating a Certificate of Conformity

C. Issue of the Homologation (or acceptance)

D. Import procedures for testing proposals

E. Reference Standards for conformity assessment

F. Recognized Laboratories and Test Reports

G. Marking

H. Monitoring, Enforcement, and Sanctions and Post-Market Surveillance

Practical use of these procedures is presented in section 6.4.3, through examples showing the interactions between the concerned entities/bodies existing in a conformity assessment regime for ICT products.

1.4.2 Definitions of terms used in this section

Applicant - is the manufacturer or representative interested in selling the product in the concerned market (country/region).

Certification - is the type approval process in which a Certification Body states, through the Certificate of Conformity, that a product fulfills the specified requirements.

Certificate of Conformity - is a statement of conformity issued by 3rd party (Certification Body).

Declaration of Conformity - is a statement of conformity issued by a 1st party or a 2nd party.

Conformity Assessment - The process for demonstrating that a product meets the standards, regulations and other specifications.

Homologation - is the official act issued by the Regulatory Authority that empowers the applicant for selling the ICT product in the concerned market.

First party - supplier of a product.

Second party - the purchaser of a product.

Third party - a person or body that is independent of the organization that provides the product, and of the user interested in the product.

Type Approval – product certified to meet certain requirement for its type e.g. cell phones operating in a certain frequency band. Type approval is granted to a product that meets a minimum set of regulatory, technical and safety requirements.

1.4.3 Procedures for establishing a Conformity Assessment Regime

A. Query for new products to be homologated

The first step of the procedures is the submission of a formal “application form” from the vendor, manufacturer or representative requesting for issuing the homologation.

The application form can request/include the following documents:

- Identification of the manufacturer or representative including the name, address, references for official communication and any other relevant information;

- A description of the ICT equipment together with the model number, software version, manufacturer identification and factory site. Product`s description of interfaces and protocols that are subject to conformance testing (e.g. ISDN, E1, STM, etc.). The operating frequency range for radio equipment with associated details, the maximum EIRP and modulation type;

- Proof of chargeable fees payment for issuing the homologation certificate;

- Additional technical information explaining the equipment purposes. Such information can be provided by brochure, operational instructions, description of the equipment by diagrams illustrating functional units and their connections. For example, a drawing showing the methods of connection to the mobile phone, its interfaces and connections with other equipment;

- High quality colored pictures of the equipment that allows clearly identification of the product: one picture from the internal circuits and another from the external view may be required;

- Certificate of Conformity issued by a recognized Certification Body or, if Declaration of Conformity is accepted, the Declaration of conformity issued by the manufacturer or representative (details in B section);

- The original, or a certified copy, of the laboratory test reports, translated to the local language or English, pertaining to the testing of transmission and interface parameters, electrical safety and electromagnetic compatibility issued by an accredited test laboratory (details in F);

- A copy of the user's manual. Local official language may be required in case of the equipment is intended for use by the general public for purposes of accessing ICT services (e.g. mobile terminals).

If the application is incomplete additional technical details or clarifications may be requested.

Example of practical case:

The Regulatory Authority will reject the application request and turndown the file if the supplier fails to respond within thirty (30) days from the date of Regulatory Authority's notice for request of information

B. Issuing and/or validating a Certificate of Conformity

The Certificate of Conformity is a statement of conformity issued by an independent organism referred as Certification Body.

The Regulatory Authority may want to rule over the responsible to issue the Certification of Conformity. For instance, the certificate of conformity may be accepted if issued by:

- The Regulatory Authority;
- A Certification Body accredited under the normative ISO 17021 (Conformity assessment - Requirements for bodies providing audit and certification of management systems);
- A Certification Body designated by the Regulatory Authority;

The Declaration of Conformity is an option that may be explored, for any or specific equipment. For instance, when there is no laboratory available to run the tests in the country/region, or when there is urgent need to introduce a new product in the market. Also, the Declaration of Conformity is a good option for specialized ICT products used for professional applications. Other example would be discontinued equipment with low demand. The Regulatory Authority can also play the role of the Certification Body, executing the certification activities together with the homologation procedures.

C. Issue of the Homologation (or acceptance)

When a product submitted to conformance assessment testing completes the document verification phase and proved its compliance, the Regulatory Authority may issue the Homologation act and enter a record in the national list of type approved equipment.

A unique number code identifying de conformance assessment procedure may be associated to a particular product that was accepted by the Regulatory Authority.

D. Import procedures for testing proposals

If it is intended to perform local testing, the Customs office must be aware and have procedures implemented that allow to promptly issuing an import licensing to the equipment samples.

E. Reference Standards for conformity assessment

The Regulatory Authority (or Ministry) has the duty of issuing the conformity assessment rules and regulations regarding the reference standards and technical requirements which have to be respected for allowing the new product to be homologated

- The rules shall prescribe the procedures and requirements necessary for directing the conformity assessment process, to which procedures all stakeholders (certification bodies, laboratories, manufactures and representatives) are required to adhere;

- The regulations shall specify the minimum requirements to which the products must conform and may define the procedures necessary for performing of tests;

The Reference Standards may be based on the following sequence:

- International technical standards;
- Regulations applicable to the product in other countries or regions;
- Regulations issued by the Regulatory Authority for similar products; or
- Manufacturer specifications.

Due to the variety of ICT products and applications, it is a common practice to segment them into different classifications. It allows addressing different requirements according to the complexity of the equipment and the environment in which it will be used. An example of "Equipment Classification" is presented below:

- Users' equipment: are equipment intended for use by the general public for purposes of accessing ICT services;
- Radio and Telecommunication Terminal Equipment (RTTE): mean the equipment not covered by the previous definition but which make use of the electromagnetic spectrum for the transmission of signals, which equipment includes radio transmitters/receivers, antennas and those products characterized in specific regulations;
- Network equipment: any products not contained in the previous definitions that are generally, but not limited to, used in the core of networks and that requires standards to guarantee interoperability and reliability of ICT networks. Essential requirements, as Electromagnetic Compatibility and Safety, must also be assured.

Example of Reference Standards and Products:

Category	PRODUCT	STANDARD	TECHNICAL REQUIREMENT
User`s equipment	Mobile	3GPP	Power; frequency stability, frequency in-band emission.
	Landline phone	IEC	Electrical, sound pressure, acoustic chock protection
	PABX	-ITU-T Rec. G.711: Pulse code modulation (PCM) of voice frequencies - ITU-T Rec. Q.921: ISDN user-network interface – Data link layer specification	protocols
	Charge and Power Adapter	ITU-T Rec. L.1000	Power, energy efficiency, eco-environment specifications
	Personal Area Communication	National Frequency Allocation	Gain, transmission power, bandwidth, frequency stability.
	Residential Optical Unit	ITU-T G.984	Power; frequency stability, frequency in-band emission, SAR limits.
	UTP Cable	ISO/IEC 11801	Return Loss, FEXT, NEXT, bandwidth
RTTE	Mobile-Broadband Base Station	ETSI	Gain, transmission power, bandwidth.
	Antenna	ETSI	Radiation Diagram, Gain, VSWR.
	Broadcast Transmitter	ETSI	Gain, transmission power, frequency width.
	Earth Station Equipment / VSAT	ETSI	Gain, transmission power, bandwidth.
Network equipment	Transmission equipment	ITU-T Rec. G.707	protocols
	Network Switches and Routers.	MPLS - G.8121 Ethernet - G.8021 IPTV - H.62X	protocols
	Cables	ISO/IEC 11801	Return Loss, FEXT, NEXT, bandwidth
	IPTV	ITU-T Rec.	See Standard
Electromagnetic Compatibility	All equipment	ITU-T Rec. K.48	Radiated spurious emission, conducted spurious emission, resistibility
Safety	All equipment	ITU-T Rec. K.21	Electrical chock protection, fire protection, overcurrent protection

F. Recognized Laboratories and Test Reports

The tests to which the product sample is submitted may be performed by a third-party (independent) accredited laboratory among those accredited by and Accreditation body or recognized one through a Mutual Recognition Agreement. (More information about accredited laboratories available on the Guidelines on Establishing Conformity Assessment Test Labs)

The test report is the document reporting about the test results and the compliance of the equipment under testing against the reference standards.

Example of practical case

About qualified Laboratories: If no accredited laboratory is available in the country/ region, priorities may be given to available solutions, as follow:

1. *National Third Party Laboratories accredited (ISO 17025) and/or foreign laboratories recognized by Mutual Recognition Agreements;*
2. *Third Party Laboratories evaluated by the Regulatory Authority;*
3. *Laboratories which are not Third Party, evaluated by the Regulatory Authority;*
4. *Foreign laboratories accredited by organization member of ILAC.*

G. Marking

The compliance to the type approval requirements may be noted and identified through a unique Homologation number or, in some cases, through the identification of the standards to which the product is compliant may be required.

H. Monitoring, Enforcement, Sanctions and Post-Market Surveillance

Monitoring activities and random site visits may occur periodically at distribution points (stores, borders, etc.) to check if products are compliant with the conditions that granted the issue of the homologation.

Violators may be subject to the following sanctions, which may be applied separately or in combination:

– warning;
– fine;
– prosecutions;
– suspension or withdrawal of the homologation;
– suspension or withdrawal of the designation (in case of designated Certification Bodies).

Examples of practical case.

A person who sales or installs any communications equipment or facilities without first obtaining the Regulatory Authority`s homologation commits an offence and on conviction, is liable to a fine not exceeding $ 50,000.00 or to imprisonment for a term not exceeding 1* year or to both such fine and imprisonment.*

Notwithstanding the previous provisions, a licensee who installs or sales any communications equipment or facilities without first obtaining the Regulatory Authority's homologation is liable to pay fine in such amount as determine by the Regulatory Authority.

** Indicative values only*

1.4.4 Conformity Assessment workflow: The following flowchart presents an example of interactions that may exist among the entities participating in a conformity assessment process that uses certification mechanism:

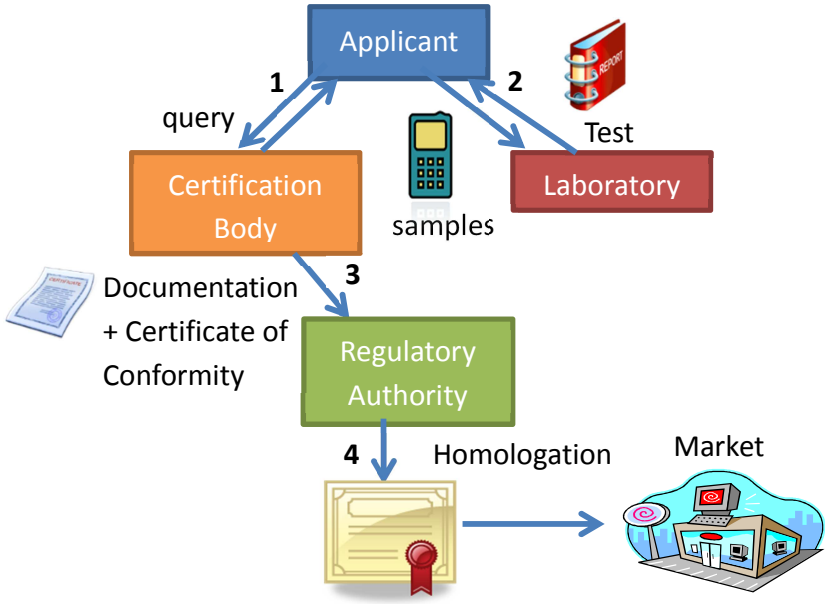


Figure 1. **Interactions among Entities in Conformity Assessment Process (Certification Mechanism)**

1) The first step for the applicant , in order to initiate the process, is getting in contact with the Certification Body, who acts on behalf of the Regulatory Authority on type approval matters, that has the responsibility to provide all information concerning the certification process, including time and costs estimation, rules and regulations in force, and so on. (description details on procedures A, D and E)
   1.1 The Applicant must present the Technical Documentation that will be analyzed/noted by the Certification Body to properly characterize the product.
   1.2 The Certification Body indicates to the applicable standards, procedures to select samples, information about the tests suits, and a commercial proposal.
   1.3 If the Applicant wants to proceed ahead with the homologation process, the Applicant must remain in contact with the Certification Body for conducting further services that involve management of the required documents and, mainly, an impartial analysis of the conformance of the product to reference standards and rules. The decision must be strictly based on the test reports.
2) Testing the product (procedures F for laboratories)
   2.1 The Certification Body indicates the qualified laboratories able to perform the tests. If there is more than one laboratory available, the applicant may be free to choose among them.
   2.2 Sampling: the sample to be tested must be collected from the manufacturer`s production line, representing the same product that will be available to consumers. The Certification Body may be responsible for collecting the sample or, optionally, if the manufacturing process to produce such product has obtained a certificate of quality system (e.g. ISO 9001) the Applicant himself can collect the sample.
   2.3 The Applicant may continue with the operational procedures (as transportation and importation) in order to deliver the sample to the laboratory facilities.
   2.4 After the test procedures, the Laboratory will issue the Test Report containing the results. The analysis of the test results and related conclusion if the product is conformance to the reference standards is solely responsibility of the Certification Body.
3) Certification (procedures B and G)

   3.1 With all required documentation available , the Certification body, based strictly on the test results, certifies if the product is compliant with the reference standards or not.

   3.2 If the product is approved, the Certification Body issues the Certificate of Conformity.

   3.3 The Certificate of Conformity must contain the identification of the manufacturer or representative including the name and address, a description of the ICT equipment together with the model number, software version and related release, manufacturer identification and factory site. Product`s description of interfaces and protocols that are subject to conformance testing (e.g. ISDN, E1, STM, etc.). The operating frequency

range for radio equipment with associated details, the maximum EIRP and modulation type should be also indicated.

3.4 The Certification Body must be informed about any changes to the product that may have affected the conditions that granted the certification. The Certification Body must assess if the compliance can no longer be guaranteed and, depending on the changes (e.g. new software release reviewing protocols which may have affected interoperability), may require additional or repetition of tests.

3.5 All documents may be submitted to the Regulatory Authority.

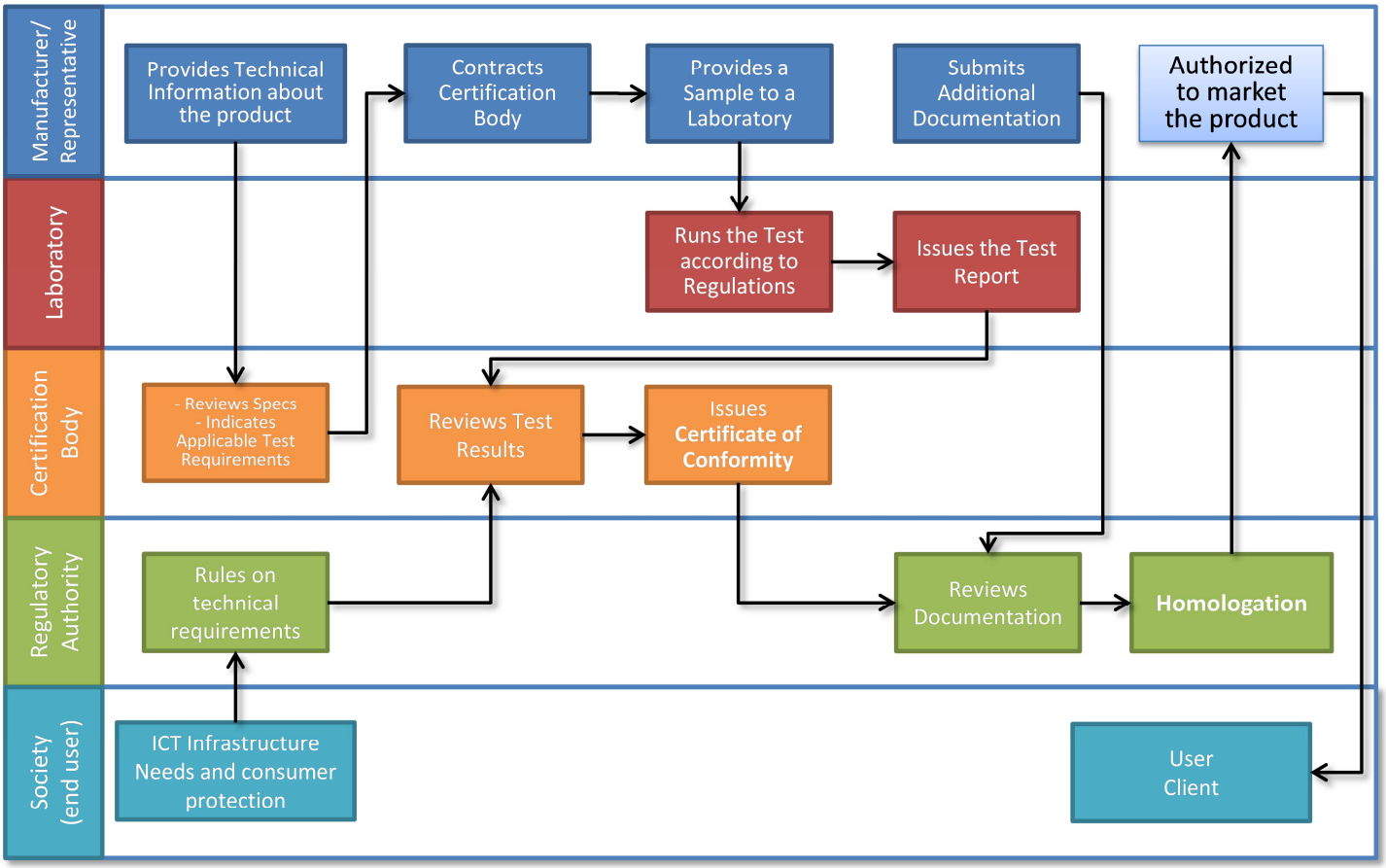
4) Homologation (procedures C and H)

4.1 The Regulatory Authority records and executes a final check and finally issues the homologation act.

4.2 The product is then authorized to market.

4.3 The Regulatory Authority may proceed with monitoring and enforcement procedures.

Another example of interactions that may exist among the entities participating in the conformity assessment process is shown below. Compared with the previous example, here the Certification Body is responsible for the first contact and issuing the Certification of Conformity. However, the Regulatory Authority has more control, systematically reviewing the documentation for each application before homologating.


Manufacturer/ Representative
Laboratory
Certification Body
Regulatory Authority
Society (end user)
Provides Technical Information about the product
Contracts Certification Body
Provides a Sample to a Laboratory
Submits Additional Documentation
Authorized to market the product
Runs the Test according to Regulations
Issues the Test Report
- Reviews Specs - Indicates Applicable Test Requirements
Reviews Test Results
Issues Certificate of Conformity
Rules on technical requirements
Reviews Documentation
Homologation
ICT Infrastructure Needs and consumer protection
User Client

2.0 CRITERIA FOR SELECTING COUNTRIES TO ESTABLISH REGIONAL TEST CENTRES

2.1National Government's Commitment

Countries with firm commitment from the national government to set up a test lab for conformity assessment and interoperability testing will be an ideal candidate for hosting a test lab in the sub-region. This criterion should be the most important in selecting a country to establish a regional test centre. A government committed in setting up a test lab will be prepared to commit funds or look for funds to set up the test lab since it understands the importance of ensuring that conformity assessment and interoperability testing is conducted for all equipment entering the country or sub-region. Such a government will also be prepared in supporting the test lab operationally and to help build the capacity of the human resources for the test lab.

2.2Technical and Financial Capacity

Technical and financial capacity should the second most important for selecting a country to establish regional test centres. A country with the technical capacity in terms of human resources and the financial capacity to set up and operate a test lab will be able to do so with less challenge. The country will also be able to set up the test lab within a relatively shorter time frame.

2.3 Demography and Market Size

Demography and market size is a very important criterion to consider in selection of a country to establish regional test centres. The literacy level and the size of the market will make the country attractive for a test lab either by the private sector alone or through a public-private partnership. A high level of literacy will make capacity building relatively

easier for a potential investor or development agency in a test lab. A big market size will make a country attractive enough for a test lab.

2.4 Political, Economic and Legal Stability

Political, economic and legal stability should be the fourth criterion for selecting a country to establish regional test centres. A country with political, economic and legal stability provides some certainty and less risk for an investor or development agencies who will want to be involved in the setting up of a test lab.