ITU Training Course on
Conformity and Interoperability for AFR Region

Tunis, Tunisia, 14–18 December 2015

Conformity Assessment Procedures

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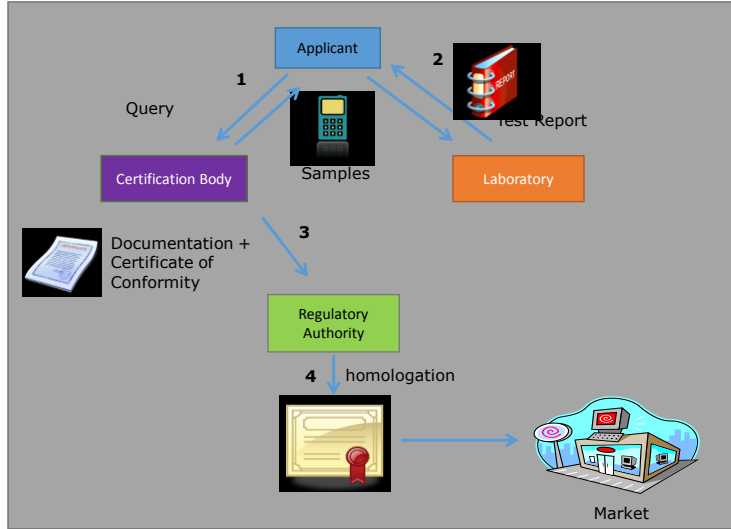ITU-BDT, C&I Focal Point riccardo.passerini@itu.int

Conformity Assessment Procedures

Procedures for establishing a conformance assessment regime may include the following procedures:

A. **Query for new products to be homologated**

B. **D. Import procedures for testing proposals**

C. **Reference Standards for conformity assessment**

D. **Test, Recognized Laboratories, Test Reports**

E. **Issuing and/or validating a Certificate of Conformity**

F. **Issue of the Homologation (or acceptance)**

G. **Suspension and Withdrawal of the Homologation Certificate**

H. **Monitoring, Enforcement, and Sanctions and Post-Market Surveillance**
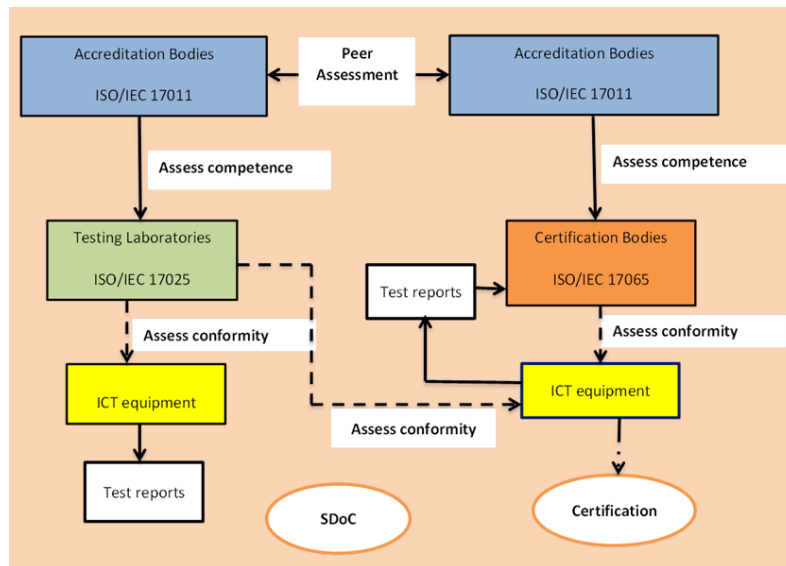
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Regulatory Aspects Conformance assessment procedures

Example of interactions that may exist among the entities participating in a conformity assessment process that uses certification mechanism:

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Conformity Assessment Regimes

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ITU/IEC 17000 Series: Conformity Assessment

- 17000:2004– Vocabulary and general principles
- 17001:2005– Impartiality – Principles and requirements
- 17002:2004– Confidentiality – Principles and requirements
- 17003:2004– Complaints and appeals – Principles and requirements
- 17004:2005– Disclosure of Information – Principles and requirements
- 17005:2008– Use of Management systems – Principles and requirements
- 17007:2009– Guidelines for drafting normative documents suitable for use for conformity assessment
- 17011:2004– Requirements for accreditation bodies accrediting conformity assessment bodies
- 17020:2012– Requirements for the operation of various types of bodies performing inspection
- 17021:2011– Requirements for bodies providing audit and certification of management systems
- 17024:2012– General requirements for bodies operating certification of persons
- 17025:2005– General requirements for the competence of testing and calibration laboratories
- 17030:2003– General requirements for third-party marks of conformity
- 17040:2005– General requirements for peer assessment of conformity assessment bodies and accreditation bodies
- 17043:2005– General requirements for proficiency testing
- 17050-1:2007– Supplier's declaration of conformity – Part 1: General requirements
- 17050-2:2007– Supplier's declaration of conformity – Part 2: Supporting document
- 17065:2012– Requirements for bodies certifying products, processes and services
- 17067:2013– Fundamentals of product certification and guidelines for product certification schemes

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Conformance Assessment Procedures

- **Fees**
    - **Assessment and reassessment fee**
    - **Technical expertise fee**
    - **Listing fees**
    - **Registration fees**
    - **Payment of fees**

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Definition and publication of ICT reference standards for conformity assessment of ICT equipment

- Sub-category of equipment has specific mandatory technical specifications as part of the regulatory requirements which must be met in order to be deployed in the marketplace

- These standards are developed primarily in accordance with decisions made and ratified in the International Telecommunication Union (ITU), International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) combined with regional, national and industry standards requirements and are therefore a complex and very complete set of requirements which are vitally important to an interference free and safe environment for ICT products:

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Definition and publication of ICT reference standards for conformity assessment of ICT equipment

- A number of regional standards bodies serving specific regional policies, regulations and requirements are heavily engaged in development and promulgation of the product standards and include the European Telecommunications Standards Institute, USA Telecommunications Industry Association, and various important forums and consortia such as 3GPP

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ITU's Decisions – C&I Action Plan

- **Resolution 177** ITU Plenipotentiary Conference (PP-10, rev. PP14)
- **Resolution 47** ITU World Telecommunication Development Conference (WTDC-10, rev. WTDC-14)
- **Resolution 76** ITU World Telecommunication Standardization Assembly (WTSA-08 rev. WTSA-12)
- **Resolution 62** Radiocommunication Assembly (RA-2012, rev. RA-2015)
- **ITU Council Decisions** (2009, 2010, 2011,2012, 2013, 2014, 2015)

Definition and publication of ICT reference standards for conformity assessment of ICT equipment

The next table gives an example of international standards, regional standards and forum and consortia standards that may be used by some countries

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Category	Product	Standard	Technical Requirement
User equipment	Mobile	3GPP	Power; frequency stability, frequency in-band emission.
	Fiix Telephone	CEI	Power; frequency stability, frequency in-band emission.
	PABX	• Rec. UIT-T G.711. • Rec. UIT-T Q.921.	Protocols
	Charge and power adapter	Rec. UIT-T L.1000	Power, energy efficiency, eco-environment specifications
	Personal area communication	Allocation of national frequencies	Gain, transmission power, bandwidth, frequency stability.
	Residential optical unit	UIT-T G.984	Power; frequency stability, frequency in-band emission, SAR limits.
	UTP cable	ISO/CEI 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	Rec. UIT-T G.707	Protocols
	Network switches and routers.	MPLS - G.8121 Ethernet - G.8021 TVIP - H.62X	Protocols
	Cables	ISO/CEI 11801	Return Loss, FEXT, NEXT, bandwidth
	IPVT	Rec. UIT-T	See Standard
Electromagnetic Compatibility	All equipment	Rec. UIT-T K.48	Radiated spurious emission, conducted spurious emission, resistibility
Safety	All equipment	Rec. UIT-T K.21	Electrical chock protection, fire protection, overcurrent protection

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Proposal for building in country labs

Scope

To **identify priorities in conformance testing lab implementation** in EAC African countries

Preamble:

It is urgent to **establish the MRA** between different African countries as Africa is the only region without any accreditation scheme similar to ILAC. However implementing an MRA **will take time** due to political and procedural reasons.

Possible approach

A possible approach could be **to start, in parallel to the MRA implementation**, the **development of Mini Labs (focusing on verification of incoming quality of mobile terminals)** in different African countries in order to **promote the KH development** in such regions as far as concern use of instrumentation, lab management, quality and instrumentation purchasing process (quality and instrumentation maintenance). Proceeding in such a way **the countries developing labs could become the reference** for each specific testing area in the African area

In parallel the MRA will be established and **auditing and verification procedures** could be established to monitor the labs implemented in the meantime. Same subtest list for conformance testing (acceptance) and market survilliance

Lab implementation priorities

LAB	activity	Rationale	Usefulness	cost	total
DTT	Digital terrestrial	to verify the quality of set top box	10	10	20
SAR	SAR	to verify the quality of mobile terminals for health reasons	12	6	18
PWR	Powering consumption lab	critical powering conditions either for main supply conditions and quality of equipment	8	9	17
QML	Quality of material lab	to verify the quality of equipment in severe environmental conditions (temperature humidity, fog salt)	5	11	16
WIF	Personal area network lab	Important to verify WIFI	6	8	14
EPS	Electrical safety & protection lab	critical powering conditions either for main supply conditions and quality of equipment	9	5	14
EMC	Electromagnetic compatibility lab	to verify the emitted and conducted radiations in low quality equipment	10	3	13
RSL	Radio & Signalling lab	to verify the quality of radio part of mobile terminals in low quality mobile equipment	11	2	13
VAS	Mobile value added services lab	Not useful in EAC	0	12	12
ELA	Electroacoustic lab	To verify audio quality in mobile terminals	4	7	11
USX	User experience lab	Not useful in EAC	0	10	10
BBA	Broadband access lab	to verify the quality of broadband lines in emerging fixed market	5	4	9
TPF	Fixed Test plant	Too complex and expensive, useful only for big test center	0	1	1
TPM	Mobile Test plant	Too complex and expensive, useful only for big test center	0	1	1

Large test center cost (ITU feasibility study)

lab	activity	m²	Location Rent K€/year	Utility K€/year	Instrument. Asset K€	Personne Number of people #	Instrument. Opex K€/year
SAR	Specific Absorption Rate lab	150	19	28	800	4	25
USX	User experience lab	130	17	24	100	6	0
BBA	Broadband access lab	300	39	56	1.400	7	5
VAS	Mobile value added services lab	40	5	7	0	3	0
EPS	Electrical safety & protection lab	80	10	15	1.200	4	25
ELA	Electroacoustic lab	250	32	46	800	4	5
EMC	Electromagnetic compatibility lab	300	39	56	1.600	5	5
RSL	Radio & Signalling lab	250	32	46	2.000	12	10
PWR	Powering consumption lab	80	10	15	200	2	5
QML	Quality of material lab	250	32	46	1.300	6	15
WIF	Personal area network lab	170	22	31	500	5	5
TPF	Fixed Test plant	900	117	167	3.000	33	120
TPM	Mobile Test plant	2500	324	463	3.000	55	300
management						10	
cross activities (*)						24	
TOTAL		5.400	700	1.000	15.900	180	520

lab	activity	m²	Location Rent K€/year	Utility K€/year	Instrument. Asset K€	Personne Number of people #	Instrument. Opex K€/year
DTT	Digital terrestrial (DVB -T2)	40	50	50	150	2	20

Example of Mini Lab cost (for *mobile terminals testing* only)

lab	activity	m²	Location Rent K€/year	Utility K€/year	Instrument. Asset K€	Personne Number of people #	Instrument. Opex K€/year
EPS	Electrical safety & protection lab	80	10	15	12	3	2
RSL	Radio lab	100	32	46	150	3	6
ANC	Radio lab anechoic chamber				200		
SIL	Signalling radio lab	60	8	12	800	4	4
BCL	Battery charge	80	10	16	230	2	8
SAR	Specific Absorption Rate lab	150	19	28	423	3	4
management						2	
cross activities (*)						1	
TOTAL		470	79	117	1815	18	24

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Example: SAR lab cost evaluation

Instrumentation/device	Purpose	Estimate cost (kEuros)
SAR measurement system	Overall measurement system, including probes and phantoms	200.0
Dielectric probe kit	SW and probe used to measure Tissue Simulating Liquids properties	15.0
Network analyser	Instrumentation used to measure Tissue Simulating Liquids properties	25.0
Radio communication tester	Instrumentation needed to set up EUT communication (e.g. 2G, 3G, LTE systems)	80.0
System check components	Instrumentation needed to perform SAR system verification	60.0
Personal computer and printer	Measurement SW is installed on it	3.0
Absorbers	To avoid reflections in close proximity of the measurement area	20.0
Liquid management	Material, instrumentation needed to prepare liquids and storage chemicals	20.0
	TOTAL	423.0

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ITU Training activities on C&I

http://www.itu.int/en/ITU-D/Technology/Pages/CI_Events.aspx
ITU Academy – C&I training

- CIS Countries NGN integration testing, Moscow (Russian Federation), 2010 and 2011

- Africa and Arab Regions, Tunis 5-7 Nov 2012

- ARB Region, Tunis 2-6 April 2013 (EMC Compatibility)

- Africa Region, Tunis 28 October-1st November 2013 (EMC Compatibility)

- Americas Region, Campinas, 24-28 June 2013 (EMC Compatibility)

- ARB Region, Tunis 17-22 March 2014 (Mobile terminals)

- Americas Region, Campinas (Brazil) 12-16 May 2014, (Mobile terminals)

- Training Course on Conformance and Interoperability Testing for the Africa Region, 23-27 June 2014, Tunis (Tunisia)

- CIS Region: ITU Virtual Laboratory for Remote Tests of Equipment, New Technologies and Services", 10-12 November 2014, Moscow (Russian Federation)

ITU Training activities on C&I for 2015

- Training Course for the Arab Region on Type Approval Testing for Mobile Terminals, Homologation Procedures and Market Surveillance, 20-24 April 2015, Tunis (Tunisia)

- Training Course for the Americas Region on Type Approval Testing for Mobile Terminals, NGN integration and interoperability testing, Homologation Procedures and Market Surveillance, 8-12 June 2015, Campinas (Brazil)

- Training Course for the Africa Region on Type Approval Testing for Mobile Terminals, Homologation Procedures and Market Surveillance, 27-31 July 2015, Tunis (Tunisia). Postponed to December 2015

- Training Course for CIS Region, Moscow (Russian Federation), 7-9 July 2015

- ITU Asia-Pacific Centres of Excellence Training on Conformity and Interoperability, Beijing, P. R. China, 12-16 October 2015

Direct Assistance on C&I

A number of countries have expressed strong interest and requested direct assistance (e.g. Sri-Lanka, Kiribati, Mongolia, Zambia, Cameroon, Cote d'Ivoire, Ghana) in establishing C&I infrastructure and procedures

The Direct Assistance provided through the Regional Offices will provide support taken into consideration all C&I aspects, as:

- **Regulatory framework**
- **Institutions roles and typical procedures**
- **Mutual Recognition Agreements**
- **Funding**
- **National and Regional test centres and harmonized C&I programmes: Roadmap and Feasibility Study**

12/14/2015

ITU C&I Regional Assessment Studies

➢ The C&I Assessment Studies looks for promoting the establishment of Harmonized C&I Programmes, collaborate to improve regional integration and fostering the availability of highly qualified institutions (as Laboratories, Certification and Accreditation Bodies)
➢ Activity conducted in close collaboration with Regional Organizations in addressing capacity building activities, accreditation and type approval testing for moving forward to establishing national, regional test centers and/or Mutual Recognition Agreements - MRAs as appropriate

SADC Region

The Southern African Development Community (SADC, 15 countries) Assessment Study took place in 2014. The results were presented in the Subregional Workshop for SADC, 13-15 October 2014, Livingstone (Zambia).

Caribbean countries

In collaboration with the Caribbean Telecommunication Union (CTU), the ITU C&I Assessment Study covered the Caribbean region in 2014. The results were presented in the Subregional Workshop for the Caribbean, 2-4 December 2014, in Trinidad and Tobago

Maghreb Region

Mauritania, Morocco, Algeria, Tunisia, Libya participated in the ITU Assessment Study for the Maghreb Region. The results of the Study were presented during the Subregional Workshop for Maghreb Countries, Tunis 9-11 December 2014

EAC countries

The East African Community (EAC) is the regional intergovernmental organization of the Republic of Burundi, Kenya, Rwanda, Tanzania, and Uganda. The results of the Study were presented during the Subregional Workshop for EAC countries, Nairobi October 2015

COMTELCA Countries and Cuba

For the Central American countries (Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama and Cuba), the study is taking place in 2015. The results of the Study will be presented during the ITU C&I Workshop for COMTELCA and Cuba, 7-9 December, Tegucigalpa, Honduras

C&I Regional Assessment Studies

The C&I Assessment Studies looks for promoting the establishment of Harmonized C&I Programmes, when possible.

It will collaborate to improve **regional integration** and foster the availability of highly qualified institutions (as Laboratories, Certification and Accreditation Bodies)

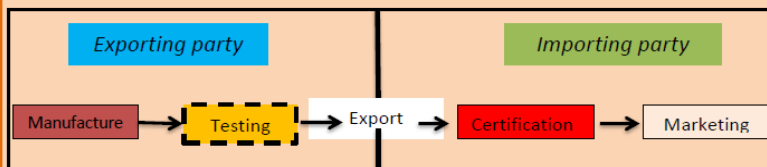In an overall analysis, the Assessment Studies contributes to:

- **Bridging the Standardization Gap,**

- **reducing the Digital Divide, and**

- **as is inherent to ICT technologies development, strengthens business environment for global players**.

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C&I Regional Assessement Studies

- C&I infrastructure in regions/sub-regions/countries are being assessed

- Analysis of the status in the regions are being conducted

- Looking for promoting regional agreements about possible locations for resources (Labs), agreements and testing capabilities

- Close collaboration with regional experts in addressing capacity building activities, accreditation and type approval testing.

- Moving forward to establishing regional test centers and/or MRAs as appropriate
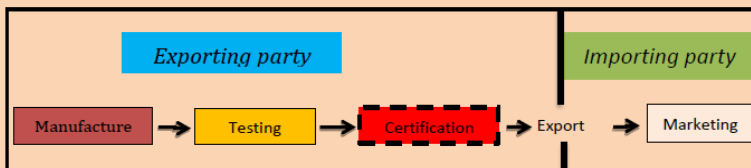
Implementation of an MRA

Figure 4: Phase 1 – Mutual acceptance of test reports

Exporting party — Importing party

Manufacture → Testing → Export → Certification → Marketing

Source: Andrew Kwan

Figure 5: Phase 2 – Mutual acceptance of certification

Exporting party — Importing party

Manufacture → Testing → Certification → Export → Marketing

Source: Andrew Kwan

Parties can choose to implement the phases of the MRA one at a time or both together. Typically the parties will implement Phase 1 and after gaining experience and confidence with the Phase 1 procedure, they will then proceed to implement the Phase 2 procedure.

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MRA Benefits

For manufacturers:

• opportunity to test and certify products one time to the requirements of multiple markets and ship products without further conformity assessment

• increase certification efficiency for products exported to foreign markets, thus increasing export opportunities for small and medium-sized enterprises (SMEs)

• decreasing time-to-market for companies manufacturing telecommunication equipment with shorter and shorter product life cycles, thus maximizing export opportunities and allowing for rapid reinvestment in research and further development for new technologies

For conformity assessment bodies:

• Allowing conformity assessment bodies (CABs) to increase the value of their service by offering their clients testing and certifying products for multiple markets.

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MRA Benefits (cont)

For regulators:

• reduction of regulatory resources required to certify terminal attachment and radio equipment

• opportunity to reallocate a portion of these former certification costs to other areas

• further harmonizing of technical requirements and of regional and national conformity assessment systems

• access to a pool of knowledge about the latest global trends and experiences regarding conformity assessment and regulatory systems.

For consumers:

• increasing consumer access to the widest variety of available technology

• faster access to equipment at a lower cost

• speeding the development of telecommunication and Internet infrastructure.

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C&I Regional Assessment Studies

Calendar

❑**Assessment Study for SADC Region completed 2014)**

- The results of the Assessment Study have been presented during the Subregional Workshop for SADC (Southern African Development Community), 13-15 October 2014, Livingstone (Zambia)

C&I Assessment Study for SADC

- Final Report
- Survey Findings
- Outcomes of the Workshop for SADC, Livingstone, Zambia, 13-15 October, 2014
  - Recommendations: In Country C&I Test Lab
  - Criteria for selecting countries for establishing regional test centres
  - Proposed plan for a SADC framework MRA
  - Media statement on the meeting of SADC Ministers Responsible for Communications, Postal and ICTs. Mangochi, Malawi, 21 November 2014

❑ **Assessment Study for Maghreb countries**

Mauritania, Morocco, Algeria, Tunisia, Libya (completed 2014)

The results of the assessment study have been presented during the Subregional Workshop for Maghreb Countries, Tunis 9-11 December 2014

➢ Assessment Study for AMS (Caribbean) conducted in 2014, Assessment Studies for AMS (Central America) and AFR (EAC countries) are being conducted during 2015

C&I Assessment Study for Maghreb

- Final Report
- Survey Findings
- Outcomes of the workshop for Maghreb, Tunis 9-11 December 2014
  - ➢ Recommendations: In Country C&I Test Lab
  - ➢ Criteria for selecting countries for establishing regional test centres
  - ➢ Proposed plan for a Maghreb framework MRA

Follow-up of Assessment Study for Maghreb

- Joint declaration signed between ITU Regional Office of Cairo and UMA the Secretariat General of the Arab Maghreb Union (UMA) for collaboration and support to Maghreb countries for establishing a common MRA

- **First meeting of C&I Expert Committee for Maghreb, Rabat (Morocco), 23-25 November 2015**

Assessment Studies for the Caribbean

- The results of the first assessment were presented during the ITU C&I Workshop for Caribbean (2-4 December 2014, in St. Augustine, Trinidad and Tobago)

- Assessment Study on C&I for the Caribbean
- Report
- Outcomes

http://www.itu.int/en/ITU-D/Technology/Pages/Events.aspx

Follow-up of Assessment Study for the Caribbean

*As one of the results of the assessment and workshop held for the
Caribbean was the cooperation between an ITU Academia member, CPqD
with Caribbean countries in regard to homologation and testing procedures.
A high level Caribbean mission visited the laboratories of the CPqD in
Campinas, Brazil, during the C&I training for the region in June 2015*

❑ **Assessment Studies for EAC countries:**

The East African Community (EAC) is the regional intergovernmental organization of the Republics of
Burundi, **Kenya**, **Rwanda**, the **United Republic of Tanzania**, and the Republic of **Uganda**, with its
headquarters in Arusha, **Tanzania**. **(ongoing 2015)**
The results of the assessment study was presented during the Subregional Workshop for EAC
countries, Nairobi 21-23 October 2015. **EAC Secretariat will call for Ministerial Meeting early 2016**

Assessment Studies

- **Assessment Studies for Central America**
- The results of the first assessment will be presented during the ITU C&I Workshop for Central America Tegucigalpa, Honduras 7 – 9 December 2015

Costa Rica
El Salvador
Guatemala
Honduras
Nicaragua
Panama
Dominican Republic
+
Cuba

Follow-up of C&I Assessment Studies on Regional Basis

SADC	▪ Final Report
	▪ Survey Findings
	▪ Outcomes of the Workshop for SADC, Livingstone, Zambia, 13-15 October, 2014
	  • Recommendations: In Country C&I Test Lab
	  • Criteria for selecting countries for establishing regional test centres
	  • Proposed plan for a SADC framework MRA
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Maghreb	• Final Report
	• Survey Findings
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	  ➢ Criteria for selecting countries for establishing regional test centres
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Caribbean	• As one of the results of the assessment and workshop held for the Caribbean was the cooperation between an ITU Academia member, CPqD with Caribbean countries in regard to homologation and testing procedures. A high level Caribbean mission visited the laboratories of the CPqD in Campinas, Brazil, during the C&I training for the region in June 2015
EAC	• C&I Assessment Study for EAC: Survey Findings • Outcomes • Recommendations: In Country C&I Test Lab • Criteria for selecting countries for establishing regional test centres • Proposed plan for EAC framework MRA • EAC Task Force on Conformity and Interoperability (C&I): Terms of Reference