Smart Africa Initiative as an Enabler for efficient Technology convergence in Africa
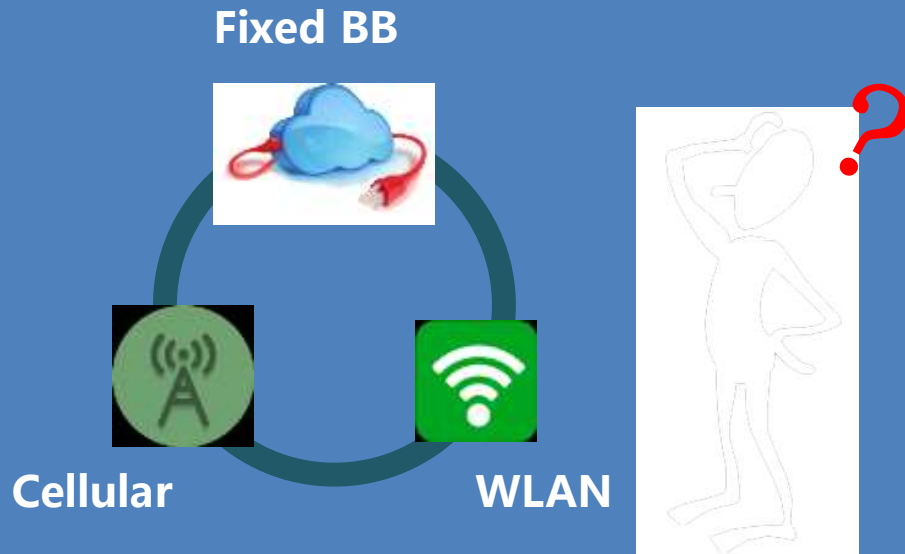
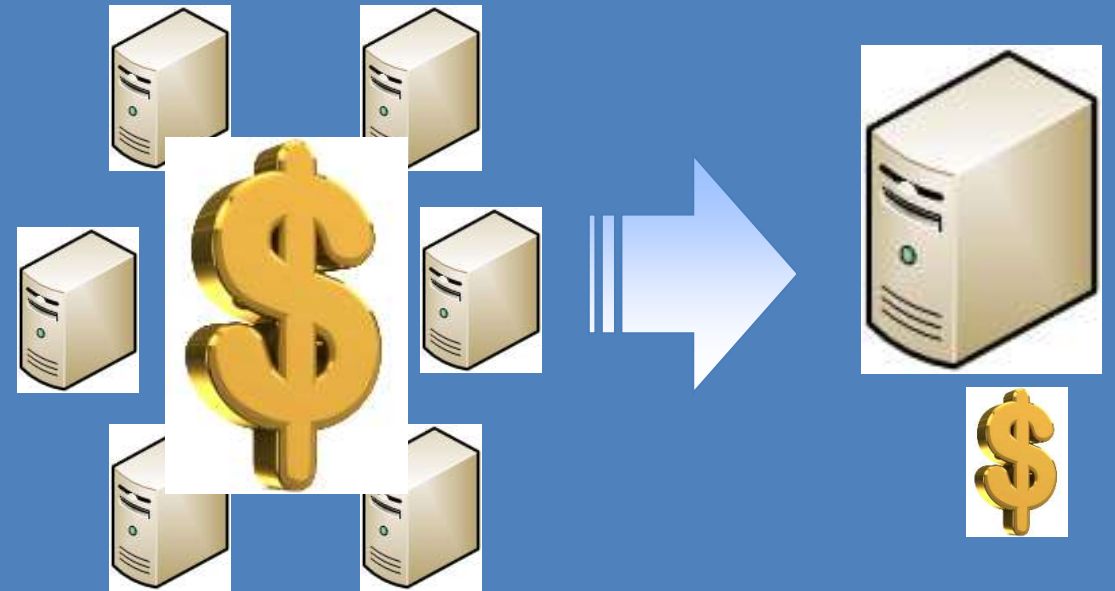Brice MURARA
ITU-T SG 13 Vice-Chair

Terms and Definitions

- **Fixed mobile convergence:** The capabilities that provide services and application to the end user regardless of the fixed or mobile access technologies being used. [Q.1762/Y.2802]

Motivation of FMC

Fixed BB

Cellular   **WLAN**

Service perspective

- Unified user identity
- Unified charging
- Service continuity
- Service consistency

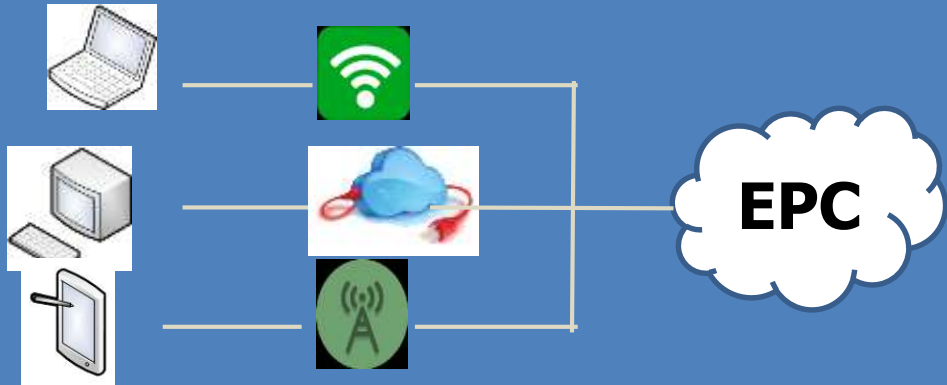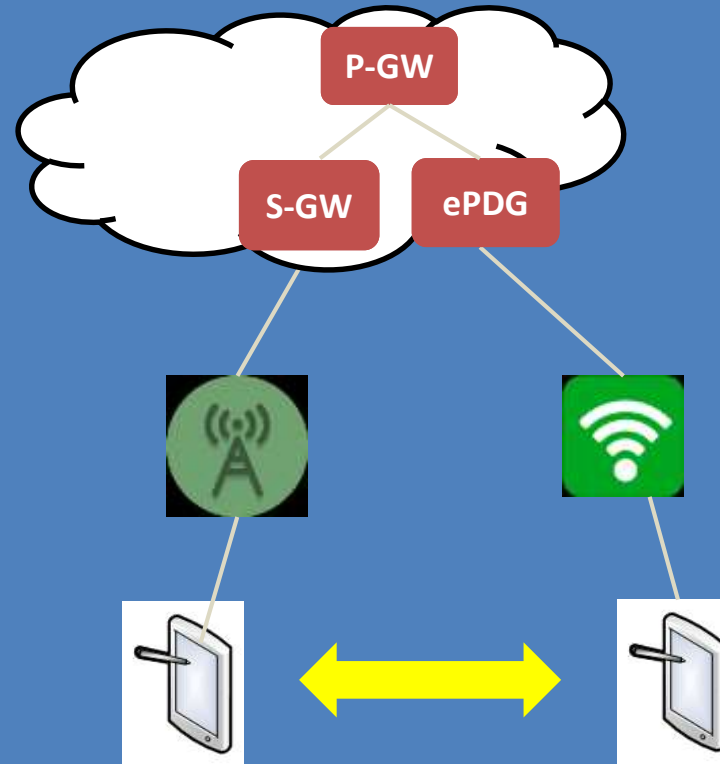## Network perspective

- Simplify network architecture
- Reduce OPEX & CAPEX

What is on the table for FMC

EPC provides a service level convergence

- Devices can access CN using any access type as far as there is an IP connectivity.

- Different devices can share the same subscriber profile (e.g. IMPI/IMPU/iFC) as well as the service features.

CN provides service continuity b/w LTE and WLAN

EPC acts as the unified core network for LTE and WLAN

When device moving b/w LTE and WLAN, the IP address keeps unchanged, and the service flow uninterrupted.

Fixed BB is not converged with other accesses at network level!!
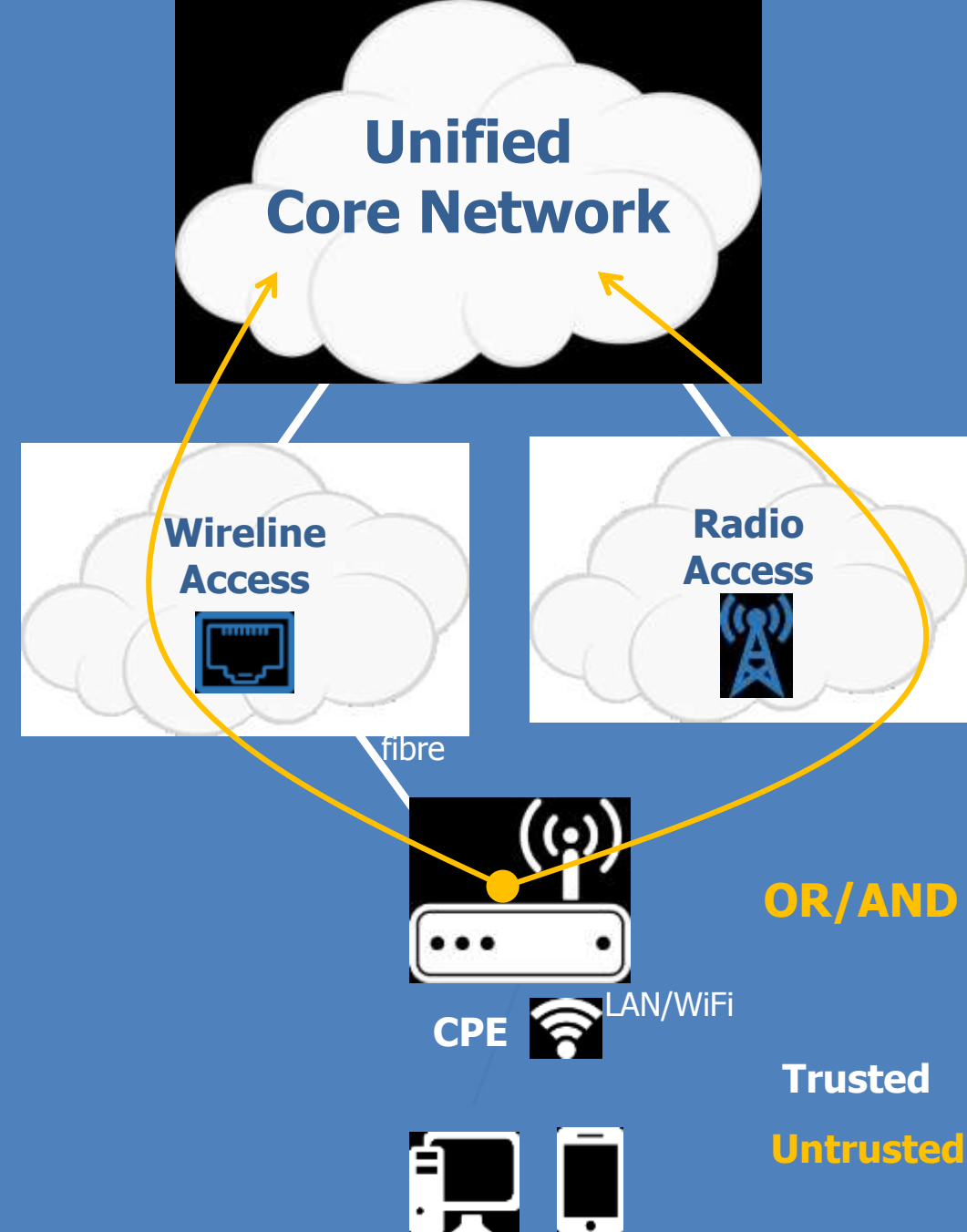
FMC in 5G Environment

FMC Use case 1

Fixed BB service via
- wireline access (trusted)

OR / AND

- radio access (trusted)

Features :

- Unified core network operator (**provides both wireline/radio access**)
- Support of using Wireline/Radio ANs seamlessly to provide the Low cost user experience
- Recovery alternatively from the other access fail over or an access's conditions cannot meet current service's requirements
- **Continuous and consistent provision of charging, traffic policies, etc**.
- Support of unified management of **subscriber's identity** and credentials
- When two accesses connected simultaneously ('**AND**' in the figure), the traffic can be split, combined, scheduled according to services' requirements and network conditions in user experience optimization

Unified Core Network

Wireline Access

Radio Access

fibre

OR/AND

CPE   LAN/WiFi

Trusted

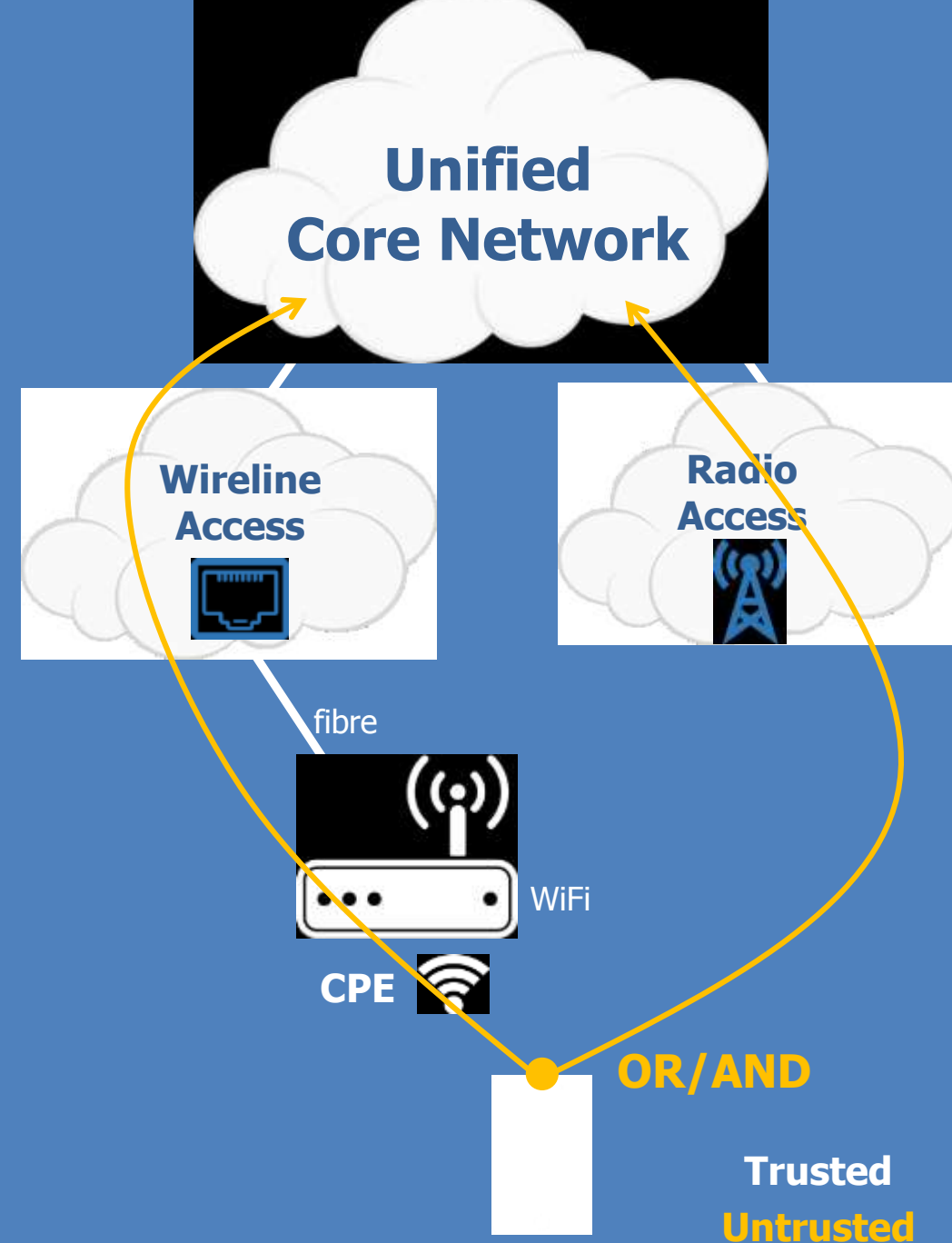**Untrusted**

FMC Use case 2

Mobile BB service via
- wireline access (trusted)

OR / AND
- radio access (trusted)

Features :

o Unified core network operator **provides both wireline and radio access**
o Support of using wireline or radio access network seamlessly to provide the Low cost user experience
o Recovery alternatively from the other access fail over or an access's conditions cannot meet current service's requirements
o Continuous and consistent provision of charging, traffic policies, etc.
o Support of unified management of subscriber's identity, credentials, and **mobility & session stack**
o When two accesses connected simultaneously ('AND' in the figure), the traffic can be split, combined, scheduled according to services' requirements and network conditions in user experience optimization
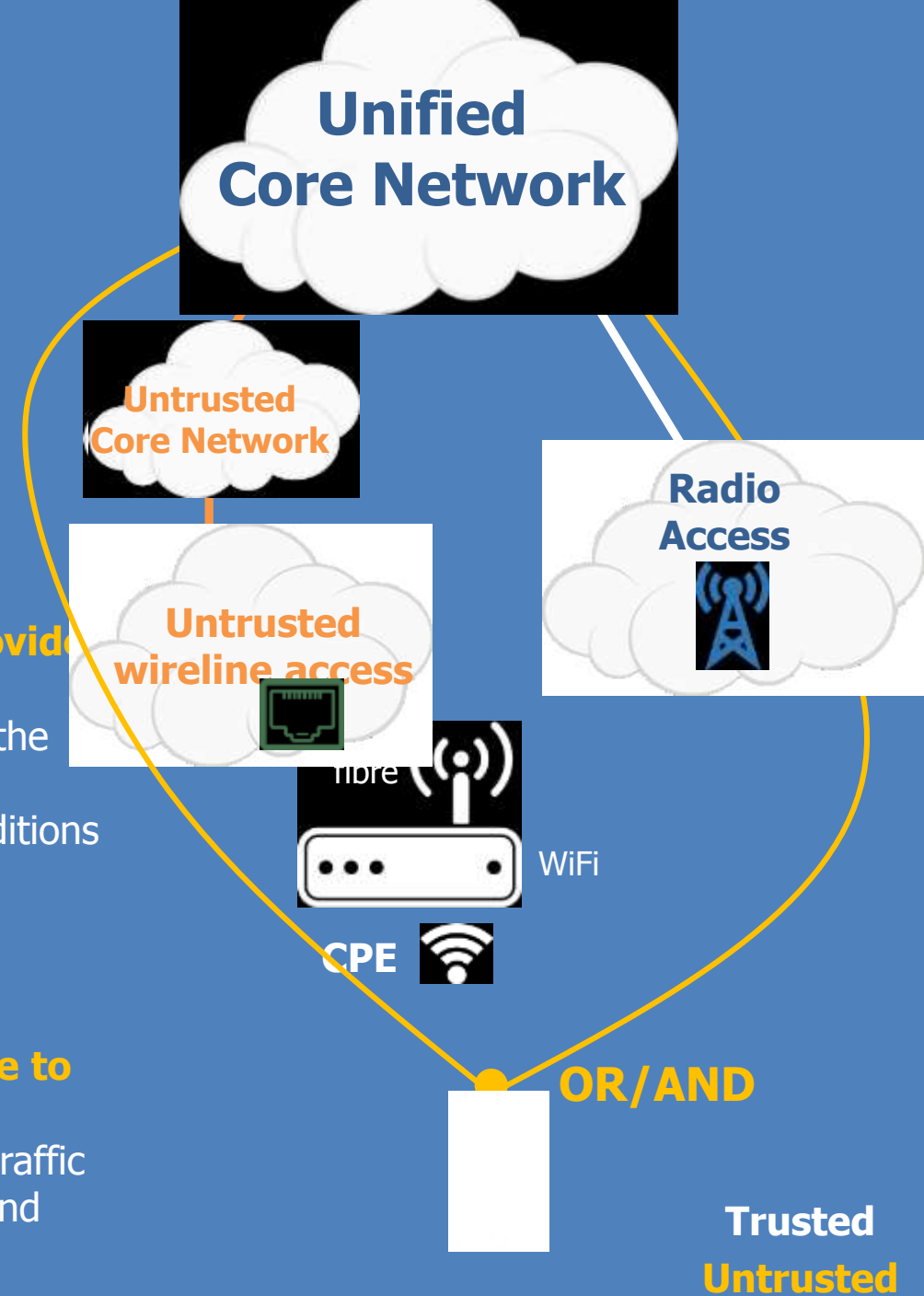
Unified Core Network

Wireline Access

Radio Access

fibre

WiFi

CPE

OR/AND

Trusted

Untrusted

FMC Use case 3

Mobile BB service via
- wireline access **(Untrusted)**

OR / AND
- radio access (Trusted)

Features :

o   Unified core network operator **provides radio access, a 3rd Party provide wireline access**
o   Support of using wireline or radio access network seamlessly to provide the Low cost user experience
o   Recovery alternatively from the other access fail over or an access's conditions cannot meet current service's requirements
o   Continuous and consistent provision of charging, traffic policies, etc.
o   Support of unified management of subscriber's identity, credentials, and **mobility & session stack**
o   **Limitations of the level of service (including QoS) may occur due to untrusted wireline access network provided by a 3rd Party**
o   When two accesses connected simultaneously ('AND' in the figure), the traffic can be split, combined, scheduled according to services' requirements and network conditions in user experience optimization

Unified Core Network

Untrusted Core Network

Untrusted wireline access

Radio Access

fibre

WiFi

CPE

OR/AND

Trusted

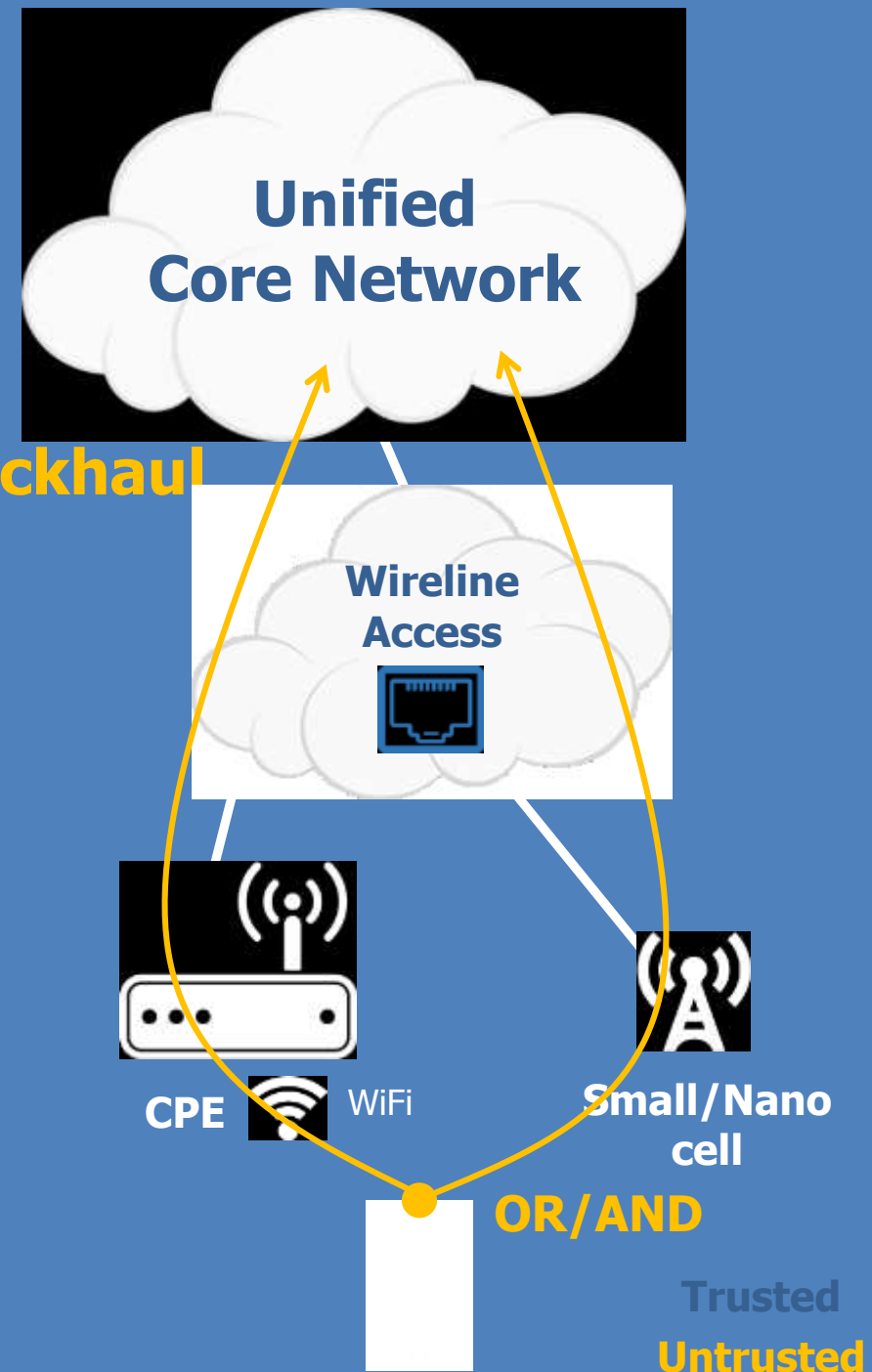**Untrusted**

FMC Use case 4

Mobile BB service via
- wireline access (trusted)

OR / AND

- radio access (trusted) **regards fixed network as backhaul**

Features :

o Unified core network operator **provides both radio access and wireline access**
o Support of using wireline or radio access network seamlessly to provide the high cost performance user experience
o Recovery alternatively from the other access fail over or an access's conditions cannot meet current service's requirements
o Continuous and consistent provision of charging, traffic policies, etc.
o Support of unified management of subscriber's identity, credentials, and **mobility & session stack**
o When two accesses connected simultaneously ('AND' in the figure), the traffic can be split, combined, scheduled according to services' requirements and network conditions in user experience optimization

Unified Core Network

Wireline Access

CPE WiFi

Small/Nano cell

OR/AND

Trusted

Untrusted

Purpose of Convergence

- Extending the <u>reach</u> and <u>scope</u> of services beyond in a pre-converged environment, **even Cross-border**.

- Seamless <u>services provisioning</u> across Fixed and evolving mobile networks, **even Cross-border**

- Seamless service provisioning <u>from the service provider's</u> perspective across heterogeneous fixed and mobile networks, **even Cross-border**.

- Ubiquity of service availability where the end users can enjoy virtually any application, from any location, on any terminal device, **even Cross-border**;

Devices/Terminals requirements

- The various Access systems involve very different bandwidth capabilities/requirements, as well as very different access technologies.

- No single multimode terminal to handle so many accesses.

- Rather, users will be granted access to the network by using a range of terminals, some of them capable of multimode operation.

- Consequently, mobility across this heterogeneous environment requires service adaptation for terminal mobility as well as personal mobility.
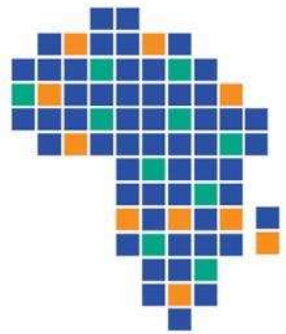
Service requirements

- the user's ability to <u>gain access</u> from any network access point.

- the user's ability to <u>obtain their services in a consistent</u> manner.

- the user's <u>availability</u> and <u>reachability</u> should be known to <u>network functions</u>, and possibly to <u>services and applications</u>, including those provided by a third party.

About Smart Africa Alliance

Smart Africa's Vision

" Transform Africa into a single digital market"

PRINCIPLES OF THE SMART AFRICA MANIFESTO

- To put ICT at the center of national socio-economic development agenda
- To improve access to ICT especially Broadband
- To improve accountability, efficiency and openness through ICT
- To put the Private Sector First
- To leverage ICT to promote sustainable development

smartafrica
Connect - Innovate - Transform

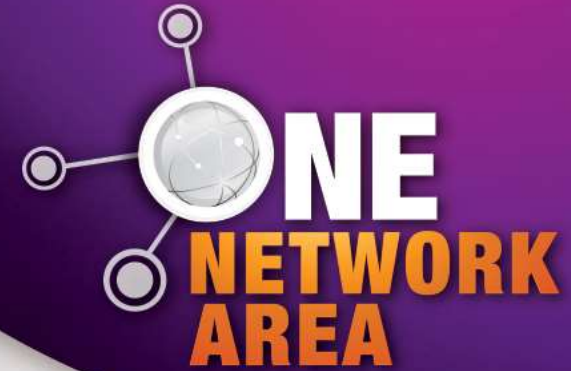**Endorsed by: AU, ITU, ATU, Global Industry, key stakeholders**

How can S.A Contribute

- Assist the African member countries to harmonize legislation for the implementation of:
  - ❖ Cross-Border Networks convergence
  - ❖ Cross-Border Interconnection and interoperability issues
- Inter-governments policy arrangements for converged network roaming regionally (African level) ,.

Results?

- Cross-Border Service registration in Africa
- Mechanism of unique user identity in Africa
- International emergency services in fixed/mobile convergence in Africa

Example: One area network

E.A adoption of One Network Area

- One area network (ONA) is a regional framework comprising countries that have agreed to **waive** or **manage** roaming charges and other surcharges for telecommunications traffic.

- Effective Jan 2015, Kenya, Rwanda and Uganda waived roaming charges following the full implementation of the ONA agreement

- Roaming charges, which have been beyond the reach of many East Africans, went down drastically, stimulating growth in the telecommunications sector

- The retail rate is the cost incurred in distributing calls within a country.

- Operationalization of the One Network Area means a drop in calling charges across the three countries from Ksh25 ($0.28) per minute to Ksh10 per minute ($0.1).

- Further operationalization for SMS, Data and Mobile Financial Services

Conclusions and Recommendations

- The studies on how interconnection and converged Telecom systems are topics that need to be addressed by the SG 13 RG AFR.

- SG 13 RG AFR needs to study how the use of Technology Convergence can make it possible to provide services to a mobile user even beyond the country borders in Africa.

Thank you!