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African  
Backbone

Communication Infrastructure Technology - Congo



**INTERNATIONAL TELECOMMUNICATION UNION**

**ITU Forum on Conformance and Interoperability  
for the Arab and African regions**

**Tunis, Tunisia, 5-7 November 2012**

**Harmonization and improvement of standards in accordance  
with policies and regulations applied in Africa**

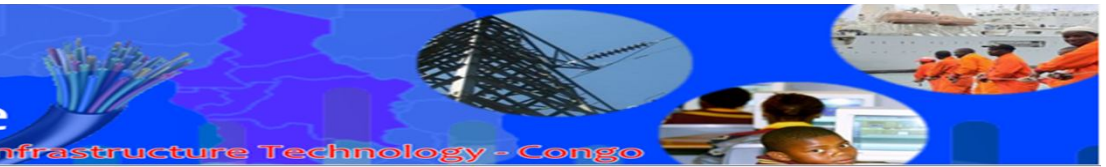
Luc Missidimbazi,  
Director, National Coordinator, Unité de Coordination du Projet CAB – CIT  
[lmissidimbazi@cabcongo.org](mailto:lmissidimbazi@cabcongo.org) ou [luc.missidimbazi@arpce.cg](mailto:luc.missidimbazi@arpce.cg)  
[www.cabcongo.org](http://www.cabcongo.org)





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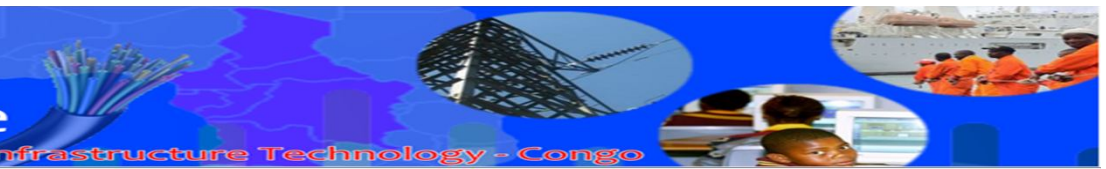


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# 1. African Context of Telecommunications and ICT



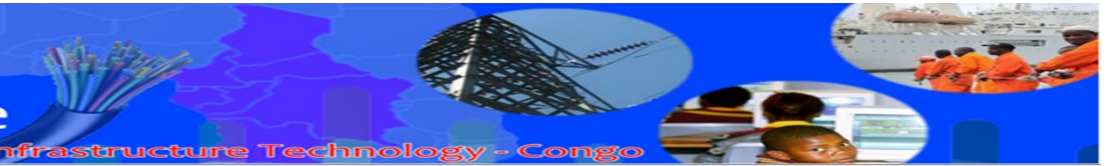
## DEVELOPMENT OF THE SECTOR IN FULL EXPANSION

- ✓ Currently dominated by mobile telephony with more than 600 million SIM cards sold in Africa until now, or a 60% of the mobile penetration rate. In addition, in value, the telecom market represents more than \$ 60 billion.
- ✓ This growth in the market of telecommunications in Africa is mainly due to the growth of the African population. The growth of telecoms has a considerable economic impact in Africa because it allowed making more dynamic African market.

Finally, there are three major developments in telecoms in Africa:

- ✓ Business model of operators turns because of the high competitive intensity: 3.6 operators per country, resulting in a war of prices in some markets.
- ✓ Internet is considered to be the next relay of growth because the access to Internet is developing: 25 million Internet connections, 57 3G networks deployed. In addition, the uses of internet explode: 38 million Facebook accounts created, 30 million Smartphones sold in 2011.
- ✓ A payment revolution through the mobile: the operators are in a position of making bank accessible in Africa. 1 African on 9 maintains a bank account.

**The growth of telecoms in Africa is remarkable and called to evolve, the regulations should support this development.**



## DEVELOPPEMENT DU SECTEUR EN PLEIN EXPANSION

### ✓ Development of the infrastructure networks

- Construction of wide band infrastructure
- Evolution of access networks
- Increase of underwater interconnection systems
- Interconnection of neighboring countries
- More multimedia services on terminals

### ✓ Services Development

- Services and uses Development;  
Introduction of ERP in companies
- Internet; Data warehouse; ERP ERP; EDI EDI;  
Extranet Extranet. CRM CRM;SCM SCM

### ✓ Internet et Telephony

- increase the rate of internet penetration
- Saturation of the mobile penetration rate
- Diversification of mobile services

### ✓ Institutional arrangements

- Developing new regulatory frameworks;
- Strong orientation towards Open Access;
- PP Development
- Harmonization of the subregion regulation texts.

### ✓ Regulation

- Renewed regulatory framework
- Development of sub regional guidelines
- Autonomous regulators
- Towards a full release.

### ✓ Local content

- Construction of GIXP
- Development of the Data Center
- Increase in the Blog and website with local digital identity

## THE CHALLENGES OF THE TELECOMMUNICATIONS AND ICT DEVELOPMENT

The development of telecommunications and ICT commits States to meet several challenges that revolve around economic, strategic and technical issues.

### ✓ Economic issues

- Telecoms are 10 mobile penetration points, representing a growth of 0.8% of GDP. In addition, the increase in Telecom has a social impact because in Africa there is a high use of mobile phones in services that will evolve on new services.

### ✓ Strategic issues

- Construction of large infrastructures
- Management of Bandwidth

### ✓ Technical issues

- Improvement of service quality and total availability of the service

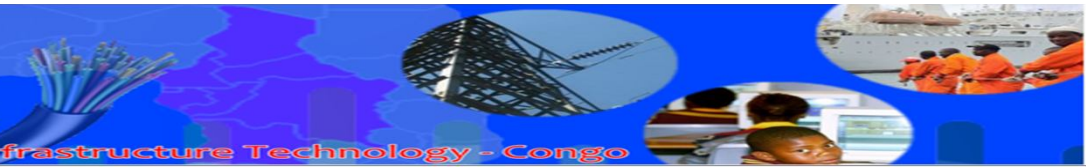
### ✓ Challenges

- To ensure the free exercise of competition from international and domestic services;
- To develop the platform of international routing traffic for local and border country's needs.
- To promote the transparency of the current regulatory framework and strengthen the legal certainty enjoyed by the actors of the market;
- To facilitate Internet access for all and at reasonable price.

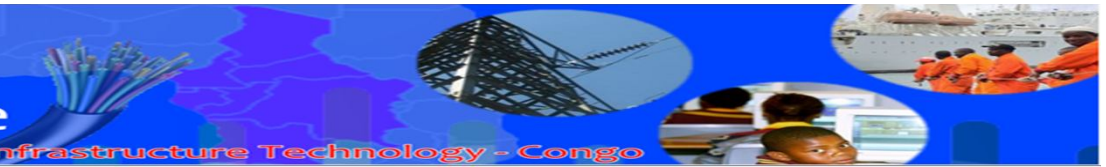


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## 2. Guidance for better regulation



## Need for regulation

The regulation seeks to create equal conditions for the development of competition by setting the right balance between competing objectives such as:

- ✓ Long term growth and development of the sector
- ✓ Smooth operation of networks and services

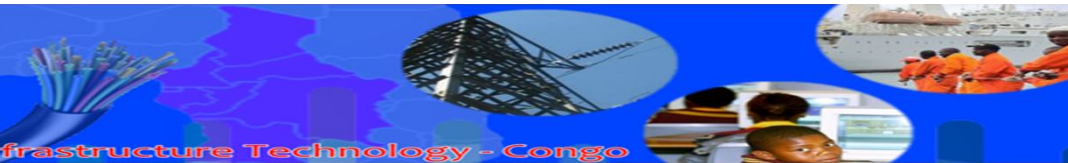
### Regulation is necessary for two main reasons:

Emergence of open standards that takes its full meaning in this context of development and technical flexibility transfers private initiative capacity on the market

The proliferation and competition between platforms of aggregation or network system to capture the relationship to consumer tends to evolve technical standards from market standards.

MAINTAIN A ECONOMIC ENVIRONMENT  
COMPETITIVE





## Methodology to regulate

### African Contexte

Context of electronic communications is highly scalable. Development of infrastructure and services

### Regulation

A harmonization of advanced regulatory texts, which must be a support for the regulation on the compliance and interoperability

### Adapt standards

Adapt technical standards to the specific standards for the African region

MAINTAIN A ECONOMIC ENVIRONMENT  
COMPETITIVE



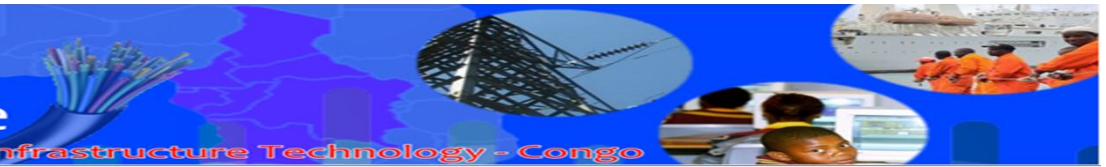


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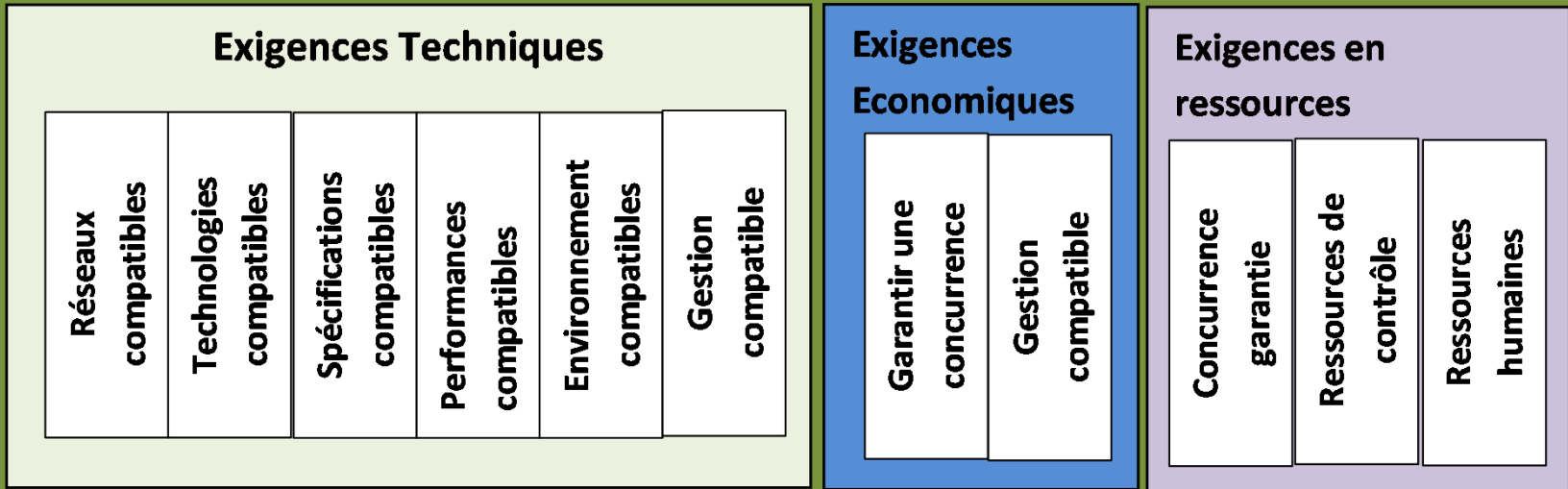
## 3. Technical requirements



**Technical requirements for the compliance of networks and service**

To ensure an efficient ecosystem, area is oriented Open access which imposes technical requirements that impose compliance of networks for Data interconnection and exchange

**Global vision for an open access regime**



**The technical requirements of the bases for compliance regulations of networks and services.**



## Technical requirements for the compliance of networks and service

### Compatible networks

The compatibility of networks is characterized by: the synchronization of networks, signaling, protection and restoration mode of traffic

### Compatible Technologies

Conformity with telecom standards or organizations such as ITU-T, ETSI and IETF: ADSL: ITU-T G.992, PLT: ITU-T G.9960 (G.hn) , FTTX: GPON ITU-T G.984 Bendable fibers: ITU-T G.657. SDH: ITU-T G.707, Carrier Ethernet: ITU-T Y.1731

### Compatible Specifications

Level of conformity :  
Define the standard minimum for technologies WDM, SDH, Giga Ethernet, Ethernet

### Compatible performance

Network performance must be measured by technologies and secure: the time of transmission, availability, recovery...

### Compatible environment

The climatic conditions, electrical safety, electromagnetic radiation and electrical compatibility (power and voltage of equipment) are fundamental

### compatible management

Information data for the management of the networks must comply with a standard established by managers. Signaling must therefore be subject of harmonization

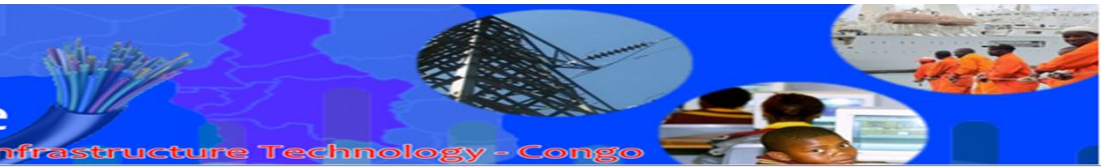
## ANALYSIS OF IMPLEMENTATION OF THE REQUIREMENTS

	Level of application	Responsibility	Resources
Compatible networks	<ol style="list-style-type: none"> <li>1. The law must promote the sharing of infrastructure</li> <li>2. The specification should clearly state</li> <li>3. Directive on technical environment</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Regulatory structure</b></li> <li>2. Regulation Agency</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Knowledge of networks</b></li> </ol>
Compatible Technologies	<ol style="list-style-type: none"> <li>1. Le Cahier de charges doit clairement le stipuler</li> </ol>	<ol style="list-style-type: none"> <li>1. Integrators (Or operators)</li> <li>2. Manufacturers</li> </ol>	<ol style="list-style-type: none"> <li>1. Plateforme de tests</li> <li>2. Connaissance technologiques</li> </ol>
Compatible Specifications	<ol style="list-style-type: none"> <li>1. Le Cahier de charges doit clairement le stipuler</li> </ol>	<ol style="list-style-type: none"> <li>1. Integrators (Or operators)</li> <li>2. Manufacturers</li> </ol>	<ol style="list-style-type: none"> <li>1. <b>Testing platform</b></li> <li>2. <b>Technological knowledge</b></li> </ol>
Compatible performance	<ol style="list-style-type: none"> <li>1. Le Cahier de charges doit clairement le stipuler</li> </ol>	<ol style="list-style-type: none"> <li>1. Integrators (Or operators)</li> <li>2. Manufacturers</li> </ol>	<ol style="list-style-type: none"> <li>1. Plateforme de tests</li> <li>2. Connaissance technologiques</li> </ol>
Compatible environnement	<ol style="list-style-type: none"> <li>1. Directive sur l'environnement technique</li> <li>2. Le Cahier de charges doit clairement le stipuler</li> </ol>	<ol style="list-style-type: none"> <li>1. Le regulator</li> <li>2. Integrators (Or operators)</li> <li>3. Manufacturers</li> </ol>	<ol style="list-style-type: none"> <li>1. Plateforme de tests</li> <li>2. <b>Geographical knowledge</b></li> <li>3. Connaissance technologiques</li> </ol>
compatible management	<ol style="list-style-type: none"> <li>1. Le Cahier de charges doit clairement le stipuler</li> </ol>	<ol style="list-style-type: none"> <li>1. Integrators (Or operators)</li> <li>2. Manufacturers</li> </ol>	<ol style="list-style-type: none"> <li>1. Plateforme de tests</li> <li>2. Connaissance technologiques</li> </ol>

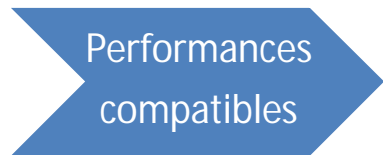
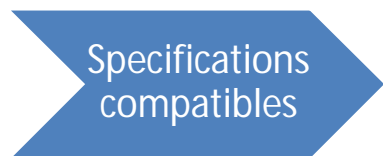


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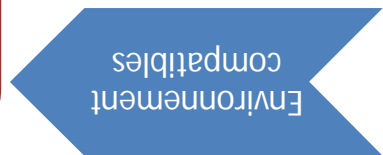
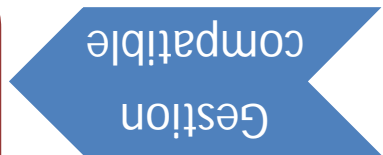
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## 3. Implementation of Regulation



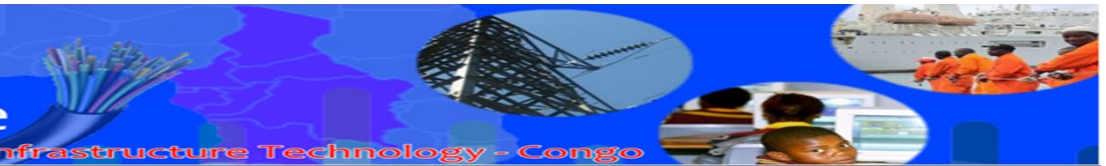
L'application des exigences relatives au régime de l'Open Access nécessite de faire un focus sur la conformité des réseaux et l'homologation des équipements utilisés.  
The application of requirements relative to Open Access requires a focus on compliance of the networks and the licensing of used equipment





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# NETWORK CONFORMITY

## Télécommunications : System end Equipement Normes

Environnement:  
Standards

Conformity with telecom standards or organizations such as ITU-T, ETSI and IETF

Level of conformity :  
Define the standard minimum for technologies WDM, SDH, Giga Ethernet, Ethernet

Type de protocole

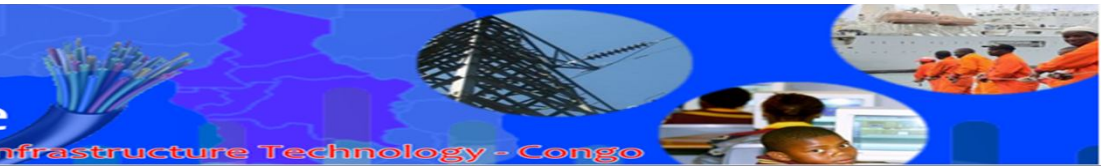
Performance

Environnement comptable

-  
Synchronisation  
- Signalisation  
- Protection du trafic  
Restauration  
- granularité

defines the electrical characteristics and environmental conditions of operation of telecommunication equipment installed in industrial buildings for HV/VHV substations.





## IMPLEMENTATION OF THE REQUIREMENTS

# Conformity of equipment

**Network  
equipment**

Conformity with telecom standards or organizations such as ITU-T, ETSI and IETF

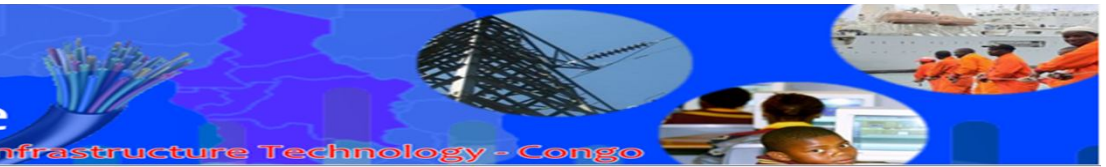
**Terminal  
equipment**

Approval of terminals;  
Test laboratory



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## REGLEMENTATION ET REGULATION

**To meet these demands, regulation must be structured in three levels to address the issue of interoperability and compliance.**

- Level 1 : Conditions of networks establishment**
- Level 2 : Conditions of networks operation**
- Level 3 : Conditions of Controls and ensuring good competition**

## REGULATION

### Level 1 : Conditions of networks establishment

1. The Act on the regulation of the communications industry should clearly refer to the sharing of infrastructure. Law registration allows the implementation of the provisions for a structured sharing.
2. Depending on the mode of permission, the specifications must clearly indicate the level of compliance: networks, technologies, environment, performance and environment.
3. Clarification of responsibilities between actors for operational implementation of sharing through decrees of act application, convention of sharing between operators or regulator's decisions..

## REGULATION

### Level 2 : Condition of Network operation

1. The regulator must ensure that operational networks meet the provisions promoting the networks interconnection and interoperability of services.

For this purpose, he is in charge of:

- ensure exchange of information and integrity of the network between operators
- validate interconnection catalog and offers of references
- define the terms of accommodation and operations at the point of sharing
- Conventions of infrastructure sharing

2. Establish a system of information and technology watch

- Adoption of a decree on approval of equipment
- Establishment of a standardization structure in the form of Committee
- Establishment of national test lab for compliance

## REGULATION

### Level 3 : Conditions to control and ensure a good competition

The regulator is in charge of controlling the setting in of conditions related to interoperability and the conformity of the equipment comes in 4 categories

#### 1- **Networks and telecommunication systems :**

Must guarantee the ability of networks to interconnect in order to ensure the obligation to right of access

#### 2- **Equipment and Environment**

Must ensure the compliance of the equipment, to be operable on any type of same technology networks

#### 3- **Services and applications**

Harmonization of services

#### 4. **The mechanism of information and technology watch**

The actors of the sector must be vouched for the publication of the specifications

GENERAL TERMS AND  
APPROVAL CONDITIONS OF  
TERMINAL EQUIPMENT

APPROVAL PROCEDURES OF  
TERMINAL EQUIPMENT

CONNECTION OF TERMINAL  
EQUIPMENT TO NETWORKS  
OPEN TO THE PUBLIC

L'HOMOLOGATION OF  
TERMINAL EQUIPEMENTS

CERTIFICATION OF  
INSTALLERS



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## Resources for

# To carry out these missions, resources are needed

Resources must allow operators, regulators, researchers and academics, users

### 1- Human Resources

Implementation of mixed technical cells constituted of operators, regulators, University and equipment manufacturers to integrate technological specifications and standards.

The organization of national and regional workshops encouraged.

To strengthen the alternative body skills (ex: customs, taxes...)

### 2- Material Resources

The acquisition of measuring equipment and setting up of a national laboratory dedicated to perform tests of any type of imported electronic communication equipment

### 4. Mechanism of information and technology watch

Under the tutelage of the body in charge of homologation, a communication plan with adapted supports: dedicated website, monthly flash ...



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**Thank you**

Luc Missidimbazi,  
Director, National Coordinator, Unité de Coordination du Projet CAB – CIT  
[lmissidimbazi@cabcongo.org](mailto:lmissidimbazi@cabcongo.org) ou [luc.missidimbazi@arpce.cg](mailto:luc.missidimbazi@arpce.cg)  
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