

Republic of Rwanda

Ministry of Youth and ICT



National Digital Talent Policy

Kigali, April 2017

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ACRONYMS

ACRONYM	EXPANSION
12YBE	<i>Twelve Years Basic Education</i>
ATM	<i>Automatic Teller Machine</i>
CESB	<i>Capacity Development and Employment Services Board</i>
CIO	<i>Chief Information Officer</i>
CSR	<i>Corporate Social Responsibility</i>
DAP	<i>Digital Ambassador Programme</i>
EDPRS	<i>Economic Development and Poverty Reduction Strategy</i>
E-LEARNING	<i>Electronic Learning</i>
EICV	<i>Integrated Household Living Conditions Survey</i>
FDI	<i>Foreign Domestic Investment</i>
GDP	<i>Gross Domestic Product</i>
GoR	<i>Government of Rwanda</i>
HLI	<i>Higher Learning Institutions</i>
ICT	<i>Information and Communication Technology</i>
IECB	<i>ICT Engineers Certification Body</i>
IPRC	<i>Integrated Polytechnic Regional Center</i>
IT	<i>Information Technology</i>
MIFOTRA	<i>Ministry of Public Service and Labor</i>
MIGEPROF	<i>Ministry of Gender and Family Promotion</i>
MINALOC	<i>Ministry of Local Government</i>
MINECOFIN	<i>Ministry of Finance and Economic Planning</i>
MINEDUC	<i>Ministry of Education</i>
MYICT	<i>Ministry of Youth and Information & Communication Technology</i>
NCPD	<i>National Council of People with Disabilities</i>
NCST	<i>National Commission for Science and Technology</i>
PC	<i>Personal Computer</i>
PhD	<i>Doctor of Philosophy</i>
PPP	<i>Public Private Partnership</i>
RCA	<i>Rwanda Cooperative Agency</i>
RDB	<i>Rwanda Development Board</i>
RISA	<i>Rwanda Information Society Authority</i>
SDG	<i>Sustainable Development Goals</i>
SMEs	<i>Small and Medium Enterprises</i>
SRMP	<i>Smart Rwanda Master Plan</i>
SWOT	<i>Strength, Weaknesses, Opportunities and Threats</i>
TSS	<i>Technical Secondary School</i>
TVET	<i>Technical Vocational Education and Training</i>
UR	<i>University of Rwanda</i>
USD	<i>United States Dollar</i>
WDA	<i>Workforce Development Agency</i>

EXECUTIVE SUMMARY

Rwanda's National Digital Talent policy aims to increase digital literacy and skills and across all levels of Rwanda society both in terms of quality and quantity. Implementation of this nation-wide digital literacy programme linked to e-government and e-business services will significantly benefit Rwandan citizens, attract global talents and drive progress toward achieving the country's Economic Development and Poverty Reduction Strategy (EDPRS) targets and beyond.

Considering current figures on ICT Literacy status in Rwanda, there is a need to harmonize the progress being made in ICT Sector with continuing efforts to address the issue of limited ICT Skills and literacy in a systematic manner. According to the EICV IV, computer literacy has increased in the past three years from 5.3% to 8.4% overall and almost doubled from 6.5% to 10.9% in the younger cohort. The urban/rural divide is estimated around a quarter (26%) of all individuals living in urban areas reported as being computer literate compared to rural folks who are estimated at 6.8% of the whole population.

The five-year programme for priority skills development by MIFOTRA to deliver EDPRS II adopted by the Government of Rwanda in 2013, prescribed that a total aggregated number of 13,323 skills in ICT is required over the 2013 – 2018 EDPRS time frame. These skills needs sets were subdivided in 5,126 skills at associate level; 1,681 at professional level; and 6,716 at expert level, all distributed in various specific areas of specialization spanning the ICT sector.

A recently released study by National Commission of Science and Technology (NCST) revealed that the projected capacity to supply skills over the period 2015-2018 is estimated at 12,466 skills units with diploma or advanced diploma and secondary school certificates, 3,245 skills units at bachelor's degree level, 487 at Master level and 16 Skills Units at PhD level. In terms of quantity, the country is relatively able to supply its skills needs at associate and professional level but Rwanda desperately falls short on supply of skills at professional and expert level. In terms of quality, the NCST report confirms a big divide between the supply and demand sides of skills particularly at professional and expert levels.

As it can be seen from above, these figures are still alarmingly low and call for urgent intervention to increase the levels of literacy at the citizen, workforce and IT savvy professional levels.

This National Digital Talent policy comes to provide practical orientation that will position Rwanda's digital talent as competitive in the increasingly global and rapidly evolving digital landscape. The uniqueness of this policy lies in that it targets all levels of society: 1st level

includes lay citizens and children at Primary schools, 2nd level groups all members of workforce, students from secondary school at the Higher learning institutions, while the 3rd level comprises experts, innovators and entrepreneurs in IT field.

The Policy aims to set a framework to:

1. **Provide digital literacy for all (Primary school learners and general population):** by enhancing digital literacy across all levels of Rwandan society through embedding training into citizen's daily activities as needed to demystify information and communication technology. At this level, 5,000,000 Rwandans will be trained in digital literacy with a particular emphasis put on those in primary education and general citizens. Particular focus will be put on youth, women and people with special needs.
2. **Build a digital savvy workforce:** by workforce upskilling to enhance digital adoption. Starting with both education system at secondary and tertiary levels, as well as the national workforce, 1,000,000 Rwandans will be trained. The emphasis will be on supplying adequately the digital skills needed to enable the ICT sector to deliver on the EDPRS II targets and forward. Digital proficiency and internationally accepted ICT certification for the target beneficiaries will be prioritized.
3. **Set up an IT elite corps:** by nurturing a critical mass of 10,000 ICT experts for domestic and export needs to transform the country from a consumer/importer to a producer/exporter of ICT's to the region and global scene and to professionalize the ICT sector professions.
4. **Coordinate the digital literacy initiatives:** by setting up standards on needed digital literacy and provide coordination mechanisms of this policy implementation.

This policy compliments other existing policy, strategies and legal framework: Vision 2020, EDPRS II, Smart Rwanda Master Plan, ICT in Education strategy, Labour policy, Gender mainstreaming policy, Community Development policy, Labour code.

The Ministry of Youth and ICT in collaboration of stakeholders in the area of Human Capacity Development from Government (MINEDUC, MIFOTRA, NCBS, UR, RDB, NCST), from Private Sector, Civil society and target beneficiaries of this policy provided their views and will periodically review its implementation progress to ensure that set goals are achieved in a timely and appropriate manner.

1. INTRODUCTION

Evolution of today's society goes hand-in-hand with a gradually changing set of key competences. Over the past three decades the world has witnessed unprecedented growth in which Information and communication technologies (ICTs) are helping government, business and other organizations to interact with citizens and clients to make a difference in terms of government operations, public services delivery, citizen participation, policy and decision making, governance reform and business promotion.

The Government of Rwanda has a dedicated and strong public policy towards the development of the country, utilizing ICT as one of the crosscutting enablers for a fast social, political and economic development. On the whole, all ingredients towards a knowledge-based economy are in place, yet, there are low levels of adoption of electronic services and limited human capacity to reach the knowledge economy and society goals. This low adoption level is for the most part attributable to low levels of digital skills and literacy among Rwandan citizens.

To address the above issue, the National Digital Talent Policy foresees that a digitally educated Rwandan citizens ("Smart Citizen") is expected to be self-confident in manipulation of information technology devices, able to access services without intermediaries, interact with others in an environment where the process will be simple, intuitive, and fast. With today's hyper-connected administration, digitisation of the workplace via technologies like automation and artificial intelligence will make work more complex, creating higher demand for more digitally skilled workers in knowledge-intensive occupations in non-ICT domains. On business side, IT experts and innovators are expected to produce user-centric solutions transforming life of global citizens.

1.1. CONTEXT

Just after liberation of Rwanda in 1994, the Government of Rwanda (GoR) and both national and international private sector have significantly invested in ICT's infrastructure and solutions that transformed the country into the most connected country in Africa, with a coverage of high-speed broadband infrastructure reaching all main corners of the country. It was followed by the increased proliferation of digital devices and application to easy service accessibility, financial transaction, doing business and social communication. These changes brought about a demanding exercise of re-defining the literacies in a lifelong learning perspective which, in its turn, correspond to the societal and conceptual structures of the emerging information society.

Today, GoR's services are being digitized to make them accessible on *Irembo*, an e-Government Service Platform. The number of electronic services has increased significantly fueled by disruptive advancements in electronic financial services. Private sector is contributing to the modernization of payment systems to adopt the cashless economy. In this area, banks are adopting the use of electronic cards, ATMs, online and Mobile Banking to eradicate the issues of long queues of service seekers. A thriving mobile application ecosystem is transforming lives and business practices. This progress goes together with putting in place policies, regulatory framework and human capacity building programmes to ensure enough skills are in place to lead the transformation journey.

- Adopted in 2000, **Vision 2020** gives the overall vision for Rwandan development and establishes a goal to move Rwanda from an agrarian economy to information-rich, service oriented, knowledge-based economy by 2020. ICTs were placed at the centre of the transformation across all sectors. However, it was noted that Rwanda lags behind in professional training, with shortages in the field of ICT among others. The vision recommends to ensure a proper link between education policies and sector development and labour policies to get a suitably skilled labour force.
- The 1st Strategy of an **Integrated ICT-led Socio-Economic Development Policy** adopted in 2001, has an aim to transform Rwanda into an IT literate nation. One of key objectives was to enhance Rwanda's capacity to develop, produce, manufacture and assembly ICT products and services as a step towards developing a local globally competitive ICT service sector and industry.
- **The Economic Development and Poverty Reduction Strategy (EDPRS 2)** guides Rwanda's medium-term plans to drive sustainable economic growth and fast poverty reduction under five thematic areas: Economic Transformation, Rural Development, Productivity and Youth Employment, and Accountable Governance. The EDPRS 2 rightly acknowledges the role that ICT play in contributing to the targets of the five thematic areas.
- All three pillars of **Sustainable Development Goals (SDGs)** – economic development, social inclusion and environmental protection need ICTs as key catalysts, and ICTs will absolutely be crucial for achieving the SDGs.
- The SMART Africa Initiative is an implementation framework of the **Smart Africa Manifesto**. Original signatories to this Manifesto formed the SMART Africa Alliance and established its secretariat in Rwanda. The Alliance has developed continent-wide goals and best practice for the implementation of Smart Africa. In turn, each adhering country will develop and implement its own SMART country programmes aligned to the five principles of the Initiative. The National Digital literacy programme is one of the eight initiatives that each signatory country is required to implement in the framework of the SMART Africa initiative. Rwanda, being among the champion in ICT

development, is obligated to lead by example by implementing its own National Digital Talent Programme.

- The **Smart Rwanda Master Plan - SRMP** (2015-2020) aims to power Rwanda's socio-economic transformation towards a knowledge-based economy through innovative, information-driven and ICT-enabled solutions. Regarding ICT capacity building, the Master Plan highlights that Rwanda will embrace the policy approach to increase ICT skills in the general population and to undertake professional ICT certifications courses to increase their productivity. Students shall graduate from high schools and universities with the appropriate ICT proficiency certifications, national effort shall be undertaken to increase the available professionally qualified ICT professionals as well as attracting talents from Rwandans in the diaspora and foreign talent to support the growth and transformation of Rwanda's economy. SRMP anticipated a National Digital Talent Policy to be enacted for this purpose.
- Rwanda as member of regional integration programmes (like Northern Corridor Initiative among others) will need expertise and high-level skills in ICT to implement different projects that will be initiated under these frameworks.

This vision is the driving force for Digital Talent Policy development.

1.2. DEFINITIONS

For the purpose of this policy:

Digital Literacy is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills at a basic level.

Digital Skills means the advanced level of digital proficiency that allows an individual to perform specialized and complex functions in Information and Communication Technology and related fields.

Digital Talent is the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills at a basic level, intermediate and advanced levels.

A digital literate person is someone with competencies required for full participation in a knowledge society. She/He must have knowledge, skills, and behaviors for effective use of digital devices such as smartphones, tablets, laptops and desktop PCs for purposes of communication, access digital services, and collaboration.

1.3. RATIONALE

A large number of organizations and businesses in Rwanda rely on ICTs to conduct their business ranging from governance matters, economic activities like education, trade, tourism and hotels, airlines and financial transactions on a day to day basis. Despite the importance of information technology usage to public administration, business sector, innovation and competitiveness, Rwanda's adoption rate remains low compared to what needs to be achieved to be called a middle-income nation. Digital services and content remains desperately low threatening to render GoR investments wasteful. The adoption level is mainly attributed to low levels of ICT literacy among the Rwandan population.

Over the past decade, the education system has produced a commendable number of ICT professionals; but a recurrent problem of an evident mismatch between the supply and demand of ICT skills persists. This mismatch is attributable to lack of strong linkages between, on one side, the outputs of HLI's and other training institutions and, on the other side, the specific ICT skills needs of the ICT industry which requires more specialized, hands-on workforce. The MIFOTRA's five years program for priority skills development study identified a number of skills units needed in the ICT sector to deliver on the EDPRS II. A recent study commissioned by the NCST confirmed a previously held notion that our education systems has produced a commendable number of ICT professionals, therefore it remains a recurrent problem of a glaring mismatch between the supply and demand of ICT skills.

This policy aims to among others address:

- The mismatch in our demand and supply of digital skills calls for our national efforts. Outputs from our secondary and tertiary education are yet to start competing on the global market and reflect lack hands-on skillsets and little connection to the market demands.
- Our adoption rate to the digital services and content is alarmingly still low.
- The shortage of skilled talent, especially in workplaces and businesses make for unnecessary and wasteful processes and resources.
- To strengthen our bilateral and multilateral relationships, Rwanda should be able to tap into its pool of talent for exchange purposes.

1.4. POLICY FORMULATION PROCESS

The development of Digital Talent Policy was based on the need to implement Vision 2020, SDG, Smart Rwanda Master Plan and the need to bridge ICT skills gaps identified by the Ministry of Public Service and labor in five year priority skills report and National Science and Technology's ICT Skills mapping report.

Consultation meeting and workshops were widely conducted to develop this policy jointly with concerned stakeholders and we have set goals, targets and policy instruments to achieve these targets. A draft policy was shared for public comment, and different comments and inputs provided have been considered.

The National Digital Talent Policy provides a direction and framework for digital literacy and talent management initiatives through appropriate coordination and standardization of needed competence for a digital literate person. It calls for strengthening the framework for ICT training and qualification in Rwanda and addresses the unforeseen challenges and issues brought by economic development, modernization and the digital transformation and set clear role of stakeholders. The policy comes into place to complement the existing human capacity development policies and legal framework.

2. SITUATIONAL ANALYSIS

2.1 CURRENT OPERATIONS AND PRACTICES

In Rwanda, a lot of initiatives that provide digital literacy skills are run by individuals, training companies, formal education and vocational training institutes. However, there is a need for coordination mechanisms and standards to be established to determine expected competences that graduates have to demonstrate after following such programs.

Rwanda is increasingly witnessing the growth of small and medium-sized enterprises (SMEs) that acutely need skilled digital talent to cope with global economic growth. Most of them have limited capacity to train or find a job-ready workforce to respond to the fast changing reality of the global economic landscape. It is, therefore, critical that skilled digital talent is available so that companies can effectively adopt and leverage digital technologies. This calls for production of excess capacity of ICT professionals with market-oriented, specialized skills.

Current figures reveals that ICT Literacy in Rwanda is still at the lower level and needs to be boosted: According to the EICV IV, computer literacy has increased in the past three years from 5.3% to 8.4% overall and almost doubled from 6.5% to 10.9% in the younger cohort. The urban/rural divide is very pronounced as around a quarter (26%) of all individuals living in urban areas report being computer literate compared to rural folks who stand at a paltry 6.8%. As can be seen, these figures are still alarmingly low and something needs to be done urgently to dramatically increase the levels of literacy.

The GoR has rightly positioned the ICT sector as a crosscutting enabler of achievement of the EDPRS II. The five-year program for priority skills development to deliver EDPRS II, adopted by the Government of Rwanda in 2013, prescribed the number of skill units required over the period 2013-2018. These skills sets needs were prescribed in fields such as telecommunications, computer networking, database, software engineering and mobile applications development, multimedia and digital design, information security as well as IT projects management, to cite but a few.

While output figures show availability in terms of skills of quantity, especially at certificate, diploma, as well as bachelor's levels, the issue of quality of the same output has been a recurring theme. There is a mismatch between ICT skills supply and demand. Most graduates do not have the technical, market-oriented expertise required by employers in government and private sector. Also, the programs taught at higher leaning institutions are not customized to address the skills required for current ICT projects or programs.

The above-mentioned mismatch is caused by weak limited linkages between the outputs of the education system on one hand and the specific skills needs of the ICT industry that requires more a specialized workforce.

The gap between ICT skills and supply is even more evident at post graduate level (Masters and PhD), a segment that has the potential to supply experts that would help Rwanda transform itself from an importer to exporters of ICT's. The number of post-graduate level professionals remains very low.

This is seriously holding back Rwanda's potential to become an ICT hub in the region. Rwanda's ICT sector has witnessed tremendous growth both in its own right and in terms of its contribution to the economy. For example during the year 2014, ICT grew at 25% while the rest of the economy grew at 7.1%. ICT contribution to GDP was valued at 3% representing more than all agriculture exports combined. Phone and Internet penetration is standing at more than 78.2% by March 2016 and 33.5% by December 2015 respectively, while mobile phones are increasingly contributing to financial inclusion with more than 6.5 million mobile wallets currently active. The Telecom sector attracted USD 66,354,840 in investments in 2014.

Rwanda has been recognized as the most connected country in Africa. By 2017, 95% of Rwandans will be covered by 4G/LTE. However, a world-class ICT infrastructure will only bear desired fruits if there is mass adoption of content and services that have been developed in the fields of e-Government, e-Business, e-Agriculture and e-Health. Low adoption is mainly attributed to low levels of ICT literacy and across all segments of Rwandan society. Also 70% of jobs have an ICT component.

The recipe for success in this dynamic and evolving economic environment is dependent on Rwandan ability as a nation, to increase investments in innovation, equip our workforce with relevant skills, produce higher-value goods and services, and expand trade. Increasing Digital Literacy will also help increase demand for the above electronic services and content, improve productivity of economy due to improved workforce efficiency, increase organizational productivity provide opportunities for innovation and entrepreneurship, attract Foreign Direct Investment (FDI) due to digitally literate and skilled citizens, facilitate youth employability and reduce social exclusion by giving opportunity to previously under-considered segments of society.

2.2 CURRENT LEGAL FRAMEWORK

Rwanda's ambitions to fully transform the country's economy from agrarian to a knowledge-based economy and become an ICT hub will be achieved when the progress being made in ICT Sector is in harmony with continuing efforts to address the issue of limited ICT Skills and literacy in a systematic manner. Globally benchmarked ICT literacy and skills are imperative to ensure citizens benefiting from the existing infrastructure, to equip the workforce with digital skills for more productivity and to establish a nation IT cohort of highly skilled IT engineers capable to compete on the global market.

There is a need to formulate a policy framework that will help all citizens to fully and competitively participate in transforming Rwanda into a knowledge-based economy with equal access and use of advanced technologies.

Targeted beneficiaries of this policy framework will be all Government employees, employees of the private sector and civil society, private sector institutions, students at all levels of education, and all of Rwanda's active population.

The policy shall create and communicate an acknowledgement that Digital skills and Literacy are needed by Rwandans at all levels, and that every citizen must be competent in these new basic skills and literacies.

The policy shall help establish the institutional and operational framework that will govern the promotion of Digital Skills and Literacy in the Rwandan society.

More importantly, the policy will set the stage for an appropriate legal instrument that will enforce digital skills and literacy among all targeted segments of the Rwandan society.

2.3. CURRENT INSITUTATIONAL FRAMEWORK

More than 30 existing public and private Higher Learning Institutions (HLIs) offer ICT related courses. Universities offering ICT courses concentrate on Bachelor of Science in Computer Science or Computer Engineering, Information Technology, Electronics & Communication Systems. Most of these programmes are of a general nature focusing on basic aspects of computer management and engineering at the undergraduate level. HLIs have not been able to diversify their undergraduate and post-graduate academic programs towards specializations in key emerging ICT areas to target the SMART Rwanda Master Plan priority programs. These include courses like: Software development and Engineering, Mobile Computing & Distribution Systems, Forensic Information Technology & Cybercrime and, Networking and Digital electronics. With an increase in access and use of shared infrastructure and services, mobile services and cybercrime, these courses have become even more imperative for Rwanda. The ICT for Education Strategy that has been approved were called to specifically improve ICT skills and integrating ICTs in teaching.

In terms of quantity, the country may relatively be able to supply its skills needs at associate and professional level but Rwanda desperately falls short on supply of skills at professional and expert level. In terms of quality, the NCST report confirms a big divide between the supply and demand sides of skills particularly at professional and expert levels.

According to the EICV IV, computer literacy has increased in the past three years from 5.3% to 8.4% overall and almost doubled from 6.5% to 10.9% in the younger cohort. The urban/rural divide is very pronounced as around a quarter (26%) of all individuals living in urban areas report being computer literate compared to rural folks who stand at a paltry 6.8%. As can be seen, these figures are still alarmingly low and something needs to be done urgently to dramatically increase the levels of literacy

2.4 ICT AWARENESS CAMPAIGNS AND CITIZENS' EDUCATION

Since 2013, the Ministry of Youth and ICT (MYICT) together the Ministry of Local Government (MINALOC), Ministry of Education (MINEDUC), Rwanda Development Board (RDB), the Private Sector Federation (PSF), Finance sector together with other partners have been implementing a “**National Public ICT Literacy and Awareness Campaign**” – “**KORANA UBUHANGA**” to drive the awareness and usage of ICT services, content and applications, to increase the ICT Literacy, educate and train the masses and businesses on the potential of ICT to drive competitiveness, efficiency, transparency as well as civic participation.

The purpose of the campaign is to drive change and make more Rwandans utilize their investment in ICT in a productive and efficient manner. The campaign is designed broadly but its implementation will target specific sectors of our economy. Furthermore, as a long term ICT Literacy and awareness strategy, each program and project implemented in the framework of the five year.

2.5 SWOT ANALYSIS

- **Strength:** Established ICT Infrastructure (National Fiber Optic Backbone, 4G LTE enrolment in the whole country, Smart Rwanda Master Plan as ICT strategy toward knowledge based economy, Government of Rwanda has started to offer services online under one platform (Rwanda Online) etc.;
- **Weakness:** lack of ministerial instructions and a policy governing ICT skills development and lack of standard for ICT literacy and skills.
- **Opportunity:** Government willing to bridge ICT Skills gaps, different program designed to bridge digital divide, high percentage of phone penetration in the population.
- **Threat:** As new technologies come, there is always a need to educate the population and this require a huge budget. As we go for regional integration, we will also need to educate our population on digital services from other countries.

3. DIGITAL TALENT POLICY

3.1 VISION

Transform Rwanda into a digitally savvy nation by engaging all available talent, including man and women, youth, and persons with special needs, to critically mitigate the talent shortage.

3.2 GOAL/MISSION

To Bridge ICT skills gap and educate Rwanda's active population in digital literacy and become an exporter of ICT skills globally and create more jobs.

3.3 STRATEGIC OBJECTIVES

The National Digital Talent Policy aims to build ICT professional skills and leverage ICTs in education in order to accelerate skills development. The scope of this policy is three fold: first, to conduct a digital literacy for Rwandan citizens; second, to leverage ICTs in education and public workforce and third, to build ICT professional skills that will increase innovation in the ICT industry and enable all sectors of the economy.

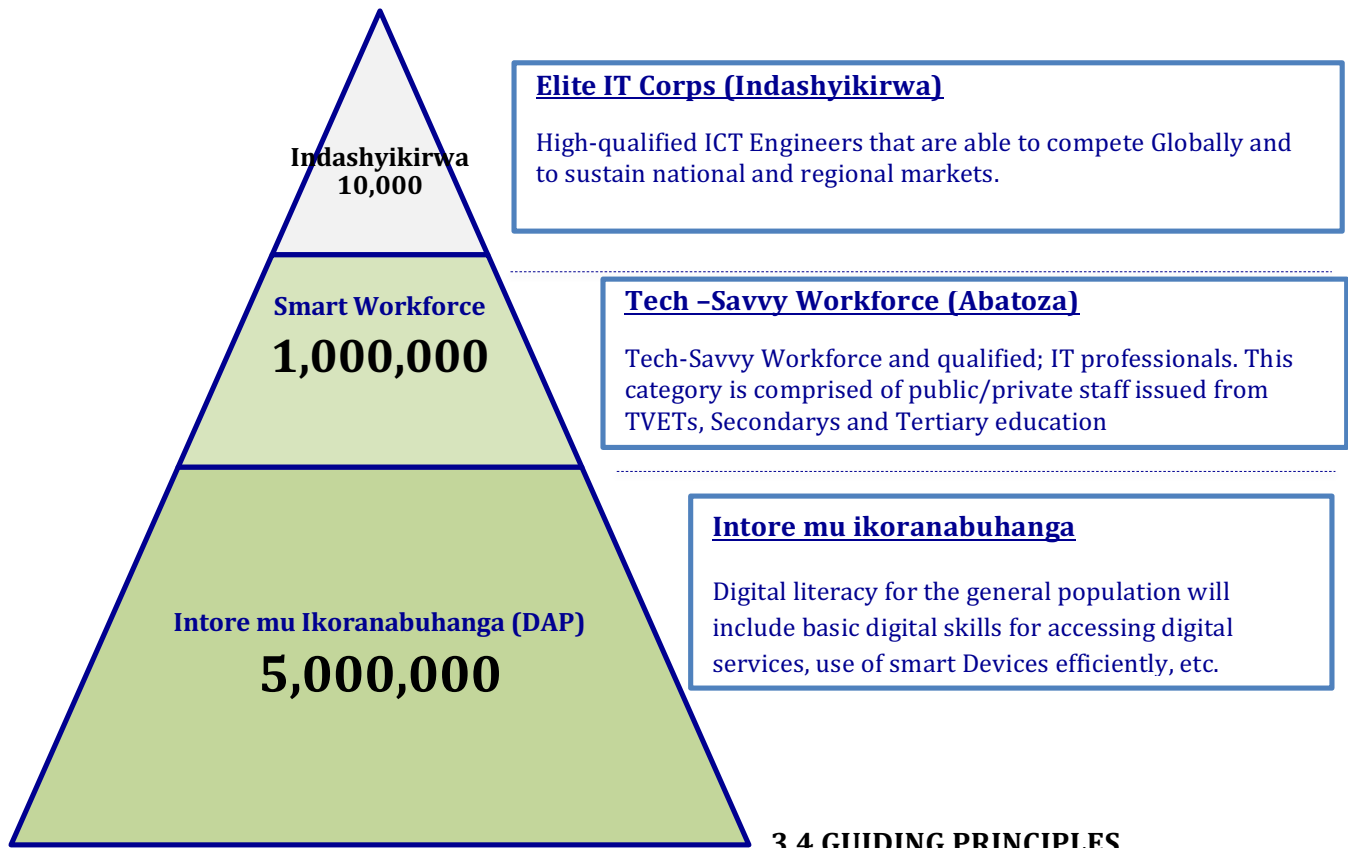
The policy has the following strategic objectives:

- Provide digital literacy for all including primary education and general population
- Build a digital savvy workforce for the public and private sector by producing digitally proficiency professionals with internationally accepted ICT certification.
- Set up an IT elite corps made of ICT experts and professionalize the ICT sector professions.

- **Digital Skills Development Pyramid**

Digital Talent policy calls for a strong digital competence with specific knowledge, skills and attitude development and placing emphasis on to build digital skills capacity for general population, for employees and at development of highly qualified ICT engineers, this is summarized in the pyramid below. There is a target to meet 1:3500 ratio of IT engineer per capita.

DIGITAL TALENT LAYERS



This policy is premised on the following principles:

- 1. *Integrating globally benchmarked certifications:*** A quick, surefire way to address the issue of mismatch between supply and demand sides of ICT skills is to integrate internationally accepted ICT Certification across all level of Education in Rwanda.
- 2. *Focus on both Quality and Quantity:*** There is no such thing as compromising one for the other. There is need to focus on maintaining consistently high quality based on international standards in large digital skills and literacy initiatives from the country's ICT training and education institutions.
- 3. *Market responsiveness of ICT Skills Units:*** The need to shift from a scattergun approach to a more systematic, market responsive approach to training ICT students has never been more pressing.
- 4. *Blended Learning as a preferred model of delivery:*** A blended learning solution utilizing methods and resources that are appropriate for the target audience should be adopted. The delivery approach must be suitable for the audience; being left unsupported with “silver bullet” e-learning solutions can often leave behind citizens with no/low digital literacy levels. These solutions have been known to fail due to factors such as poor Internet accessibility, high ICT illiteracy, and poor user support and maintenance. A more appropriate approach involves using suitably trained trainers, who have attended training workshops specifically for ICT Skills development, using a range of resources such as printed books, and (only where suitable to the group and appropriately supported) learning management systems and/or e-learning.
- 5. *Ensuring the participation of women and people with special needs:*** While the scope of this policy covers all sections of Rwanda's active population, a special component will be dedicated to ensuring the participation of women and people with special needs and /or disabilities, particularly those in rural areas. The attention to people with special needs and / or disabilities is underpinned by Rwanda's ratification of the United Nations Convention on the Rights of Persons with Disabilities and Optional Protocol in 2008. The full inclusion of women, persons with special needs and/or disabilities, and those in rural areas in all opportunities the Digital Talent Policy presents, is a fundamental principle which applies to all activities and related policies of the Digital Talent Policy. It will ensure that these citizens will have access to all the Digital Talent Policy activities together with all Rwandans, where special attention is given to ensure the accessibility of the programs and specialist support as well as assistive technology where needed to support them to engage with the training available.
- 6.** Therefore all actions within the DTP will be based on the universal design principle, where products, environments, programmes and services are designed to be usable by all people, to the greatest extent possible, without the need for later adaptation or

specialised re-design. 'Universal Design' does not exclude the provision or use of assistive devices for particular groups of people with special needs and/or disabilities where this is needed; they should be viewed as mutually supporting and complementary approaches. Policy actions and initiatives that are designed to be inclusive and enable access to digital learning opportunities for everyone – including people with special needs and/or disabilities have the potential to build synergies that make access to ICTs easier for all users.

- 7. *Fostering Public Private Partnerships:*** The GoR acknowledges, and will be keen to harness the private sector's unique strengths i.e. finance, efficiency, initiative in implementation of this policy.

3.5 KEY POLICY AREAS

POLICY AREA 1: DIGITAL LITERACY FOR ALL - RWANDA 'S GENERAL POPULATION REACHED BY DIGITAL LITERACY PROGRAMMES

Policy Action 1: Computer Literacy increased from 8.4% up to 50% of active population

Activity 1: Mainstreaming ICT at primary school

In collaboration with MINEDUC, all primary school students will need to undergo digital literacy training in their respective schools and finalize the basic digital literacy package when graduating. By harmonizing the curriculum to meet this end, Smart Classrooms and personal computers will also be used to accomplish this target. In this activity the target number by 2020 is 1,000,000 pupils.

IT in today's world is no longer a teacher's prerogative. Rwandan children are already exposed to many of the devices ranging from cell phones, tablets & laptops and are already much aware and smart in dealing with these devices and benefitting from the advantages of technology, much before they step into schools. There is need to prepare future ICT professionals and experts by introducing coding at a basic level of education (12YBE).

Activity 2: Digital Literacy training for Rwanda's general population with emphasis on women, youth, members of cooperatives, people with disabilities and other people with special needs through organized groups

In collaboration from the Ministry of Gender and Family Promotion, the Ministry of Local Government, the Ministry of Education, Rwanda Cooperative Agency, and National Council of Persons with Disabilities, there will be Digital Literacy trainings of all women, persons with special needs and/or disabilities, youth, members of cooperatives through organized groups. These users will have access to the same training programs together with all Rwandans. However, special attention under the guidance and with monitoring of the appropriate specialist co-operative or organized group will be given to ensure the accessibility of training programs and specialist support as well as assistive technology where needed to support them to engage with the training available. Throughout the phases of policy delivery, attention will be given to include all citizens within and through:

1. *Auditing Actions:* including data focused on access to digital learning opportunities for people with special needs and/or disabilities, women and those in rural areas when reviewing the current situation.
2. *Pre-requisite Actions:* ensuring necessary requirements for implementation are in place to include above groups, by considering the complete 'supply chain' involved in

fostering digital talent. From the availability of electricity, connectivity, to availability of accessible hard and software as well as assistive technology where needed, to the knowledge of providing an inclusive learning experience for all.

3. *Implementation Actions:* delivering the policy objectives to all citizens based on the principles of inclusion and universal design.
4. *Monitoring and Dissemination Actions:* gathering systematic data and feedback to guide further action as well as sharing information on specific outcomes and results of the inclusion of people with special needs and/or disabilities, women and those in rural areas in order to ensure comprehensive stakeholder review and reflection upon the outcomes of the DTP for all citizens.

Digital Ambassador programme (DAP) will be a new initiative to support Rwanda to increase the number of digitally literate citizens (Smart Citizen) and their use of e-government and e-business services, contributing to digital inclusion and growth. The programme shall bring together more partners and stakeholders so that 4,000,000 people will be reached by this initiative. Digital Ambassadors Program will drive digital adoption and bridge ICT skills gap for the general population and sustainably transform communities across Rwanda to use technology effectively and meet rural needs.

Activity 3: Implement e-Torero Programme

In collaboration with MINALOC, a mass digital literacy trainings for citizens, women, youth, members of cooperatives and people with special needs shall be implemented on using ICTs responsibly and with ethics. This program will be designed bearing in mind an environment favorable for the young people in the society of information (access to internet, job desks, digital literacy trainings, appropriate behavior online, etc.). For space, the Youth empowerment for Global Opportunity Centers will be useful for this purpose.

POLICY AREA 2: BUILD A DIGITAL SAVVY WORKFORCE ADDRESSING THE MISMATCH BETWEEN DEMAND AND SUPPLY OF DIGITAL SKILLS AND LITERACY

Policy Action 2: Train students of Secondary, HLI and government employees in Digital Literacy and reach 1,000,000 of people

Activity 4: Train and Certify Secondary and HLI students

A growing number of jobs across all sectors require ICT skills, this leads the Government of Rwanda to conclude ICT and digital skills in secondary schools for a successful participation

in the labor market after graduation, hence new job entrants must have at least basic level certificate from globally accepted digital literacy providers.

Globally accepted ICT certifications will be integrated in the national education curriculum and will be recognized as an indispensable benchmark for ICT qualification.

A target of 750,000 students will be reached by this initiative by 2020 and those include at least 700,000 secondary schools students, 50,000 university students.

Activity 4: Certify all Government employees in Digital Literacy

A growing number of jobs across all sectors require ICT skills, therefore ICT and digital skills are key to successful participation in the labor market. All employees governed by the public service law and those employed in Government owned corporation will undergo training and be certified with globally accepted digital literacy providers. Rwanda will ensure that new graduates have the practical knowledge and skills need to enter the workforce testified by possession of at least basic level certificate from globally accepted digital literacy providers.

Government institutions, private sector institutions and other organizations will plan and budget every year digital literacy certification for their employees so that 250,000 employees will be reached by Digital Literacy program by 2020.

Within three years, all non-ICT employees must be certified in digital literacy, and this will be achieved by self-sponsor scheme for which they can be facilitated to pay in installments.

Activity 5: Carry out a National ICT Skills supply and demand matching study

At regular intervals, carry out a study to establish the quality and quantity of output of all ICT education and training providers as they relate to the demand for the same among public and private operators. The study shall build on previous reports by NCST on demand and supply of ICT skills in the public sector as well as a similar one carried out by the ICT Skills Council on demand and supply of ICT in the private sector.

Activity 6: Develop and Implement a National Digital Skills and Literacy supply and demand matching strategy

Develop and implement a National Digital Skills and Literacy supply and demand matching strategy. The ultimate goal of the matching strategy is to ensure that Digital Skills and Literacy units produced by education sector and training institutions at any given timeframe are of sufficient quality and quantity as required by Rwanda's national needs and are of satisfying requirements to meet Rwanda's ambitions to become an ICT Hub of the region.

The matching strategy will prescribe the number of skills units at various levels (Associate, Professional and Expert) to be trained and certified in different ICT disciplines i.e. Software Development, Network and Cloud Computing, Hardware Services and Infrastructure, Cyber Security, Web and Mobile etc. and at Digital Literacy levels.

The strategy will be a dynamic one with clear monitoring and evaluation process as a feedback loop to ensure continuous skills quality improvement.

Activity 7: Providing upward mobility of technically endowed students

The new curriculum will provide for upward mobility such that students who were previously deemed inadmissible at current ICT Degree programs can be admitted into the same upon receiving qualified globally accepted certifications. ICT related courses at IPRCs/TVETs and other Diploma-issuing technical institutions, upon receiving qualified globally accepted certifications will now be able to join 3rd year of mainstream ICT Degree programs issued at Rwandan Universities

The National Digital Skills and Literacy Demand and Supply Matching Strategy will specify the types and level of Global ICT Certifications required for students at IPRCs/TVETs and other Technical Diploma-issuing colleges to qualify for entry into 3rd year of Degree programs.

This provision will encourage students to join IPRCs/ TVETs and other Technical Diploma issuing institutions. In return, the country will see the number of technically endowed ICT Skill Units at professional level significantly increase.

POLICY AREA 3: SET UP AN IT ELITE CORPS – INDUSTRY-ORIENTED TRAININGS AND IT CAREER PROFESSIONALIZATION

Policy Action 3: Increasing productivity of Rwanda’s labor force through professionalization of IT employees

Activity 8: Train and certify all ICT professionals of the Government, private sector and civil society

Government institutions, private sector and civil society will plan, each financial year, digital trainings of their existing employees in their respective carrier that will be prescribed by the ICT Sector Skills Council.

For IT staff, acquisition of professional certification is mandatory and must be acquired within two years following approval of this policy. New entrants must have ICT professional certifications matching with the position they apply for.

ICT employees will be facilitated to pay in installments for the acquisition of ICT Professional certifications.

Policy Action 4: Increasing the ratio of market-oriented, ICT skills units per capita

Activity 9: Initiate a special program to create a pool of highly talented ICT professionals with future-ready qualifications

The IT landscape is changing fast and new technologies are being introduced. Today, the best of the IT jobs are based around digital transformation.

The Government will prioritize a special program aimed at building a talent pool of the most sought after skill sets on the global IT market place. Select, highly talented professionals will be put under a fast-track program where they will be trained in such fields as IT Product engineering, Cloud Technology and Architecture, Big Data and Data Sciences, Internet of Thing, Virtual Reality Robotics, Machine Learning & Artificial Intelligence etc. This initiative will significantly elevate Rwanda among the most endowed nations in terms of IT expertise. With these skills Rwanda will soon be transformed into a net exporter of high end ICT Skills and expertise

Activity 10: Customize specialized ICT programs matching Rwanda and regional ICT industry/Market need

Instead of the current ICT general programs offered at HLI's, Educations institutions will introduce specialized courses as prescribed by the National Skills Demand and Supply Matching Strategy. Instead of having a Bachelor of Computer Science or Bachelor of Engineering there will instead be Bachelor focusing on specific domains: Network Engineering, Software Engineering, Information Security, Internet of Things (IoT), Data Science, Creative Industry, Mobility and digital life style, Drone, etc.

Activity 11: Identifying and developing Rwanda's niche globally and regionally

MYICT will carry out a study to determine Rwanda's niche on the global and regional ICT expertise market place. Rwanda's niche will be identified after taking into consideration, among other considerations, the niche's own potential economic viability and the country's (potential) competitive advantage in the region and globally. The niche could be specific disciplines of ICT (e.g. Networking, Software Development, Mobile Value Added Services, Infrastructure, Cyber security). Once identified, the ICT Sector Skills Council will prescribe

the number of Skills Units needed in the identified niches in order to achieve Rwanda's ambition to become the global and regional exporter of ICT expertise.

The first priority will be to fill the skills gap at expert and professional levels as NCST rightly identified in its report. Second will be to ensure that Rwanda achieves the highest ratio of specialized ICT Certifications per capita in the region, with emphasis on disciplines and at levels prescribed by the ICT Sector Skills Council.

Activity 12: Attract internationally recognized training and certification providers

More internationally recognized training and certification providers will be attracted to establish their presence in Rwanda. HLIs will be encouraged to enter into partnerships with these providers where the department of ICT shall be outsourced to qualified internationally recognized training and certification companies on a revenue sharing basis.

Activity 13: Strengthen Industrial attachment for ICT students

The ICT Sector Skills council will prescribe ICT students industrial attachment by setting guidelines for implementation of ICT Students 'industrial training and attachment. ICT companies that are already established in Rwanda will provide industrial attachment to local students with a possibility of having employment if it is available.

Activity 14: Introducing strong ICT components at non-ICT graduate programs

New programs need to be introduced at both degree and post Graduate level that will incorporate strong, relevant ICT components to non-ICT programs such as Management, Law, Banking, Finance, Tourism, Business, Medical and Public Health. Students will be able to achieve such qualifications as Bachelor/Master of IT Management, Bachelor/Master of ICT Law, and Bachelor/Master of e-Banking, Bachelor/Master of e-Tourism, Bachelor/Master of e-Business, and Bachelor/Master of e-Health. etc.

This will help the country reduce the current skills gap at expert and professional level and reverse the current over reliance to foreign ICT as the number of Skill Units in ICT enabled sectors will be significantly increased. This measure will strengthen the CIO concept by which each non ICT Sector will have a CIO who understands ICT applications in his respective sector.

Activity 15: Establish ICT Engineers' Licensing body

The ICT Engineers' Certification Body (IECB) role will be to acknowledge the expertise of ICT engineers and also to recognize that ICT engineers' abilities in ICT profession. This certification is not meant to replace professional certification.

The body's certificate at national level will help for:

1. Validation of knowledge
2. Increased marketability
3. Define a standard and levels of digital literacy in Rwanda
4. Enhanced reputation, credibility, and confidence

4. IMPLEMENTATION MECHANISMS

4.1 REGULATORY FRAMEWORK

Digital Talent Policy will be enforced by regulation and the following actions will be considered:

- Stipulate general timeline and deadlines for implementation of Digital Skills and Literacy programs;
- Allow the development of Ministerial instructions governing development of Digital Skills and Literacy in Rwanda;
- Define Institutional framework governing digital skills and literacy program;
- Create a strong ICT Sector Skills Council giving it jurisdiction to coordinate implementation of Digital Skills and Literacy program.

4.2 INSTITUTIONAL FRAMEWORK

With the objective to strengthen digital talent Institutional framework that enables effective policy coordination between policy areas, a strong Digital Institutional Framework will be set with each institution responsibilities as follows:

- The Ministry of Youth and ICT (MYICT) will ensure Digital Talent development coordination and Monitoring and Evaluation;
- Ministry of Finance and Economic Planning (MINECOFIN) will finance the implementation of Digital Talent Policy;
- Rwanda Information Society Agency (RISA) will ensure implementation and development of digital talents;
- Rwanda Development Board (RDB) will focus on attracting ICT capacity building investments;
- Capacity Development and Employment Services Board (CESB) will manage ICT capacity building budget

- The Ministry of Education (MINEDUC) will enforce Digital Talent development in formal education and promote research in ICT sector;
- National Commission of Science and Technology (NCST) will after analysis provide advice and recommendation in the field of ICT research, innovation and monitor implementation of Digital Talent policy;
- Ministry of Local Government (MINALOC) will work closely with RISA for training of Rwanda's general population;
- Ministry of Public Service (MIFOTRA) to ensure training of government employees;
- Ministry of Family and Gender Promotion (MIGEPROF), RCA and NCPD will ensure training of women, girls and people with special needs through their respective implementing organs;
- ICT Engineering body will act as ICT Local Certification Body;
- The ICT Skills Council shall be strengthened to ensure that ICT Skills matching strategy is aligned with ICT industry needs and make periodic assessment of progress in achievement of Digital Talent Policy objectives. It will also create a sustainable ICT industry ready talent pipeline by bringing together all stakeholders (the ICT industry, academia, and government) to attain its goal of building the quality capacity.

4.3 FINANCIAL IMPLICATIONS

A separate, dedicated effort will need to be implemented by RISA in collaboration with the ICT Sector Skills Council to identify sources of financing and develop a financing model for the National Digital Literacy Program. The program will be implemented through an appropriate PPP model, bringing together resources from Government, the private sector, academia and civil society.

Government institutions will set aside a budget for training and certification of their employees and will include a budget for Digital Literacy in their procurement plan.

The financing model below shows source of funds for ICT capacity building:

Beneficiary Category Source Of fund	Private sector	Youth, Women, people with special interest	12YBE	TSS, HII, TVE T	Gener al Public	Gov. Employe es	Special Expertise
Universal access fund	-	✓	-	-	✓	-	-
Grants	✓	✓	✓	✓	✓	✓	✓
Loans	-	-	-	✓	✓	✓	✓
Self sponsored	✓	-	-	✓	✓	✓	✓
Subsidies, CSR	-	✓	-	-	✓	✓	-
Levies	-	✓	-	-	✓	✓	✓
Tax incentive	✓	✓	✓	✓	✓	✓	✓
PPP	-	✓	✓	✓	✓	✓	✓
Institutions with financial autonomy	-	-	-	-	-	✓	✓

ANNEX: Implementation Plan (Budget in Millions Rwandan Francs)

#	Area	Projects/Programs/Flagships	2017-2018	2018-2019	2019-2020	Sponsor	LEAD INSTITUTION	STAKEHOLDERS
1	DIGITAL LITERACY FOR ALL - RWANDA 'S GENERAL POPULATION REACHED BY DIGITAL LITERACY PROGRAMS	Mainstreaming ICT at primary school	✓	✓	✓	GoR	REB	MINEDUC, MYICT, RISA
		Digital literacy awareness for Rwandan community (5,000,000 of Rwandans reached by digital literacy awareness campaigns through Digital Ambassadors	815	1,140	1,240	PPP	RISA	RISA, MIGEPROF, CESB, RCA, MYICT, MINALOC, NGOs and other partners
		Launch eTorero programme and strengthen Youth Centers to deliver /implement digital literacy program;	30	10	10	GoR	MINALOC	MYICT, RISA, NYC, MIGEPROF, NWC, NCPD
		Start Radio and TV programmes about digital literacy awareness;	✓	✓	✓	GoR	RISA	RISA, MYICT, PSF-ICT CHAMBER
		Train and certify all cooperatives managers	✓	✓	✓	PPP	RCA	MINEACOM, MYICT, RISA
		National Public ICT Literacy and Awareness Campaign” – “KORANA UBUHANGA	✓	✓	✓	PPP	RISA	RISA, MYICT, MINALOC, PSF-ICT CHAMBER
2	BUILD A DIGITAL SAVVY WORKFORCE ADDRESSING THE MISMATCH BETWEEN DEMAND AND SUPPLY OF DIGITAL SKILLS AND LITERACY	Embed Digital training and certification into the secondary and HLI education programme	✓	✓	✓	GoR	MINEDUC	MYICT, RISA, HEC, REB, NCST, UR, WDA

		1,000,000 government employees trained in Digital Literacy	447	447	298	PPP	CESB	RISA, RMI, MYICT, MIFOTRA
		Carry out a National ICT Skills supply and demand matching study	✓	✓	✓	GoR	NCST	MYICT, MIFOTRA, RISA, CEBS
		Develop and Implement a National ICT Skills supply and demand matching strategy	20			GoR	MIFOTRA	MINEDUC, MYICT, NCST, RISA, PSF-ICT Chamber,
		Setting standards and guidelines for ICT career path progression and for quality research progression	✓	✓	✓	GoR	MYICT	MINEDUC, MIFOTRA, RISA, NCST, CEBS
		Coordinate with University of Rwanda to provide programs related to the critical and scarce skills in priority sectors;	✓	✓	✓	GoR	MINEDUC	MYICT, RISA, HEC, NCST, UR, WDA
		Attract International recognized training centers to establish their academies in Higher learning institutions;	✓	✓	✓	GoR	RDB	MYICT, MINEDUC, PSF-ICT Chamber, RISA
		Attract diaspora and International talents and innovator to establish their base in Rwanda ;	✓	✓	✓	GoR	RISA	RDB, NCST
		Trainings in ICT industry related courses (8000 people trained)	200	300	300	PPP	MINEDUC	RISA, CESB, MYICT,UR
3	SET UP AN IT ELITE CORPS - INDUSTRY-ORIENTED TRAININGS AND IT CAREER PROFESSIONALIZATION	Attract internationally recognized training and certification providers	✓	✓	✓	GoR	RDB	RISA, MYICT, PSF-ICT CHAMBER
		Put in place internationally recognized ICT centers of excellence and attract private	✓	✓	✓	PPP	RDB	RDB, RISA,MYICT PSF-ICT CHAMBER

		sector to invest in establishing ICT centers of excellence						
		Initiate a special program to create a pool of highly talented ICT professionals with future-ready qualifications	100	✓	✓	PPP	PSF-ICT Chamber	MINEDUC, MYICT, RISA
		Strengthen ICT innovation center (Kigali Lab) by initiating a program titled “Digital Knack Detection Bus – (DKD-Bus)” by which a tour will be made in different schools and different ICT talents shall be detected;	230	30	30	PPP	PSF-ICT Chamber	RISA, RDB, MYICT, NCST
		Customize specialized ICT programs matching Rwanda and regional ICT industry/Market need	✓	✓	✓	GoR	RISA	RDB, MYICT, NCST
		Identifying and developing Rwanda’s niche globally and regionally	✓	✓	✓	GoR	RISA	RDB, MYICT, NCST
		Strengthen Industrial attachment for ICT students	✓	✓	✓	GoR	RISA	RDB, MYICT, NCST
		Introducing strong ICT components at non-ICT graduate programs	✓	✓	✓	GoR	RISA	RDB, MYICT, NCST
		Establish ICT Engineers’ Licensing Body	✓			PPP	ICT Sector Skills Council	PSF-ICT Chamber, MYICT, RISA, RDB, MINIJUST
4	OPERATIONALISE AN INSTITUTIONAL FRAMEWORK TO GOVERN AND COORDINATE DIGITAL TALENT DEVELOPMENT	Strengthen ICT Sector Skills Council	✓			GoR	MYICT	NCST, MINEDUC, MINEACOM, PSF-ICT Chamber

		Review primary, secondary and HLI curriculum by considering certifying pupils/students with specific international certification at the end of their courses before they leave schools or universities.	50	✓	✓	GoR	MINEDUC	HEC, REB, MYICT
5	ESTABLISH A LEGAL AND REGULATORY FRAMEWORK TO GOVERN DIGITAL SKILLS AND LITERACY	Publish ministerial instructions governing ICT Skills development in Rwanda	✓			GoR	MYICT	MIFOTRA, RISA, MINIJUST, CESB
		ICT Basic Certificate as Job Entry Requirement guidelines	✓			GoR	MIFOTRA	PSC, MYICT
		Add ICT certifications on the list of VAT exonerated products and services.	✓			GoR	MINECOFIN	RRA, MYICT, RISA, CESB, PSF-ICT Chamber
TOTALS			1862	1927	1,878			
GRAND TOTAL						5,667		

- Government of Rwanda alone is required to invest (45%) of the budget: **2,550,000,000 FRW**, but fees requires to sponsor activities market with (V) must also be included in the budget for concerned institutions.
- Government of Rwanda in partnership with Private Sector (PPP) are required to invest: **3,117,000,000 FRW** (cost to be shared with GoR and Private Sector).