



INTRODUCTION TO CONFORMANCE & INTEROPERABILITY (C&I) TESTING

**ITU/MAGHREB WORKSHOP FOR THE ADMINISTRATION OF ALGERIA
ALGIERS, 26-27 JUNE 2018**

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Presentation Outline



- Standards & Technical requirements
- Processes of Standards setting
- Mutual Recognition Arrangement
- Interoperability
- Why interoperability testing
- Causes of interoperability problems
- Contribution of Testing Labs to C&I

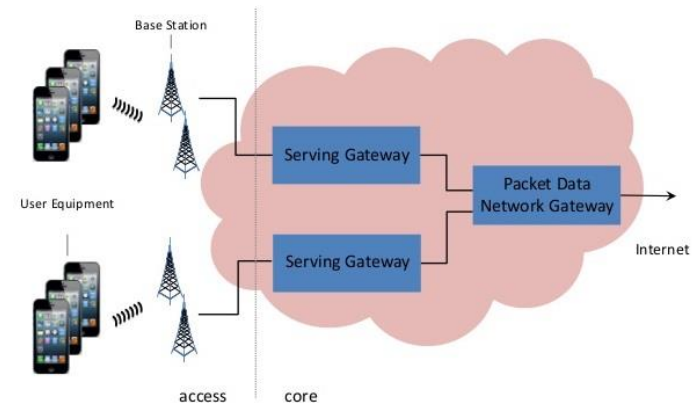


Standards & Technical requirements

STANDARDS - established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results aimed at the achievement of the optimum degree of order in a given context. [ISO/IEC Guide 2: 1996, definition 3.2]

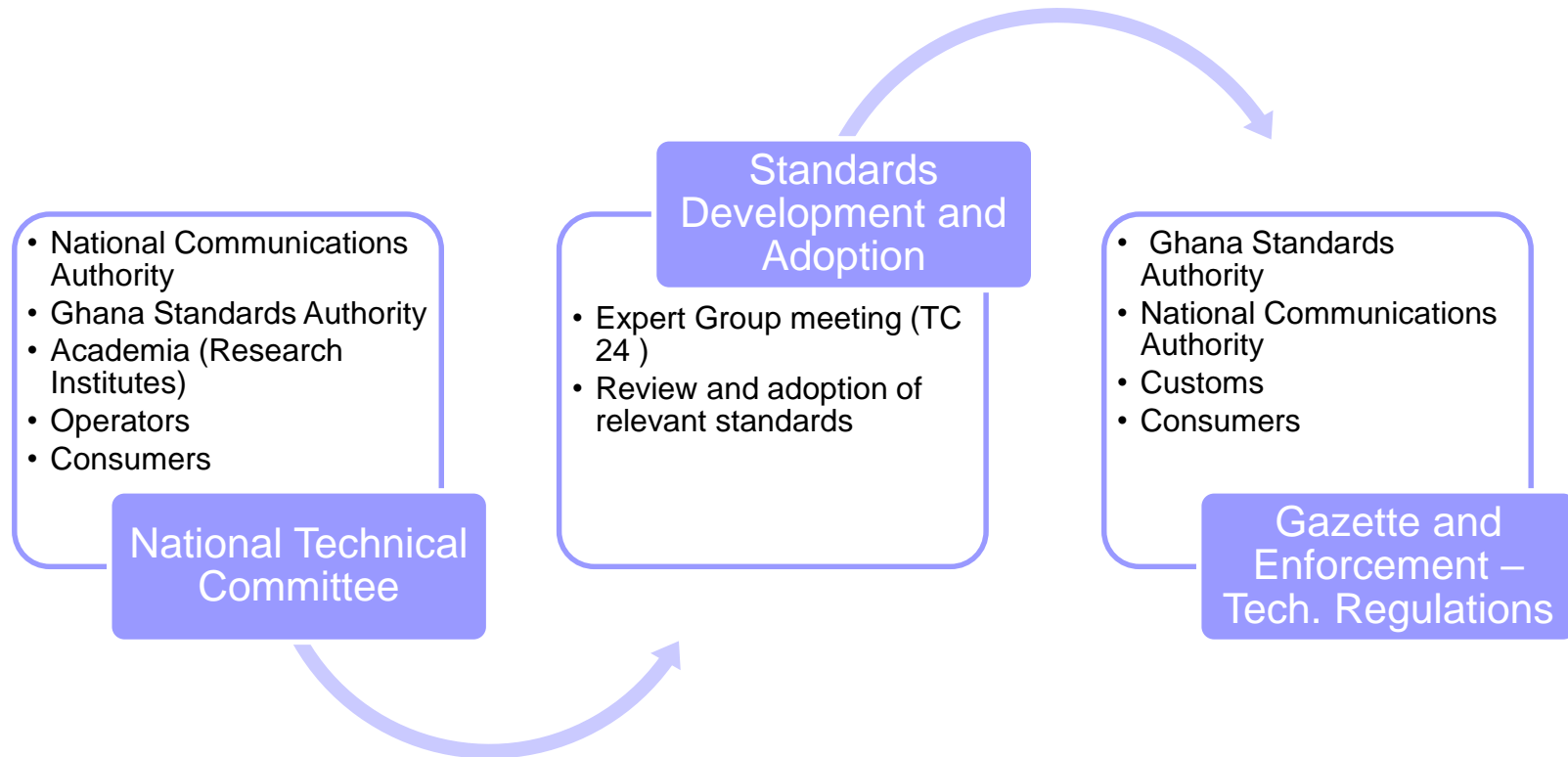
Benefits of Standards:

- ❑ Quality
- ❑ Safety
- ❑ Interoperability
- ❑ Reduces trade barriers



The ICT Standards Setting Process

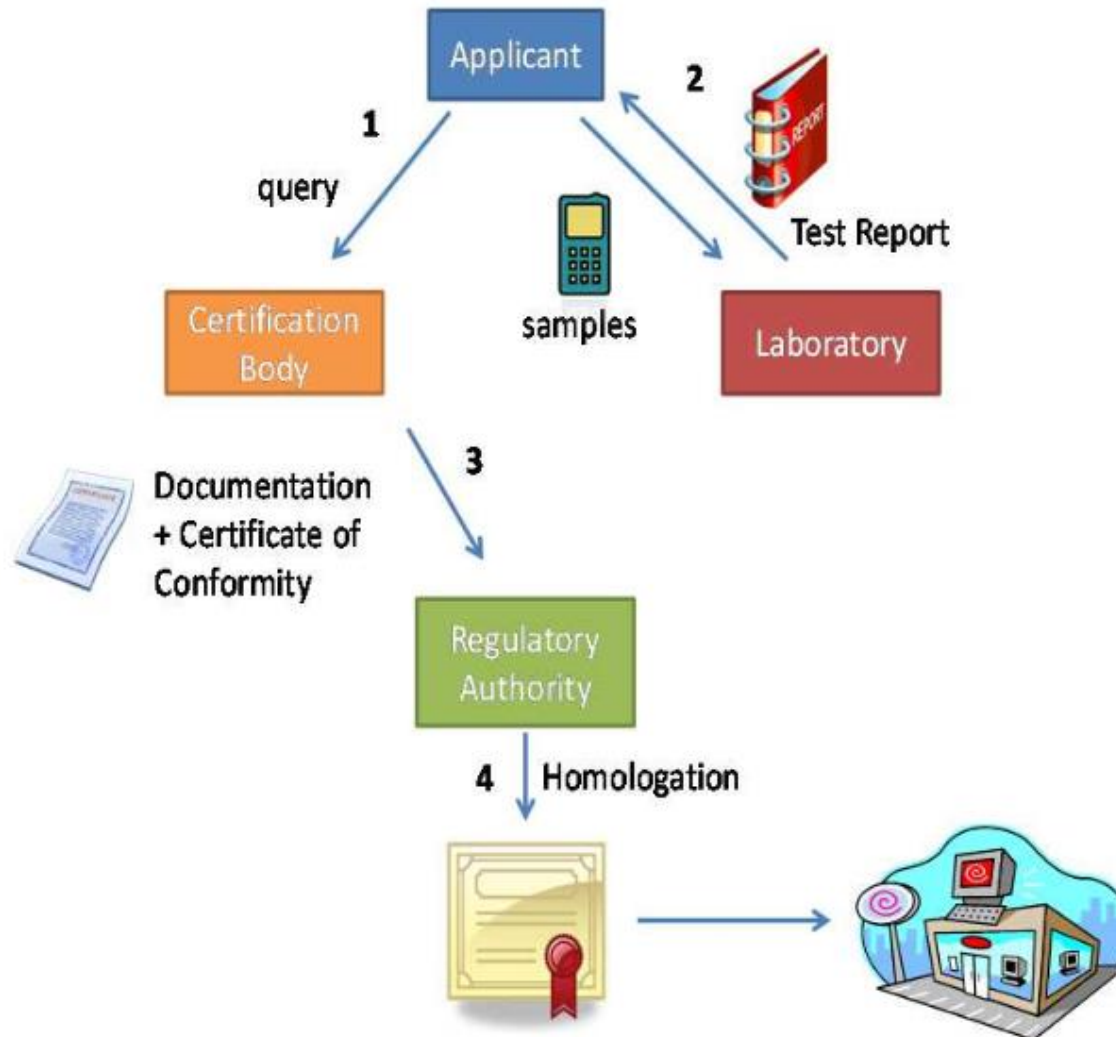
- ❑ Electronic Communication Equipment Standards in Ghana are developed by an inter agency National Technical Committee.



Standards Vs. Regulations

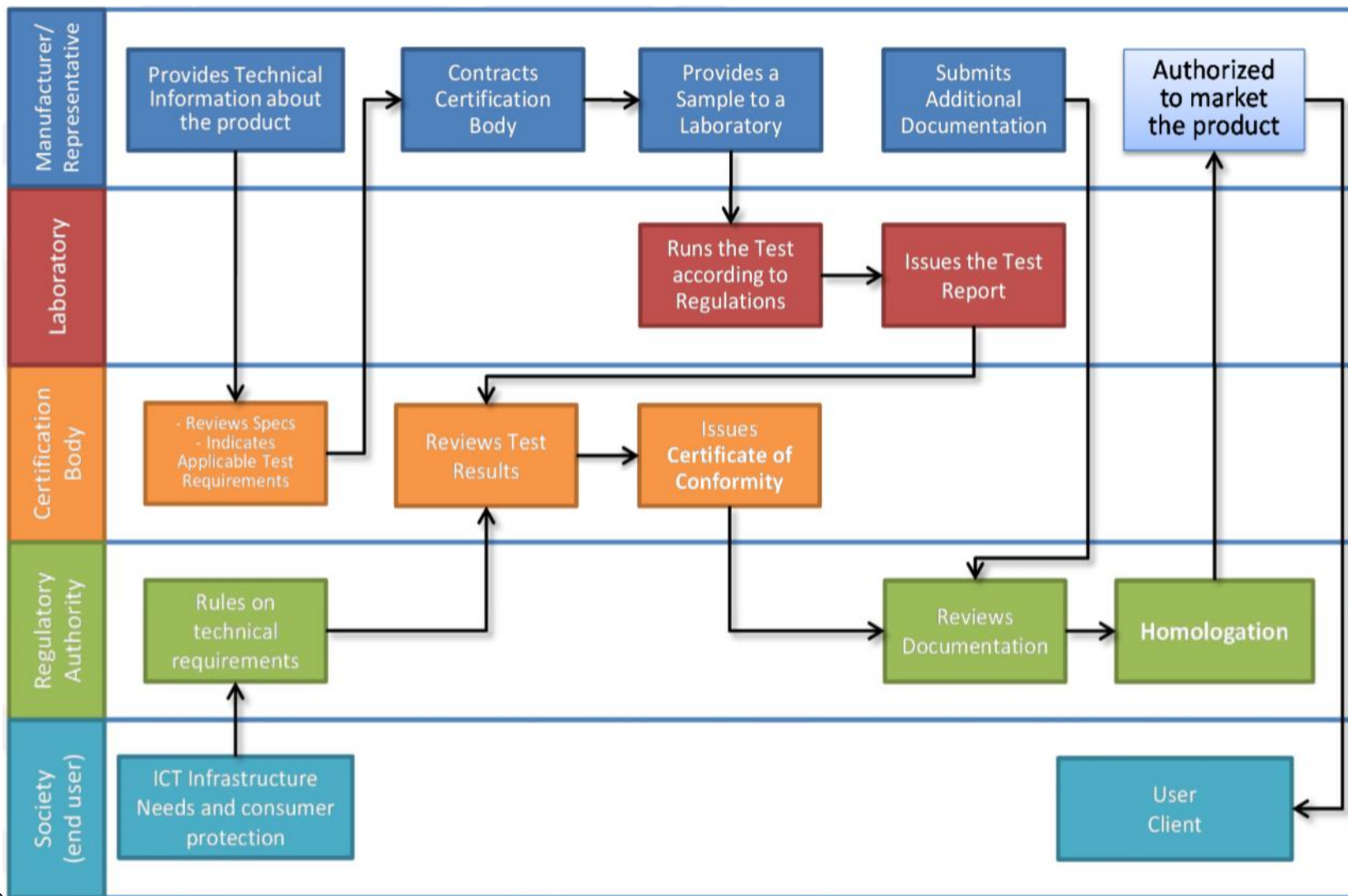
- ❑ Recommendations
- ❑ Use is voluntary
- ❑ Approved and Published by recognized Standardization bodies
- ❑ Based on consolidated results of science , technology and experience
- ❑ Binding legislative enactments
- ❑ Use is mandatory – leads to Conformity Assessment Procedures
- ❑ Adopted by an Authority
- ❑ Provides Technical Specifications directly or by reference to standards

General Procedure for C&I Assessment





Product Assessment Procedures



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Mutual Recognition Agreements (MRAs)

- Purpose: Facilitate trade by allowing Conformity Assessment Bodies (CAB) or Regulators in one economy to test (one part) and/or certify (another part) of products to the Technical Regulations of another economy.

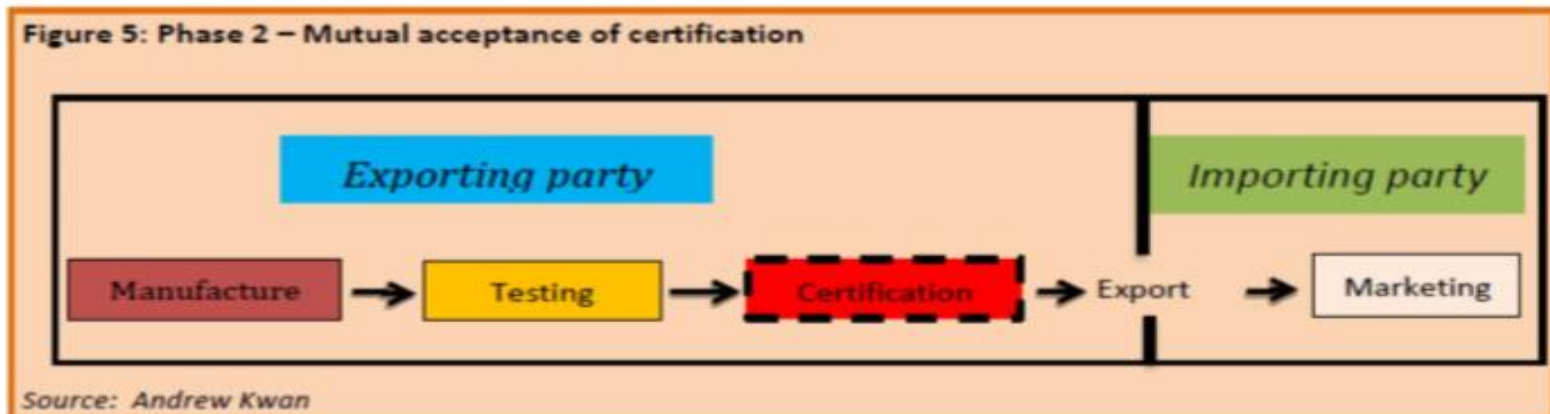
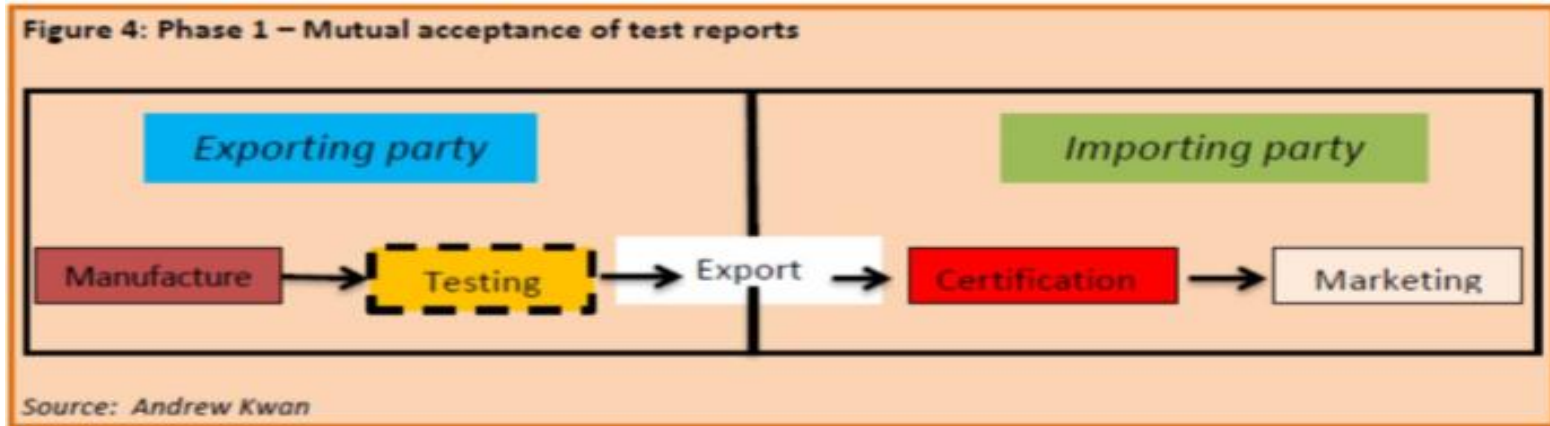
Parties to an MRA mutually agree to accept:

- Test results
- Product approval



Mutual Recognition Agreements (MRAs)

Implementation of an MRA



Benefits of an MRA

For regulators:

- ❑ reduction of regulatory resources required to certify terminal attachment and radio equipment
- ❑ an opportunity to reallocate a portion of these former certification costs to other areas
- ❑ a potential stepping stone towards 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

Benefits of an MRA

For manufacturers:

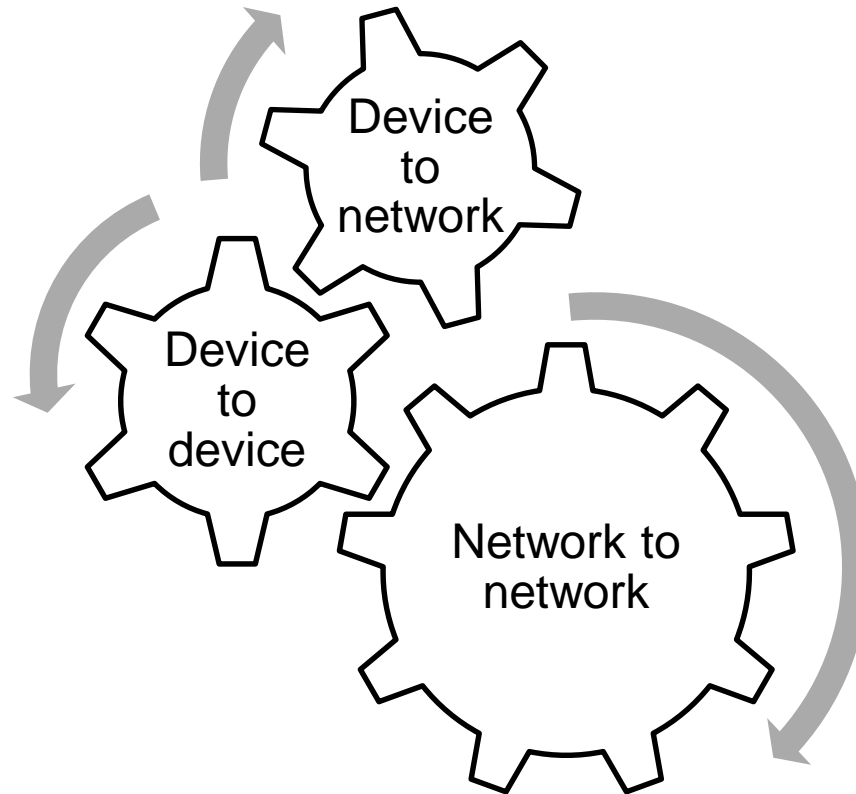
- ❑ an opportunity to test and certify products one time to the requirements of multiple markets and ship products without further conformity assessment
- ❑ increase certification efficiency for products exported to foreign markets, thus increasing export opportunities for small and medium-sized enterprises (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 development for next-generation technologies

For Conformity Assessment Bodies:

- ❑ Allowing conformity assessment bodies (CABs) to increase the value of their service by offering their clients a substantially wider portfolio, including testing and certifying products for multiple markets

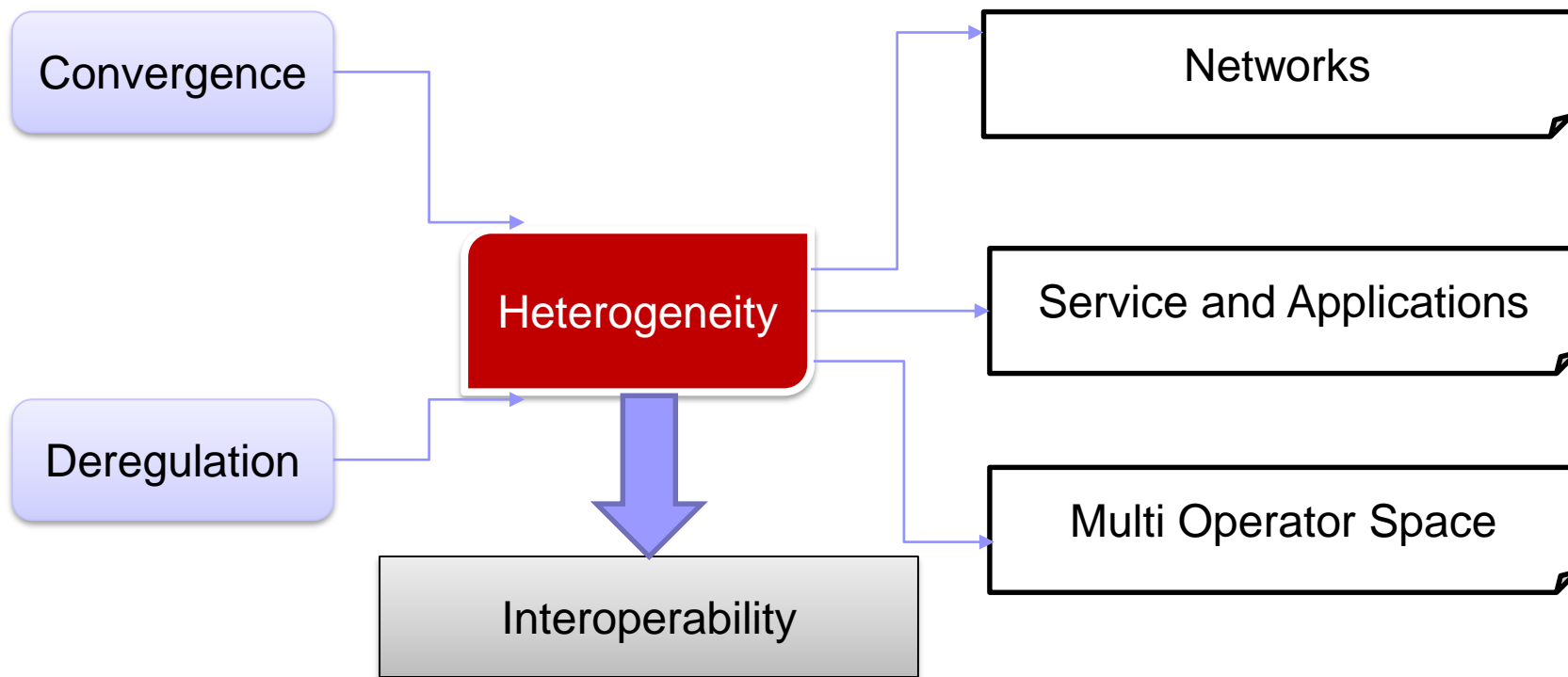
Interoperability

The ability of networks, systems, devices, applications or components to exchange information between them and to use the information so exchanged.



Interoperability Issues

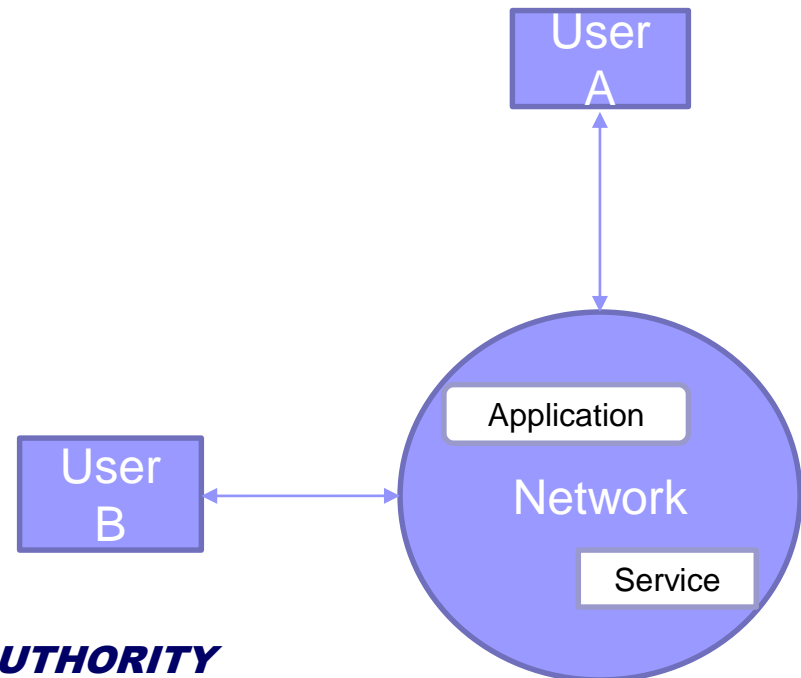
- The Internet of Things and Telecommunication Convergence has made interoperability one of the most critical issues in communications to be solved in the 21st century.



Interoperability Issues

Specifically, how information is exchanged and used between user-based devices and network-based devices, applications and services:

- ❑ provision of basic and enhanced services
- ❑ secure information exchange among authorized users
- ❑ end-to-end quality of service
- ❑ network management
- ❑ processing and storage/retrieval



Why Interoperability testing

Interoperability is of benefit to all actors in the Telecommunications value chain:

- ❑ The user benefits because he can communicate with whom he wants or needs anywhere and anytime, with a single terminal.
- ❑ The network operator benefits because it can select the best equipment from different manufacturers according to the best price and performance.
- ❑ The manufacturer benefits because it can sell the same equipment to different countries or operators, and benefit from economies of scale in fabrication and marketing.

Why Interoperability testing

Public authorities benefit because they can coordinate responses from different critical infrastructures networks.

Safety issues and security policy show how important is to be able to interoperate between different emergency networks, satellite, fixed and mobile:

- ❑ disease epidemic
- ❑ terrorism attacks
- ❑ volcanic eruptions and hurricanes
- ❑ protection against crime
- ❑ coordination of utility grids
- ❑ disaster management



Causes of Interoperability Problems

■ Standards

- Errors and ambiguities in standards
- Incompatible standards (standards with different QoS, traffic priorities)

■ Implementations

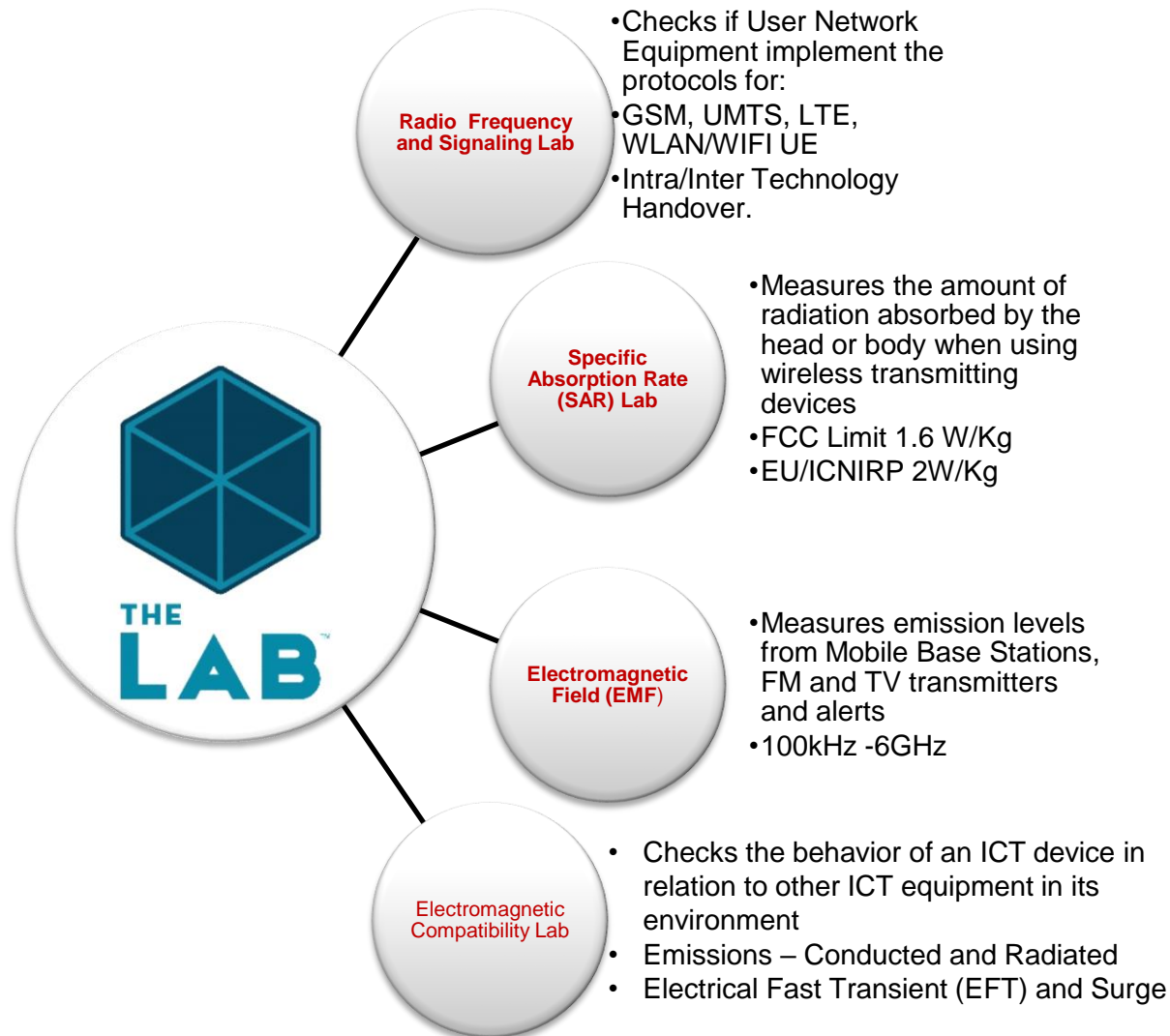
- Human errors, e.g. programmer errors
- Different interpretations of the standard
- Different choice of options allowed by the standard

■ Technology

- Networks use different traffic queuing techniques
- Device compatibility –host system configuration



Contribution of Testing Laboratories to C&I



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Any Questions?

