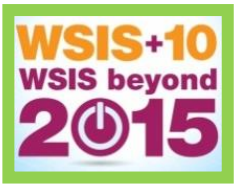
REPUBLIC OF RWANDA



DRAFT (1st Physical Meeting)
WSIS+10: OVERALL REVIEW OF THE IMPLEMENTATION OF THE WSIS OUTCOMES

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ABBREVIATIONS

AMIS: Agricultural Management Information Systems
ARFEM: Rwandan Association for Journalist Women
ARJ: Association of Rwandan Journalists
BDC: Business Development Centres
BSC: Broadband Systems Corporation
CCNA: Cisco Certified Network Associate
CHW: Community Health Workers
CIP: Crop Intensification Program
CS: Cyber Security
CTO: Commonwealth Telecommunications Organisation
EAC: East African Community
EACO: East Africa Communication Organization
EASSy*:* Africa Submarine Cable System
ECMIS: Examinations Coordination and Management Information System
E-GOV: E-Government
EIA: Environmental Impact Assessment
EIDSR: Electronic Integrated Diseases Surveillance and Response
EMIS: Education Management Information System
ERMS: Electronic Records Management System
EWSA: Energy, Water and Sanitation Authority
GoR: Government of Rwanda
HESLD MIS: Higher Education Students Loan Department Management Information System
ICANN: Internet Corporation for Assigned Names and Numbers
ICDL: International Centre for Distance Learning
ICT: Information and Communication Technology
IFMS: Integrated Financial Management System
IPRC: Integrated Polytechnic Regional Centre
KIE: Kigali Institute of Education
KIST: Kigali Institute of Science and Technology
KOICA: Korea International Cooperation Agency
LTM MIS: Learning and Teaching Material Management Information System
MHC: Media High Council
MYICT: Ministry of Youth and ICT
NICI: National Information and Communication Infrastructure
ODeL: Open distance and e-Learning
POS: Number of Point of Sale
RCIP: Regional Communications Infrastructure Program
RDB: Rwanda Development Board
REB: Rwanda Education Board
REC: Rwanda Education Commons
R-HMIS: Rwanda Health Management Information System
RINEX: Rwanda Internet Exchange Point
RIPPS: Rwanda Integrated Payment Processing System
RITA: Rwanda Information Technology Authority

RMSP: Rwanda Media Strengthening Program
RNP: Rwanda National Police
RRA: Rwanda Revenue Authority
RURA: Rwanda Utilities Regulatory Authority
SFAR: Student Financing Agency for Rwanda
SIGTAS: Standard Integrated Government Tax Administration System
SMMS: Spectrum Management and Monitoring System
TCC: Tax Clearance Certificates
TTC: Teacher Training Colleges
UNDP*:* United Nations Development Programme
UNECA: United Nations Economic Commission for Africa
USAID*:* United States Agency for International Development
VCF: Video Conferencing Facility
VLP: Virtual Landing Point
VSAT: Very Small Aperture Terminal
VSO: Voluntary Service Overseas
WDA: Workforce Development Authority

Section I: Executive summary

I.1. Introduction

Global ICT policies have become more main stream in the last decade underpinning growth and jobs, increasing productivity, enhancing the delivery of public and private services, and achieving broad socio-economic objectives in the areas of healthcare, education, climate change, energy, employment and social development. As such, the global ICT industry is fast changing as a result of emerging technologies, economic, social and business trends. As ICT applications and services have become ubiquitous, they are essential for ensuring sustainable economic development.

Vision 2020 aims to transform Rwanda into a middle-income country and transition from an agrarian economy to an information-rich, knowledge-based society by 2020. The Government of Rwanda (GoR) strongly believes that Information and Communication Technology (ICT) can enable Rwanda leap-frog the key stages of industrialization. As such, GoR has integrated ICTs through the National Information and Communication Infrastructure (NICI) process, as a key driver for socio-economic development and to fast track Rwanda's transformation to a knowledge-based society, and strives to align her development agenda to global trends in order to be competitive.

Since 2000, the GoR has invested in ICT as a crosscutting area that will help the country achieve Vision 2020 (adopted in 2000) goals while accelerating social and economic development. Through the NICI process, Rwanda has established an enabling environment, deployed critical world-class ICT infrastructure and is developing a highly skilled human resource base in its quest. Today, a conducive legal and regulatory framework, availability of good infrastructure, a growing human resource base and technologies are further positioning Rwanda to achieve Millennium Development Goals and accelerate service development by running efficient government services and increasing the country's competitiveness.

I.2. Rwanda at a glance

Rwanda's economy has continued to grow at comparably good rates, averaging 8 percent per annum, despite the global recessionary period that started in 2008. The country's continuing growth in the midst of the global downturn can be attributed to its good governance and sound fiscal discipline, as well as to the commitment from both its public and private sectors to build a more equitable country.

The 2013 World Bank Doing Business Report has ranked Rwanda 52 nd out of 185 countries. In the overall performance, Rwanda is still the best performing country in the East African region as well as 3rd easiest place to do business in Sub-Saharan Africa

The 2013 Global Competitiveness Report published by the World Economic Forum, ranked Rwanda the most competitive economy among the East Africa Community countries, third in sub-Saharan Africa and raised from the ranking from 70 last year to 63 in 2013. This is a result of extensive efforts by government to create a more conducive business environment, increase

innovations, improve the skills of our people through trainings and higher education and improve service delivery in order to compete globally Rwanda

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The fact that the country is landlocked alone poses challenges for a nation with big ambitions. But the distance from Rwanda to the coast both from Mombasa in neighbouring Kenya and Dar-es-Salaam in Tanzania was circumvented by connecting to two submarine cables (the Eastern Africa Submarine Cable System, or EASSY, through Uganda to Kenya in Mombasa and The East African Marine System, or TEAMS, submarine cable through Tanzania at the Dar-es-Salaam coast). This is crucial because it creates the redundancies that ensure high-quality, reliable connections with no, or minimum, interruptions even when a fibre-optic cable has been inadvertently cut by road construction or farming activities.

Besides laying the national fibre backbone, which is underground, Rwanda has also rolled out fibre on its electricity national grid network. This creates extra coverage above ground and reduces the risk of cut cables that tends to haunt underground cable networks.

With the huge investments in ICT infrastructure, over US$540 million in Foreign Direct Investment have been attracted to the ICT sector. This has led to an influx of foreign institutions setting up operations in Rwanda. Among these are VISA, Inc., the multinational financial services and global payment systems giant that set up its Rwandan offices in late 2011; and Airtel Company, the fourth-largest telecommunications company in the world, which started operations in March 2012.

Total investment in the telecommunications sector in 2011 was over US$46 million; it exceeded US$36 million for the first six months of 2012. The Total Investment as of December 2012 was estimated at $76 million and it is increasing with the investment in 4G LTE wireless Broadband.

Rwanda’s ambitions permeate its borders: it intends to capitalize on its central location in Africa and act as a hub for banking and financial services, as well as business process outsourcing services, leveraging on the strength of its ICT sector. With seven years to meet Vision 2020 and counting, Rwanda is already emerging as a regional ICT leader. The country confidently looks to heralding ICT growth not only in the region, but also on the continent as a whole.

SECTION II: REPORTING ON EACH ACTION LINE

WSIS ACTION LINE C1: The role of public governance authorities and all stakeholders in the promotion of ICTs for Development in Rwanda.

1. Development of national e-strategies, including the necessary human capacity building:

1.1.1. General Policy

Rwanda vision 2020 targets are to transform the country from agriculture based economy into a middle income knowledge based society using ICT as an engine for development. Since 2000 Government of Rwanda (GoR) has established institutions and mechanisms to create an enabling environment for ICT development, deployed critical world-class infrastructure and is continuously developing a skilled human resource base in its quest to become a knowledge-based society and regional ICT hub. To achieve the Vision 2020 targets, Rwanda National Information and Communication Infrastructure (NICI) Plan was developed and adopted since 2000. The NICI Plan is divided into 4 rollout plans of 05 years each as Follows:

NICI I (NICI 2000-2005 Plan), which coincides with Vision 2020, began with the first of four five-year rolling plans and focused on creating the necessary enabling environment that would enable the establishment and growth of Rwanda's ICT sector. Emphasis was placed on establishing the appropriate institutional, legal and regulatory framework, liberalization of the telecoms market, and reduction of entry barriers to the telecom market as well as an effective implementation and coordination mechanism.

NICI II (NICI 2005-2010 Plan), focused on providing world-class communications infrastructure which serves as the backbone for current and future communications requirements. Today, Rwanda enjoys increased nationwide coverage of telecommunication networks, has deployed a versatile and high capacity national optic fibre backbone network, and a national data centre. Rwanda is now well positioned to become a regional ICT hub that can offer a wide range of competitive ICT products and services.

NICI III (NICI 2010-2015 Plan), focuses on the development of services by leveraging ICTs to improve service delivery to citizens, as Rwanda approaches the fourth and final phase of the NICI process that will propel Rwanda to achieve Vision 2020 goals. In this phase, emphasis is being placed on the development of services in the following five focus areas:

(i) Skills development aims to develop a high quality skill and knowledge base leveraging ICT.

(ii) Private Sector Development aims to develop a vibrant, competitive, and innovative ICT sector/ ICT enabled private sector.

(iii) Community Development aims to empower and transform communities through improved access to information and services

(iv) E-Government (e-GOV) aims to improve government operational efficiency and service delivery
(v) Cyber Security (CS) aims to secure Rwanda's cyberspace and information assets

These focus areas will accelerate services development and fuel continued growth.

1.1.2. Capacity building to provide the market with skilled human resource for development of ICT sector and meet demand for private sector:

- Creation of Kigali Institute of Sciences and technology (KIST) in 1998
- Creation of ICT department at the National University of Rwanda
- Creation of Technical colleges for middle Technicians
- Creation of Technical Vocational Training Centres for technical manpower staff in ICT

So far, more than 3534 Students have been graduated from above mentioned institution in the field of Information Communication Technology (ICT) and 9,000 Teachers have been trained in ICT to use ICT as tool for teaching.

1.1.3. ICT Market Liberalisation

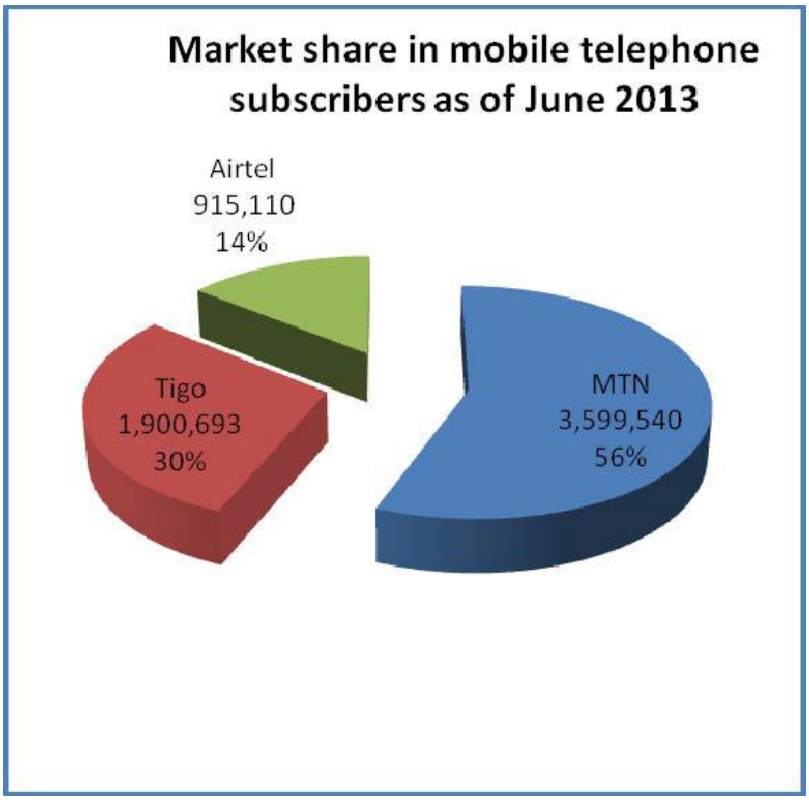
During this process of Liberalisation, below are some achievements:

- 2001, enactment of the TELECOM Law to liberalise the market
- 2001, Creation of an Independent Regulator: Rwanda Utilities Regulatory Authority (RURA)
- 2001, Creation of Universal Access Fund to increase the Access and penetration in rural and remote areas.
- 2005, Privatisation of Incumbent Operator
- 2007, Government programme for the construction of national Optic Fibre backbone which was completed in 2010. The National Optic Fibre backbone connects all districts in towns as well as districts in remote and rural areas. Total fibre network is 5,003 Km where 2,503 Km belong to the private sector.
- The Independent Regulator reinforces the legal and regulatory framework for open competition and infrastructure sharing regime to allow a quick rollout plan.
- 2013, Draft and adoption process of new broadband policy and restructuring of Broadband market with whole sales only provider and open access to Wholesale infrastructure for broadband services

- Implementation of SIM registration by all operators was successfully completed on 31st July 2013. Users Phones numbers are linked to national Identity card to allow easy tractability and quick identification when necessary in case of misuse.

Current situation:

- Connectivity using VSAT technology to rural and remote areas with the support the universal access fund
- Geographical mobile network coverage is more than 99.5%
- 3G Networks available in all main cities of the country
- Internet Penetration: 12.2 % as of June 2013
- Liberalisation of international traffic(Each Telecom company manage their own Gateway)
- Voice Penetration: 63.6 % as of August 2013.
- Adoption of 4G LTE for Wireless Broadband Infrastructure and wholesales only provider



Voice Penetration in Rwanda as of June 2013.

1.1.4. Mechanisms at the national, regional and international levels for the initiation and promotion of partnerships among stakeholders of the Information Society.

- East Africa Communication Organization (EACO) created to coordinate ICT sector and groups all Operators, Regulators of the East African Community. Rwanda hosts the EACO Headquarters.
- Have trans-boarder connectivity using Optic fibre network of regional countries. All East African Countries interconnected using fibre Optic.
- Rwanda utilities Regulatory Authority (RURA) is the member of Association of Regulators of Information and Communications for Eastern and Southern Africa (ARICEA).
- Rwanda is one of the members of Internet Corporation for Assigned Names and Numbers (ICANN).
- Rwanda is one of the members of Commonwealth Telecommunications Organisation(CTO)

WSIS ACTION LINE C2: Information and Communication Infrastructure (An Essential Foundation for the Information Society)

2.1. National development policies to support competitive environment for the necessary investment in ICT infrastructure:

The major priorities are defined by the National Information and Communications Infrastructure (NICI 1) Policy and Plan for the ICT Sector in Rwanda. The Rapid National Broadband Backbone Development Facilitation Initiative is an expression of this priority. This initiative aims to promote the rapid development of an advanced broadband communication backbone infrastructure.

2.2. Universal access policies and strategies:

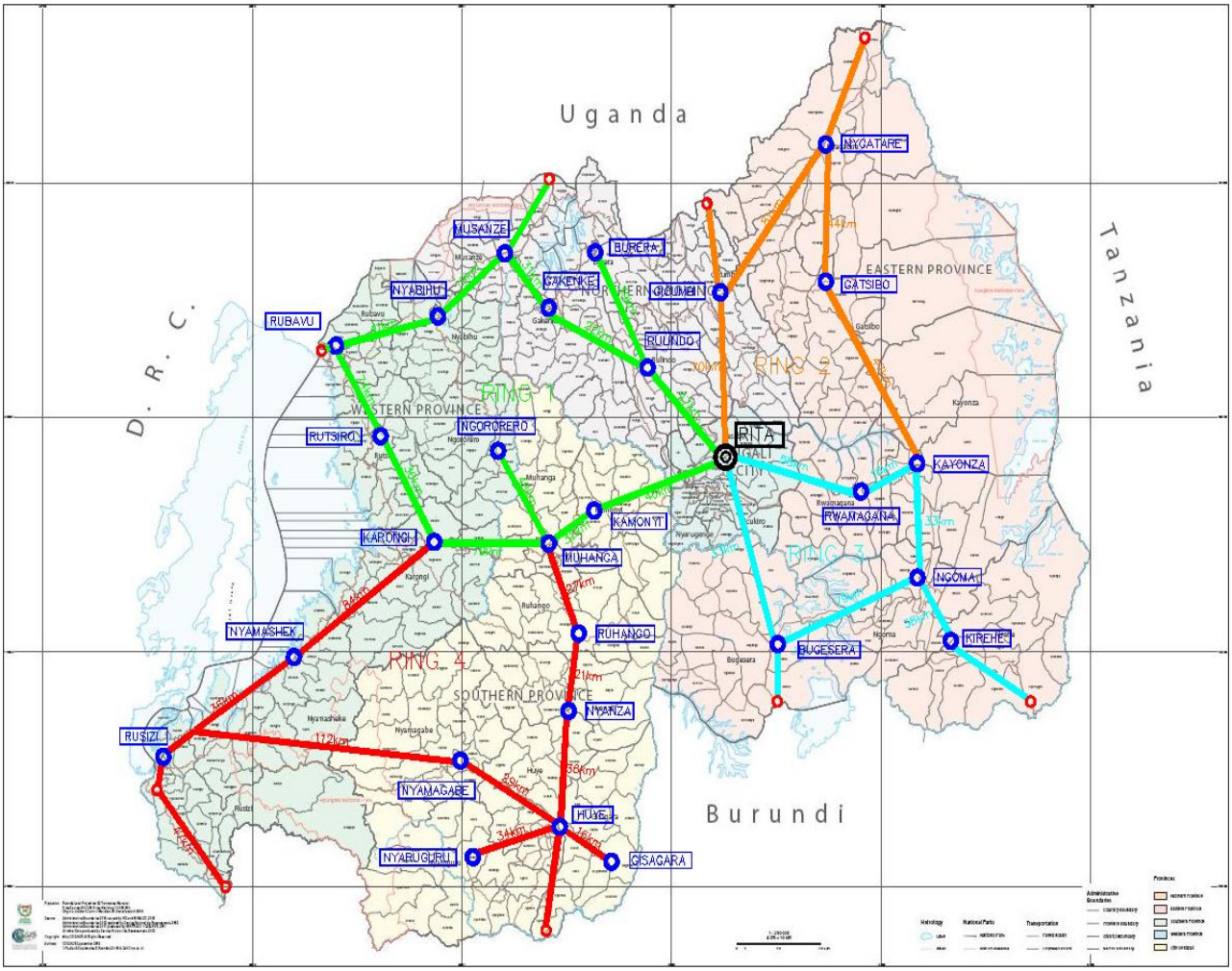
The Government of Rwanda promoted and implemented the concept of the Universal Access (UA) through the Law N° 44 of 30th November 2001 governing Telecommunications (http://www.rura.gov.rw/laws/TelecomLaw.pdf) and Universal Access Presidential Order (http://www.rura.gov.rw/laws/pl05.pdf) with the objective of accelerating the use of ICT in rural and remote areas. The Universal Access Fund subsidised bandwidth for telecentres, Educational institutions, health institutions, public institutions, totalling 110Mbps of bandwidth from Intelsat.

A secondary school in rural areas connected to internet through VSAT.

2.3. The status of broadband network infrastructure in Rwanda

The development of fibre optic backbone infrastructure is a key aspect in connecting Rwanda to the international internet source. Telecom companies and EWSA (Energy, Water and Sanitation

Authority) laid fibre optic cables over 2503Km. The government of Rwanda has completed construction of a 2,500 Kilometres fibre optic network across the country to link it to undersea cables running along the East African coast. The infrastructure will boost access to various broadband services, including government plan such as e-governance, e-banking, e-learning and e-health. The network is connecting more than 360 institutions both government and private in all 30 districts, and connects all nine (9) Rwandan borders.



National Backbone Fibre-Optic Network, (Source: Broadband Systems Corporation (BSC))

2.4. National Broadband Access Project:

With the National Fibre Optic Backbone built and completed in all the 30 districts, the next step is to extend the broadband connectivity to various institutions (schools, hospitals, business, and government facilities) and household as last mile solution.

Rwanda adopted 4G LTE wireless Broadband network as last mile solution for urban and rural area which will be operated on wholesale basis with Open access to all operators.

2.5. Rwanda Internet Exchange Point and Virtual Landing Station project

A Rwanda Internet Exchange Point (RINEX) was put in place by local network operators and ISPs. Another important point is that a Virtual Landing Point (VLP) is being built to help local ISPs and Network operators acquire submarine capacity that can be redistributed in their respective networks.

2.6. 4G LTE wireless Broadband for Rwanda

4G LTE is a cutting-edge wireless broadband technology that the government of Rwanda has adopted with the aim of providing reliable, affordable and quality wireless data services to its citizenry; hence increasing the Internet penetration rate. This technology has been deployed in Kigali city with plans of expanding the wireless infrastructure to five other major towns of the country as an extension of the access network.

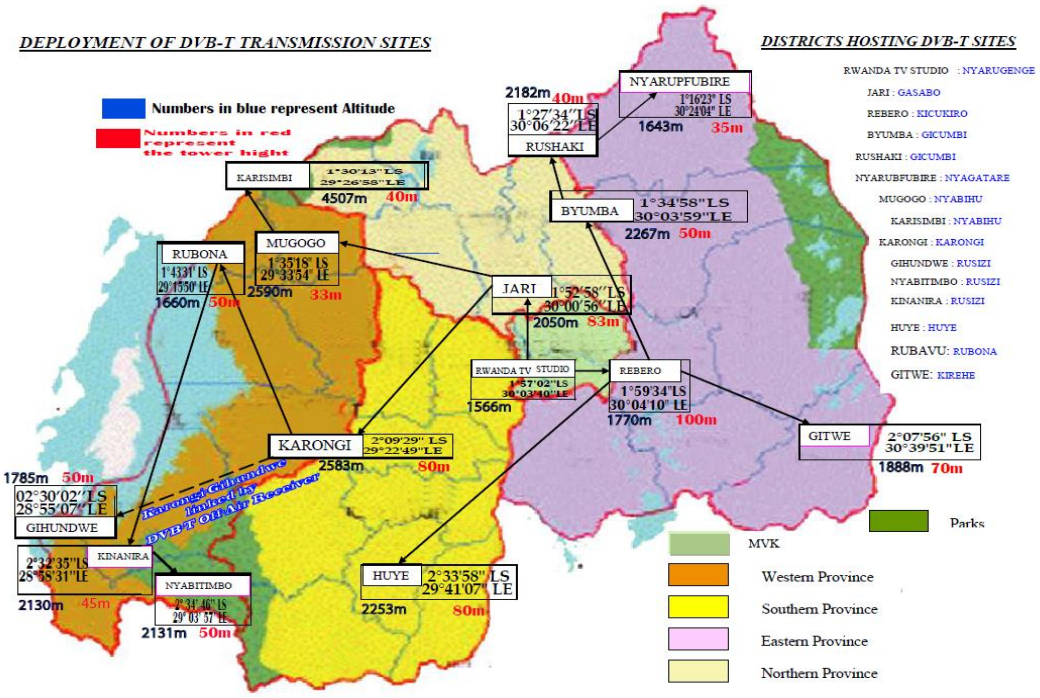
This technology will be deployed as last mile solution to cover the whole country for total inclusion of the whole population including people with low income in rural area.

2.7. Improvement low-cost connectivity in developing countries.

The Regional Communications Infrastructure Program *(*RCIP*)* project is increasing the availability of broadband to over 700 Rwandan institutions including the central government, local government administrative centres, schools, health centres and public security institutions. RCIP has also increased the availability of international bandwidth to the country by ensuring that Rwanda is connected to the East coast submarine fibre-optic cables. The volume of international bandwidth connected to Rwanda is expected to rise more than three times and the cost will fall accelerating access to broadband. The volume of international bandwidth connected to Rwanda is expected is currently 04 GBPS uplink and 04 GBPS down link with prices going down (125 US $ per MBPS).

2.8. Broadcasting network infrastructure

The Government of Rwanda initiated Digital Migration project in order to enhance television and Radio coverage all over the country and this will support the right of citizens to access to information. Presently Digital Video Broadcasting–Terrestrial systems have been installed. Rwanda deployed this infrastructure countrywide with the projection of average signal coverage of 98%.



Deployment of DVB-T transmission sites in Rwanda.

2.9. Spectrum Management and Monitoring System

In order to support spectrum management, RURA owns a fully integrated automated Spectrum Management and Monitoring System (SMMS) with five (5) fixed monitoring sites and three mobile stations. They are able to monitor the frequencies range from 9 KHz – 3GHz.

The spectrum monitoring system in Rwanda

WSIS ACTION LINE C3: Access to Information and Knowledge

The Government of Rwanda has set a national goal that the country will achieve middle income status by 2020 based on an information-rich, knowledge-based economy using ICT as a catalyst. This vision, developed through a national consultative process that began in 1998, is the driving force for policy development across government ministries, public institutions, and with the country's development partners.

There is a significant increase in the use of computers in the public as well as private sectors. The culture of using computers is higher than ever before. In order to meet the changing demands of the economy, Rwanda has focused on improving its human resource capacity. This includes development of ICT skills in the civil society, public and private sectors. ICT Capacity Building in the Public and Private Sector is aimed at encouraging the public and private sector to start using ICTs in their transactions. Most Public and Private Institutions have websites.

3.1. Websites of different institutions

Rwanda's web presence is seen through development of dynamic websites for both public and private institutions as follows:

- Each Government Ministry, Public Service Organization and district local Government web-site is linked to the Government of Rwanda (GOR) Official Web site. It will be possible for investors to access information on investment opportunities in Rwanda on this web-site and make inquires for additional information and facilitation services via the site. This Virtual One- Stop Site is likely to serve as the first port of call for most potential foreign investors.

- Business start up process has been simplified and registration is only done in 24 hours at Rwanda Development Board (RDB). However, this project is strongly linked to other National Information and Communications Infrastructure (NICI) Planned actions.

- The Government has also established the Trade Information Centre which is composed of an online business information website for Rwanda called ***Trade Point*** developed for the local and international business community, and there is an online forum (web-site) developed by the Rwanda Public Procurement Authority. All tenders and procurement news are published on this website called the *dg market*. The website is accessed and used by local and international entrepreneurs.

- The Ministry of Justice has provided online access to laws and regulations to the public. This includes Rwanda laws and regulations.

3.2. Promoting and facilitating accessibility of ICTs for all

There is no doubt that the handling of information to support all types of activities in the economy, workplaces and homes is increasingly becoming a major sector in most countries.

ICTs are dramatically changing our way of life. Information knowledge and technology are increasingly becoming the key drivers for socio-economic development in Rwanda.

3.2.1. ICT buses

ICT buses are mobile telecentres as well as computer labs, more convenient and affordable for farmers, traders, students, women, youth groups, entrepreneurs and other rural based Rwandans to access ICT services as well as training. Four buses are crossing the countryside to take the computing and internet services to remote and underserved areas.

In a bid to bridge the digital divide, especially among the rural population, many Rwandans have benefited from the services offered by Rwanda Development Board (RDB) mobile ICT buses.

ICT buses as mobile telecentres and computer labs

3.2.2. Telecentres

Rwanda has a target to connect all villages using Telecentres by 2020; it has 94 telecentres disseminated in all 30 districts. In 2012, more than 165,241 people have been trained to use computers in all Telecentres around the country. In the same context an average of 6,038 people are trained in International Centre for Distance Learning (ICDL) in a period of 21 days. More than 500 people are certified in CISCO networking courses in a period of 3 months.

Telecentres have allowed the local enterprises like agricultural co-operatives, handicraft industries, artisans, shops, garages and tourist facilities to gain access to accurate market and pricing information using applications like e-Soko for agricultural products pricing at the different market points, Agricultural Management Information Systems (AMIS), Crop Intensification Program (CIP). These multi-purpose telecentres are strategically placed where people, especially in rural areas, can gain access to information and learn how to use the internet.

The telecentres in district

3.2.3. Public Information Kiosks

Rwanda Development Board (RDB) has installed digital public information kiosks normally composed of touch screens and printers that are connected to the internet to help service seekers check the information they need. This has allowed people to check basic information online using those kiosks that the government has installed at several sites. They will save time spent by physically going to different institutions and will enable easy access to information by the public. This programme is allowing major government institutions with public information kiosks as part of their e-government project, a plan that aims to develop ICT in public service delivery.

Public Information Kiosk at Kigali International Airport

3.3. National ICT literacy and Awareness campaign initiative

This is an initiative of the Ministry of youth and ICT, Ministry of Education, Ministry of Local Government, Rwanda Education Board and Rwanda Development Board that focuses on rural people and makes them aware of online services like social media, electronic banking like mobile money and other internet services. This campaign aims at transforming Rwanda into an ICT-literate nation and reach a 50% computer literacy by 2018 for the population aged 15 and above and raising the awareness and increase the use/consumption of existing and future information and services enabled through ICT for at least 60% of the Rwandan population aged 15 and above by 2018. The campaign is ongoing.

National ICT awareness campaign initiative by the Ministry of Youth and ICT (MYICT)

3.3.1. Drive to increase TV penetration

In a bid to increase digital television penetration in the country, the government has started a special programme that seeks to facilitate affordable access to digital TV sets, with a special focus on rural areas. This program is called '*Tunga TV*", which literally means "Own a TV".

In the beginning, 700 viewing centres will be set up across the country, but their number will keep growing. The centre is complete with a cable television; two computers connected to the internet as well as a fixed telephone to help people without mobile phones to make calls and will be powered by solar energy system where the electrical grid is not yet available.

It is expected that the programme will push TV penetration from the current six per cent to 40 per cent in the next five years.

3.4. Encouraging Research and Innovation that facilitate accessibility to ICTs

The Rwanda Innovation Endowment Fund is an initiative of the Government of Rwanda in partnership with the United Nations Economic Commission for Africa (UNECA) and UNDP that supports scientific innovations, especially in the areas of ICT, Agriculture and Manufacturing.

3.5. A digital public library and archive services

RDB, in partnership with volunteers from Korea International Cooperation Agency (KOICA), started a digital e-library to be used in all the 30 Business Development Centres (BDCs- also known as multi-purpose telecentres), countrywide. Physical libraries at telecentres will be equipped with Samsung Galaxy Tablet computers which enhance a suitable way of accessing information. The digital library project is expected to impact the development of a "knowledge-based economy" in Rwanda as these digital platforms that will be introduced across the country.

3.6. The Genocide Archive of Rwanda

The Genocide Archive of Rwanda is a unified digital repository that provides access to information related to the history of the 1994 genocide perpetrated against the Tutsis in Rwanda. The collection includes audiovisual testimonies, maps, historic photographs, the genocide propaganda information and other related official documents.

The digital archive in place has huge technology aspects behind it, from the entire system setup to different steps that are undertaken to provide access to information. Information mentioned above can be viewed on this link www.genocidearchiverwanda.org.rw. There has been establishment of Audio visual equipment infrastructure to ensure production, show-casting, storage, accessibility of video, audio and text contents all related to evidence of genocide at memorial sites.

3.7. Gacaca Courts Archives Scanning Project

Preliminary phase of scanning Gacaca Courts archives has been initiated and is progressive. This project includes establishing a high-tech scanning environment and enables it with capacity to speedily scan huge numbers of hand-written papers into digital readable format. The Gacaca courts are a method of community and transitional justice inspired by tradition, designed to promote healing and moving on after the 1994 Rwanda Genocide against Tutsis.

WSIS ACTION LINE C4: Capacity Building

4.1. Policies and strategy in place for mainstreaming ICT in education as a tool for Learning

The ICTs in education strategy is premised on the need to "transform Rwanda into an IT-literate nation by transforming the educational system using ICTs with the aim of improving accessibility, quality and relevance to the development needs of Rwanda" as well as improving the "human resource development capacity of Rwanda to meet the changing demands of the economy".

Training primary and secondary school teachers on ICTs in education initiative is fully operational and is aimed at ensuring that primary and secondary school teachers are competent enough in the use of ICTs to be able to teach their students; and to ensure that teachers are knowledgeable enough in ICTs in order to enhance their teaching skills. As a result, there are now up to 8000 teachers trained and there is evidence of improved ICT skills.

4.1.1. Rwanda Education Commons (REC) Program

The REC is a four-year program funded by USAID to promote the effective use of ICTs in education. Since REC opened its office within Ministry of Education in January 2009, it has worked to expand teachers' access to quality resources, to connect educators with each other, and to inspire and empower teachers. REC has a record of achieving its goals, and a reputation as a practical and effective partner in assisting Rwanda to achieve its ICT in education goals.

REC has led activities within five areas of focus: policy and coordination; content production; multimedia channel development; capacity building; and partnership development. This breadth reflects REC's approach of working collaboratively at all levels including Ministry of Education, national and international education technology partners and teachers. Some of the major accomplishments to date are:

ICT in education policy: REC supported the Ministry of Education in drafting the first ICT in Education sub-sector policy. This draft has been incorporated into the Education Sector Strategic Plan, National Communication infrastructure Plan NICI III, and is the foundation of the current ICT in Education draft implementation plan.

Connectivity: REC led an initiative to connect all Teacher Training Colleges (TTCs) and Colleges of Education (COEs) to the Internet. As a result of a REC-initiated collaboration between Ministry of Education, Rwanda Utilities Regulatory Authority (RURA) and Rwanda Education Board (REB), Internet connectivity is subsidized at 80% of costs by Rwanda Utility Regulatory Authority/Universal Access Fund. REC bears the remaining costs and is currently working with a subcontractor on a plan to sustain and expand access to this connectivity.

Teacher portal: REC collaborated with Google to develop a state-of-the-art teacher portal' www.educationcommons.rw ' that is free to users and free to host. The online community includes a digital library of high-quality resources aligned to the curriculum, discussion boards, social networking tools, and informational areas. More than 1,630 teachers have registered for the portal.

"Smart Learning" program: **REC,** with the support of Ministry of Education, Kigali Institute of Education (KIE), Voluntary Service Overseas (VSO), and the Public broadcaster, broadcasts a twice-weekly educational television program showcasing good teaching practices. The

broadcast is intended to improve teaching quality, and has also attracted an audience of secondary students aiming to improve their subject knowledge and prepare for exams.
Digital content development: REC has amassed a library of over 7000 of digital resources. The online library contains teaching guides for each unit within the primary and secondary curriculum, produced with Rwandan teachers. It also contains multimedia materials contributed by partners.
Partnerships: REC has introduced a number of technology and education service providers to fill gaps in Rwanda's education sector. World Book has contributed dozens of encyclopaedias to each TTC; Waterford Research Institute has launched an education software pilot for Primary Schools; Google helped build the REC portal and content providers have offered digital resources at no cost.

4.2. Creation of an ICT skilled profession and expert workforce

The institution under Workforce Development Authority (WDA) that is offering IT professional courses is Tumba College of Technology (TCT) in Cisco Certified Network Associate (CCNA). TCT offers also training in IT courses at ordinary diploma and higher diploma level. Kigali Integrated Polytechnic Regional Centre (IPRC) also offers training at diploma level in IT courses.
Kigali Institute of Science and Technology (KIST) is a public testing centre for IT professional courses like Cisco Certified Network Associate (CCNA), Cisco Certified Network Professional (CCNP) and Microsoft Certified IT Professional (MCITP).


Students in a computer lab in the Kigali Institute of Science and Technology.

4.3. One Laptop per Child (OLPC) project

The One Laptop per Child (OLPC) Project is a key project that aims at the enhancement of education through the Introduction of technology in primary schools. It also allows primary

school students early access to computer skills and computer science understanding while expanding their knowledge on specific subjects like Science, Mathematics, languages and Social Sciences through online research or content hosted on server.

This is a fundamental step toward the building of a knowledge based economy. In this regards, Rwanda launched the One Laptop per Child program (OLPC) in June 2008 and the current proposed target is to provide all students from P4 to P6 access to laptops.

At the beginning two pilot projects were prioritized:

1. Government Pilot Project 1: The pilot project distributed 8150 laptops in 10 public schools while 1800 laptops were bought by parents from 12 private schools.
2. Pilot Project 2: The Government of Rwanda (GoR) in partnership with the Microsoft Corporation developed this second pilot project and this project involved the training of teachers and local school technician, many teachers were trained, Electrical installations in classrooms were done, Internet access set up and Content servers installed.

Pupils using One Laptop per Child (OLPC)

4.4. ODeL (Open Distance and e-Learning) Project

Ten Open distance and e-Learning (ODeL) Centres are all fully operational and currently act as physical hubs for the creation, organization and sharing of knowledge and the development of local distance and eLearning programs. The centre's main functions include acting as: a training facilities for staff in the use of ICT in development, delivery and management of educational programs; a delivery point for the current and future eLearning programs (e.g. the Teacher Education Program); a physical location where staff are able to conduct research and participate in collaborative work; and an income generating facility to ensure their long term sustainability.

4.5. E-Champions Training

This is an initiative for Rwanda Education Board (REB) for training primary and secondary school teachers on how to use ICTs in Learning and Teaching; trained teachers in this program

are called "**e-Champions**". More than 3200 teachers were trained. More than 59 e-champion clubs have been created in the whole country.

4.6. E-Innovators Workshop

The main objective of these workshops is to scale-up new innovations in Educational Technology and to create e-Innovators' Clubs in all Districts. Four (4) e-Innovators' clubs have been created and Rwanda Technology Innovation Forum was created.

WSIS ACTION LINE C5: Building confidence and security in the use of ICTs

5.1. Cyber Security Department

A Cyber Security Department was established in Rwanda Development Board (RDB), which acts as central focal point for all related cyber security issues (i.e. Incident handling and Response, Real time cyber space monitoring) and implementation of national cyber security strategy and program. This department acts also as the focal point for regional and international cooperation on cyber security related matters.

5.2. Cyber Security Legal Aspect and its implementation

To effectively use the electronic services and build trust and confidence of users, cyber security legal aspects were taken into consideration and addressed in the undergoing ICT Bill and in the Electronic Transaction Law. An Information Security Policy, guidelines and procedures were drafted in line with the ISO 27001 standards.

5.3. Cyber Security Capacity Building and Awareness program

A National Cyber Security capacity building and Awareness Program was developed. The primary goals and objectives of this program are to increase the number of information security professionals in both public and private institutions who are capable to maintain and protect critical information assets. It will also support to raise national cyber security awareness on how to protect themselves against Internet threats, recognize them and respond to them appropriately.

WSIS ACTION LINE C6: Enabling Environment

Creating an enabling environment is among the government's priorities to have a vibrant ICT sector which contributes to the transformation of the country.

6.1. Policy and regulatory framework for encouraging investment in the Information Society.

This was done by setting up institutions to empower ICT in Rwanda and to encourage its socio-economic growth towards reaching its Vision 2020.

The Ministry in charge of ICT has a mandate to develop policies and legal framework.

The Rwanda Information Technology Authority (RITA) currently merged in Rwanda Development Board has been created with the mandate of coordinating all Government ICT initiatives, projects, programmes and investments in the country, specifically the implementation of NICI Plans and to ensure their viability.

The Government of Rwanda has initiated a tax free incentive policy on ICT equipments.

The Rwanda Utilities Regulatory Authority which has a mandate to regulate the ICT sector was also created and developed among other regulations the following:

- ICT Infrastructure sharing guidelines has been put in place to facilitate any investor willing to invest in Rwanda.
- Guidelines for Sharing of Dark Fibre and Duct Infrastructure,
- Guidelines for Interconnection,
- Guidelines for broadband Internet quality of service.

6.2. Rwanda's Country Code Top Level Domain (ccTLD), ".rw"

Rwanda Information Communication Technology Association (RICTA) has gained all the rights from the Internet Corporation for Assigned Names and Numbers (ICANN) to manage the government's web domain after using formal procedures to apply for its repatriation. RICTA provides registry services such as registrar management, domain name registration, renewal, dispute settlement services and maintains the entire .rw register system. Rwanda is very proud to manage its national identity and it gives the country the capability and confidence to technically manage its web domains.

6.3. Consumer protection laws to respond to the new requirements of the Information Society

The law establishing Rwanda Utilities Regulatory Authority (RURA) addresses consumer protection; particularly RURA has a department dealing with consumer protection and providing timely resolutions to consumer complaints and disputes.

6.4. E-government strategy in Rwanda

Rwanda E-Government strategy focuses on the evolution of existing systems and implementation of new ones in order to promote a variety of issues including Capacity development, electronic transaction legislation, security issues and access plus networking in the public and private sectors as well as addressing minimum technology standards on systems, hardware and software.
Rwanda is using information technology especially the internet, to deliver government information, services to citizens and businesses. Many applications have been deployed and ICT helped the government to streamline and make services more efficient and transparent.

6.5. Electronic commerce in Rwanda

In electronic commerce, the following has been achieved:

- The country's payment system has moved from a cash-based transaction to a cashless one driven by electronic payments. Local commercial banks and their outlets have increased the number of Point of Sale (POS) machines that accept Electronic Credit Cards in all transactions.

- Telecom companies in Rwanda provide mobile financial services
- The Rwanda Central Bank has introduced Rwanda Integrated Payment Processing System (RIPPS) that links all banks in the country to facilitate quick, secure and smart transactions.

6.6. Effective dispute settlement in Rwanda

The Kigali International Arbitration Centre was created in 2011with an aim to strength the Capacity of Economic Operators in Rwanda to resolve their disputes themselves without need to go to courts.

6.7. Economic potential of ICTs for Small and Medium-Sized Enterprises (SMEs) in Rwanda

The ICT Chamber which is a member of the Private Sector Federation (PSF), acts as an agent to support ICT sector development. More specifically the Rwanda ICT Chamber brings together ICT Associations, businesses, groups and individuals into a community where they can share ideas on how to promote and develop Rwanda's ICT and ICT enabled Industries.

WSIS ACTION LINE C7: ICT Applications: Benefits in all Aspects of Life

The Government has been focusing on improving the efficiency of the public and private sectors to deliver services and information through the utilization of appropriate technologies. It also aimed at widening public–private partnerships (PPPs), improving accountability and transparency and citizen participation in governance issues.

7.1. E-Government in Rwanda

- **E-Mboni:** The Rwandan government has implemented electronic record system e-Mboni, in a bid to improve organisational efficiency, transparency and effectiveness within the local and central government institutions. The system is also solution oriented to drastically reduce the use of paper.

- Ministry of Finance and all its governmental partners are interconnected through the SMARTGov software applications including Integrated Financial Management System (IFMS), Budget Master for budget preparation and execution, Tax Master for public tax management, PIPMaster for monitoring and management of external finance inflow, PublicBooks for auditing and processing of reports on public finance management, Gatekeeper for immigration management, and the scholarship management application software at Student Financing Agency for Rwanda(SFAR).

- EMIS (Education Management Information System): used to improve efficiency in academic evaluation, monitoring and evaluation in schools, report compliance, and easiness of communication to parents and ministry of education.

- HESLD MIS (Higher Education Students Loan Department Management Information System): Used to help track thousands of former university students who benefited from a state-run loan scheme in an effort to support loan application, loan provision and loan recovery process.

- Rwanda Teacher Management System: Used for registration of all teachers, evaluation, placements and licensing of teachers.

- ECMIS (Examinations Coordination and Management Information System): Used for publication of examination results to every national examination candidate through SMSs and the website. With more than 95% geographical coverage, the System is available all over the country.

- LTM MIS (Learning and Teaching Material Management Information System): Used for textbooks management in ordering, distribution, capitation, checking of books distributed in schools.

- Applications for passports and visas can be made online, and the progress of the dossiers can also be followed via the Internet. The only time you actually have to go to the migration offices is to pick up the requested document.

- **The Judicial ICT major achievements in Rwanda**:

  - ✓ The **Electronic Records Management System (ERMS)** consists of the Case Management system. The ERMS is now installed in 22 courts and being used for case management as pilot phase in all 6 courts located in Kigali.

  - ✓ Digitization of Physical files involves the scanning and storing files electronically.
  - ✓ The Electronic Filing System (EFS) allows litigants to file their cases online straight to the courts.

  - ✓ **Judiciary Blog**: The blog is actively being used by members of the Judiciary and the bar association.

  - ✓ **Video Conferencing Facility (VCF):** There are currently 7 court rooms with VCF.

- **The Rwanda Revenue Authority (RRA) ICT major achievements**:

  - ✓ **Standard Integrated Government Tax Administration System (SIGTAS):** Domestic Tax Collection System which enables to analyse the taxpayers' data in order to issue the tax clearance certificate within one working day.

  - ✓ **Tax Clearance Certificates (TCC) software:** which issues a tax clearance certificate downloadable over internet.

  - ✓ **NIDGATEWARE**: Interface which allows RRA to validate National Identification (NID) for individual taxpayers.

  - ✓ **Rwanda Electronic Single Window**: Easy expedition of goods clearance to reduce the cost of doing business due to online clearance and simplified procedures.

7.2. E-business

Rwanda has a strategy to promote international trade, use of e-business and business model for the stimulation of private sector and Public Private Partnership (PPP) and promoting new applications.

- **The Rwanda e-Regulations system** is an online database designed to provide investors and entrepreneurs with an easy access to detailed, complete and up to date information on investment procedures in Rwanda. The system is implemented by the RDB.

- **Business Registration system (basic and online)**: is a system that provides a single point registration where the RDB clients will have interface with a single agency by filling a single consolidated dossier.

- **Security interest on Movable Properties Registration System:** used for registering Intellectual Property Rights on a Mark, copyright and provides mortgage registration Certificate.

- **E-Portal:** The portal automates various processes of the Investment arm (specifically the One Stop Centre Processes) of RDB by providing the following online services: Investment Certificate Registration, Environmental Compliance Processing and issuance of Environmental Impact Assessment (EIA) Certificate and Processing of exemptions on imported goods.

7.3. E-learning in Rwanda

- Currently there are 5 centres for e-learning with total 614 students (Nursing and Midwifery) using successful videoconferencing. System used to upgrade nurses from A2 (A-level) to A1 (Advanced Diploma).

7.4. E-health in Rwanda

- **Rwanda Health Management Information System (R-HMIS):** system that integrates data collection processing, reporting, and use of the information for programmatic decision-making. For example, Monthly reporting forms for Health Centres, District Hospitals, Referral Hospitals and Private health facilities.

- **Data warehouse/Dashboard:** is a "One-stop shop: for key health sector indicators pulled from multiple systems.

- **Rapid SMS (RAPIDSMS):** System used to save newborns and mothers though routine surveillance of health events by Community Health Workers (CHWs).

- **mUBUZIMA**: Is an application that builds on Rwanda's mobile phone infrastructure to support Community Health Workers. It allows Community health workers to enter and transmit Community Health Information System (CHIS) indicators in real time even in remote parts of the country using only a mobile phone. The system is also used to facilitate the reporting of MDGs indicators directly from the community (Village) to the Ministry of Health.

- **Electronic Integrated Diseases Surveillance and Response (EIDSR):** is a strategy for coordinating and integrating surveillance activities by focusing on the surveillance, laboratory and response functions of the national disease surveillance system.

- **OpenMRS:** An open-source Medical Records System that tracks patient-level data.

- **TracPlus and TRACnet***:* Monthly monitoring of infectious diseases including HIV/AIDS, TB, and Malaria.

- **Telemedicine** –used to deliver health and healthcare services where patients are treated by experts without moving from their respective district hospitals. The technology has reduced the cost and risk of transport for patients and doctors.

- **Human Resources (iHRIS):** Is used to improve planning, management and registration of human resources across the health system.

7.5. E-employment

- **Jobs in Rwanda:** The main mission of this website is to facilitate the communication between job seekers and employers operating in Rwanda using online technologies**.** On top of this daily activity, they organize an annual career day event, where the two stakeholders meet for one-to-one interviews.

- **YES Rwanda Job Desk**: Job Desk Service is an on-line job search, advertisement and recruitment service aimed at enabling the youth in Rwanda to find the right kind of paying jobs. The system also provides employers with less costly means for job advertisements and recruitment.

7.6. E-agriculture

- **Agricultural Management Information System (AMIS):** is an exchange platform for all stakeholders of the agricultural and livestock sector.

- **E-soko:** Project that seeks to empower farmers to enable them to make more informed market pricing decisions and ultimately more successful farming.

WSIS ACTION LINE C8: Cultural Diversity and Identity, Linguistic Diversity and Local Content

8.1. Policies that support preservation, promotion and enhancement of cultural and linguistic diversity and cultural heritage

ICT in Rwanda has preserved natural and cultural heritage, keeping it accessible as a living part of today's culture. This includes developing systems for ensuring continued access to archived digital information and multimedia content in digital repositories, and support archives, cultural collections and libraries as the memory of humankind.

8.2. Microsoft unveils Windows 8 in Kinyarwanda

Windows 8 in Kinyarwanda is being implemented and this will assist in building information and communication technology literacy in the country spreading ICT usage to a large number of the population.

WSIS ACTION LINE C9: Media

9.1. Media Sector in Rwanda

The Rwandan media sector has great potential as the country moves towards development and technological progress. It's a commitment to attain and relies strongly on the innovative use of ICT and new media technologies for achieving the goal of transforming itself into an inclusive information society, therefore in compliance to the action line as laid down in the WSIS declaration.

9.2. Social Media Powers Grassroots Democracy in Rwanda

The Government of Rwanda is urging citizens to embrace social media tools as a revolutionary way to share information and access government services starting with **President Kagame**, who has more than 68,000 followers on Twitter. Officials across the government and its institutions are embracing social media as a way to communicate with citizens.

The Rwanda National Police (RNP) uses the social networks and they have proved to be the fastest and effective means of communicating to the public in and out of the country. Today, RNP uses social media networks to sensitise the public about abstaining from crimes, drugs, driving under influence of alcohol, gender based violence and violation of children's rights.

9.3. Benefits of Digital Migration on media sector in Rwanda

The Digital Broadcasting Technology will diversify the sources of information facilitating choice to the population based on effective competition.

9.4. Media - print and broadcast as well as new media to continue to play an important role in the Information Society

The internet has raised new ethical due to the growing number of new technologies. A new trend amongst some local media is to have a presence on the internet as well print and broadcast news items. The sharing of content on face book, Twitter and other social media on current issues is becoming a culture amongst journalists and other Rwandans. The use of the internet in media is growing as seen currently where most of the virtual newspapers in the national language (Kinyarwanda) can be downloaded online.

9.5. Encouraging the development of domestic legislation that guarantees the Independence and plurality of the media

Rwanda has harmonised her legislative instruments with constitutional provisions guaranteeing the freedom and independence of the media sector. These instruments enhance self-regulation and the fundamental goal being to encourage diversification of both broadcasting and printing media.

9.6. Encouraging media professionals in developed countries to establish Partnerships and Networks with the media in developing ones, especially in the field of training

Rwanda Media Strengthening Program (RMSP) in collaboration with Carleton University provides practical-skills based courses and additional training certification programs to journalists from various areas of the Rwandan media. As a result, there has been an increase of professionalism amongst different media organisations including: Association of Rwandan Journalists (ARJ), Rwanda Editors Forum (REFO) and the Rwandan Association for Journalist Women (ARFEM).

9.7. Promoting balanced and diverse portrayals of women and men by the Media

Media High Council (MHC) in close collaboration with ARFEM initiated a continuous and conscious campaign to encourage women to join the media sector in order to address the gender imbalance in the sector. This campaign is shown through intensive programs on Radio and TV as well as in printing media addressing women issues.

9.8. Encouraging traditional media to bridge the knowledge divide and to facilitate the flow of cultural content, particularly in rural areas

All licensed 29 radio stations in Rwanda broadcast essentially in the national language. The programs broadcast over the radio stations mostly at an interactive manner aim at educating the population on their specific socio-economic and cultural activities.

WSIS ACTION LINE C10: Ethical dimensions of the Information Society

The ICT Bill in pipeline will harmonize legal and regulatory framework for the ICT sector taking into account the convergence of technologies as well as privacy, data protection and cyber security aspects.
The rights and protection of children are addressed in a specific law.
All aspects regarding cyber security are addressed in the Rwanda penal code.

WSIS ACTION LINE C11: International and regional cooperation

11.1. East African Community (EAC) Legal Framework for Cyber Laws

The Government of Rwanda participates in the development of the EAC legal framework for cyber laws; the purpose of this framework is to harmonize the national laws of EAC Member States in order to promote adequate electronic commerce, use of data security mechanisms, integrity, confidentiality, availability of information assets and protection of consumers in online environment.

11.2. International cooperation on Cyber Security

The Government of Rwanda established a strategic partnership with the Government of South Korea through Korea Internet and Security Agency (KISA) to protect ICT infrastructure and share information related to cyber security incidents.

11.3. East African Communications Organization (EACO)

EACO is a leading inter- governmental organization established by ICT regulators and operators from the EAC. The purpose of the organization is to coordinate all the ICT activities and initiatives in the region and the organization headquarter is based in Kigali.

11.4. E-Rwanda

This is a project funded by World Bank that aims to help the government of Rwanda achieve its policies of developing the country through ICT. The project supports components which focus on the use of technology as an enabler to growth and development in all sectors.

11.5. Swedish International Development Agency (SIDA)

The National University of Rwanda in partnership with SIDA, have taken a leading contribution to conduct research in ICT based education to meet the demand of the national policy set up to enhance ICT use in various sectors for socio- economic development.

11.6. United Nations Economic Commission for Africa (UNECA)

UNECA supports Rwanda to use ICT for socio-economic development in a strategic manner since 1998. The support is materialized in the form of National Information and Communication Infrastructure Plans (NICI) which have been formulated and implemented through NICI I (2001-2005), NICI II (2006-2010) and ongoing NICI III (2011-2015).

11.7. Regional Connectivity Infrastructure Program (RCIP)

The Government of Rwanda extended its geographic fibre network by connecting to the international fibre link. The core objective of the RCIP project is to reduce cost for international capacity (connectivity) by extending the geographic reach of Rwanda's broadband networks. The goal of RCIP is to give Rwanda capacity and access to broadband connectivity by:

- Providing connectivity to all government institutions and all Rwandans:
- Establishing a central broadband international gateway facility (virtual landing point) in Rwanda that facilitates international connectivity;
- Purchasing and/or leasing broadband capacity to connect Rwanda to undersea fibre-optic cables.
- Building competent technical capacity to manage and operate the acquisition, distribution and management of international broadband connectivity.

SECTION III: PROFILES OF PROGRESS

1. The national fibre backbone: laying the foundation for the transformation to a knowledge economy

In the framework of implementing Rwanda's Vision 2020 that focuses on transforming Rwanda to a Knowledge economy, the Government of Rwanda initiated the National Fibre Backbone project in 2008 with the aim of providing connectivity and adequate broadband communications services across the country. Over 3,000km of Fibre Optic cables were laid across the country connecting all the 30 districts and 11 border posts. The network interconnects all Government buildings and other major privately owned buildings in Kigali forming the Kigali Metropolitan Network as well as other sites in Districts. Many sites across the nation are connected including secondary schools, universities, hospitals, district offices, judicial courts and most of central government institutions.

The journey of the National Fibre Backbone started in 2008 in Kigali with the roll out of Fibre-Optic. By 2011 the infrastructure roll out was completed and has been providing Fibre connectivity services mainly focusing on wholesale services ever since.

According to the published speed results in November 2012 by Ookla, the global leader in broadband testing, Rwanda was ranked the first in Africa with 7.28Mbps.This high speed has enabled users from Government institutions to access and send information much faster thus enabling applications such as the Financial Management Information Systems (FMIS) used by the Ministry of Finance and Economic Planning for accounting, budgeting and payments.
The education sector has also been positively impacted where students are able to interactively participate in live sessions with other students across the Globe.

In Rwanda's Judiciary, the Supreme Court and almost all major courts are now able to conduct court sessions via video link both in Rwanda and abroad. Sharing, accessing and retrieving case files have also been made easier.
For the Rwanda National Police, the Fibre-Optic connection has significantly improved their connectivity and substantially lowered their monthly expenses.
The Rwanda Directorate of Emigration & Migration adopted an online system for application for travel documents. This had made the process of acquiring travel documents and tracking of the dossier progress much easier facilitating investors as well as Rwandan citizens.

The National Data Centre– Enabling local content
The National Fibre Backbone and Kigali Metropolitan Network created the need for a conducive environment to store data. The state-of-the-art Tier 3 Data Centre offers benefits to both Government and private sector while encouraging the creation of local content.
The benefits include guaranteed high availability and flexibility through server virtualization, reduced IT infrastructure investments, real-time scalability supporting business changes, data recovery and very soon for the first time in Rwanda, cloud computing.

Major Rwandan and some widely internationally accessed websites such as Google and YouTube cache are hosted in the National Data Centre contributing to faster information access and international bandwidth capacity savings.

SECTION IV: THE WAY FORWARD AND THE VISION BEYOND 2015

With nationwide fibre optic coverage, the country is embarking on ensuring that last mile access is provided to fully maximize the opportunity at hand. A study has been commissioned with the aim of mapping out Rwanda's broadband needs across the entire country in order to bridge the digital divide through last mile broadband connectivity. The plan is to install fibre to some premises and wireless broadband for the rest. A new market structure for better service provision include rural and remote area while taking in account the affordability, digital literacy issues for broadband services uptake and adoption.

A series of actions have been put in place and are included in Rwanda NICI plan III & VI for the period 2013-2020 which aims at develop appropriate content and applications to the local market, in order to reach knowledge based economy.

With the establishment of the Kigali Free Trade Zone, Rwanda again looks at moving forward and fast-tracking development in all sectors. The zone will be home to various industries, including an ICT park. It will provide tax incentives for businesses situated there, especially those targeting the export market. These incentives include a Zero (0) percent corporate tax value added tax exemption, a Zero(0) percent import duty, a 100 percent research and development costs write-off, among other advantages. At the core of the technology park will be Carnegie Mellon University, a world-class university with which the government of Rwanda has partnered to establish a centre of excellence that will develop much needed, highly skilled ICT professionals. The technology park, which will be heavily oriented towards research and development, is envisioned to foster key clusters in ICTs, including business process outsourcing, cloud computing, ICT education and training, e-government, cyber security, and mobile solutions.