



Rwanda Internet Governance Forum 2017

Meeting Report

November 16th 2017.

Thanks to RWIGF 2017 Partners



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2.0 Summary

RICTA and partner institutions on 16th November 2017 hosted the annual Rwanda Internet Governance Forum.

The forum brought together stakeholders in the ICT sector under the theme ‘Broadband as A Utility’ giving attention to Broadband infrastructure which is key for a sustainable Internet ecosystem.

The meeting’s relevance was largely informed by the growing importance of Broadband in social and economic perspectives across multiple sectors including government services delivery, agriculture and health care among others.

The event attracted One Hundred Twenty-Four (124) participants and representatives from various industries: from banking and financial service providers, from academia, from regulatory authority (RURA and NBR) bodies, Rwanda National Police(RNP), NIDA, RTDA, Rwanda House Authority, Road Maintenance Fund and from the private and business sectors.

3 Key deliberations

The forum was open to discuss cross cutting issues across broadband and existing infrastructure. However, the key areas of deliberations were:

- Challenges in broadband rollout
- Action steps to address the challenges
- Recommendations

These deliberations were around:

- Introductory remarks
- Presentation by Service Providers
- Presentation by JICA
- Presentation by Regulator (RURA)
- Ministers’ remarks

3.1 Presentations: Introduction. By Ghislain NKERAMUGABA CEO RICTA

The session largely put into context the current trends of the broadband ecosystem in the country and the need to development and utilize it fully to achieve national goals of a knowledge driven economy such as e-commerce and Job creation among others.

The session also put into context the cross cutting responsibility to not only develop the local broadband sector but also maximize its use.

3.2 JICA presentation- development partner facilitated by chief advisor at JICA, Atsushi Yamanaka.

The session largely focused on experience sharing from Japan in the aspect of internet governance and models that Rwanda can replicate for growth.

There has been a grey area on internet governance and limited understanding who ought to govern the sub-sector. Internet governance only started in 2006. In Rwanda, the internet governance initiatives have been supported by JICA especially in policy formulation and resource development.

From Japanese experience, Broadband is an important utility to achieve development agenda especially aspects that can further drive growth such as Knowledge driven economy. However, for broadband to have key importance to the various sectors, sector stakeholders ought to ensure that it is affordable and reliable.

3.3 Regulator's presentation: Charles SEMAPONDO

Here, the regulator Rwanda Utilities Regulatory Authority gave participants insights to the latest developments in the internet sector, challenges and future plans by the regulator.

In Rwanda, there is a liberal market among the internet service providers to foster competition and innovation consequently leading to better services for clients.

The government has also invested in Optic fibre cable across the country which enabled players like KTRN operate effectively.

The government has also invested in public private partnerships to deploy 4G network across the country.

To ensure affordability, the government has removed taxes on telecom and ICT devices to foster uptake.

There have also been initiatives to foster the manufacture of Laptops in the country to further bring down the cost of operations and foster ecosystem.

To regulate and guide operations within the sector, RURA has set up guidelines for:

- Guidelines for siting and sharing of telecommunication base station infrastructure
- Guidelines for sharing of fiber and duct infrastructure/open access policy
- Regulations on the use of unlicensed frequency spectrum for the delivery of telecommunication services.
- Regulations for Quality of Service of cellular mobile and fixed networks services
- Guidelines N°003/ICT/RURA/2014 of 16/04/2014 on minimum bandwidth and other requirements for Internet connectivity in hospitality industry;

Consequently, the uptake has grown to about 5 million in terms of subscribers with room for further growth in coming years.

Main challenges identified by the regulator include:

- Low coverage and penetration of smart devices hence low usage of 3G, 3.5G and 4G.
- Expensive International terrestrial links which impact cost to end users.
- Low digital literacy impacting on internet uptake.
- Broadband pricing models discourage uptake
- Low levels of local content which have not given users reasons for increased uptake.
- Cyber security is not adequate leading to vulnerability.

3.4 Presentation by Internet service providers:

Presented by Charles GAHUNGU Chief Technical Officer Korea Telecom Rwanda Networks.

The presentation brought into perspective the theme of the day from Internet service providers view point, challenges they were facing and possible remedies to the challenges.

KTRN is the only 4G LTE infrastructure company in Rwanda, jointly invested by the Government of Rwanda and KT exclusively for wholesale provision of universal mobile broadband network in Rwanda using 4G LTE technology.

Currently for Broadband to be considered a utility, there is an urgent need to get past a set of challenges that have hindered its reliability, penetration and relevance.

From an ISP point of view, the key challenges at the moment include:

Poor coverage in buildings across the country- this can be addressed by ensuring the effectiveness of standards of buildings such as the internal buildings solutions where by broadband infrastructure is in-built just like in the case of water and electricity.

Energy and Power- the cost of energy has a direct impact on the quality of broadband. The current plans to step up generation and distribution rates are likely to solve the challenge.

Destruction of infrastructure during road construction: the road construction projects have had a diverse impact on broadband infrastructure especially through destruction of underground infrastructure leading to inconvenience to clients. KTRN alone has since spend Rwf 1 Billion cost of repair after road construction.

Other recommendations to address key challenges of infrastructure destruction:

Enforcement of a broadband infrastructure protection policy to avoid the damaging of fibre optic cable. Punishment for offenders.

Close collaboration with road constructors – relocation should happen before construction begins with relocation costs included in the project budgets.

Effective road construction plans, design and implementation to avoid emergency scenarios

Need for protection of fibre infrastructure especially from theft.

Need to raise awareness on the need to protect the infrastructure. Can partner with police and other stakeholders to raise awareness.

4.0 Key note speeches highlights

4.1 Minister of ICT Jean Philbert NSENGIMANA

To increase its relevance in the local economy and in community development, broadband ought to be considered as a utility like in the case of water and electricity which are often viewed as necessities for productivity.

At the moment, despite the massive investments by the government, broadband usage is yet to be maximized or reach maximum impact. Usage is largely lagging in the country.

Among the reasons for the lag in uptake and impact is that a most players in the local market do not have innovative products and services that can drive uptake. Most of the products and services are very similar and not forward looking hence limited impact in uptake.

There is further need of partnerships in the ecosystem to come up with ways to have services with maximum impact and relevance.

A number of players seem content with average profits and market dominance probably holding them back from diversifying further as well as innovating further.

Minister mentioned that there should not be any packages that are below 2 Mbps, offered by service providers

4.2 Minister of State for Local government in charge of Socio-Economic Development: Cyriaque HARELIMANA

There is need to improve standards of living for citizens by availing internet access especially in the rural areas which continue to be underserved.

The services and products across the country should also be able to address citizens' lives for them to have impact and have relevancy.

Among the opportunities is to enable local governments to provide services to citizens at the sector level through ICT uptake.

There is also an immense opportunity reducing cost of operations across the country for both private and public delivery of services.

5.0 Panel session/discussion

The section featured representatives of the various stakeholders present at the meeting including; City of Kigali, JICA, RURA, University of Rwanda, also representing the consumers and open to the audience.

Concerns of destruction of broadband infrastructure during road construction have often existed partly because a number of ISPs are not aware of the exact locations of their cables leaving them prone to destruction.

The issue of fibre cuts is also due to lack of previous city planning previously. However, the city master plan takes into account the existence of such cables and infrastructure.

Buildings across the country that accommodate about 100 people are now required to have internet installation provisions just like is the case for water and electricity.

To minimize damage on infrastructure, ducts will be put up to hold cables of the various firms and companies across the country. This will ensure that the cables are not only safe but also that their owners are well aware of their exact locations.

The city has put up transversal sections every three hundred meters to ensure that the broadband infrastructure is in less 'conflict' with road infrastructure.

As the uptake of ICT goes up, there is a rise in the threat of cybercrimes across the country.

The Rwanda national police and partners are building capacities in cyber security and are increasingly stopping cybercrimes across the country.

6.0 summary challenges and way forward

Key challenges

Destruction of broadband infrastructure especially during road construction:

Poor coverage in buildings largely due to lack of pre-installed broadband infrastructure

Energy and power costs and reliability affect internet rollout across the country

Lack of innovative services by ISPs which can drive uptake

Challenges in the relevance of business models of most internet providers to ensure more internet penetration and uptake.

Digital literacy and local content

Key recommendations and way forward

Close collaboration between ISPs and road constructors to avoid damage of infrastructure

Enforcement of Broadband Infrastructure Protection

Effective Road Construction Plan, Design and Implementation to avoid damage of infrastructure

Proper mapping out of infrastructure to avoid destruction of infrastructure



ISPs ought to have customer centric approaches in developing and packaging their services to encourage uptake especially in rural areas

ISPs should review the relevance of their products to clients to drive uptake.

Ensuring that city buildings under construction have provision for internet installation

Creating synergy between stakeholders in the sector to have speedy solutions to challenges holding back the sector

7.0 APPENDIX-1

POLICIES, REGULATIONS AND GUIDELINES IN PLACE

To help develop the broadband infrastructure presented by Charles SEMAPONDO

**POLICIES, REGULATIONS AND
GUIDELINES IN PLACE**
**To help develop the broadband
infrastructure**

16 November 2017

Kigali Convention Centre



Inspiring development

Introduction

- Definition of Broadband in Rwanda
“A network connection that is always on, available at home, at work and on the move, that delivers progressively higher bandwidths that are capable of supporting innovative and interactive content and services, as to enhance the user-experience.” (source: Rwanda BB Policy 2013))
- ITU -T Recommendations I.113 & Y.1541 define the Broadband as a service or system requiring transmission channels capable of supporting rates greater than the primary rates (2 Mbps).

Policies

- Vision 2020
- NICI I-IV
- ICT SSP 2013-2018
- Smart Rwanda Master Plan 2015-2020
- National Broadband Policy 2013



Inspiring development

Policies

- **Accessibility**
 - Market liberalization
 - Optic fiber backbone by GoR, REG and Telecom Operators
 - PPP to deploy 4G Networks
 - UAF to connect institutions in rural & remote area
 - VSAT network
- **Affordability**
 - Remove of Tax on telecom/ICT equipment/Devices
 - International Bandwidth by GoR
 - Manufacture of Laptops in the country



Inspiring development

Policies

- Reliability
 - International gateway. (02 routes)
- Stimulations of demand and use of Broadband
 - Cheaper Devices
 - E- Services:
 - Smart Rwanda Master Plan (Finance, Education, Agriculture, Health, Government Services, WoY)

Laws & Orders

- RURA was initially created by the
- Law N° 39/2001 of 13th September 2001 as multi-sector regulatory agency
- Law N° 09/2013 of 01/03/2013 establishing Rwanda Utilities Regulatory Authority (RURA) and determining its mission, powers, organization and functioning.
- The Law N°24/2016 of 18/06/2016 governing Information and Communication Technologies
- The functioning and the source of funding of UAF are determined by the Presidential Order No 05/01 of 15/03/2004
- Ministerial Order N°001/MINICT/2012 of 12/03/2012 related to the Distribution and management of Internet bandwidth.



Inspiring development

Regulations and guidelines

- Guidelines for siting and sharing of telecommunication base station infrastructure
- Guidelines for sharing of fiber and duct infrastructure/open access policy
- Regulations on the use of unlicensed frequency spectrum for the delivery of telecommunication services.
- Regulations for Quality of Service of cellular mobile and fixed networks services
- Guidelines N°003/ICT/RURA/2014 of 16/04/2014 on minimum bandwidth and other requirements for Internet connectivity in hospitality industry;



Inspiring development

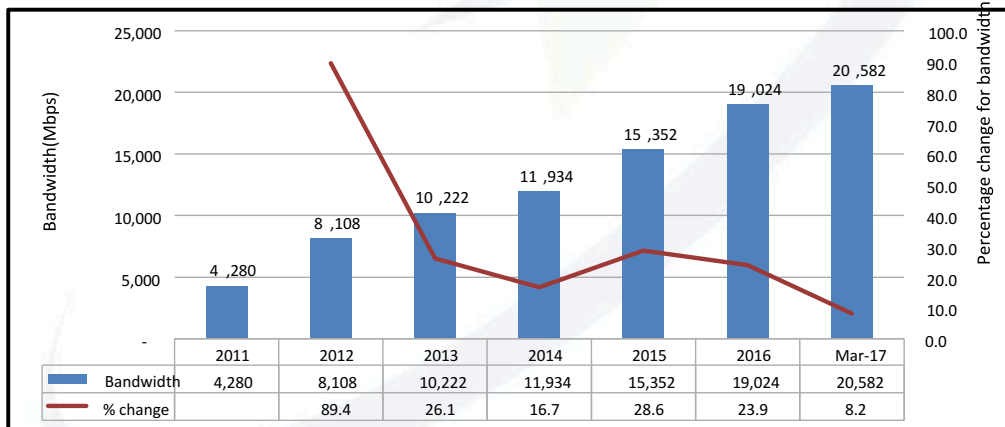
Regulations and guidelines

- Guidelines for broadband Internet quality of service.
- Guidelines for Rwanda Internet Exchange point (RINEX) management;

According to RICTA, with Internet exchange point, there is a saving of \$134,400 (about Rwf113 million) per month ; this means that Rwanda saved about Rwf1.4 billion in the just concluded financial year 2016-2017.

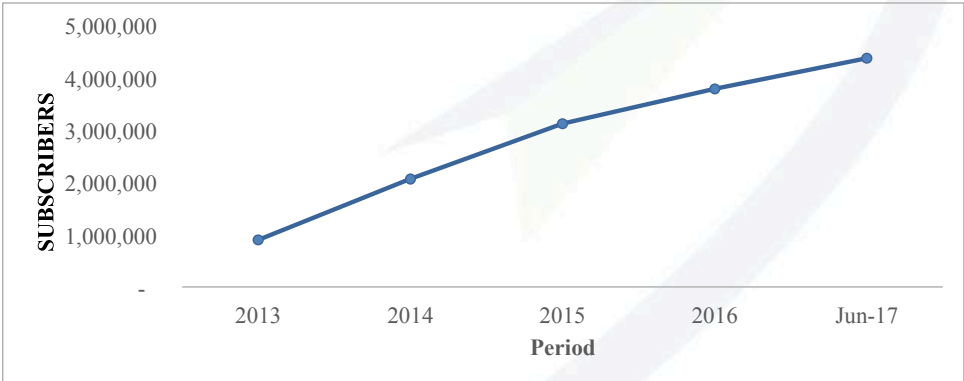
Coverage as of June 2017

Technology	2G	2.5 G	3G	3.5G	4G
Geographic coverage	99.13%	99.13%	76.27%	76.27%	51.40%
Population coverage	99.92%	99.92%	93.11%	93.11%	64.30%



Inspiring development

Internet Subscribers Trend



Source: RURA operators' returns

Challenges

- Coverage/Usage (3G,3.5G,4G): Smart devices
- FTTH extension is still low.
- Expensive International terrestrial links
- Digital literacy
- Broadband pricing
- Local Content
- Cybersecurity

Way forward

- Continue the cooperation and collaboration with stakeholders in the digital transformation journey;
- FTTH to be extended to other main cities;
- Operators to extend and upgrade their networks to support the increasing demand;
- Continue rollout of 4G LTE to achieve targets
- Innovative pricing for ISPs
- Follow up the negotiation at the EAC level the issues related to the International terrestrial pricing.
- Development of Local content to boost consumption

Thank you!

7.0 APPENDIX-2

BROADBAND AS A UTILITY

By Charles GAHUNGU- CTO KTRN



Rwanda Internet Governance Forum

BROADBAND AS A UTILITY



Gahungu Charles
CTO – Korea Telecom Rwanda Networks

16 Nov 2017

KTRN Background

Who we are

KTRN is the only 4G LTE infrastructure company in Rwanda, jointly invested by the Government of Rwanda and KT exclusively for wholesale provision of universal mobile broadband network in Rwanda using 4G LTE technology.

Vision

To accelerate data market growth by deploying world-class last mile technologies (FOC, LTE) and to expand business to neighboring countries making Rwanda as the regional hub.

Mission

To drive the fixed-mobile broadband penetration in collaboration with retail partners (MNOs, ISPs) on top of world-class ICT infrastructure of nationwide FOC backbone and 4G LTE access, and therefore to contribute to the transformation of Rwanda into ICT Hub of Africa

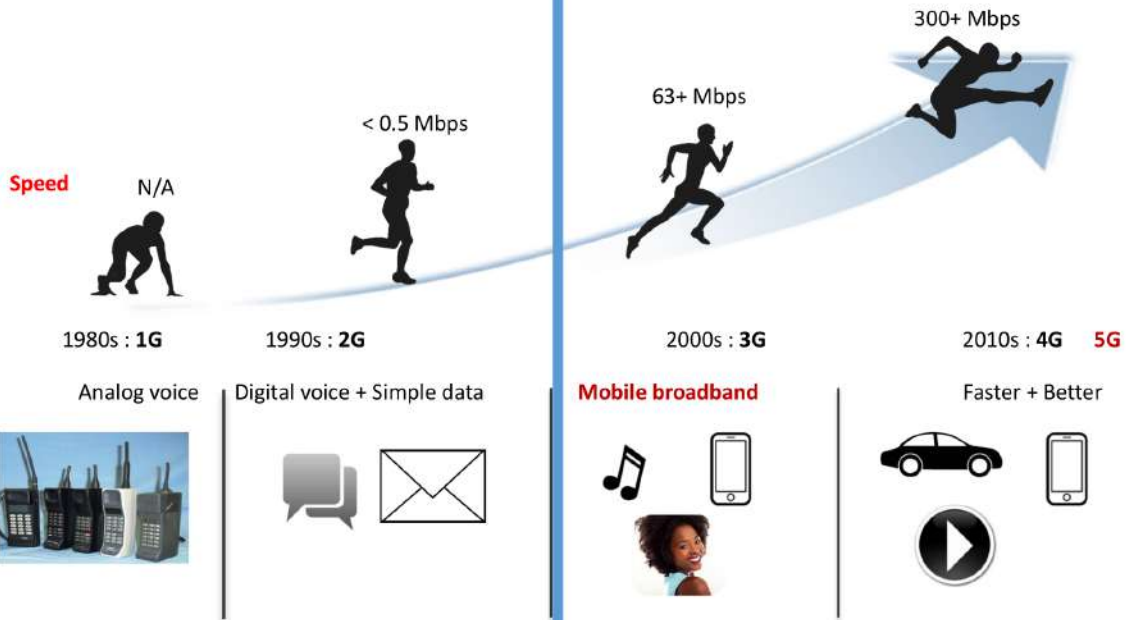
WHAT IS BROADBAND ?

Broadband is a term used to describe internet access connections with a large data transfer capacity that are therefore capable of delivering information at faster speeds than those possible using a traditional telephone network

I. Introduction

Evolution of Gs

Broadband



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SHALL BROADBAND BE CONSIDERED AS A UTILITY ???

There has been Debate in different Countries on either regulate broadband Internet service as a public utility

1. BROADBAND IMPORTANCE

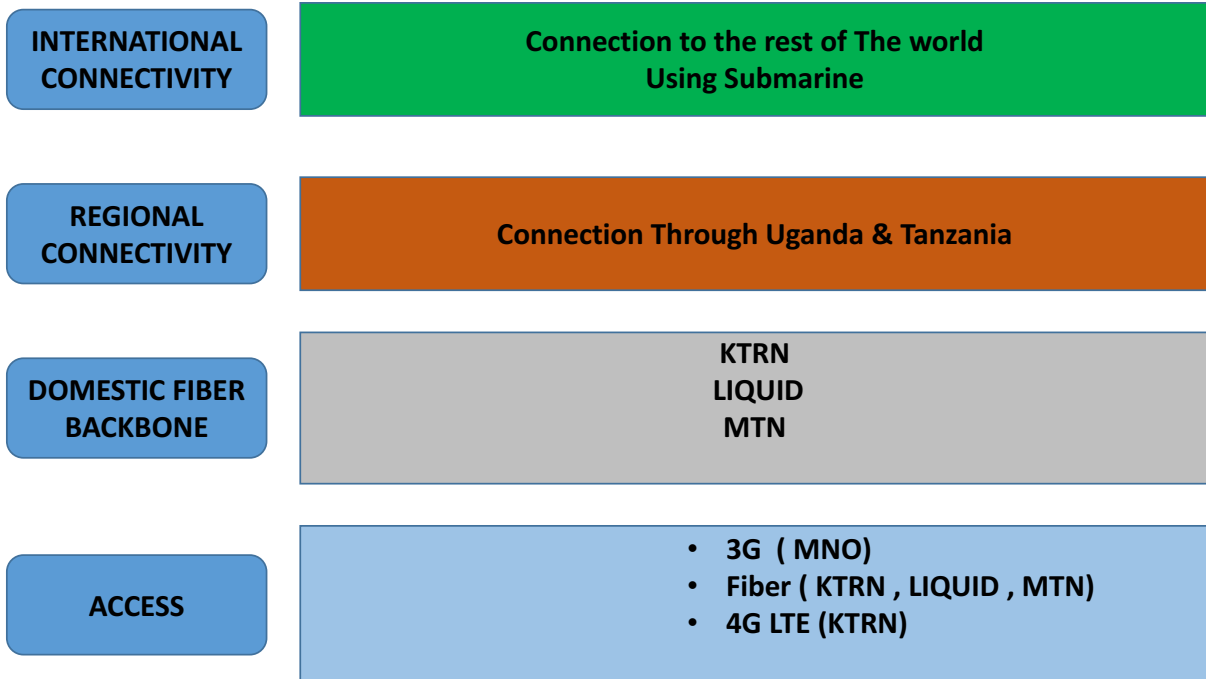
Broadband is not a basic need for human survival but its importance as the central communications technology of our age is indisputable.

Answer: ????

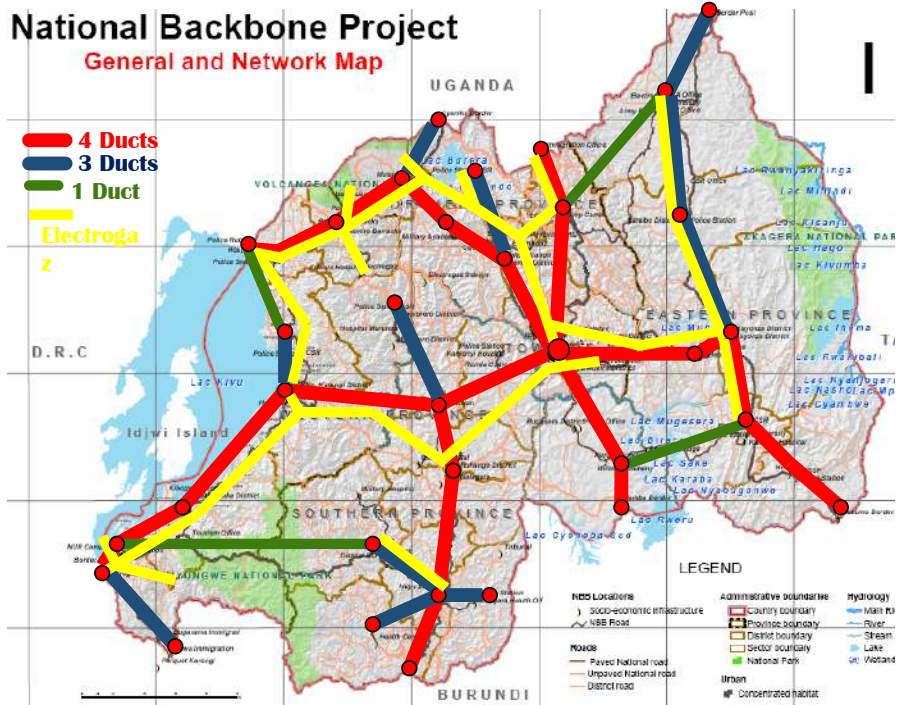
It is an essential public utility; crucial in virtually everything:

- Business and Employment
- Civic engagement
- Social interaction.

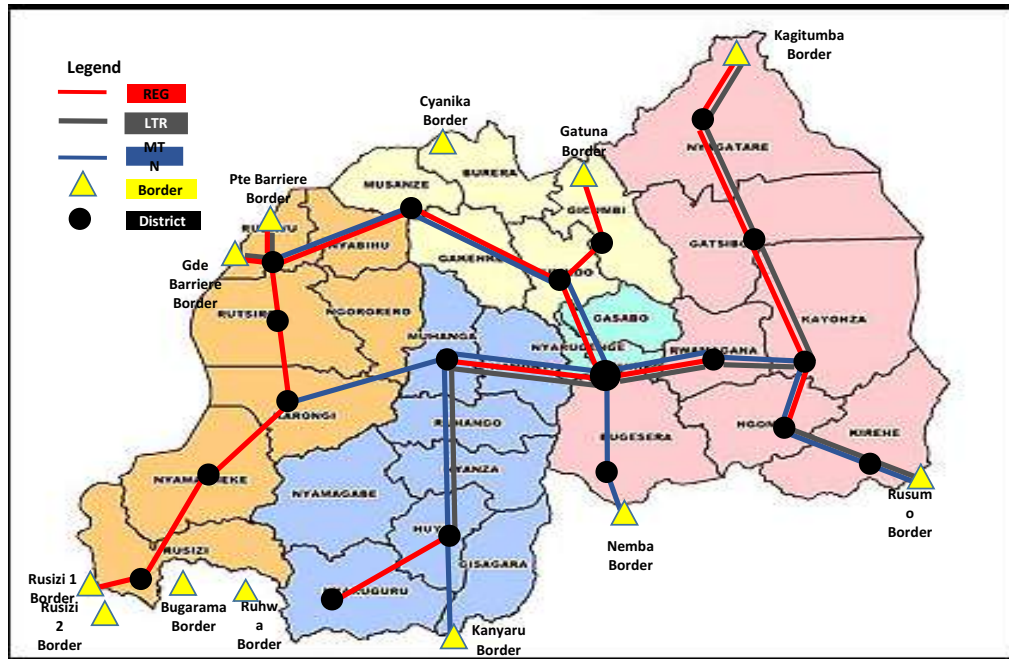
BROADBAND INFRASTRUCTURE IN RWANDA



KTRN Backbone fiber routes Map



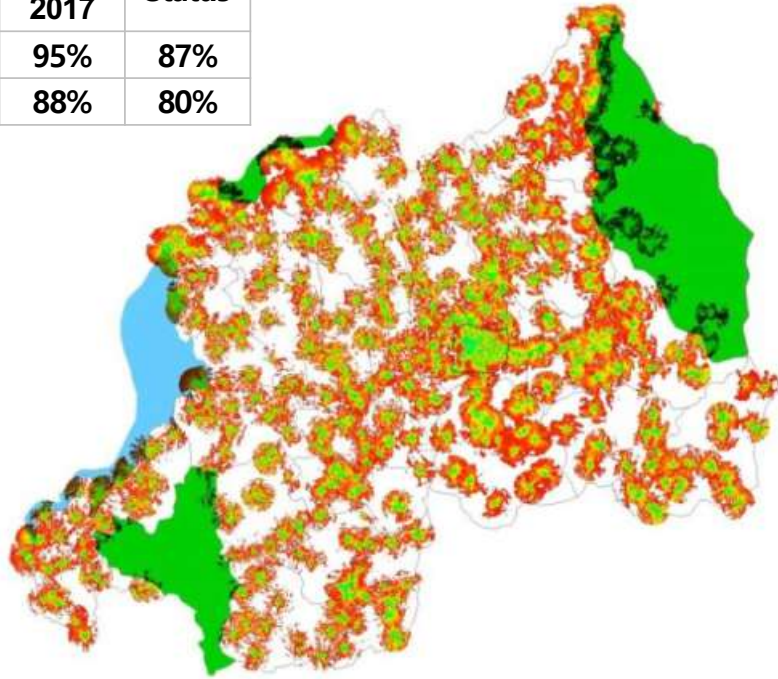
Other Backbone fiber routes Map



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4G Network Coverage Status

Coverage	Target 2017	Status
Pop. Coverage	95%	87%
Geo. Coverage	88%	80%



FIBER OPTIC & 4G LTE HIGHWAY



**Generating
Traffic / Content**

**Online
Services**

**Online
Education**

Serving IT services



On the way to serve ...



NYABARONGO FLOOD

What Is the role of Broadband in case of Disaster ?

- **It is very Important for Service Continuity and Communication**



Broadband Infrastructure Challenges

Barrier

**Poor Coverage
In buildings**

Energy / Power

Road Construction

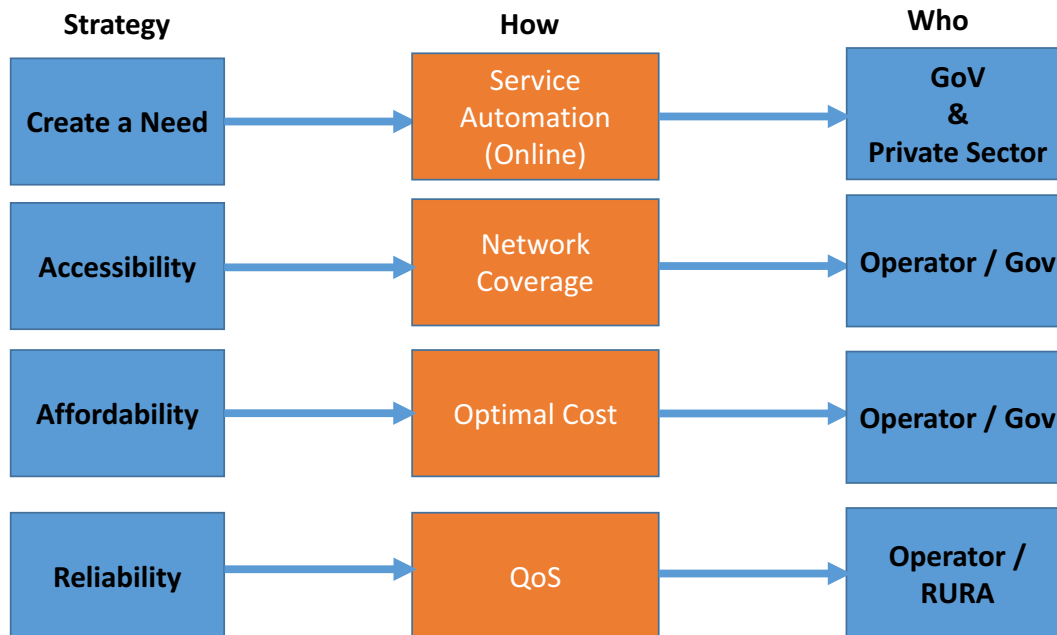
Solution

**IBS in All New Buildings must
be part of initial requirement
[Policy]**

**Power Stability
Affordable**

- Road Design to allow
Telecom scalability**
- Effective Coordination**

Maximizing broadband service utilization

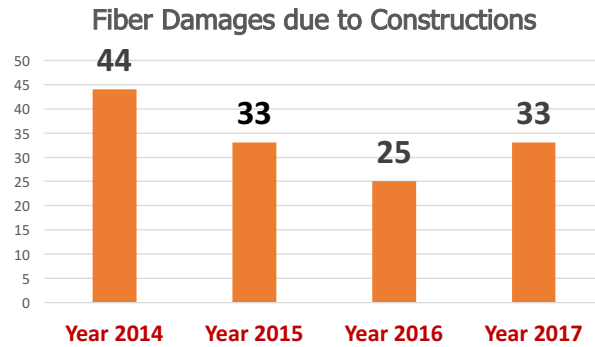


More Content / Online services – More Utilization – Opex Reduction – Affordability

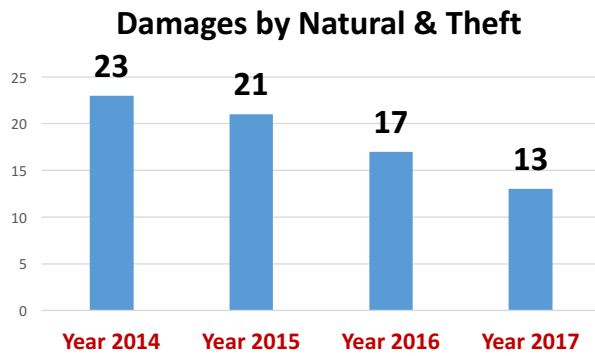
PROTECTION OF FIBER INFRASTRUCTURE

Major Cause Of Damages

1 Road Constructions



2 Natural Disaster and Theft



PROTECTION OF FIBER INFRASTRUCTURE

Enforcement of Broadband Infrastructure Protection (Policy)

- Damaging Fiber Infrastructure / Utilities is a crime
- Heavy Punishment

Close Collaboration with Road Constructors

- Relocation must be done before Road constructions starts
- Include Relocation cost in the Budget

Effective Road Construction Plan, Design and Implementation

- Avoid Emergency Scenario's
- Clear Road standards (Road Crossing, etc.)

PROTECTION OF FIBER INFRASTRUCTURE

Respect of fiber installation standards

- Utilities Owners to respect the Installation Guidelines

Patriotism

- Love the Country – Protect the Country Infrastructure
- Provide QoS for

Protection awareness

- Joint effort (Gov, Infrastructure Owners , Local Leaders , Police, RURA , etc.



4G LTE
& BEYOND