ICT HUB STRATEGY 2024

ICT HUB STRATEGY

Rwanda's roadmap to becoming a leading ICT Hub in Africa

MINISTRY OF INFORMATION TECHNOLOGY AND COMMUNICATIONS

ACRONYMS AND ABBREVIATIONS

B2B	Business to Business
BNR	Banque National du Rwanda
CAPEX	Capital Expenditure
EDPRS	Economic Development & Poverty Reduction Strategy
E-GOV	E-Government
GDP	Gross Domestic Product
GoR	Government of Rwanda
ICT	Information & Communication Technologies
ICT4D	ICT for Development
IDI	ICT Development Index
ITU	Information Technology Union
JICA	Japan International Cooperation Agency
JSWG	Joint-sector Working Group
KBE/S	Knowledge -based Economy/Society
MDA	Ministry, Department, Agency
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINICOM	Ministry of Trade and Industry
MINECOFIN	The Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MOH	Ministry of Health
MITEC	Ministry of Information Technology and Communications
MYICT	Ministry of Youth and ICT
NSCT	National Council for Science and Technology
NIDA	National Identification Agency
NICI Plan	National Information and Communications Infrastructure Plan
NICI I	NICI Plan Phase I (2000-2005)
NICI II	NICI Plan Phase II (2006-2010)
NICI III	NICI Plan Phase III (2011-2015)
NST-1	National Strategy for Transformation-1 (2017 – 2024)
OECD	Organization for Economic Cooperation and Development
PKI	Public Key Infrastructure
PPP	Public Private Partnership
PSF	Private Sector Federation
R&D	Research and Development
RDB	Rwanda Development Board
RICTA	Rwanda ICT Association
RISA	Rwanda Information Society Authority
ROI	Return on Investment
RURA	Rwanda Utilities Regulatory Authority
SME	Small and Medium Enterprises
SRMP	SMART Rwanda Master Plan
UNDP	United Nations Development Program
WEF	World Economic Forum

CONTENT

TABLES AND FIGURES

TABLES

FIGURES

EXECUTIVE SUMMARY

Introduction

Rwanda aspires to be the leading ICT Hub in Africa, exhibiting a culture of innovation, supported by significant investment in R&D and undertaken by a highly educated and skilled workforce. It envisions having high usage and awareness of ICTs in the society and the ICTs contribute a significant portion of the economy. Studies have shown six universal characteristics of countries considered leading global ICT Hubs. These are:

1. presence of a highly skilled and educated workforce;
2. a culture of innovation;
3. advanced technological capabilities;
4. an enviable lifestyle;
5. a competitive business environment; and
6. a proactive and stable government.

The current state of these characteristics for Rwanda is illustrated in Figure 1 below.

It clearly shows that Rwanda excels in three out the six pre-requisites of being considered a leading ICT Hub, and thus addressing these three areas is the focus of this strategic plan.

From the illustration, it is evident that much work is required to create a skilled and educated workforce, inculcate a culture of innovation, while building advanced capabilities and capacity in technology. The ICT Hub Strategic Plan (2019 – 2024) focusses on these three thematic areas through an ambitious five-year strategic plan of actions that should position Rwanda as a leading ICT Hub in Africa.

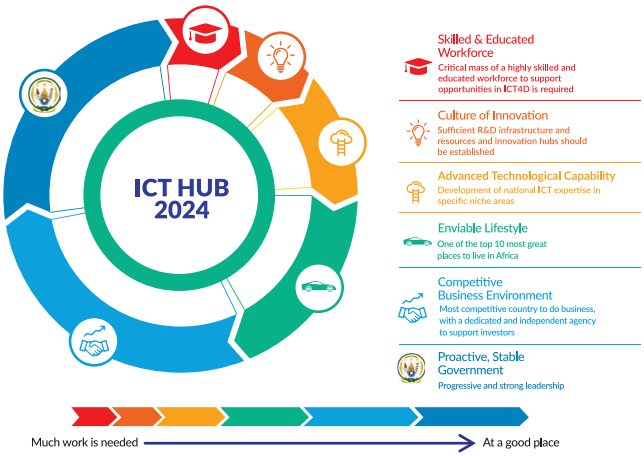


Figure 1: Rwanda's current status

The ICT Hub Strategy design is also aligned to the goals of the National Strategy for Transformation (2017 – 2024), which aims to build a society where people learn for and through life, are innovative, trust one another, enjoy a high quality of life and embrace their unique identity and culture. The strategic plan is complemented by other ICT strategies and policies including SMART Rwanda Master Plan (2016-2020), ICT4RAg (2016-2020), the National Digital Talent Policy, the National Data Revolution Policy, the National Science & innovation Policy, the National Cyber Security Policy, and the Broadband Policy.

The ICT Hub strategy presents a framework for greater focus on knowledge creation, innovation and entrepreneurship promotion. It provides a coherent systematic approach to innovation and development and identifies several technology and innovation domains critical for Rwanda. The strategic plan starts with the "end in mind" – identifies long-term opportunities and then "bridges back to the present".

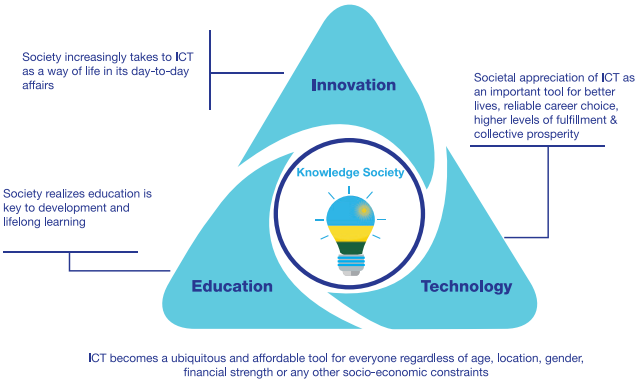


Figure 2: Pillars of a Knowledge-based Society

Why become an ICT Hub?

Globally, ICT remains to be the fastest growing economic sector and the export of ICT-enabled services would be an invaluable contributor to the national economy development. The ICT Hub status will enable the country to:

- Generate direct and indirect job opportunities for thousands of educated Rwandan youth and increase national economic productivity. This can be achieved not only through inbred innovations with global application but also through offshoring arrangements with consumers of ICT services from other countries and continents. An expansion of opportunities in this space also means an expansion of employment opportunities.
- Stimulate the economy and significantly grow the contribution of the Information Technology enabled Services (ITeS) to the national economy by attracting and partnering with global organizations and institutions to develop solutions addressing the socio-economic challenges in education, health, agriculture, fintech and e-government services.
- Overall improvement of quality of life as a result of the improved incomes and inevitable upgrades to both social and physical infrastructure.

Vision, Mission, & Strategic Goals

To achieve the vision of becoming a leading ICT Hub is based on three strategic themes. These are :

1. Build a critical mass of educated and skilled IT literate workforce by undertaking collaborative exercises involving stakeholders in industry, academia and government; establish Rwanda as a hub of ICT expertise and employment; encouraging risk taking in innovation pursuits.
2. Foster a national innovative culture by initiating appropriate legal, institutional and policy changes to promote a research and development culture; strengthening the partnership and collaboration between the government, academics and the private sectors; and encouraging commercialization of knowledge developed through research
3. Develop advanced technological capability and expertise in selected niche areas by identifying and building expertise through establishment of innovation hubs to provide solutions related in the specific economic sectors. The niche areas within the economic sectors are empowering data-driven farming, health and informatics, digital finance services, and e-government.

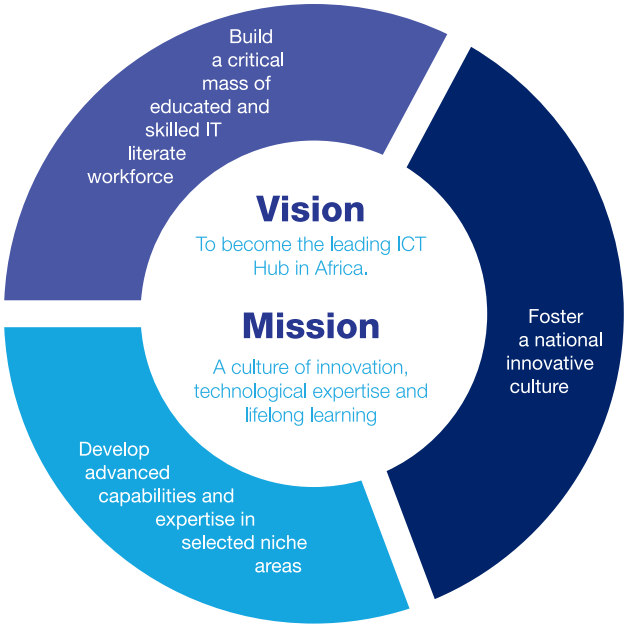


Figure 3: Vision, Mission & Strategic goals

Lifelong Learning

As the pace of globalization increases and the economies of the world become increasingly focused on knowledge and skills, learning is becoming one of the dominant forces in deciding the success and sustainability of individuals and nations. Lifelong learning is increasingly recognized as the principal key to, and guarantor of, a country's prosperity and well-being. It is globally seen as an imperative for growth and development in today's knowledge- driven societies.

Monitoring and Assessing Progress

Since the ICT Hub Strategy is an enabler to a knowledge-based economy and society, there is need to develop a national framework for measuring a knowledge-based economy and society. The framework, its structure and indicators will clearly need to change over time to remain relevant.

A monitoring and evaluation system is mandatory for assessing the progress of ICT Hub Strategy against key indicators. The RISA Program Management Office (PMO)

will finalize benchmarks and a system for tracking and assessing the progress of critical projects under each of the three strategic themes. These metrics are to be guided by international benchmarks. Further, the PMO will conduct empirical work (surveys, self-led or in partnership with Ministries and Agencies) to monitor performance, adoption, and usage of ICT in homes, businesses, and the government sector. The information gathered will support, among other things: yearly comparison; corrective action; realignment of strategies; resource control; and better reporting on international indices. Further, the information gathered will support a major review of the plan to come in the third year of implementation. The realization of the strategic objectives shall be monitored by using output indicators as shown in in Figure 4 below.

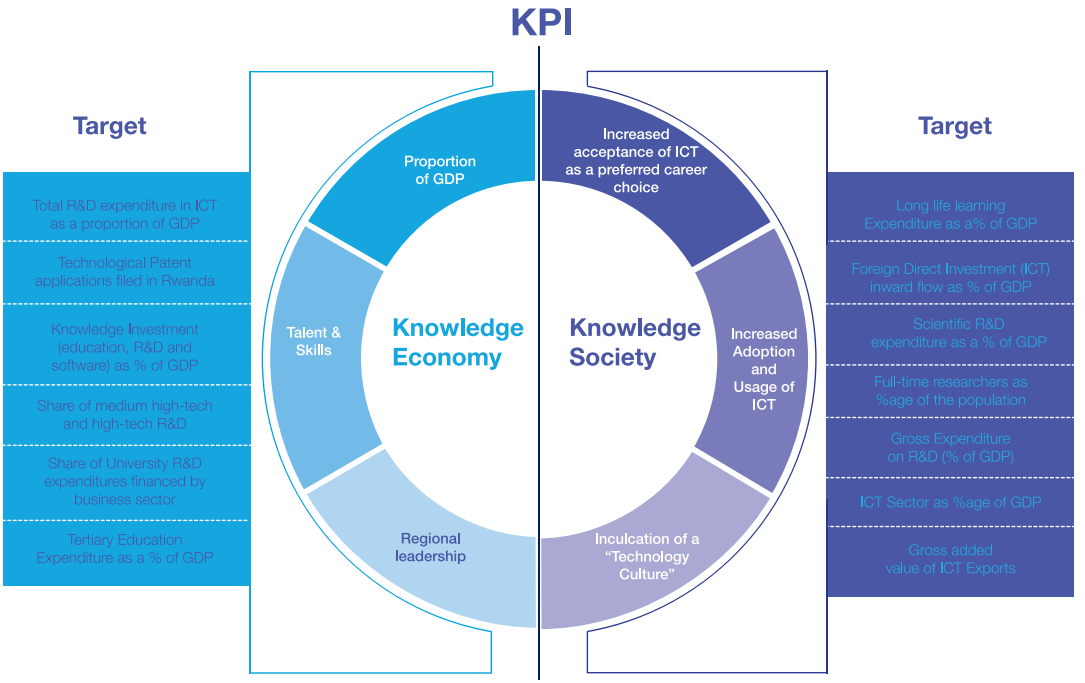


Figure 4: ICT Hub Strategy Output Indicators

Key Challenges

a) Infrastructure and Investments

Despite past efforts in growing the reach of ICT infrastructure particularly the fiber coverage, telecommunications networks and power, the coverage has still not reached the desired level to become a leading ICT Hub. In addition, innovation systems are not effectively incentivized to apply research in the form of commercially viable and marketable innovations. Therefore there is need for accelerated efforts to develop private investment in ICT R&D, expand last mile connectivity to reach more people and more places, and increased access to electricity and entrepreneurial support networks.

b) Human Resource and Capacity

Rwanda needs to achieve a high digital literacy rate, relevant technology related capacity and skills, and strength in innovation through a highly skilled workforce. There is still limited human resources available for Science Technology and Innovation Development due to fewer scientists coming out of the academic institutions and the low conversion of research into commercial application.

c) Management of ICT projects

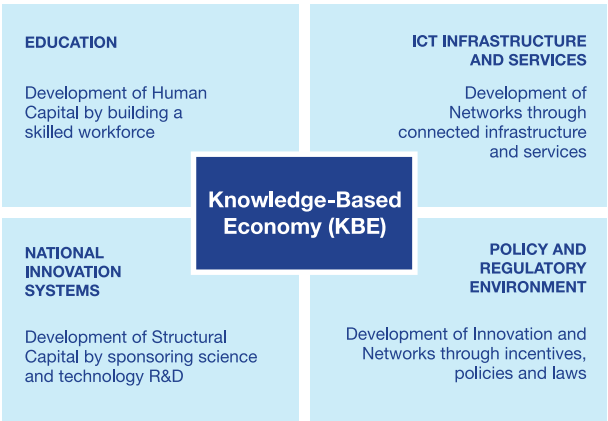
There is weak project governance and management of ICT projects leading to ineffective execution and poor benefits realization and impact, despite existence of well though-out programs and initiatives for the development of an ICT-Centric ecosystem.

d) Social and cultural change

General societal awareness for the benefits of ICT is still not widespread and increasing Internet access and the number of devices used by the population has not delivered the hoped-for results, while a fledgling private sector has not yet grown enough to make the ICT sector broadly independent of government and donor funding.

e) Geo-factors and Macro-economics

Despite Rwanda enjoying strong economic growth–which averaged over 7 percent annually from 2010 to 2015, high rankings in the 2018 World Bank's Doing Business report (41st out of 190 economies and 2nd in Africa), and a reputation for low corruption, potential and current investors still cite a number of hurdles and constraints, including Rwanda's landlocked geography and resulting high freight transport costs, a small domestic market, and limited access to affordable financing.



1) World Bank

Figure 5: Pillars of a Knowledge Based Economy

Implementation Framework

Global studies have shown that ICT4D projects have a high failure rate, in part because of poor project design and management. Rwanda is no exception and its own ICT4D projects have faced similar challenges. The establishment of Rwanda Information Society Authority (RISA) should improve the management of ICT projects by adopting robust governance systems, and appropriate project management methodologies.

Some of the characteristics that define Rwanda ICT programs environment include:

- Most ICT projects are initially donor funded with operational/running costs met by the government. Though the budgets for ICT are inadequate but rising, the funding (capital and human resource requirements) ends with the project phase.
- Poor co-relation to the ICT master plans and policies to the extent that, with a number donors funding ICT, there have been multiple investments for the same product due to lack of coordination.
- A focus on ICT applications that support traditional administrative and functional transactions rather than on effective information processing and distribution within and without government departments; and
- Inadequate ICT resource capabilities within and without government.

Based on the above, it is therefore imperative that RISA not only develops and implements a government ICT Program Governance Framework that ensures that the principles of good governance, capacity building and project management are implemented for all ICT projects. It should also take the lead to improve collaboration with the local ICT industry through the ICT Chamber to get a higher level of engagement in project development and to help build local industry capacity to respond to the country's needs. The significant costs associated with poor implementation of ICT projects means that inaction in this area is not an option.

The functions of the implementation and governance framework as shown in Figure 6 comprises of:

- **Project Execution and Monitoring:** "owner" organizations shall take ownership and execute the programs. The identified "owner" organizations would be responsible for execution and monitoring of the individual projects.
- **Program Execution and Monitoring:** Program Steering Committees and Taskforces (PSCTs) shall have separate responsibility for execution and monitoring the program, including all the projects under the respective strategic objectives programs.
- **Execution Guidance and Progress Monitoring:** At the apex level, RISA will responsible for monitoring the implementation of the whole of the strategic plan programs. A master M&E tracking dashboard for the ICT Hub Strategy programs will be developed and shared regularly with all stakeholders.

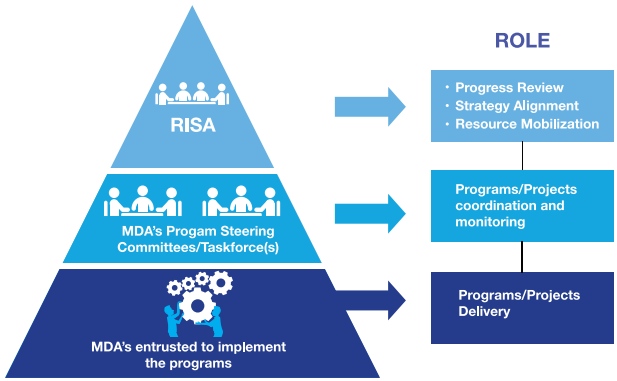


Figure 6: ICT Hub Strategy Implementation Framework

Independent Reviews

The development of national strategies has followed a predicable process however, there is a need to introduce an independent reviewer role to ensure the strategies are realistic and within the capacity and capabilities of the implementing agency(s). The primary role of the Independent Reviewer will be to provide independent assurance as to the extent to which the strategies and related objectives are being supported by the available resources and the environment under which the strategy shall be implemented.

Seeking Synergies

As financial and human resources are limited, achieving the above strategic goals requires the establishment of stakeholder integration at the interdepartmental and cross-sectoral levels that includes ministries, departments, and agencies, academia, private sector and content providers, users, education and research institutions, development partners, and civil society organizations. Cross-sectoral integration and joint projects will be particularly significant in developing the ecosystem for supporting the ICT Hub vision.

Implementation Effectiveness

The ICT Hub Strategy shall rely on a results-based management (RBM) framework to ensure a strong and coherent linkage between the strategic goals, objectives and programs. The RBM framework integrates the strategy, people, resources, processes, and measurements to improve decision-making, transparency, and accountability. Further, this approach should help focus on achieving outcomes, implementing performance measurement, learning, and adapting, as well as reporting performance. The approach shifts away from a focus on inputs, activities and processes to a focus on benefits and achievements that are a direct effect of the interventions. Accordingly, it also allows making necessary adjustments to ensure that planned or desired outcomes or results are realized, hence enhancing implementation effectiveness.

Financing the ICT Hub Strategy

The estimated budget for the implementation of the 5-year strategic plan is Rwf 120 Billion. This will be funded through several sources including sector or target specific funds, Rwanda Innovation Fund (RIF), and the National Research and Innovation Fund (NRIF). RIF is a US $30 million (~Rwf 26 Billion) seed funding from the African Development Bank to promote innovation economy in Rwanda. Subsequently, the launch of the National Research and Innovation Fund (NRIF) by the National Council for Science & Technology (NCST) demonstrates the commitment of GoR to support for research and innovation. Leveraging these funds should be a key pillar to the financing of the strategic plan.

While private equity and venture capital remain popular funding sources and are instrumental in helping small enterprises grow into medium-sized enterprises and semi-formal into formal businesses, another emerging trend to public-private partnerships is use of blended finance which uses development finance and philanthropic funds (“public funds”) to mobilize private capital flows. Exploring all available sources to support the implementation of the ICT Hub Strategy will constitute the implementation responsibilities.

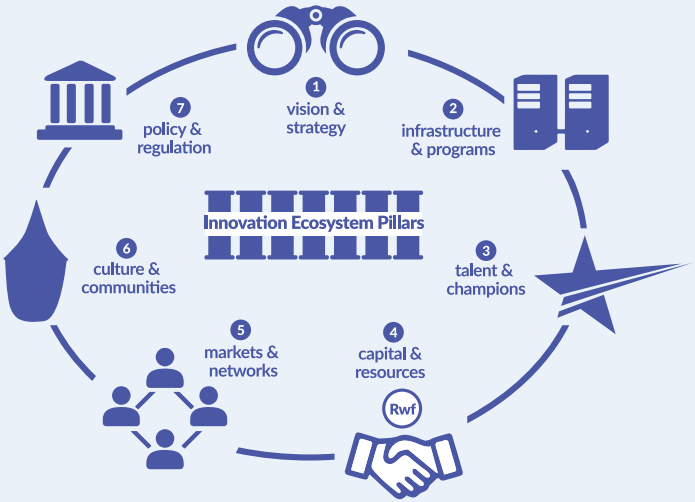
Conclusion

Complementary to the SMART Rwanda Master Plan, and other sectoral strategies, the ICT Hub Strategy incorporates both remedial and proactive interventions to create opportunities for the people, businesses, and Government of Rwanda. It addresses the current ICT eco-system gaps, capitalizes on opportunities and trends, to catalyze the transformation of the following three dimensions / strategic themes:

1. Build a critical mass of educated and IT skilled workforce
2. Foster a national innovative culture
3. Develop advanced technological capabilities in selected niche areas

For successful implementation of the Plan to meet the desired outcomes and achieve the National ICT vision, the recommended governance structures and processes must be in place. Strong governance ensures that changing priorities and needs of the country are effectively managed. More importantly, there is a need for a mind-set change to transition to leading ICT Hub status. People, private sector, and the public sector must be prepared to do things differently and to adapt to new ways of connecting, learning, living, doing business, and engaging with public services.

One of the major success factors identified in countries which are at the top of international ICT rankings is they have concerned themselves with ICTs systematically for 10 years or more as well as regularly adapting their ICT strategies to changing general conditions. Rwanda is similarly doing both and is therefore best placed to make a successful transition to a leading ICT Hub if the challenges are addressed in a coherent and systematic manner as described in the strategic plan.



STRUCTURE OF THE STRATEGIC PLAN

The strategic plan is contained in 3 parts:

Part I: Summary of Situation Assessment

This part summarizes the situation assessment and the approach taken towards evolving the strategy, and brief coverage of the findings and how they contribute to the strategy development model.

Part II: Vision, Mission, Strategic Goals and Objectives

This part describes the ICT vision for Rwanda. It outlines the overall vision and proceeds to elaborate the vision and mission down into the distinct goals that Rwanda needs to attain in order to transform into a leading ICT hub. The strategic objectives and related programs/projects supporting these objectives are also presented in this part. The programs have been described to constitute the key activities, output indicators and milestones that define the projects and help monitor their implementation.

Part III: Implementation and Management Framework

This part describes the Implementation and Management Framework of the ICT HUB Strategy, including the results-based management framework to manage the delivery of the strategic programs. The part also examines the possible risks that could negatively affect the implementation of the ICT hub strategy and gives measures to manage each risk for successful strategy execution. Additional implementation risks would be expected to be identified, recorded and tracked as part of ongoing project governance work.

Annex

The Annex section contains the key reference material, detailed projects, implementation, communication and M & E plans,.

SITUATIONAL ASSESSMENT

PART I

1.1 Introduction

To develop the strategic plan, a situational assessment was necessary to understand the prevailing socio-economic circumstances, trace the development of the ICT Sector in Rwanda over the last two decades and examine the dynamics of achieving a supportive ICT-centric innovation ecosystem necessary to become an ICT Hub. This was done by examining Rwanda's strengths, and challenges, as well as identifying viable strategic goals, objectives, initiatives, measurable actions, coherent approaches and actions plans. The Situational Assessment relied on several methodologies, including PESTLE Analysis, SWOC Analysis, literature review of the ICT Sector and international and regional benchmarking.

Global ICT Technological Trends

In developing the ICT Hub Strategy, it was also important not only to look at the progress and challenges of ICT in Rwanda, and the lessons learned, but also to look at the global trends in ICT to inform the strategic direction. Below are some of the key global trends considered:

- The number of internet users in 2018 is 4.021 billion, up 7 per cent year-on-year; Africa has the fastest growth rates, with the number of internet users across the continent increasing by more than 20 percent year-on-year
- The number of social media users in 2018 is 3.196 billion, up 13 per cent year-on-year
- The number of mobile phone users in 2018 is 5.135 billion, up 4 per cent year-on-year
- More than 3 billion people around the world now use social media each month, with 9 in 10 of those users accessing their chosen platforms via mobile devices.
- The so-called Data Economy is here to stay; this is evident in everything from Analytics to Business Intelligence.
- The Internet of Things (IoT) and Big Data are being leveraged to address major development challenges.
- Cloud computing is becoming a strategic differentiator, enabling companies to more flexibly manage operations, and create and maintain products and services.
- Workplaces are becoming increasingly digital.
- Growing investments by governments in ICT is enabling, among other things, productivity and efficiency in the delivery of public services.
- A 'whole of government' approach to data, information and decision support is evident.
- Open networks/interfaces with the practice of establishing collaborative industry standards to govern technology
- Cybersecurity is an imminent concern to the global digital space that requires cooperation and coordination in response at the national, regional, and international level

1.2 ICT4D and Vision 2020

Rwanda began to relentlessly develop its ICT for Development Strategy (ICT4D) in 2000 when it adopted the National Information Communications Infrastructure (NICI) policy and created a long-term plan to achieve full digitization in four five-year stages. NICI I (2000-2005) prepared the groundwork for ICT sector, including establishing institutional, legal and regulatory frameworks, as well as opening the telecom market by reducing barriers for entry. The government also enacted laws to govern electronic messages, signatures, transactions, data protection, cyber -security and ICT usage.

It established the Rwanda Utilities and Regulatory Agency in 2002, which adopted the International Telecommunications Union (ITU) ICT industry standards.

The NICI plans were further integrated into Vision 2020, which was the government's comprehensive program to transform Rwanda into a middle-income country by 2020. Figure 7 below outlines the Vision 2020 pillars and its cross-cutting themes.

The Rwanda NICI process from 2000 – 2015 yielded one of the most comprehensive and integrated ICT4D Policy and Plans in Africa[1]. The NICI plans transitioned into the SMART Rwanda Master Plan in 2016. Figure 8 below shows the transition from NICI Plans to SMART Rwanda.

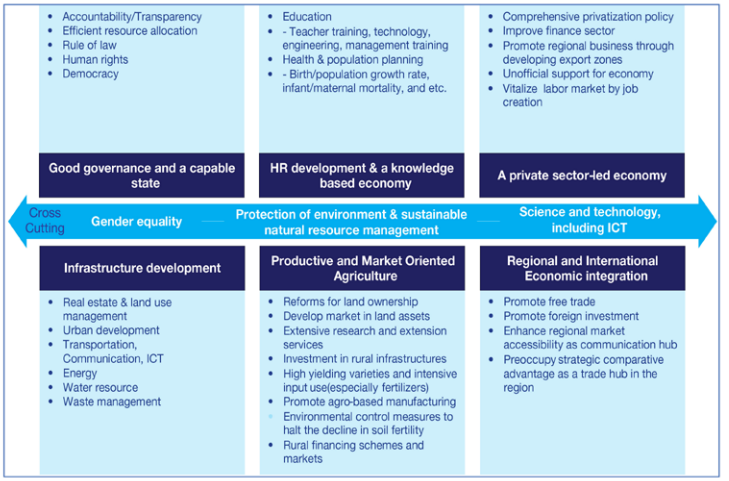


Figure 7: Vision 2020 Pillars

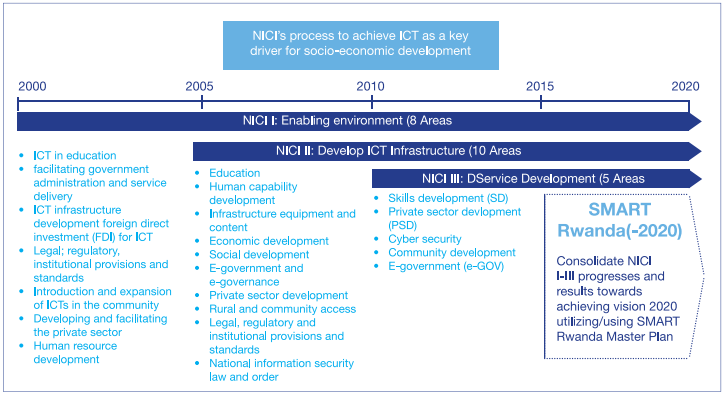


Figure 8: NICI Plans to SMART Rwanda Master Plan

[1] National Information and Communication Infrastructure (NICI): Best Practices and Lessons Learnt, Economic Commission for Africa

1.3 SMART Rwanda Master Plan

SMART Rwanda 2020 Master Plan (SRMP) constituted the fourth generation of NICI Plans and it was developed to go in tandem with the EDPRS II. The SRMP also drew inspiration from the Smart Africa Manifesto that was launched during the Transform Africa Summit in October 2013.

The SRMP therefore derived key initiatives through analysis and assessment from four perspectives: aligning national development vision and strategies, reflecting the achievements of NICI I~III and ICT SSP, and the execution and management performance. It identified three (3) enablers, ICT Capability & Capacity, Governance & Management, and Secured & Shared Infrastructure and seven (7) pillars: SMART Agriculture, Finance, Trade & Industry, Health, Education, Government, Women and Youth Empowerment in ICT. Figure 9 below shows the SMART Master Plan framework.

1.4 Institutional Framework

Rwanda's ICT Sector institutional framework includes key Ministries, such as Ministry of Information Technology & Communications (MITEC), Rwanda Information Society Authority (RISA), and Rwanda Utilities and Regulation Authority (RURA), supported by other government agencies such as National Statistics Institute of Rwanda (NISR), National Commission of Science and Technology (NCST), Rwanda National Computer Security and Incident Response Team (Rw-CSIRT) and Rwanda Development Board (RDB). The private sector is represented through the Private Sector Foundation – ICT Chamber, which 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. The development partners form a critical component of supporting the growth and development of Rwanda's ICT sector. Figure 10 shows the sector institutional framework.

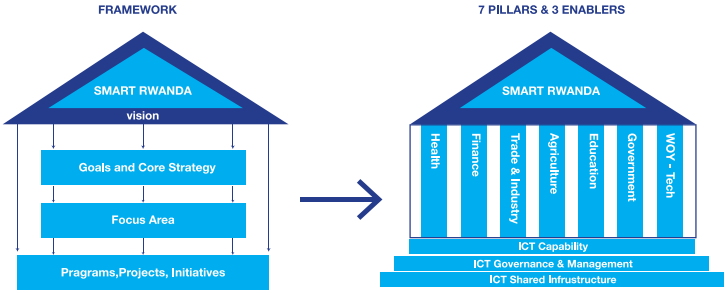


Figure 9: SRMP Framework

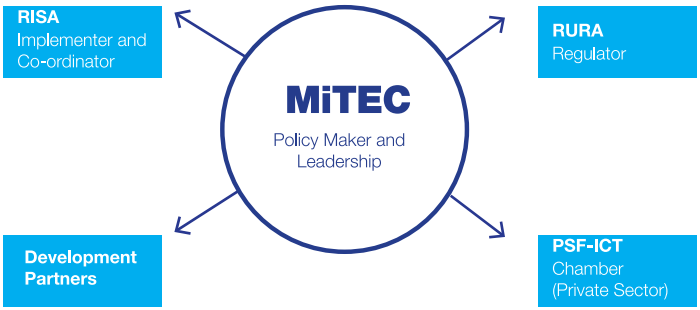


Figure 10: ICT Sector Institutional Framework

1.5 Kigali Innovation City[2]

Rwanda has established the Kigali Innovation City (KIC) to capture the innovative capacity created by interaction and collaboration between academic institutions, business and industrial enterprises. Its objective is to encourage activation of the national economy through supporting start-up business, transforming industry structures from low technology to high technology, attracting foreign high technology companies and creating more jobs. The concept of KIC is to attract a balance mix of technological companies in order to create synergies in the innovation eco-system. KIC aims to attract several types of companies focused on innovation through technology and RD, large scale deployment of existing technology services, and support services, across seven different sectors: financial technology, smart energy, biomedical engineering, cyber security, data and analytics, agriculture technology, and smart logistics. KIC shall house a mix of early stage, growth stage and mature companies to facilitate knowledge transfer, co-creation and practical application of technology in the economy. KIC remains at the core of Rwanda's drive for growth in innovation and growth

1.6 International Benchmarking

The Global ICT Development Index compiled by ITU, ranked Rwanda as 158/174 in 2015, 150/175 in 2016, and 153/176 in 2017, while the UN Department of Economic and Social Affairs (UNDESA) e-Government Index placed Rwanda at the 138/ 193 countries in 2016, and 120/193 countries in 2018. The World Economic Forum Global Competitiveness 2017/2018 report ranked Rwanda 58th /137 countries a drop of 6 places from 2016/2017 raking of 52nd out of 137 countries. Even though the indicators and rankings show mixed results, they still indicate Rwanda's strong commitment in the ICT-led development.

However Rwanda still remains among the most competitive African countries thanks to efficient goods and labor markets and a stable political situation that supports robust GDP growth (above 6 percent for the next few years). Lower health and primary education, and macroeconomic environment's scores drove most of Rwanda's decline[3].

Index Component/Pillars	Rank (out of 137 countries)	Score (1-7, 7 is best)
Global Competitiveness Index	58	4.35
Institutions	16	5.4
Infrastructure	98	3.4
Macro-Economic Environment	92	4.3
Health and Primary Education	98	5.3
Higher Education and Training	113	3.2
Goods Market Efficiency	37	4.7
Labor Market Efficiency	8	5.4
Financial Market Development	34	4.5
Technological Readiness	101	3.2
Market Size	123	2.6
Business Sophistication	61	4.1
Innovation	44	3.6

Table 1: Rwanda in the Global Competitiveness Index, 2017-2018

[2]Source: RDB
[3]World Economic Forum, Global Competitiveness Report, 2017-2018

Table 2: Rwanda in the Global Innovation Index, 2018

Item	Rank (out of 126 countries)	Score (1-100; 100 is best)
Global Innovation Index	99	26.54
Institutions	60	63.4
Human capital and research	107	15.8
Infrastructure	91	36.8
Market sophistication	34	54.2
Business sophistication	57	32.2
Knowledge and technology outputs	124	6.6
Creative outputs	101	18.6

Table 3: Rwanda in the ICT Development Index (IDI)[4]

Country	2017 Rank**	2017 Value	2016 Rank	2016 Value
Rwanda	153	2.18	151	2.10
South Africa	92	4.96	88	4.91
Gabon	114	4.11	118	3.62
Mauritius	72	5.88	75	5.51
Uganda	152	2.19	158	1.90
Burundi	172	1.48	172	1.39
Tanzania	165	1.81	164	1.73
Kenya	138	2.91	137	2.67
Ethiopia	170	1.65	171	1.42
Ghana	116	4.05	113	3.88
Morocco	100	4.77	98	4.57
Senegal	142	2.66	142	2.48
Nigeria	143	2.60	143	2.44

[4]ICT Index (IDI) is a composite index that combines 11 indicators into one benchmark measure that can be used to monitor and compare developments in ICTs between countries and over time. It has 3 dimensions ICT access, ICT use and ICT skills. ***Source Measuring the Information Society Report, ITU 2017***

Table 4: Rwanda in the eGovernment Development Index, 2018

Item	Rank (out of 193 countries)	Score (0-1); 1 is best)
eGovernment Development Index	120	0.4590
Online Service Component		0.7222
Telecom Infrastructure Component		0.1733
Human Capital Component		0.4815

1.7 ICT Sector Challenges[5]

The ICT Sector Strategic Plan (2018-2024) has identified several challenges that will need to be addressed if the vision of becoming a leading continental ICT Hub is to be achieved.

The challenges are depicted in Figure 11. Sector and cluster specific strategies have been developed to address these challenges.

1.8 Gender and ICT[6]

Gender equality has been integrated in all national development frameworks and is now a crosscutting issue in all development sectors including ICT - a central engine for economic transformation, knowledge transfer, and capacity building. Vision 2020 requires that gender be integrated as a crosscutting issue in all development policies and strategies. It prioritizes the use of internet and penetration of telephone especially in rural areas. The Economic Development and Poverty Reduction Strategy (EDPRS 2013 - 2018) identified ICT as a central engine for national economic transformation, knowledge transfer and capacity building.

The National Gender Policy (2010) highlighted that limited access to ICT contributes to poor access to information, which is an issue mostly faced by women who are more involved in domestic activities and thus have little time for collecting information. Smart Rwanda 2020 Master Plan highlights the empowerment of Women and Youth in ICT as one of its pillars. Through the plan, the Government of Rwanda committed to facilitate Women and Girls in ICT capacity building and facilitate projects related to increasing women and girls in ICT related business.

Digital and mobile technologies have enormous potential for women's empowerment by providing women with opportunities to find and share information, access educational and health services, generate income, interact, collaborate, network, and have their voices heard. The ICT Hub strategy shall through its implementation seek to address what is commonly referred to as the "gender digital divide which limits women's ability to participate fully towards building an equitable knowledge-based society. Closing this gender digital divide is therefore a national key objective and one that will empower the Rwandan women further and ensure their full participation based on equality in all spheres of society.

Summary

The Rwandan ICT sector faces several challenges that constrain its growth and could impact the vision of becoming a leading ICT Hub. Though the country has already invested in a robust and resilient communication infrastructure with the construction of the National Backbone, Kigali Metropolitan Network amongst others, the absence of a Last Mile Network is preventing a steady growth of the Internet penetration countrywide. Mobile broadband subscriptions are on the rise with the increasing coverage of the 4G network, however,

[5]Source: ICT Sector Strategic Plan (2018 -2024)

[6]Gender and Information Communication and Technology(ICT), gender monitoring office (March | 2017)

significant investments are still required to deploy a much wider national last mile broadband network.

ICT Penetration, awareness and literacy rate at community level remains at very low level generally due to limited ownership in the rural areas of ICT devices. This partially affects broadband uptake in the country. In addition, citizens (especially rural citizens) have a very limited awareness of how ICT can improve their productivity and socio-economic welfare.

The absence of large companies in the ICT sector means that the positive “pull“ effect of such companies is lacking in Rwanda, but at the same time this prevents excessive dependency on individual large companies and thus minimizes the risk that a single company could drag an entire sector into a state of crisis. With the right focus areas and measures in education to ensure that the required specialists are available, a creative entrepreneurial spirit and innovation culture, Rwanda will succeed in advancing to a top position.

While there has been a surge of new range of Business to Citizens (B2C) services made mainly available by the Telecom Operators, and Banks it has been noted that the rate of deployment of Government to Citizens (G2C) e-government services remains low and where available, systems and services not sufficiently used by the intended users. This translates into inefficient manual processes, and delays in service delivery, which in turn impose considerable burden to the economy.

Overall, Rwanda’s ICT-centric innovation ecosystem is still at an early stage of development, with significant development needed in infrastructure support and networks, capital and talent. To remain firmly on course, strategic action plans must focus on delivering the critical success factors for the ICT sector as illustrated in Figure 12 below.

Figure 11: ICT Sector Challenges

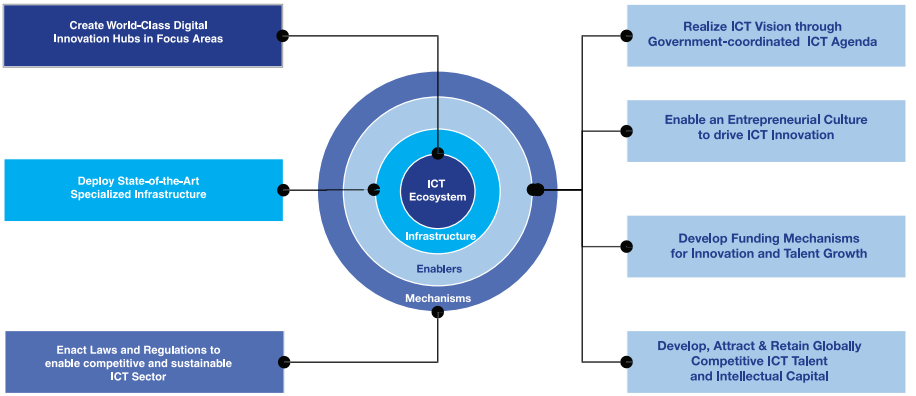


Figure 12: Key Success Factors for the ICT Sector

VISION, MISSION & STRATEGIC OBJECTIVES

PART II

2.1 Vision

To become the leading ICT Hub in Africa.

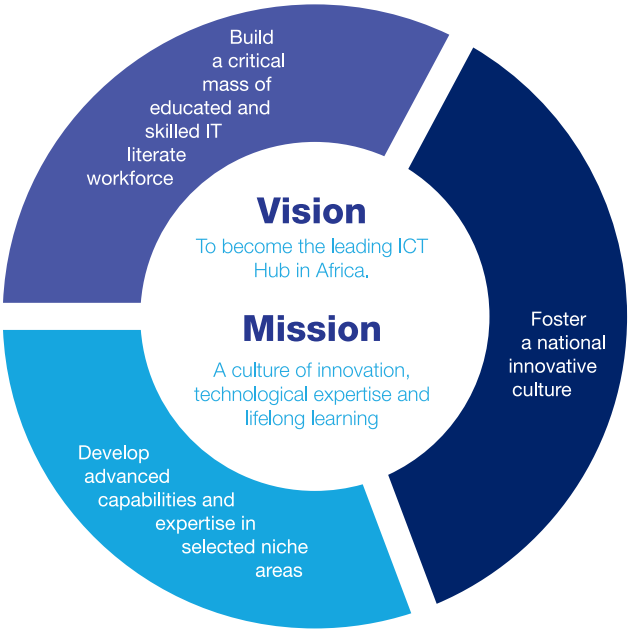
2.2 Mission

A culture of innovation, technological expertise and lifelong learning.

2.3 Strategic Objectives

The key interventions required to achieve the vision of becoming an ICT Hub are based on three strategic themes, with their associated goals and strategic objectives.

1. Build a critical mass of educated and skilled IT literate workforce by undertaking collaborative exercises involving stakeholders in industry, academia and government; establish Rwanda as a hub of ICT expertise and employment; encouraging risk taking in innovation pursuits.
2. Foster a national innovative culture by initiating appropriate legal, institutional and policy changes to promote a research and development culture; strengthening the partnership and collaboration between the government, academics and the private sectors; and encouraging commercialization of knowledge developed through research
3. Develop advanced technological capability and expertise in selected niche areas by identifying and building expertise through establishment of innovation hubs dedicated to building capacity and capability to provide solutions related in the specific economic sectors. The niche areas within the economic sectors are empowering data-driven farming, health and informatics, digital finance services, and e-government.



3. REALIZING THE VISION

3.1 Strategy Development Framework

The ICT Hub Strategy was derived using a process, that integrated the current situation assessment, identification of the thematic areas, deriving programs and initiatives, and finally prioritizing and resourcing the programs including the M&E framework. The process is illustrated by Figure 13 and described in more detail below.

Stage 1: Assessment and Identifying Focus Areas

Assessment of the current state by considering the status of the ICT Sector by reviewing of ICT Strategies, Policies and Status Reports, carrying out a PESTLE and SWOC Analysis, and regional and international benchmarking. From the situational assessment, broad intervention areas emerged that were grouped into three strategic themes.

Stage 2: Deriving Vision and Priority Areas

This stage related to deriving the vision and mission, and the programs (projects and interventions) to deliver that vision. The programs are to be implemented in a definite time-frame resulting in a pre-defined set of outputs or outcomes. The financial resources shall be sourced through a mix of public and private sectors initiatives.

Stage 3: Finalizing the ICT Hub Strategy Roadmap

This stage dealt with the implementation framework under which to execute the strategic plan and prioritization of programs determined by the twin factors of criticality (essentially how integrally linked the project is with attaining the strategic objectives associated with the program) and feasibility (the extent of ease with which a project could be implemented). A detailed M&E plan ensures that the progress and impact is monitored effectively.

3.2 ICT Hub Strategy as an Enabler

The ICT Hub strategy is positioned as an enabler of the SMART Rwanda Master Plan. Figure 14 below shows the position of the ICT Hub strategy relative to the other national and sectoral strategies.

Realization of the ICT Hub strategy requires aligning the choice of ICT initiatives and programs to the national vision and the top priorities. Figure 15 below summarizes the ICT Hub vision in relation to the National Strategy of Transformation.

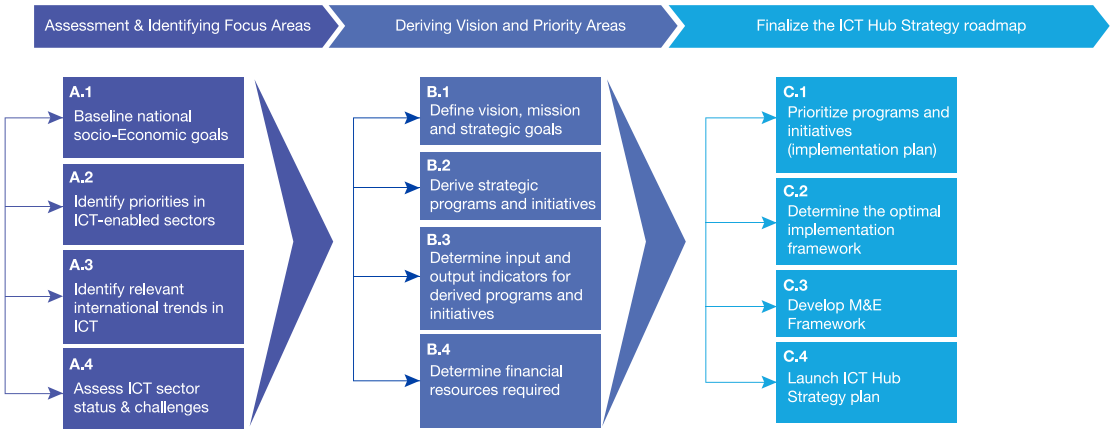


Figure 13: ICT Hub strategy development approach

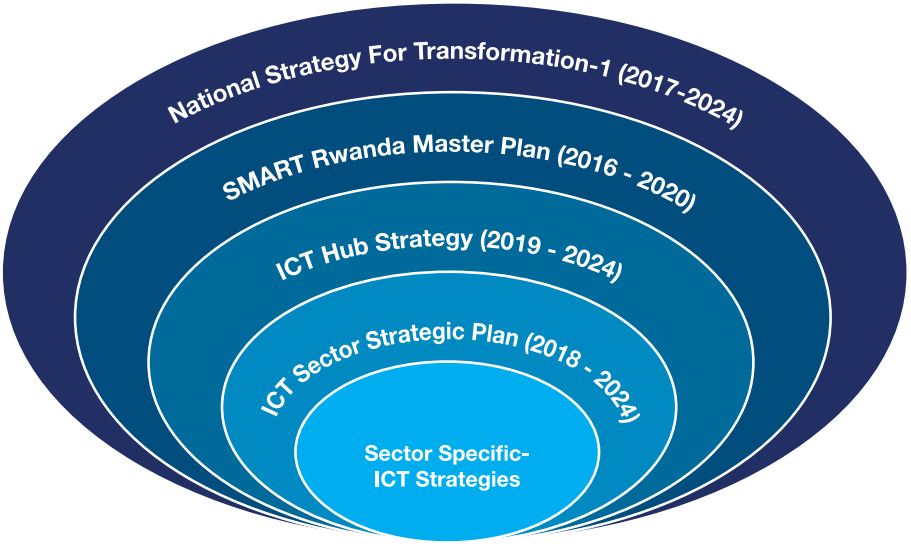


Figure 14: Positioning the ICT Hub Strategy in context of National Strategies

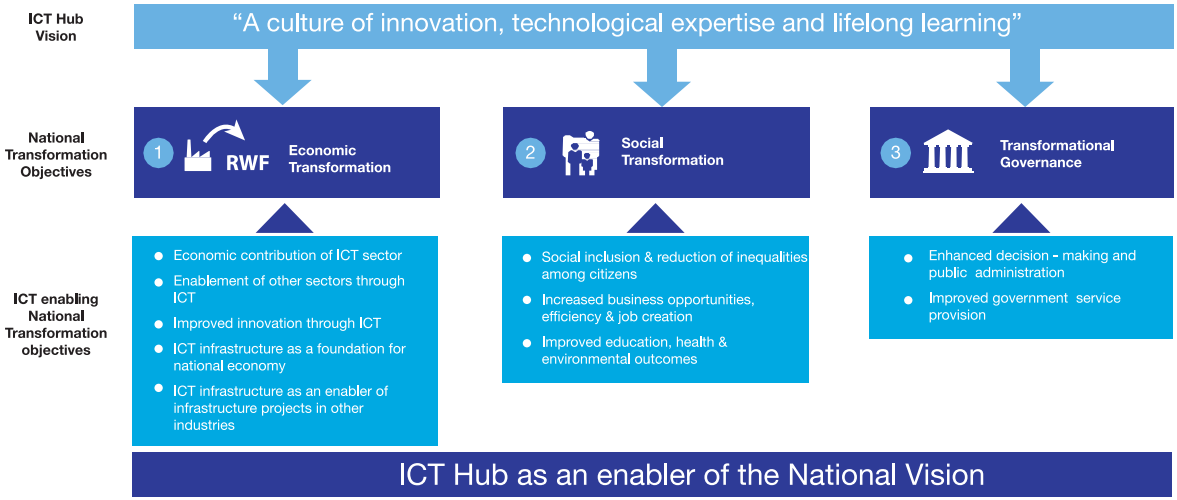


Figure 15: ICT Hub Strategy supporting NTS-1 Objectives

3.3 Stakeholder Mapping

The ICT Hub Strategy 2024 is relevant and of interest to all government and non-government actors as it provides clear actions, guidelines and defines programs for the realization of the ICT Hub vision. Figure 16 maps the relevance of the ICT Hub Strategy to the different stakeholders.

3.4 Lifelong Learning

As the pace of globalization increases and the economies of the world become increasingly focused on knowledge and skills, learning is becoming one of the dominant forces in deciding the success and sustainability of individuals and nations. Lifelong learning is increasingly recognized as the principal key to, and guarantor of, a country's prosperity and well-being. It is globally seen as an imperative for growth and development in today's knowledge- driven societies. Lifelong and life-wide learning is about the whole person. It is about allowing every individual to participate in society and making the society more cohesive. Learning enables people to develop to their full potential and to play an active role in their environments. It allows them to try new things and to harness untapped talents. Along with enhancing employment opportunities and professional standing, learning lays the groundwork for fulfillment in life. Moreover, learning cannot and should not start or end in the classroom or in other educational institutions. However, it has often been reduced to formal education and the acquisition of new skills required to succeed in the labor market – a view that prevails in particular when it comes to implementation.

One of the overall goals of the ICT Hub Strategy to make lifelong learning a reality, by having the country embrace and connect all learning stages, types and places and to link this process with the wider spectrum of benefits that flow from it. Figure 17 depicts the pillar of education within the context of lifelong learning.

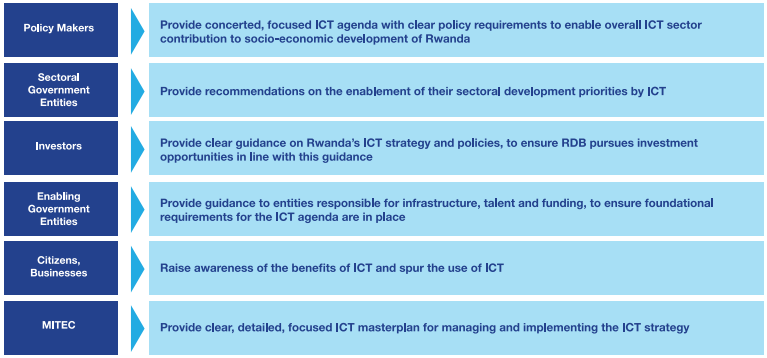


Figure 16: ICT Hub Strategy Stakeholder Mapping

Source: Four Pillars of Learning developed for UNESCO

Figure 17: 4 Pillars of Education

4. STRATEGIC THEMES

4.1 Strategic Theme #1: Build a critical mass of educated and IT skilled workforce

Strategic Goal

Critical mass of educated and skilled IT-literate workforce achieved through collaborative effort between government, academia and industry by (a) expansion of intake into courses that support for employment in ICT sector (b) rigorous awareness and sensitization campaigns for ICT as a career choice (c) attracting students from other countries into ICT education in Rwanda and (d) achieving a high rate of absorption into employment of students into the ICT sector.

Strategic Context

Promoting the adoption of ICTs, enhancing existing levels of ICT use through awareness campaigns, capacity building, awards and incentives and provision of relevant value-adding products and services, and coordinated planning, knowledge sharing and harnessing appropriate technologies, to bring about an ICT offering that enhances key economic sectors.

Rwanda should aim to provide a regional leadership role through establishing innovation hubs targeting development of relevant, demand-driven solutions. The case for adoption and induction of emerging technologies needs to be progressed through a two-pronged approach of promotion and regulation. This has could be through a Centre for Advancement in Computer Software and Engineering and through a Software Testing and Quality Assurance framework.

Strategic Objectives

Sustained Availability of Quality Manpower

ICT is a knowledge-intensive industry and hence is one which is driven essentially by skilled manpower (quantity and quality). This can be enabled by collaboration between the world of work and training providers in order to match skills provision to the needs of organizations. This is often done best at the sectoral level where the

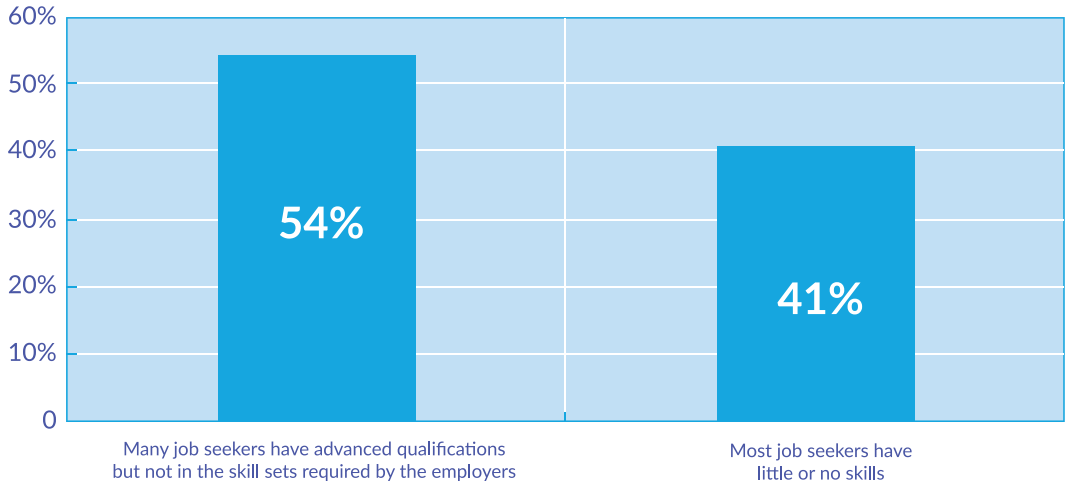


Figure 18: Skills mismatch in Africa, WEF

direct participation of employers and workers together with government and training providers can ensure the relevance of training. The growth of ICT professionals and the levels of skills in Rwanda will also hinge largely on the size of and number of both local and multinational organizations; the level of maturity and sophistication in their ICT set ups; and the growth of the SME segment as a key consumer.

Skills for tomorrow's digital world

Ensuring that everyone has the right skills for an increasingly digital and globalized world is essential to promote inclusive labor markets and to spur innovation, productivity and growth. Several types of skills are needed: technical and professional skills, including ICT specialist skills for workers who drive innovation and to support digital infrastructures and the functioning of the digital eco-system; ICT generic skills for workers and citizens alike to be able to use digital technologies; and ICT complementary "soft" skills, such as leadership, communication and teamwork skills, required for the expanding number of opportunities for ICT-enabled collaborative work (OECD, 2015a; OECD, 2016a; Grundke et al., 2017).

Continuous workplace training and lifelong learning enable workers and enterprises to adjust to an increasingly rapid pace of change. anticipating and building competencies for future needs through sustained dialogue between employers and trainers, coordination across government institutions, labor market information, employment services and performance reviews are steps to an early identification of skill needs.

4.2 Strategic Theme #2: Foster a national innovation culture

Strategic Goal

To foster a national innovative culture by improving the skills, knowledge and awareness among the population, to support a knowledge-based economy and society.

Strategic Context

By fostering a national innovative culture the aim is for the growth of an innovative, modern and competitive private sector. In addition, a national process on entrepreneurship, innovation, and capacity building needs to be enhanced by undertaking an inventory of ongoing entrepreneurship and innovation programs and clarifying programmatic missions, structures, goals, and expected results.

Although it is strongly believed that national culture characteristics cannot easily change, there is increasing evidence that the climate for innovation and creativity can be fostered when there is tolerance for mistakes, and genuine recognition for people's contribution with new ideas.

Strategic Objectives

- Streamline and prioritize national innovation and entrepreneurship programs priorities to improve coherence and reduce duplication
- Create an implementation plan including baselines of investment /achievement and clear targets for progress
- Maintain institutional consistency as a way to build momentum to cultivate innovation systems functions that fall outside of traditional mandates

- Address thinning of resources across multiple innovation support programs and institutional arrangements and clearly define their missions and/or targets. There are at least four different types of institutional arrangements aimed at promoting innovation in Rwanda: business enterprise centers, district innovation centers, technology incubators / demonstration units, and technology consultation centers.

4.3 Strategic Theme #3: Develop advanced technological capabilities and expertise in niche areas

Strategic Goal

To attain a position of continental leadership in certain identified niche areas of ICT in particular and emerge as a leading hub of ICT expertise in Africa.

Strategic Context

Leadership in Identified Niche Areas

Innovation hubs with specific focus, could assist build skills and capacity while encouraging higher institutions of learning to adopt a culture of R&D with an objective of commercializing R& through collaborative efforts with the public and private sector. This could help Rwanda should build expertise in identified niche areas in which skills are not readily available in other countries, while at the same time solving common socio-economic challenges. Such initiatives would hasten the leadership status for Rwanda in the region.

1. **Empowering data-driven farming:** This relies on big data to provide practical financial, technical, and business support to the agriculture sector in Rwanda. The objective would be to provide

   a. Access to affordable financial services irrespective of location

   b. Acquire verified, quality and affordable inputs in timely manner.

   c. Maximize production by employing good agriculture practices through monitoring pests and diseases by creating innovative disease diagnostic tools

   d. Access and Market agricultural produce for the domestic and export markets.

   e. Empowerment to youth and women through capacity building, creation of jobs and employment through a well-organized value-chain partnership using technology

   Small scale farming communities suffer from inadequate access to affordable and reliable financial services, access to quality and affordable farm inputs and market access challenges due to inability to supply products that meet domestic, regional and international market requirements in terms of quantity, quality and safety. If these challenges are not addressed conclusively, thousands of smallholder producers will be excluded from continued participation in global agro-food trading system leading to loss of jobs, farm incomes and poor livelihood. The problem is compounded by the dependence on outmoded production technologies leading to: poor productivity, high post-harvest losses, low value addition, poor management and business skills.

2. Health informatics using the data, information, and knowledge to both improve the delivery of healthcare services and improve patient outcomes. Biomedical informatics being a cross-cutting, interdisciplinary field can help identify, explore, and implement effective uses of data, information, and knowledge to improve the decision-making and problem-solving efforts to improve human health. The discipline of big data analytics and health informatics can be a strategic focus for Rwanda to supplement its universal health care system.

A robust health information technology infrastructure is critical to realize universal health coverage. This can be achieved by designing an eHealth architecture and, coordinating various IT initiatives & choices, minimizing duplication and facilitating access & integration of data.

3. **eGovernment services.** As a precursor to a knowledge-based society, e-government, will ensure that government plays a full part in the radical transformation of society by focusing on better services for citizens and businesses and more effective use of the Government's information resources. Implementing it will create an environment for the transformation of government activities by the application of e-business methods throughout the public sector. The challenges is for all public sector organizations to be innovative and deliver the services through a common to achieve the e-government goals.

   The intention is that all public services which can be electronically delivered should be accessible over the Internet and through mobile, phones, digital TV, and call centers as well as through personal computers. The mix for any service will be determined in relation to demand. This could be by developing a business portal, initially for small- and medium- sized enterprises, and a personalized 'home page' for individuals. It can be done in a non-exclusive way and will create the conditions for others, including commercial enterprises, to create innovative service offerings.

4. **Digital finance solutions.** Financial inclusion is usually defined as the proportion of individuals and firms that have access to or use financial services (World Bank, 2014). But this is not only limited to use, but also refers usage and quality. Financial Inclusion is increasingly recognized as fundamental for development as it can help poor households improve their lives while also spurring economic activity. A greater access to financial services can contribute to: (i) poverty reduction, by decreasing vulnerability, (ii) an increase in the productivity of Micro, Small and Medium Enterprises (MSMEs), and (iii) greater formalization of firms.

   At the macro level, there is also evidence that an increase in access to financial services has positive effects on stability of the financial system, effectiveness of monetary policy, growth and inequality reduction. As technological developments advance and extend the delivery of financial services to the masses, there are notable benefits of digital finance which include, amongst others: easy access to financial services, reducing travel and queuing times when done from the convenience of mobile or computer devices, completing transactions faster and moving large sums of money without carrying cash thus offering secure and safer options, and encouraging a "cashless economy".

Strategic Objectives

- Undertake collaborative exercises involving stakeholders in industry, academia and government to establish Rwanda as leader in specific areas. Technology test beds for each of the above niche, would also make for nurturing expertise in order to coordinate and monitor trials that take place on emerging technologies before they are deployed in the real world.
- Build expertise and knowledge as a provider of practical demand-driven ICT solutions in niche areas. Expertise and infrastructure garnered in this area would also enable Rwanda to take up a leadership role in the region. Initiatives should therefore be taken towards horizontally transferring home-grown ICT solutions and their associated expertise to other countries.

4.4 Strategic Programs and Projects

The ICT Hub programs and projects are categorized into 4 categories:

1. Flagship projects – these are related to the 4 niche areas of data-enabled agriculture digital finance, e-government and eHealth systems. These projects will run for the whole duration of the strategic plan (2019 -2024).
2. Quick wins -these are mainly activities related to setting a foundation for the success of the program and projects. These include review of existing laws, policies, regulations, and standards. The quick wins are to be implemented between 2019 – 2021.
3. Priority 1 programs are those that seek to embed the objectives of capacity building and skills development. Their implementation is between 2021- 2022
4. Priority 2 programs are focused on technological expertise aimed at attaining regional leadership. Their implementation is between 2022- 2024, by which the vision of becoming a leading ICT Hub should start becoming viable.

A detailed listing and description of the programs is given in Annex 2 and Annex 3 respectively.

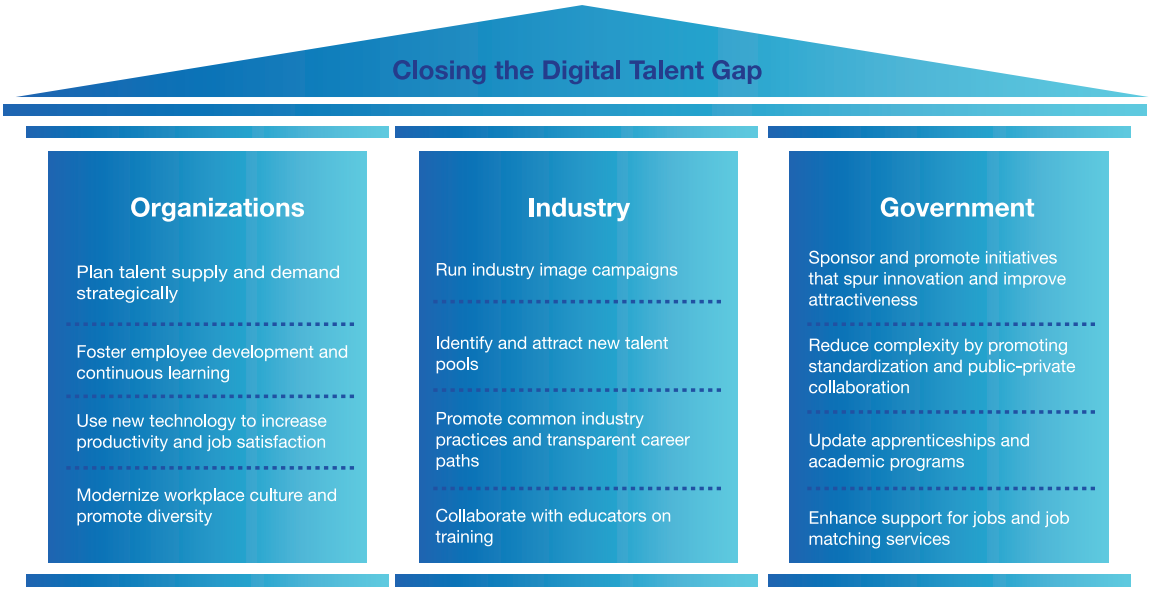


Figure 19: Solving the digital talent gap

IMPLEMENTATION FRAMEWORK

PART III

5.1 Implementation Framework

To improve the management of ICT-enabled projects, there is need to use of appropriate project methodologies and the employment of accredited project managers with experience in ICT-enabled projects. The governance structures and processes should clearly define: lines of accountability, roles and responsibilities, decision making and reporting processes.

Inadequate oversight of projects and failure to evaluate projects at key stages has been cited as an integral factor in cost overruns, time delays, failure to terminate when appropriate, and failure to collate and disseminate lessons learned. In response, it is recommended implementing a project review system which requires a team of independent experts to investigate a project at key milestones

Timely Monitoring and Evaluation Framework

In order that interventions taken up deliver the intended benefits and impacts, a timely, objective and effective monitoring and evaluation framework is also an essential pre-requisite, as also is the requirement of a dedicated team entrusted to monitor and evaluate on a continual basis. The functions of the implementation framework are shown in Figure 20 comprising of:

- Project Execution and Monitoring: The "owner" organizations would be responsible for delivery of the individual projects under the different programs.
- Program Execution and Monitoring: Program Steering Committees and Taskforces (PSCTs) shall have separate responsibility for monitoring the programs.
- Execution Guidance and Progress Monitoring: At the apex level, RISA will responsible for monitoring and coordinating the implementation of the whole of the strategic plan programs. A master M&E tracking dashboard for the ICT Hub Strategy programs will be developed and shared regularly with all stakeholders.

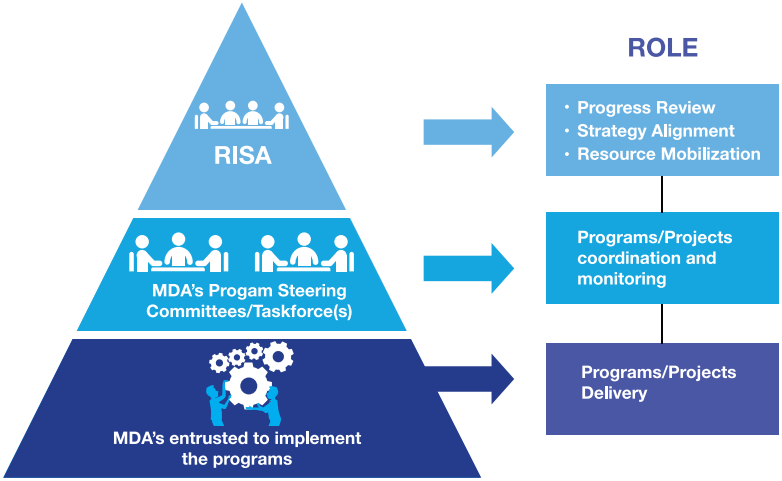


Figure 20: ICT Hub Strategy Implementation Framework

5.2 Institutional Framework

These are the institutions in which the various programs and projects shall be implemented and hence will provide the human resource and any other technical capacity required to deliver the projects and programs. The institutions under this framework shall discharge the following functions:

i. Regulation and Enforcement, activities related to regulating the activities of the ICT sector and enforcing the legal requirements as laid out in the statutes for the ICT sector.

ii. Promoting ICT Awareness and Adoption, spreading the awareness of the need for and efficacy of ICT, and taking up initiatives that would encourage the adoption of ICT in the economy and in society at large.

iii. Educational Interventions, determining and recommending measures that need to be undertaken towards building up the manpower base for the ICT sector and to help internalize a "technology" temper in the society.

iv. ICT Statistical Operations, monitoring and evaluation of various program and projects being undertaken and employing statistical analyses to make recommendations on what needs to be taken up.

v. Country Promotion and Investment, taking up initiatives that would promote the country as a leading hub of ICT. This would also include undertaking activities to promote investments into the ICT sector both from within the country and beyond.

vi. E-Governance; using electronic means towards delivering good governance, and adherence to the principles of good governance as relevant for e-Governance.

vii. Technology Trends and Standards, keeping track of latest emerging technologies and standards, and ensuring their adherence and encouraging their adoption.

viii. Strategic Advisory and Policy Making, extending inputs to the government in the required domains which would help GoR arrive at strategic plans and policies that would serve as guiding documents for stakeholders in the sector.

ix. Research and Innovation, exploring and evolving new ways of discharging the above functions in a more efficient and cost-effective way for the collective benefit of the economy and society.

x. Monitoring and Evaluation, activities related to undertaking periodical monitoring and evaluation of programs and projects underway using objectively verifiable indicators.

xi. ICT Incubation, promoting the growth of ICT businesses by offering incubation facilities to startups, including office space, basics technology infrastructure and other business support services.

xii. Information Security, activities related to building awareness and promoting adoption of Information Security and ensuring adherence to guidelines and best practices shared with the stakeholders from time to time.

Table 4 below summarizes the lead institutional responsibilities envisioned in this strategy.

Table 5: Key Institutional Responsibilities

Key Function	MITEC	MINEDUC	RISA	RURA	RDB	NCST
Regulation and Enforcement						
Promoting ICT Awareness and Adoption						
Educational Interventions						
ICT Statistical Operations						
Country Promotion and Investment						
E-Governance						
Technology Trends and Standards						
Strategic Advisory and Policy Making						
Research and Innovation						
Monitoring and Evaluation						
ICT Incubation						
Information Security						

5.3 Management of ICT Programs

A recommended pathway to improving the management of ICT-enabled projects include the development of a "whole-of-government" ICT Projects Framework and an ICT Capability Framework. These frameworks and should influence how an ICT-enabled projects are conceived, planned, procured, managed and implemented. If the inputs from these systems are of high quality, then it is likely that the outcomes for ICT-enabled projects will be significantly improved..

The ICT Program Framework would bring a much-needed strategic approach to government ICT investments and outline core principles and actions to improve ICT-enabled project delivery. The framework would also embed its core principles, policies and practices at the agency level.

Capacity Building

Strengthening public sector capability through the development of an ICT Capability Strategy would improve a range of project management practices such as stakeholder engagement, change management, business analysis, contract and vendor management. It is recommended that RISA develop an ICT Capability Strategy that could be based on the Skills for the Information Age (SFIA) Capability Framework. As this will take some time to implement, RISA could adopt short term strategies, such as professional development for existing staff, to build capacity in the interim.

The government project management framework (PMF) will also provide guidance to MDAs' on how to apply appropriate project methodologies to facilitate a more consistent approach to ICT-enabled project management, build staff capacity, improve project governance and management. The PMF shall also be used to support MDA's to implement continuous improvement in relation to their delivery of ICT-enabled projects.

The development of an ICT4D education program for Project Sponsors with a view to providing a forum where executives can learn what to expect when taking

responsibility for an ICT-enabled project or program and how to lead an ICT-enabled project to ensure the best result for the organization is also recommended.

5.4 Financing the ICT Hub Strategic Plan

5.4.1 ICT Hub Strategy Budget

Achieving the vision of ICT Hub Strategy will require the mobilization of significant financial resources. Funding for the Strategy will come from Government, International Development Partners, private sector institutions and other investors. The ICT budget allocation to the major sectors of Rwanda over the period 2011-16 was Rwf 167.28 Billion an equivalent budgetary allocation of roughly 2 per cent of GDP. The estimated total budget for the implementation of the strategic plan over the five years, is Rwf 120 Billion, of which 50 per cent or Rwf 60 Billion will be allocated to the establishment and operationalization of the four pilot innovation hubs. By reallocating and re-prioritizing, the annual recurrent and development ICT, it is anticipated that no overall increase is required to finance the implementation of the strategic plan. Further, by leveraging the US$ 30 M (~Rwf 26 Billion) Rwanda Innovation Fund and the National Research and Innovation Fund (NRIF). These two funds should help unlock private sector investment to meet the budget requirements. Additionally, support from International Development Partners would be leveraged to advance priority areas of the Plan. To avoid a situation of under budgeting, feasibility studies shall be carried out prior to finalisation of the budget.

5.4.2 Sustainability

Financial sustainability should stem from the identification of a real need. The need should be identified, owned and co-created with end users, not designed and introduced from the outside. When the benefits of a program (ICT related or not) are not tangible, it may be necessary to do some buy-in work and awareness raising with people to help make the benefits of an initiative clearer to the broader population. It's important to do a baseline and some monitoring and evaluation to know whether or not the initiative is indeed having an impact. For both financial and technological sustainability, it's important that the technology tools and devices as well as the technical support is local, with local partners involved in implementation. Research on impact should also not be exclusively done by those from the outside, but rather should involve local researchers. Local feedback loops can assist with more real-time understanding of how the initiative is faring.

5.4.3 Funding Sources

There are several funding sources that the implementors of the ICT Hub can rely on. These are grant funding, debt financing for startups, equity investment for techpreneurs, mezzanine financing for digital solutions, blended finance, technology investment funds, and the Rwanda Innovation Fund. Each is described below.

5.4.3.1 Grant Funding for ICT4D Projects

Grant funding makes no financial claim on a business in return for providing the funds. This includes everything from grants offered by national and international organizations as well as foundations, to prizes and awards offered by start-up competitions, as well as donation-based crowdfunding campaigns. Most common grants, however, tend to be on the smaller side, making them most appropriate to early-stage start-ups and digital development entrepreneurs, or more established entrepreneurs seeking capital to ease cash flow constraints.

5.4.3.2 Debt Financing for Startups

Debt financing is one of the most common ways to get funding. Debt funding can come from various types of funders, including banks, online and mobile lenders, peer-to-peer crowdfunding, impact investors, development finance institutions, microfinance institutions, and others. As start-ups need to pay interest on their loans, typically in monthly installments, debt financing is best suited to more mature start-ups with stable cash flows.

5.4.3.3 Equity Investments for Technology Entrepreneurs

Equity investment may include everything from relatively small injections of capital from angel investors, to large deals financed by private equity firms. Most equity investors understand that the majority of start-ups fail; therefore, they look for growth potential rather than steady cash flows. Equity investors like to back tech start-ups because of their ability to scale with relatively low capital requirements compared to traditional brick and mortar businesses.

In order to receive equity investment, entrepreneurs will typically need to have an extensive business plan, with strong financial models showing growth projections, competitor analysis, proposed approach to marketing, and more. Equity is the riskiest type of financing for investors, as the funders stand to lose their entire investment should a company fail.

5.4.3.4 Mezzanine Financing for Digital Development

Mezzanine is a hybrid instrument and refers to financing that sits between equity and debt (hence the name) and combines aspects of both types. It is popular with some investors because it shields investors from certain risk associated with pure equity investment, while still providing upside if a business becomes highly successful.

There are various types of mezzanine financing, including subordinated debt, convertible notes, and equity kickers. These are often combined into a single financing facility; the degree to which an investor is willing to be exposed to risk will dictate the amount of equity upside versus debt for which he or she will negotiate.

5.4.3.5 Blended Finance

Blended finance is the strategic use of development finance and philanthropic funds ("public funds") to mobilize private capital flows to emerging and frontier markets. It allows investors and lenders to reduce the costs related to risk-return expectations in emerging and frontier markets by leveraging a broader suite of financial instruments, access to reputational support, and local expertise that public funders can provide, thereby increasing the potential for deal viability. It has emerged as a catalyst to incentivize private capital flows and accelerate development impact.

Utilizing a blended finance approach, helps help align incentives and potentially reduce the risk premium through co-financing and co-investment, enabling access to private capital to implement the strategic plan. To advance the objectives of using blended finance, a number of immediate actions shall be taken, including:

i. Aligning public processes and objectives with the needs of investors early in the project preparation process to help ensure design parameters are consistent with expectations.

ii. Engaging with donors and development finance institutions to understand and facilitate access to existing instruments such as guarantees and concessional financing that can give greater comfort to investors.

iii. Strengthening existing dedicated units to help coordinate between government agencies and the private sectors to act as a focal point.

iv. Leveraging multi-stakeholder initiatives and platforms that facilitate public-private finance,

"The only way to achieve the sustainable development goals is to use more public capital strategically for unlocking private investment, particularly for infrastructure." AfDB

A key characteristic of blended finance is that impact does not need to be a driving factor for every investor in the transaction. This is what separates blended finance from impact investing. The public and philanthropic investors prioritize social returns (i.e., impact), but the private investors prioritize financial returns. The investors—public, philanthropic, and private—play complementary roles: one designing and measuring the intervention and impact and the other providing the required financing.

5.4.3.6 Technology Investment Funds

Technology Investment Funds operate somewhat like a "venture capital" providing sponsorship for ICT4D projects which would not meet the criteria for funding normally applied by commercial/development banks. Much of the support needed by local innovators is to access funds to expand, file patents, R&D and start-up capital. The funds are required to move development innovations and innovators from prototype to real-world application. An example could be the UNICEF Innovation Fund which is a pooled funding vehicle to quickly assess, fund and grow open-source solutions that have been developed in new and emerging markets. The non-thematic, pooled fund is specifically designed to finance early stage, open-source technology that can benefit children. The funds primarily target solutions that can be clustered around frontier technology, such as: blockchain, UAVs, virtual and augmented reality, machine learning, quantum computing, genetic engineering, Internet of Things, artificial intelligence, nano-satellites and human dynamics.

5.4.3.7 The Rwanda Innovation Fund

The Rwanda Innovation Fund (RIF) is a recently launched US$ 30 million technology investment fund whose main objective is to promote innovation economy in Rwanda. The fund will be used to establish an investment vehicle focused on funding Tech-Enabled Small and Medium-Sized Enterprises (SMEs) and to develop the country's entrepreneurial/innovation ecosystem capacity. This fund should be able to support promising young entrepreneurs, and local investors to service early stage ventures, including follow up on investments, due to limited funding capacity and liquidity issues. The Fund will also be used to support and provide equity financing for SMEs, train tech-oriented entrepreneurs in business planning, management while increasing awareness and sensitization with respect to intellectual property rights in Rwanda. It aims to mobilize at $100 million in direct commitments from the GoR and private investors, while targeting a leverage multiplier effect of up to US $300 million in follow-on investments.

5.5 Results-based management Framework (RBM)

To achieve the goals outlined in the ICT Hub Strategic plan, a results-based management (RBM) framework is recommended to ensure a strong and coherent linkage between the strategic goals, objectives and programs. A results-based management approach integrates strategy, people, resources, processes, and measurements to improve decision-making, transparency, and accountability. This approach shifts away from a focus on inputs, activities and processes to a focus on benefits and achievements that are a direct effect of the intervention. The RBM framework emphasizes using information on results to improve decision making and allow continual reflection on the extent to which that implementation of activities and outputs will lead to the achievement of desired outcomes. Accordingly, it also allows making necessary adjustments to ensure that planned or desired outcomes or results are realized enhancing implementation effectiveness. The RBM framework is intended to help establish standards with regard to four main pillars:

1. The definition of strategic goals which provide a focus for action;
2. The specification of expected project results which contribute to these goals and align programs, processes and resources behind them;

3. On-going monitoring and assessment of progress and integrating lessons learned into future planning; and
4. Improved accountability and continuous feedback on progress.

5.5.1 Using RBM to promote implementation efficiency

The RBM shall to promote efficient management techniques by diagnosing early weaknesses in the implementation plans using a systematic approach of gathering and assessing data and results on progress towards objectives. Periodic and targeted information should help the implementing MDAs recognize those activities that generate the highest pay-offs in terms of results, or those, which appear to need more support to deliver results aligned with strategic priorities. The MDAs shall then be able to track and measure progress towards objectives and makes targeted decisions to improve performance on an on-going basis. Monitoring the process on a continuous basis shall help determine whether programs are being implemented as intended, standards are being met, and resources are being used efficiently.

Training and provision of necessary tools, as well as participation in setting realistic goals and targets, assessing risks and reporting on performance should institutionalize knowledge and learning from reporting and evaluation to improve decision-making. Figure 21 illustrates use of information from the M&E for decision-making and improving performance.

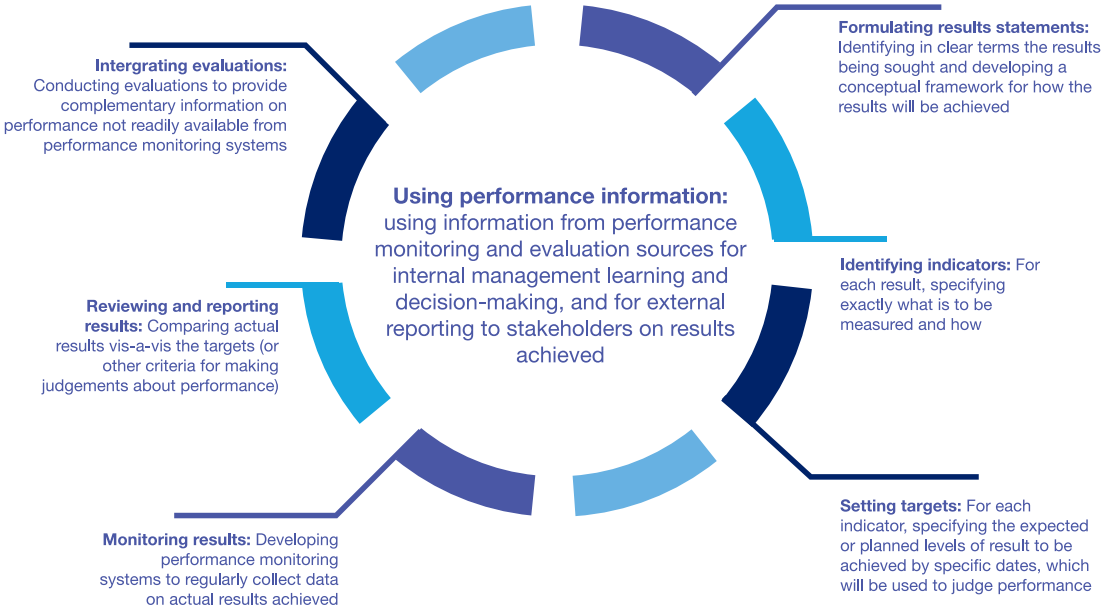


Figure 21: Performance management using RBM

MAIN PRINCIPLES OF RESULTS-BASED MANAGEMENT

- Broad participation in the planning process –involving relevant stakeholders
- Structured and clear plans with clear objectives and allocation of responsibilities
- Continuous risk analysis and risk management
- Continuous monitoring, not just at the end of the project
- Analysis of results during the follow-up and revision of plans where necessary
- Effective dissemination of results for positive influence, strategic communication
- Continuous and organizational learning

Results-based management (RBM) uses feedback loops to achieve strategic goals as shown in Figure 22. The RBM lifecycle covers the planning, follow-up, evaluation and management of the project and operations cycle from start to finish. The purpose of RBM is to achieve as positive and sustainable results as possible.

Figure 22: Results based management Lifecyle

5.6 Risk Management

Risk management shall involve identifying risks that could affect the implementation of the Strategic Plan. A comprehensive risk mitigation plan will be a key outcome of the governance and management process. The implementation framework shall include a risk mitigation progress monitoring including tracking identified risks, identifying new risks, and evaluating risk process effectiveness throughout the strategic plan execution. Table 6 below indicates the inherent risks and their mitigation.

Risk	Strategic mitigation measure	Strategic Plan Reference
Diminishing relevance and ability to demonstrate clear added value risking conflicting efforts, inconsistencies and competition with other strategic plans and implementing organizations	Identify and concentrate on activities with unique added value	Vision, Mission, Strategic goals and Objectives/ Outcomes,
Spreading too thin risking strategic plan dilution and losing sight of the overall goal	Ensure cohesiveness and strength of focus	Proactive stakeholder engagement
Failure to respond quickly to emerging needs and innovate sufficiently while still providing high-quality deliverables	Be fast moving, agile, responsive and innovative Proactively engage stakeholders	Vision, Mission, Strategic goals and Objectives/ Outcomes
Inadequate adjustment of implementation strategies, tools, methodology and processes to keep up with best practices and changing needs	Continuously improve strategies, tools, methodologies and processes according to best practice	Detailed implementation plan, with an inbuilt process of monitoring implementation of, and adjusting, the strategic plan where required
Inadequacy of funding	Be more efficient and prioritize to ensure effective financial planning	Implementation criteria

Table 6: Risk Identification & Mitigation

Risk mitigation planning

Risk mitigation planning, implementation, and progress monitoring are depicted in Figure 23 As part of an iterative process, the risk tracking tool will be used to record the results of risk prioritization analysis (step 3) that provides input to both risk mitigation (step 4) and risk impact assessment (step 2).

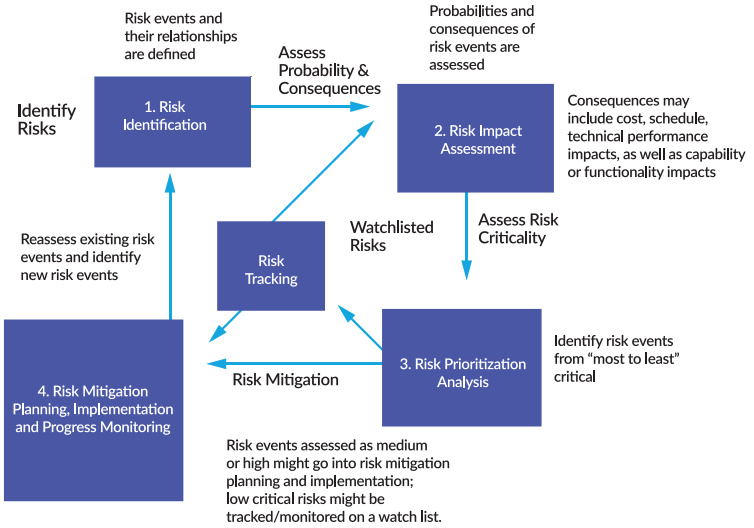


Figure 23: Risk Management Fundamental Steps

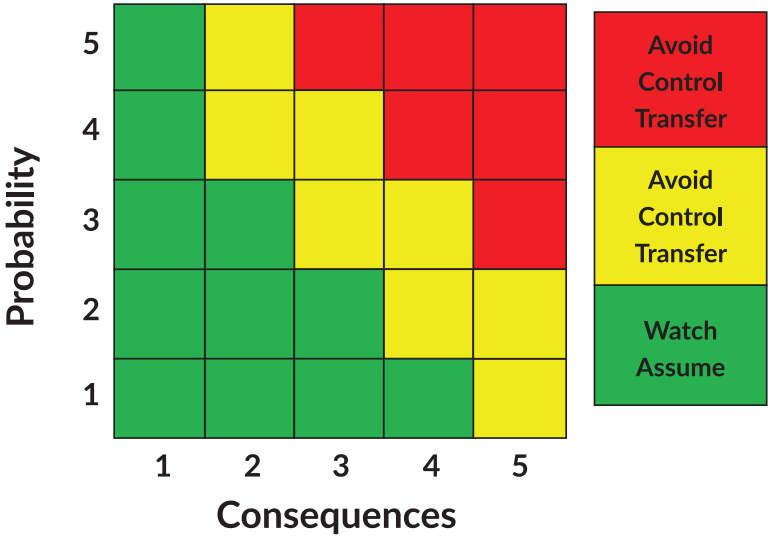


Figure 24: Risk Mitigation Handling Options

Conclusion

Rwanda has made remarkable progress in ICT4D the last twenty years and its policy ambitions and development aspirations remain at a high point. The vision of attaining recognition as a leading continental ICT Hub befits Rwanda's ambitions when the development of ICT over the last 2 decades is taken into consideration. Becoming a leading ICT Hub requires a strong and sustained emphasis on the existence of the highly skilled and educated human capital, a robust and pervasive ICT infrastructure, a conducive operating environment, a supportive legal and regulatory regime, access to financial resources, a clear rule of law that respects individual and commercial rights, and intellectual property protection to encourage innovation and creativity.

However, Rwanda's ICT challenges mainly concern structural and cultural change. For instance, awareness for the benefits of ICT is still not widespread, a labor force highly skilled in ICT is still not a reality, and a fledgling private sector has not yet grown enough to make the ICT sector broadly independent of government and donor funding. R&D is generally hampered by the lack of research capabilities and qualified specialists, inadequacy of the mechanisms available for appropriating the returns from these investments or lack of available financing.

Rwanda's ICT Hub ambitions demand increased private and public investment in R&D, high literacy, high tertiary education enrolments, good technology related capacity and IT skilled workforce, strength in innovation, and high ICT penetration and Internet usage. The efficient implementation of an all-encompassing ICT Hub strategy will depend heavily on continuing to make ICTs a high priority and on the full commitment of all stakeholders and responsible bodies. These are the issues the ICT Hub Strategy seeks to address to firmly position Rwanda as a continental ICT leader.

Key Terms and Concepts

Accelerator: A start-up service working with a start-up or entrepreneur for a fixed period of time and providing intensive mentorship and development services.

Angel Investment: Early stage investment intended to provide a one-time boost to initially launch and develop a start-up. Often provided by entrepreneurs, friends or families and connected with mentorship.

Blended Finance: The strategic use of development finance and philanthropic funds to mobilize private capital flows to emerging and frontier markets'. Blended Finance deliberately channels private investment to sectors of high-development impact while at the same time delivering risk-adjusted returns.

B2B: Business to Business: Services or products from private sector companies intended to be used by other private sector companies.

Cluster: A geographic concentration of interconnected businesses, suppliers, and associated institutions in a particular field.

Collaborative Regulation: Is regulation created by collaboration among all the various government agencies involved in overseeing the digital economy.

Crowdfunding: Financing a new venture, product or project by collecting small amounts of money from large numbers of investors, often in exchange for perks such as early access to the product.

Digital Divide: An economic and social inequality with regard to access to, use of, or impact of information and communication technologies

Digital financial inclusion: Digital access to and use of formal financial services by excluded and under-served populations

Digital finance: Methods to electronically store and transfer funds, to make and receive payments including to borrow, save, insure and invest, and to manage a person's or enterprise's finances

E-Governance: The application of ICT to the delivery of government services, government communications and backend services and activities within the government.

Entrepreneurial Support: Programs such as incubators, accelerators, labs, and other services which provide entrepreneurs with resources such as training, mentorship and business services.

Financial Technology (FinTech): The application of ICTs to make financial services more efficient.

Hard Infrastructure: Physical infrastructure to support businesses such as mobile and fixed connectivity, power, water, roads, physical plants, equipment and other elements.

ICT (Information and Communication Technology): An umbrella term covering wireless and wired communication, the hardware and software related to them and their applications.

ICT Centric Innovation Ecosystem: A description of an innovation ecosystem recognizing that ICTs are often at the center of innovation and have a cross cutting role in many other sectors of the economy.

ICDI (ICT Development Index): is a composite index that uses 11 indicators to determine a country's ranking

ICT Hub: can be defined as a globally recognized country that possesses a culture of innovation, supported by investment in R&D, undertaken by the presence of a highly educated and skilled workforce, and where there is a high usage and awareness of ICTs, and the ICTs contribute a significant portion of the economy.

ICT4D: Information and Communication Technology for Development: The use of ICTs for the purpose of economic and social development, humanitarian response or promotion of human rights.

ICT investment: Is defined as the acquisition of equipment and computer software that is used in production for more than one year. ICT has three components: information technology equipment (computers and related hardware); communications equipment; and software. Software includes acquisition of pre-packaged software, customized software and software developed in-house

Incubator: A start-up service providing business services and trainings, early stage support and mentorship and often office space and communities for start-ups and entrepreneurs.

Innovation: The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.

Innovation Ecosystem: The major stakeholders and processes supporting innovation and the establishment of new businesses in a particular area, and their associations and connections.

Innovation Hub: An innovation hub can be defined as a networked organization that supports the maturation and transfer of excellent technology to industry, in order to apply innovative technological opportunities. There are at least two different types of innovation hubs focused on different stages of technology: **Excellence hubs:** focusing on the maturation and development of upcoming new and highly innovative key enabling technologies; **Technology Transfer hubs:** focusing on the transfer to and effective uptake of existing commercially available technology by the market, access to technologies, developing their innovation capacity and business transformation, spurring new competitive products, and accelerating time-to-market, with the objective of boosting their competitiveness at global scale.

Investment Rounds: A series of investments made in a business intended to develop a business, each round focuses on a different stage of development, developing business models, expanding and scaling.

ISID Inclusive and Sustainable Industrial Development: Development in which all parts of society benefit from industrial progress, which provides the means for tackling critical social and humanitarian needs.

IoT (Internet of Things): The incorporation of sensors, connectivity, software, automation and other ICT solutions to allow objects to collect and exchange data.

IP/IPR Intellectual Property/Intellectual Property Rights: The rights of persons over their creations. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.

IT Services/ITeS: IT services typically include IT applications and engineering services, while ITES involve a wide range of services delivered over electronic networks.

Knowledge-based economy: A knowledge-based economy may be defined as an economy in which knowledge, creativity and innovation play an ever-increasing and important role in generating and sustaining growth. In such an economy, knowledge is the most critical factor of production and generates more wealth than the other traditional factors of production, land, labor and capital.

Knowledge-based society: Is a society in which people have the capabilities not just to acquire information but also to transform it into knowledge and understanding, which empowers them to enhance their livelihoods and contribute to the social and economic development of their communities.

Last Mile: The “last mile” is “the final leg of delivering connectivity from a communications provider to a customer. This leg, however, can be more than a mile, especially in remote areas. In such areas, the last-mile

infrastructure can represent a challenge because the cost of providing the service can be very high and the demand too small to justify an investment.

Log frame: A tool for improving the planning, implementation, management, monitoring and evaluation of projects. The log frame is a way of structuring the main elements in a project and highlighting the logical linkages between them.

Longitudinal study: An observational research method in which data is gathered for the same subjects repeatedly over a period of time

Mobile Money (MM): as an electronic representation of conventional money, the value of which is on par with the official currency of the licensing state, which may be transferable, redeemable for cash and is generally an accepted means of payment

Open data sandbox: A collection of tools and resources, combined with a collection of open datasets intended to allow experimentation in finding uses for those datasets.

Peer-to-Peer Lending: The process by which individuals lend their own money to other individuals or businesses directly generally through a mediating entity.

PPP (Public Private Partnership): A public sector project or business venture executed through a collaboration between a government entity and a private business.

Seed Funding: Small amounts of investment, often in the form of grants or angel investment, used to initially launch or develop a company.

SI (Systems of Innovation): An understanding of innovation as a process representing the flow of information and collaboration between various actors.

Skills Framework for the Information Age (SFIA): (Is a model for describing and managing competencies for ICT professionals for the 21st century and is intended to help match the skills of the workforce to the needs of the business.

Smart City: A city which uses information and communications technology to ensure that both its critical infrastructure and public services and components it offers are more interactive and efficient and that citizens can become more aware of them

SME: Small or medium enterprise: A private firm which is beyond the stage of being a start-up, but which is still young, with limited staffing and/or income. The exact definition used in terms of upper and lower bounds on age and scale varies between institutions.

Soft Infrastructure: Programs and resources in an innovation ecosystem which provide mentorship, skills, experience and other knowledge resources to support innovative businesses.

Soft Skills: A series of skills such as communication, business management and administration, design, and other skills related to the running of a business, rather than the products or services that business provides.

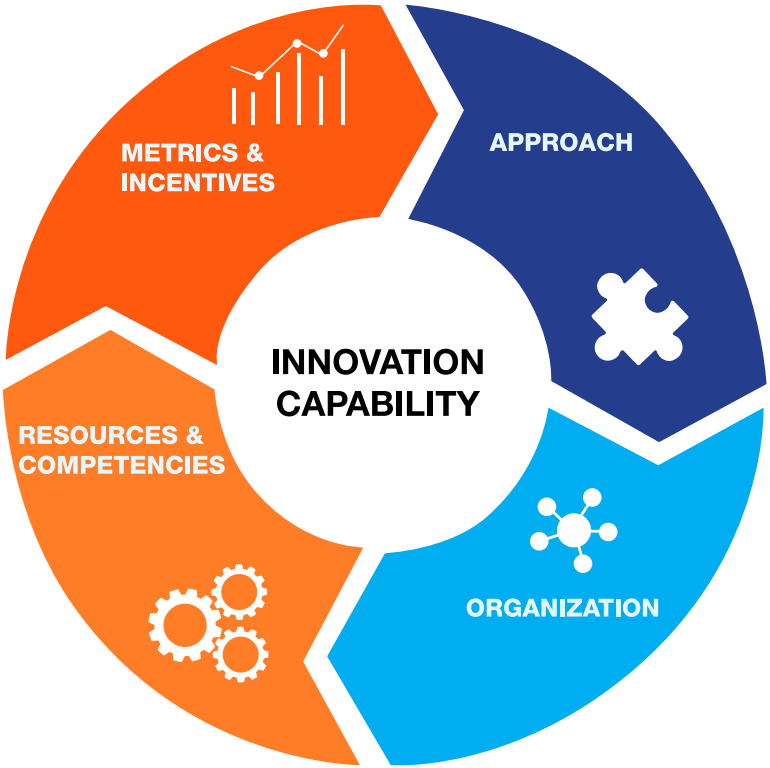
Support Skills: A series of skills such as accounting, legal advisory, regulatory compliance, and other skills necessary to meeting the requirements of running a business, often taken on by outside specialists.

Tech hubs: Spaces mainly focused on developing a digital entrepreneurship ecosystem, or a network of engagement between digital entrepreneurs, designers and potential investors. Tech hubs' ecosystem build-out also includes linking established digital/mobile businesses offering services or mentorship to new entrepreneurs and consumers (rural or urban depending on the context). In addition, Tech hub activities facilitate idea generation programming such as brainstorming sessions that engage consumer groups with developers, "intro-to-coding" workshops, hackathons and Start-Up Weekends, while offering a shared-working space, business skills, lectures or technology-related training opportunities.

Tech incubators: Organizations that predominantly offer targeted, time-bound activities and resources through

application-based "go-to-market" programs for early stage digital and tech entrepreneurs.

Technology Park[7]: A space, physical or cybernetic, managed by a specialized professional team that provides value-added services. The main objective is to increase the competitiveness of its region or territory of influence by stimulating a culture of quality and innovation among its associated businesses and knowledge-based institutions, organizing the transfer of knowledge and technology from its sources to companies and to the market place, and by actively fostering the creation of new and sustainable innovation-based companies through incubation and spin-off processes. Technology parks first originated in 1950s and the first techno park "Silicon Valley" was founded with the leadership of Stanford University in California. Silicon Valley (1950s, USA) is the pioneer in developing science parks the world, Sophia Antipolis (1960's France) in Europe and Tsukuba Science City (1970's, Japan) in Asia.



Four components of Innovation Capability

[7]UK Science Parks Association, International Association of Science Parks (IASP)


ANNEX

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2. STRATEGIC PROGRAMS AND PROJECTS

Table 7: Proposed Projects

No.	Projects Description	Lead Organization	2019/20	2020/21	2021/22	2022/23	2023/24
		FLAGSHIP PROJECTS					
FS1	Data-driven farming systems and applications	**MINAGRI**					
FS2	Digital finance integration	**MINECOFIN**					
FS3	eGovernment services	**MITEC**					
FS4	eHealth systems integration	**MOH**					
		QUICK WIN PROJECTS					
QW1	Review of policies, laws & regulations related to ICT Sector	**MITEC**					
QW2	Creation of a baseline security standard framework	**RISA**					
QW3	Development of Critical Information Infrastructure (CII) Protection	**RISA**					
QW4	Adoption of national Information Security Standards	**RURA**					
QW5	Consultative process towards building a National Cryptography Policy	**RISA**					
QW6	Regulatory review on use and application of AI, IoT, Robotics and Blockchain Technology	**RURA**					
QW7.	Review National Broadband Policy (2013)	**MITEC**					
QW8.	Creation of a Centre for Advancement in Computer Software Engineering (CACSE)	**MITEC**					
QW9	Creation of a National ICT Quality of Service framework	**MITEC**					
QW10	Creation of a National Centre for Software Testing and Quality Assurance (NCSTQA)	**MITEC**					
QW11.							
	Creation of a National Technology Testbed	**MITEC**					
QW1.	Pan-African eNetwork (PAeN) program	**MOH**					
QW13	Implementation of eGovernment Enterprise Architecture	**RISA**					

No.	Projects Description	Lead Organization	2019/20	2020/21	2021/22	2022/23	2023/24
		PRIORITY 1 PROJECTS					
P1-1	Definitions for "ICT sector" and "ICT services" Indicators for development of State of the ICT Report	**RURA**					
P1-2	Increasing and Operationalizing a network of Public Internet Access Points (PIAPs)	**RISA**					
P1-3	National Digital Literacy Project	**MINEDUC**					
P1-4	Research projects to be sponsored by industry and government	**MITEC**					
P1-5	Partnership with ICT Multinationals for commercializing R&D	**NCST**					
P1-6.	National ICT Career Counselling	**MINEDUC**					
		PRIORITY 2 PROJECTS					
P2-1.	Build Expertise in ICT Business Incubation	**RDB**					
P2-2	Setup Rwanda ICT Export Development Fund	**RDB**					
P2-3	Constituting the ICT Hub Marketing Intelligence Unit	**RDB**					

3. IMPLEMENTATION PLAN

Flagship Projects: 2019- 2024

FS1	Project Description	Data-driven farming systems and applications
	Activities	• Portal for government services to businesses • Portal for government services to citizens • Online access to government services
	Outputs	• Access to affordable financial services irrespective of location • Acquire verified, quality and affordable inputs in timely manner. • Maximize production by employing good agriculture practices through monitoring pests and diseases • Access and Market agricultural produce for the domestic and export markets. • Empowerment to youth and women through capacity building, creation of jobs and employment
	Key Milestone(s)	Rollout of the e-agriculture systems and application services

FS2	Project Description	Digital Finance Interoperability for SACCOS
	Activities	• Consultative process amongst stakeholders for building an Interoperability Roadmap: • Legal and Regulatory Framework • Governance and operating rules • Business agreements and incentives • Technology, Innovation and Competition • Technical integration
	Outputs	• Development of the banking system to reach previously unbanked customers and provide more appropriate services for banked customers • Movement toward a “cash lite” society in which electronic payments are a viable alternative to cash • Better risk management in the national payment systems • Cost effective utilization of payments infrastructure and greater convenience to customers • Enabling affordability and convenience to customers, thereby aiding financial inclusion
	Key Milestone(s)	Interoperability Roadmap

FS3	Project Description	eGovernment Services
	Activities	• Portal for government services to businesses • Portal for government services to citizens • Online access to government services
	Outputs	• Provide coherent public sector services with citizens and businesses. • Improved service quality and the release of resources. • Public sector works and communicates digitally. • Coherent and flexible infrastructure to support the services.
	Key Milestone(s)	Rollout of the e-government services

FS4	Project Description	Integrated National eHealth System and Applications
	Activities	Consolidation of all current health systems
	Outputs	• Bringing laws and regulations into line with extended use of ICT in health. • Creating a common information structure. • Creating a common technical infrastructure. • Facilitating interoperable, supportive ICT systems. • Facilitating access to information across organizational boundaries. • Making information and services easily accessible to citizens.
	Key Milestone(s)	Rollout of the integrated systems and applications

Quick Wins (2019 – 2021)

QW1	Project Description	Review of policies, laws, standards & regulations related to a progressive ICT Sector
	Activities	• Comprehensive review of laws and regulations to lend strategic directions to activities in ICT and other sectors. These could relate to Data Protection & Privacy, Cyber Crime & Computer Misuse, eCommerce, Electronic signatures, Anti-spam, Safety of women and children online, and Labor Laws as they relate to BPO etc. • Facilitating finalization of the Code of Conduct and Code of Practice in collaboration with the private sector
	Outputs	• Revisions/amendments to the National ICT Policies, Laws & Regulations of Rwanda
	Key Milestone(s)	• Completion of exercise on changes required in legislation for ICT Sector • Completion of a regulatory and competency review of ICT Sector technical and institutional capabilities • Incorporation of amendments in the relevant Acts to reflect areas and procedures of public consultation in decision-making process • Revisions agreed upon and announced • Effecting changes in the institutional arrangements related to the revisions

QW2	Project Description	Creation of a baseline security standard framework
	Activities	• Discussion and adoption of the standards, guidelines, and best practices • Adoption of the standards • Establish partnership with other international organizations for capacity building
	Outputs	• Rwanda Baseline Information Security Standards Framework • Promote the protection and resilience of critical infrastructure and other sectors important to the economy and national security.
	Key Milestone(s)	• • Framework deployed; usage and adherence monitored

QW3	Project Description	Development of Critical Information Infrastructure (CII) Protection
	Activities	• Develop criteria to facilitate identification of Critical Information Infrastructure and systems • Devise method for risk and vulnerability assessment • Promote development of security models, tools and mechanisms for risk analysis • Develop parameters for risk profiling • Risk profile Operators
	Outputs	• Security models and tools for risk analysis • Risk Profile for CII operators • Regulations for CII • Criteria for identification of CII • Method for risk and Vulnerability Assessment
	Key Milestone(s)	• Report on CII Information Security Profile and Assessment • Recommendations for CII protection • Action Plan for effecting recommendations

QW4	Project Description	Adoption of national Information Security Standards
	Activities	• Evolve Standards through a consultative process to agree on standards to be adopted • Awareness Sessions and Information Dissemination • Security categorization of information and security standards for private companies
	Outputs	• National Information Security Standards for Critical Sectors -Security categorization of companies in the private sector
	Key Milestone(s)	• Development and approval of the National Information Security Standards

QW5	**Project Description**	**Consultative process towards building a National Cryptography Policy**
	Activities	• Consultative Process to determine relevant issues, considerations and implications necessary for formulating an effective National Cryptography Policy, considering the protection of privacy, intellectual property, business and financial information, as well as the needs for law enforcement and national security • Draft Cryptography Policy • Finalize & Adopt Policy
	Outputs	• National Cryptography Policy • Secure and trustworthy e-services
	Key Milestone(s)	• Development and approval of the National Cryptography Policy

QW6	**Project Description**	**Regulatory review on use and application of Artificial intelligence, IoT, Robotics and Blockchain Technology**
	Activities	• Collaborative discussions towards evolving future roadmap of the emerging technologies and addressing issues such as opportunities, benefits, ethical challenges , regulatory oversight and impact of technologies, and implications • Recommend regulatory and technical capabilities for emerging technology adoption • Roadmap for emerging technology adoption
	Outputs	• Emerging Technology White Paper • Emerging Technology Roadmap for adoption • Increased preparedness and collaboration towards ET adoption
	Key Milestone(s)	• Roadmap published • Key regulatory and policy measures implemented • Enhanced awareness and preparedness for impact of emerging technologies • Establish initial frameworks for emerging technologies laws, regulations, ethics and policy

QW7	**Project Description**	**Review National Broadband Policy (2013)**
	Activities	Consultative process to review National Broadband Policy and update with regard to current situation, progress, emerging technologies, aspirations and lessons learnt. The review could address 5 key areas: (i)Infrastructure, (ii) Connectivity and Devices, Content, (iii) Applications and Innovations, (iv) Capacity Building and Awareness, (iv) Policy, Legal and Regulatory Environment, and (v) Financing and Investment
	Outputs	• Status update on the implementation plan embedded in the National Broadband Policy (2013) • Updated National Broadband Policy & Strategy supportive of the ICT Hub Strategic Plan • Increased broadband penetration and access • Improved and streamlined growth in the ICT sector
	Key Milestone(s)	• National Broadband Policy (updated) • National Broadband Strategy

QW8	Project Description	Creation of a Centre for Advancement in Computer Software Engineering (CACSE)
	Activities	• Mandate for the CACSE • CACSE staff and infrastructure requirements • Roadmap including business model for CACSE
	Outputs	• CACSE Project Profile Document (PPD) • Implementation based on the PPD • Enhanced uptake of research
	Key Milestone(s)	• Establishment of the Center • Inaugural enrolment in the center

QW9	Project Description	Creation of a National ICT Quality of Service framework
	Activities	• Consultative process with stakeholders • Finalization of QoS Principles and Practices
	Outputs	• QoS Principles Document • Efficient, cost-effective and customer-centric service provision
	Key Milestone(s)	• Rollout of the QoS

QW10	Project Description	Creation of a National Centre for Software Testing and Quality Assurance (NCSTQA)
	Activities	• Planning Exercise for creation of the Centre, including • Mandate for the NCSTQA • NCSTQA staff and infrastructure requirements • Roadmap design including business model for NCSTQA • Collaborative arrangements with international institutes
	Outputs	• NCSTQA Project Profile Document (PPD) • Implementation based on the PPD • Standardized and certified software applications for adoption
	Key Milestone(s)	• Roadmap for NCSTQA • Implementation based of the Roadmap

QW11	Project Description	Creation of a National Technology Testbed
	Activities	• Planning Exercise for creation of the Testbed, including • Mandate for the National Technology Testbed (NTT) • NTT staff and infrastructure requirements
	Outputs	• Roadmap including business model for NTT • Plans for regional deployment of the test bed for regional use
	Key Milestone(s)	• Timely completion of the planning exercise • Timely implementation of the plan recommendations • Extent of awareness generated about this facility at the local and regional levels

QW12	Project Description	Pan-African eNetwork (PAeN) program
	Activities	Revive the PAeN program. The program involved connecting a university and a hospital from each of the 53 nations of the African Union by satellite and fiber-optic network in a bid to enable them all to receive, among other things, tele-education and tele-medicine services from 12 hospitals in India. The program has since stalled due to funding challenges since the transfer of PAeN
	Outputs	Visibility and recognition of Rwanda as public health leader using innovative solutions
	Key Milestone(s)	Leadership role on a continental health program

QW13	Project Description	Implementation of eGovernment Enterprise Architecture
	Activities	• Expand the ICT capacity of MDAs to increase efficiencies by creating common systems and infrastructure • Improve how data is collected, managed and shared • Improve the delivery of shared whole-of-Government projects • Expand the model of sharing services and expertise across organizations • Increased Citizen Engagement, to improve policies and services; • Increased Transparency, to better understand government activities and decisions; and open Data, for transparency and innovation.
	Outputs	• Facilitate increased data sharing and innovative use of data across all Public Bodies to enable the delivery of integrated services • Improve decision making and improve openness and transparency between Government and the public • Strengthened Governance and Accountability, to ensure integrity in public life.
	Key Milestone(s)	• eGovernment implementation plan • Provisioning a platform for seamless integration of ministry, department or agency applications and database at the back end; integrating all front-end channels to deliver eServices

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	Key Milestone(s)	• eGovernment implementation plan • Provisioning a platform for seamless integration of ministry, department or agency applications and database at the back end; integrating all front-end channels to deliver eServices

PRIORITY 1: 2021 – 2022

P1-2	Project Description	Increasing and Operationalizing a network of Public Internet Access Points (PIAPs)
	Activities	• Comprehensive Planning and Design Exercise to setup and operationalize the chain of Public Internet Access Points (PIAPs) for delivery of e-government services • Operational Models and guidelines for operating PIAPs, • Setting up and Operationalizing the PIAPs
	Outputs	• Local management structures and guidelines • Enhanced ICT Uptake levels • Enhanced ICT Penetration rates • Enhanced Broadband Penetration rates • Citizen Convenience • Better community-level collaboration and decision making • Will lead to a higher ranking of Rwanda in terms of international ICT4D indicators
	Key Milestone(s)	• Completion of the planning and design exercise • Project Profile Document on the setting up and operationalizing PIAPs, including numbers and locations for the different types of PIAPs, and operational models for each

P1-3	Project Description	National Digital Literacy Project
	Activities	• Review and amendment of ICT Training Framework aligned with current and emerging technological developments • Industry recognition of the IC3 Digital Literacy Certificate • Promote IC3[8] as industry pre-requisite for employment • Work out modalities to share schools' IT infrastructure after school hours
	Outputs	• Industry recognizes IC3 • Certificates as proof of basic computational ability • Higher IT Literacy rates among the population • Better employability for Rwandans • Database of national/regional challenges with ICT-based system to encourage innovative thinking in developing local/regional, contextual solutions
	Key Milestone(s)	• Follow up courses drawn up • Number of people acquiring IC3 certificates • Number of people opting for the follow-up courses • Industry certifications are obtained • Extent of usefulness of the industry certificates • Number of people for whom these certificates made a difference in their getting employed

P1-4	Project Description	Research projects to be sponsored by industry and government
	Activities	• Extending collaborative R&D work within and outside the region in line with identified technology areas • Communication of Research areas for focus from the industry to the academia • Undertaking research at the academia
	Outputs	• Research Projects taken up in the Universities • More business areas, expansion of the business basket • Enhanced innovation in the ICT sector
	Key Milestone(s)	• Number of research projects underway • Extent of coverage of research projects in terms of emerging technologies

P1-5	Project Description	Partnership with ICT Multinationals for commercializing R&D
	Activities	• Identification of areas of partnership • Preparing the approach paper • Discussions with MNCs • Drafting MoUs • Concluding agreement • Operationalizing initiative
	Outputs	• MoUs between GoR/ Universities with MNCs • Enhanced expertise level in select areas
	Key Milestone(s)	• Approach paper is drawn out • Areas of collaboration identified • Number of MNCs with whom partnerships succeed • Number of successful partnerships resulting from the exercise

P1-6	Project Description	National ICT Career Counselling
	Activities	• Develop a network of ICT career counsellors • Sharing of Career Counselling expertise • Expansion of and Access to labor management information database, including unification of manpower databases to have maximum data on ICT resources options need to be explored to treat ICT separately, access for the private sector to individual profiles available in database, career counselling networks need to come up which go beyond mere matchmaking requirements, to include career guidance etc. • Possibilities of eTutoring
	Outputs	• Career Counselling Networks • Expanded LMIS database and application with special focus on ICT • eTutoring platform • Well-planned career paths for professionals • Reduced attrition levels • Higher productivity and longevity
	Key Milestone(s)	• Number of Career Counsellors from abroad invited • Number of students attending career counselling sessions

PRIORITY 2: 2022 – 2024

P2-3	Project Description	Build Expertise in ICT Business Incubation
	Activities	• To identify and execute modalities of incubation knowledge transfer in a way that is mutually beneficial to both the participating countries • To explore options whereby incubators themselves could be incubated in Rwanda
	Outputs	• Development of Incubation Networks Incubating Incubators • Building Incubation networks • Emergence as an Incubation Hub • Increase in the number of new businesses incubated
	Key Milestone(s)	• Incubation rollout

P2-4	Project Description	Setup Rwanda ICT Export Development Fund
	Activities	• Agree on sources for the Export Development Fund (EDF) • •Agree on the Fund's charter and utilization • Draft procedures for fund sourcing utilization • Operationalize the EDF
	Outputs	• Fully Operational EDF • Increased assistance to investors • Increased participation from
	Key Milestone(s)	• SMEs participation in ICT export services

P2-5	Project Description	Constituting the ICT Hub Marketing Intelligence Unit
	Activities	• Drafting the Terms of Reference for the Market Intelligence Wing • Recruitment/Redeployment of the same • Draft Detailed job descriptions for members of the wing and operationalize the wing • Facilitate arrangements with leading global market intelligence agencies with focus on offshore
	Outputs	• Increased competency and availability of market intelligence • Development of new markets for offshore
	Key Milestone(s)	• Timely constitution of the functional body • Definition of the Terms of reference for the wing • Facilitation arrangements made available to the wing • Extent of inputs into the Annual Plan making process

4. COMMUNICATION PLAN

Introduction

This communication plan is created to plan, harmonize and organize the communication throughout the execution and implementation of the ICT Hub Strategic Plan. . The execution of the strategic plan is of paramount importance for Rwanda, and its success will not only be based on the technical success of the implementation of the programs, projects and initiatives but on the change, it will bring to the country.

The main objectives of communication plan are therefore:

1. To create awareness among all stakeholders about the existence of the ICT Hub Strategy and its role in national development;
2. To provide status and progress updates of the ICT Hub strategy execution and its impacts.
3. To develop the same understanding among all stakeholders, and discourage misinformation, and ambiguity.
4. To prepare internal and external stakeholders by giving them the necessary information in advance
5. To encourage supply ideas and suggestions for the improvement of the implementation plan and document lessons learnt.

Because change often brings anxiety and resistance, the communication plan will anticipate these different negative feelings by sharing the right information at the right time to the right audience. In this context, communication helps all stakeholders to understand how these changes will affect them personally, the context, the purpose and the need for change (creating a theoretical framework to underpin the change).

Key Objectives

a. Communications key objectives

- Increase stakeholders awareness;
- Increase stakeholders active participation;
- Change the perception of the current project;
- Improve team culture and behavior;
- Increase the confidence towards change;
- Gain momentum.

b. Communications guidelines

To help meet the objectives, the following guidelines will be applicable to the dissemination of communications messages.

- All messages will be audience-specific;
- Every key message will be communicated formally;
- Messages will be distributed through an appropriate channel;
- The team will communicate what people need to know before they need to know it;
- Communication will be tailored, based on what people need to know;
- All critical communications must be approved by the relevant authority prior to distribution;
- Only the communications team will be able to distribute official press releases;
- Project-wide meetings will be held at all important milestones;

- Regular, unbiased reporting will be undertaken; and
- Any other resources involved in the implementation of the ICT Hub Strategy will listen and act on feedback

Stakeholders Management

For the success of the project it is critical to identify who will be involved in the dissemination and receipt of communications, who will create, send out and receive the formal communication messages. Table 8 summarizes the communication plan to keep all stakeholders informed.

Table 8: Communication Plan Summary

Stakeholder	Goal and expectations	What will they want to know	Information	When	Timeframe	Appropriate Channel
MITEC, RISA	-Overall success of the program -Achievement of the overall objectives of the program	What are the project's success measures? What are the project timelines and is it on course to meet these timelines? What decisions do we need to make?	• Summary project status • Critical risk and issues • Budget & timeline performance • Detailed project status • All risks and issues • Resource utilization	Informed at each Steering Meeting	Quarterly	Quarterly Report
Individual MDA's and GBE's	-Overall success of the project Increase of efficiency -Risk mitigation -Impacts	Sponsor Overall decision maker	• Summary project status • Timeline performance • Trainings • Celebration of key milestones	Informed after each Steering Meeting	Quarterly	Quarterly Report

Stakeholder	Goal and expectations	What will they want to know	Information	When	Timeframe	Appropriate Channel
PSCTs/Taskforces	Respect of deadline Overall success of the project More efficient way of operating User friendly system Detail project plan	Technical decision maker Risk area What is the detailed project plan?	• Overall project status • Celebration of key milestones	Monthly or as each program milestone is achieved	Monthly	Monthly Report
Risk Management	-Risk mitigation and project assurance consecutively -Proper documentation	Advise on Risk and provide assurance over the project	• Summary project status • Timeline performance • Trainings • Celebration of key milestones	Informed after Steering Meeting	Quarterly	Quarterly Report
Stakeholders (Development Partners, Academia, Private Sector, Civil Society, Private Sector	- Overall success of the project - Increase of efficiency -Risk mitigation -Impacts		• Summary project status • Timeline performance • Trainings • Celebration of key milestones	Informed at each Steering Meeting	Quarterly	Quarterly Report

Key messages

- Program/Project status: Whether the project is currently operating within the agreed schedule, budget and quality targets.
- Program/Project issues: The impact of the issues currently affecting the project and the actions taken to resolve them.
- Program/Project risks: The high-level risks which may affect the project and the actions taken to mitigate, avoid or reduce them.
- Program/Project deliverables: The deliverables completed to date and the items which are scheduled for completion within the next reporting period.
- Program/Project resources: The overall level of resourcing in relation to the Resource Plan and any resource constraints currently affecting the project.

Channels

Using the right channel is as important as drafting the right communications message for the right stakeholders at the right time.

Communications Events

To help plan for the communication events, Table 9 lists possible event, their frequency and purpose.

Table 9: Communication events planner

No.	Event Name	Event Description	Purpose	Frequency
1	PSCT Meetings	Meetings involving all program taskforce members, to discuss the work in-progress / recently completed / coming up	To keep the team informed of the project status and ensure that issues, risks or changes are raised early on.	Weekly
2	ICT Projects Governance Meetings	Quarterly review of the programs(s) progress.	To control the overall progress of the project and if necessary give required approvals and guidance	Quarterly
3	Review Meetings	Formal meeting held at the end of each year to determine whether the desired outcomes have been achieved.	To control the progress of the project through each phase in the lifecycle and boost its chance of success.	End of each year
4	Workshops	RURA would organize workshops for different stakeholders	To inform stakeholders in a formal way about the plan's progress.	Half-yearly
5	Website	MITEC/RURA websites are consulted by stakeholders and members of the public regularly	To inform internal and external stakeholders via regular updates, news etc.	Quarterly
6	TV/Radio Show	Use TVR to explain to the public the need, role and objectives of the strategic plan and relevance to the national strategy for transformation.	To inform the general public on the programs/ project and get the feedback of the public	TBD
7	Newspaper articles	MITEC/RURA would write articles about the goals of the Strategic Plan. The article should be informal not technical.	To raise awareness on the strategic and raise the interest for the country as a whole.	TBD
8	Press release	An official press release would be issued by MITEC at the onset of the strategic plan	To inform all the external stakeholders about the plan	Once

Communication Feedback

After the completion of each communications event, feedback on whether or not it was successful will be required.

a. Feedback measures

RISA will need to implement a suite of feedback measures to gain feedback on the level of success of any planned event to determine whether the right information was distributed to the right people at the right time. If the feedback was positive and all of the criteria were met, then the event was a success. However, in some cases, the feedback may show that certain success criteria were not met, and an alternative communications event or message distribution may need to take place to correct any issues raised.

b. Success criteria

The criteria that will determine whether the communications event (or activity) was successful are identified as follows:

- The message reached its intended audience;
- The message was distributed through the planned channel;
- The output reached the intended audience on schedule;
- The distribution was effective;
- The message achieved the desired effect;
- The message addressed the information requirements of the audience;
- The message was received as honest and trustworthy; and
- There were no complaints received.

5. MONITORING AND EVALUATION FRAMEWORK

Program Planning, Monitoring, Evaluation & Reporting

Approach

The approach chosen for managing the M&E for the strategic plan programs is a results-based approach (RBM). The approach to is based on clearly defined results, and the methodologies and tools to measure and achieve them. RBM supports better performance and greater accountability by applying a clear, logical framework to plan, manage and measure an intervention with a focus on the results you want to achieve. By identifying in advance, the intended results of a project/ program and how to measure their progress, the programs can be better managed, and impact determined. The RBM approach features integration between project/ program management cycle and logical framework. The logical framework will be the key management tool in each phase of the project cycle: from implementation to evaluation, and shall be used to create other tools (e.g. implementation and resource schedules, monitoring plan, etc.)

The approach shall integrate the project management of the 6 phases of the project cycle (programming, identification, appraisal (formulation), financing , implementation and evaluation), with the logical framework to ensure that projects are adjusted during the 6 phases in order to become more effective, efficient and sustainable. The approach (and framework) should produce an effective and robust monitoring and evaluation (M&E) system shall provide support in measuring and understanding the impact of the strategic objectives. The yardstick of its success shall be the extent to which the M&E information shall be used to continuously manage programs, improve performance, inform budget decisions, allocate accountability and affect policy making.

M&E Framework

A well-functioning M&E system is a critical part of the ICT Hub Strategy program management and accountability. The M&E system should provide timely and reliable information to:

- Support program/project/initiative implementation with accurate, evidence-based reporting that informs management and decision-making to guide and improve project/program performance.
- Contribute to organizational learning and knowledge sharing by reflecting upon and sharing experiences and lessons so that the institution can gain the full benefit from the what and the how.
- Uphold accountability and compliance by demonstrating whether or not work has been carried out as agreed and in compliance with established standards and with any other donor requirements.
- Provide opportunities for stakeholder feedback, especially beneficiaries, to provide input into and perceptions of the work, modelling openness to criticism, and willingness to learn from experiences and to adapt to changing needs.
- Promote and celebrate the work done by highlighting accomplishments and achievements, building morale and contributing to resource mobilization

The monitoring and evaluation framework is based on the following five components:

1. Clear statements of measurable objectives for the programs and its components, for which indicators can be defined.

2. A structured set of indicators, covering outputs generated by the programs and their impact.
3. Provisions for collecting data and managing project records so that the data required for indicators are compatible with existing statistics and are available at reasonable cost.
4. Institutional arrangements for gathering, analyzing, and reporting project data, and for investing in capacity building, to sustain the M&E service.
5. Proposals for the ways in which M&E findings will be fed back into decision making.

The M&E framework is depicted in Figure 25 below[9].

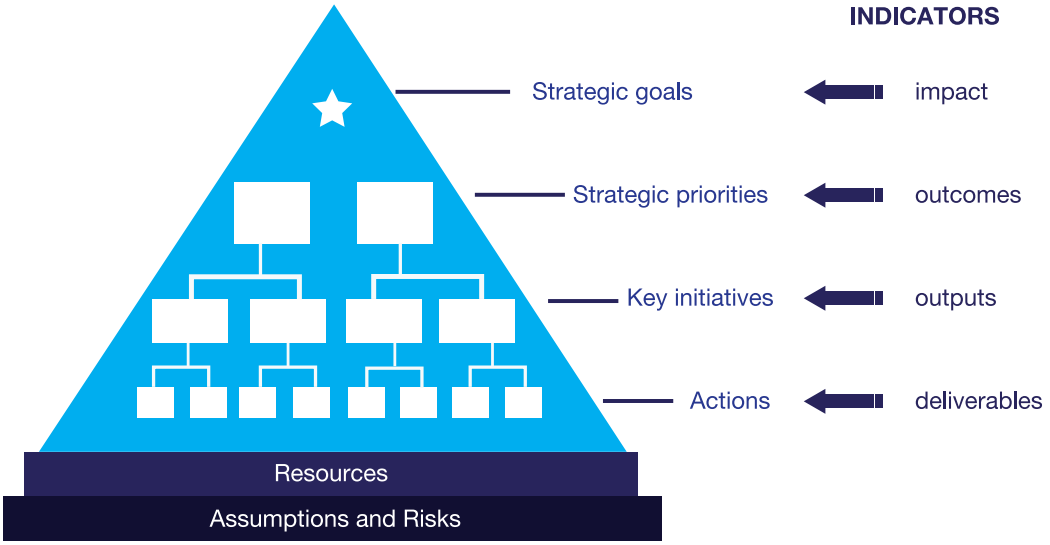


Figure 25: M&E Framework for ICT Hub Strategy

Measuring lifelong learning

Lifelong learning is complex and difficult to measure because it does not affect a narrow, easily definable demographic or sphere of human activity. On the contrary, it affects -- and is affected by -- people from all ages and backgrounds in almost all activities. This scope has defied traditional models of measurement, leaving the impression that lifelong learning remains an abstract concept, evading any coherent description. A proposed development of a Rwanda Lifelong Learning Index (RLLI) illustrated in Figure 26 could be a first step towards making lifelong and life-wide learning more tangible and measurable. The goals of such an index would be to connect the dots between different facets of learning to produce a picture that is both understandable and reliable, and thus able to have a positive impact on the decision-making process. The goals of RLLI would not merely to describe, but to motivate and produce clear perceptions, making for better decisions.

[9]Adopted from Adamali, Lanvin, Schware, M&E Toolkit for E-Strategies, 2005

The RLLI could draw on the pioneering work of the Canadian Council of Learning on the Composite Lifelong Learning Index. As a tool to raise awareness, RLLI could be used to draw public attention to the importance of lifelong learning issues. As a comparative measurement resource, it has the potential to showcase examples of good practice that harness the four pillars of education as a means of widening quality participation in specific contexts.

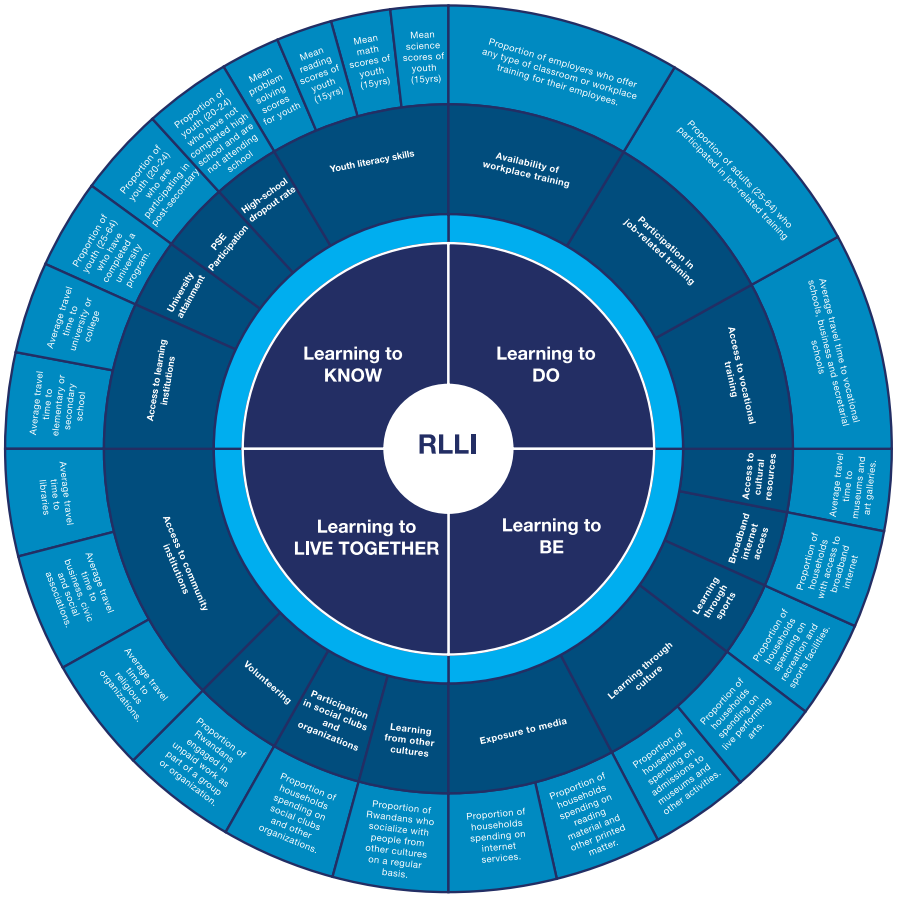


Figure 26: Proposed Rwanda Lifelong Learning Index

Impact Indicators

The list of ICT indicators for the strategic plan programs/ project/initiatives shall be derived from the Partnership on Measuring ICT for Development[10]. The list is composed of over 50 indicators in the following areas:

- ICT infrastructure and access (10 indicators);
- ICT access and use by households and individuals (19 indicators);
- ICT access and use by enterprises (12 indicators);
- ICT sector and trade in ICT goods (4 indicators);
- ICT in education (9 indicators);
- ICT in government (7 indicators).

Because M & E is an extensive and highly collaborative process, especially with a complex set of inter-related focus areas and projects, the design and on-going implementation of such a process is very demanding and requires dedicated staff. The M&E staff for each project shall determine the intervention logic, indicators to measure achievement of results, baseline values, annual targets, sources of verification, data collection, reporting frequencies and methodologies, and responsibilities. This should enable close collaboration for routine monitoring of performance and periodic independent evaluation of outcomes and impact. The key M&E activities in the project cycle are illustrated in Figure 27.

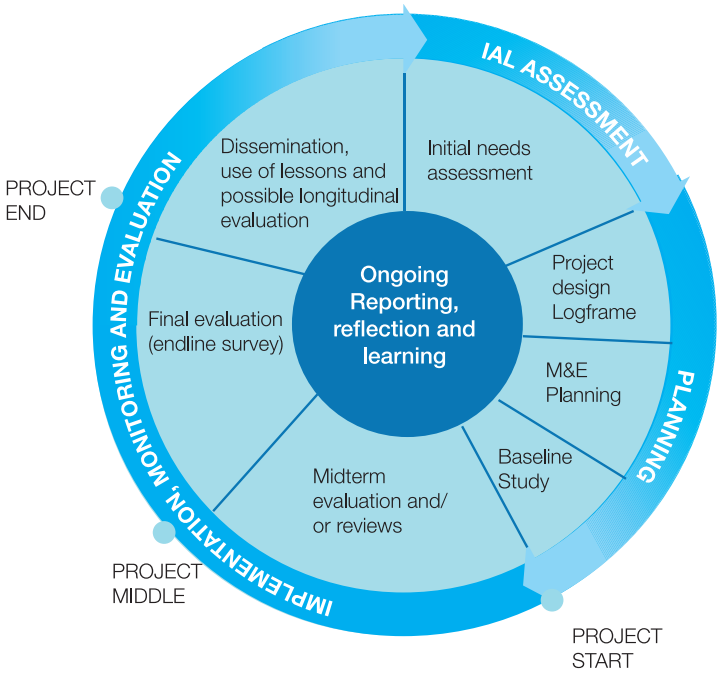


Figure 27: Key M&E Activities in the Project Cycle

[10]CORE LIST OF ICT INDICATORS March 2016 version, Partnership on Measuring ICT for Development

Converting initiatives and ideas into programs

A 5-stage process is proposed for closely tracking initiatives and ideas until they become projects. This process uses “gates” to set prioritizations of the various initiatives and projects. The respective MDA s would work on sizing the initiatives, doing feasibility studies and risk assessments so as to isolate projects for implementation and their timings. Whilst some ideas would be ruled out at the first and second gate, all ideas past the third gate should be positioned for completion and measured for impact. The gate process may be used to show the status of each project and initiative based on predefined statuses in the gate funnel as indicated in Figure 28 below.

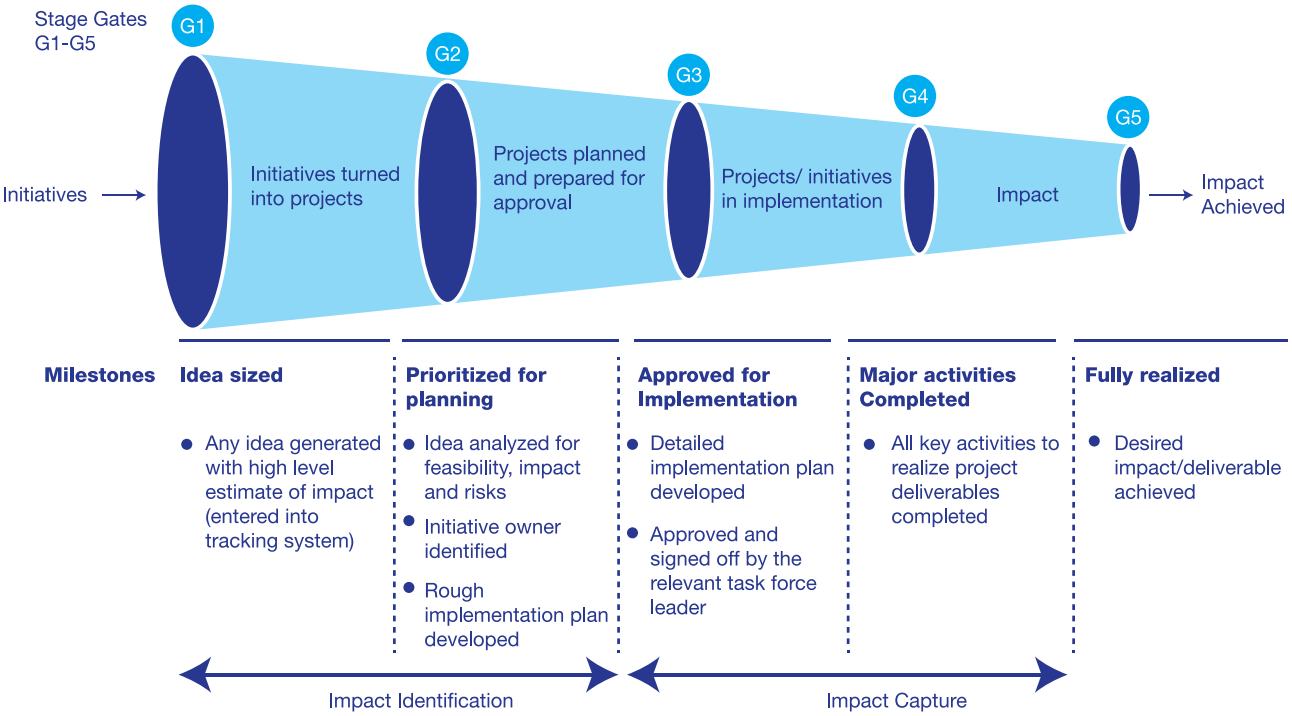


Figure 28: Turning initiatives into programs/project

The status may be summarized in status reporting tables that shows details of each initiative, owners, milestones reached and a visual indicator (RAG) on whether the specific initiative is progressing well. This will make reporting on the stage gates even clearer. Various reporting templates illustrated in Table 10, 11 and 12 could be used to track the status of the different programs.

Monthly Project Status Reporting Template

Table 10: Monthly Project Status Reporting Template

Strategic Theme	Project Code	Owner Resp (Lead)	Parameter	Gate Status (G1/G2/G3/G4/G5)	Indicator(s)/Milestone(s)	RAG

Key

Gate Status

G1 – initiative parameters generated with high level estimate of impact and recorded into tracking system)

G2 – Initiative analyzed for feasibility, impact and risks and implementation plan developed

G3 – Detailed implementation plan developed, approved and signed off by the relevant MDA

G4 - All key activities to realize desired impact are tracked

G5 - Deliverables & impact is fully realized

RED - Off-Track, high risk of not being achieved unless mitigating actions are taken

AMBER – On-Track with challenges, medium risk

GREEN – On-Track, no risk

Project Reporting Templates

Table 11: Monthly Risk Status Reporting Template

Project Code	Strategic Theme	Description of Risk	Risk Owner	Measure to Mitigate Risk	Action Taken	RAG

Table 12: Results Based Management (RBM) Rolling Framework Template

Outputs	Outcome	Performance Indicators	Data Source	Means of obtaining data	Risks and assumptions
Objective 1 ……					

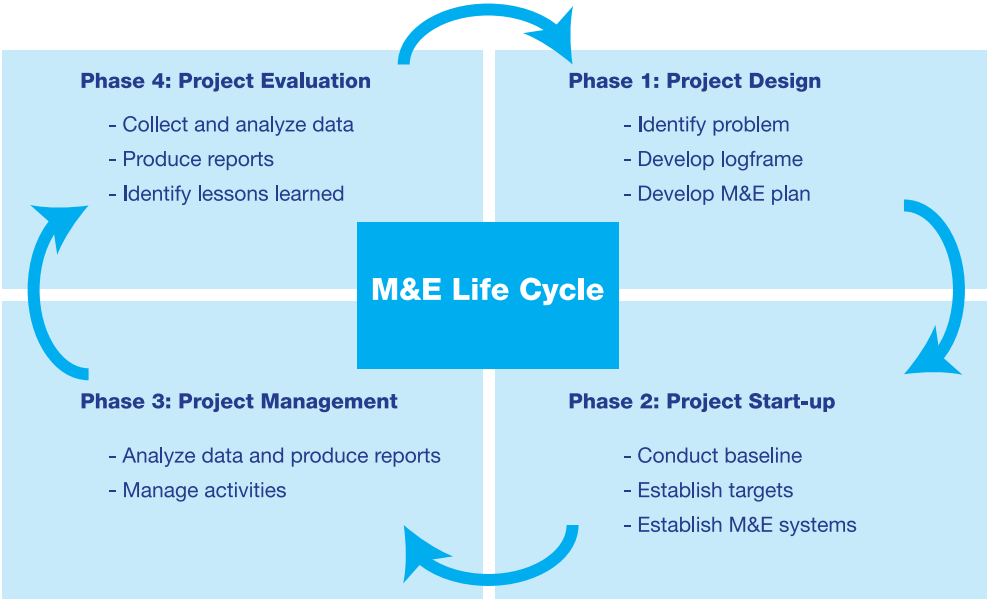


Figure 29: Program/Project M&E Lifecycle

M&E Checklist

Table 13: M&E Implementation Checklist

STEP 1 CHECKLIST: Identify the purpose and scope of the M&E system	
Activities	**Key Tools**
• Review the project/program's operation design (log frame) • Identify key stakeholder informational needs and expectations • Identify any M&E requirements • Scope major M&E events and functions	• Refer to the project/program log frame • M&E stakeholder assessment table • M&E activity planning
STEP 2 CHECKLIST: Plan for data collection and management	
Activities	**Key Tools**
• Develop an M&E plan table • Assess the availability of secondary data • Determine the balance of quantitative and qualitative data • Triangulate data collection sources and methods • Determine sampling requirements • Prepare for any surveys • Prepare specific data collection methods/tools • Establish stakeholder complaints and feedback mechanisms • Establish project/ program staff/ volunteer review mechanisms • Plan for data management • Use an indicator tracking table (ITT) • Use a risk log (table)	• M&E plan table template • Key data collection methods and tools • Complaints form and Complaints log • Staff/volunteer performance management template • Individual time resourcing sheet • Project/program team time resourcing sheet • Indicator tracking table (ITT) • Risk log
STEP 3 CHECKLIST: Plan for data analysis	
Activities	**Key Tools**
• Develop a data analysis plan, identifying the: • Purpose of data analysis • Frequency of data analysis • Responsibility for data analysis • Process for data analysis	• Data preparation • Data analysis • Data validation • Data presentation • Recommendations and action planning

STEP 4 CHECKLIST: Plan for information reporting and utilization

Activities
- Anticipate and plan for reporting
- Needs/audience
- Frequency
- Formats
- People responsible
- Plan for information utilization
- Information dissemination
- Decision-making and planning

Key Tools
- Reporting schedule
- Project/program management report-template
- Decision log
- Action log
- Lessons learned log

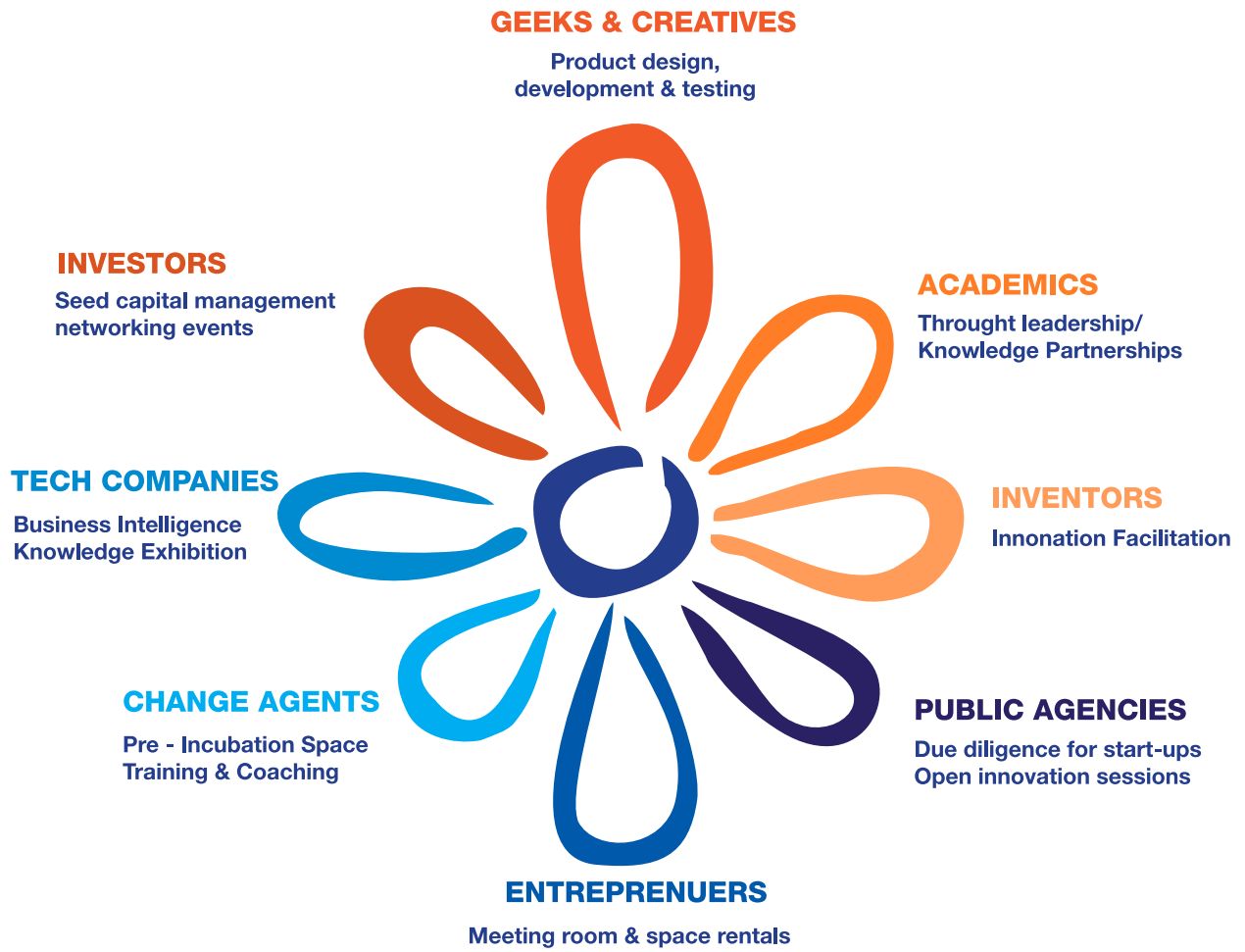
STEP 5 CHECKLIST: Plan for M&E human resources and capacity building

Activities
- Assess the project/program's HR capacity for M&E
- Determine the extent of local participation
- Determine the extent of outside expertise
- Define the roles and responsibilities for M&E
- Plan to manage project/program team's M&E activities
- Identify M&E capacity-building requirements and opportunities

Key Tools
- M&E job description
- Hiring M&E Staff
- M&E training schedule

STEP 6 CHECKLIST: Prepare the management M&E budget

Activities
- Itemize M&E budget needs
- Incorporate M&E costs into the project/program budget
- Plan for cost contingency



Innovation Ecosystem