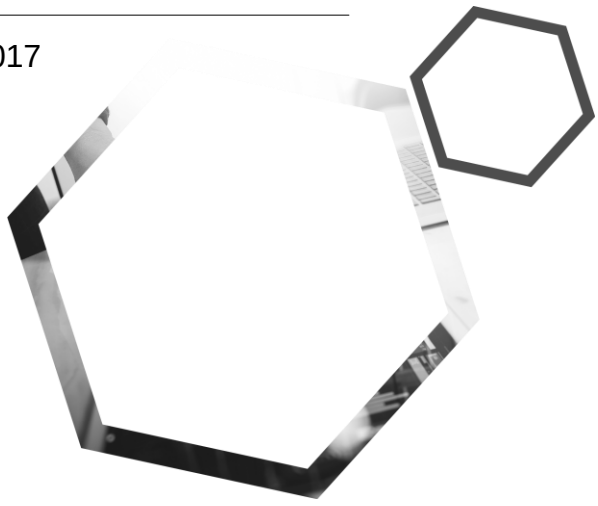
Republic of Rwanda

Ministry of Youth and ICT

NATIONAL

Data Revolution Policy

April 2017



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1.0 EXECUTIVE SUMMARY

Rwanda is on the path to transform from an agrarian based into a digital economy one. These set of ambitions are also enshrined in all national strategic development programs notably Vision 2020, EDPRS II, 7 Year Government Program, Smart Rwanda Master Plan, SDGS among others. Particularly, the Smart Rwanda Master highlights attaining 100 % Government digital transformation with big data and analytics among the special focus areas for the next 5 years.

In the current 4th industrial revolution, DATA has proved to be a natural resource offering unprecedented benefits to economies by powering innovation eco-system in science and technology. Rwanda's data revolution policy comes to set a strategic framework for attaining an innovation data-enabled industry for accelerated social economic development. The Data Readiness Assessment done in 2013 showed Rwanda's potential in delivering a successful data innovation industry indicating complementary factors already in place including good governance, ICT infrastructure development, huge data repositories across Government institutions etc. The ambitions to build a data industry in Rwanda will be powered by synergies with a pool of world class training academies notably African Center of excellence in data science, African Institute of Mathematical Sciences (AIMS), Carnage Mellon University, The Center of excellence in IOT, all which produces highly specialized human capital in data sciences.

The data revolution policy (DRP) focuses on building big data and analytics capabilities to derive insights that contribute to enormous social-economic benefits including informed policy decision making, enhancing transparency and promoting citizen participation, GDP contribution, Monitoring National Development Progress and SDGS, supporting research and development, Business Intelligence, Innovation for data enabled applications among others.

This policy targets to achieve specific objectives including; establishing standards & principles for data management, establish a framework to develop human capital in data science, define the framework for data creation-anonymization-release, conduct big data analytics and business intelligence , foster data enabled technology innovations, establish data institutional governance framework, address concerns of security-privacy and data sovereignty, define the role of private sector and partnerships, establishing a data portal warehouse, developing back-end MIS among others.

The national institute of statistics will be responsible for implementing the data revolution policy alongside other development partners and will be executed in a span of 5 years from 2017-2022.

1. INTRODUCTION

Today's 4th industrial revolution has ushered the world in an accelerated state of social economic transformation powered by emerging technologies and data specifically has emerged a valuable asset leveraged to make informed decisions, innovations, enabling economies and societies grow faster. As such, the data science field has emerged as multidisciplinary research across applied statistics, economics, business, computer science and engineering which rest at the heart of the big data revolution that is currently shaping how data is becoming a valuable commodity especially in a developing continent like Africa with home to 14% of the world's population with phenomenal potential hub for generating data given a number of recent developments in mobile technology, wireless sensors and social media, mobile financial transactions, modern infrastructure technologies among others.

Rwanda has adopted the same direction and has set a strategic commitment to transform from an agriculture-based economy to a digital one. This strategic vision is well enshrined into most national development policies including the Economic Development and Poverty Reduction Strategy (EDPRS II) and specifically the SMART Rwanda Master plan. All these strategies outline how Information and Communication Technologies (ICT) has enormous potential in extending access to data hence to information which contributes to spur innovation and creativity, increase the proliferation of high skilled jobs, contribute to economic growth, enable better decision making and create a more accountable- efficient and effective government. This policy document therefore aims is to establish the data revolution agenda which basically sets-up short, medium and long-term actions, financing and coordination framework to promote data analytics revolution. The data initiatives set in this policy hinges on broader national priority programs and brings a set of consistent rules, standards and strategies needed to enable building resilient data ecosystem in Rwanda.

Definition of key concepts

Data: Information in its rawest form. 'Data' often describes facts and factual information that can be analyzed or built upon. It is commonly referred to as a raw material that can be turned into useful information for people. Data comes in many forms. Data can be in paper-based documents and ledgers; audio/visual recordings of events; lists of information; maps; reports; transcripts; complex databases; and much more. In this document, 'data' is a term used to describe a large range of information in its rawest form.

Big data: term commonly used to describe low and complex data which can be curated and manipulated to derive insights and meaning.

Open Data: The Open Data movement is an integral element of the larger data revolution. It rises against a background of increased public demand for more openness, agility, transparency and accountability for public data and actions. Open Data only works when every agency follows the same policies, and when personally identifying information is protected from release.. Under open data spectrum, specifies set of personal, commercial and Government data which can be accessed through different layers of access including internal access, named access, group-based access, public access and those which can be accessed by anyone.

Big data analytics: The growth of the Internet and the rise of 'big data' means that access to large data sources in a usable form is an increasingly important feature in open and competitive economies. Through data analytics, these huge and complex datasets shall be analyzed using specialized tools and new insights derived to inform policies, spur innovation services, boost the business environment among others.

Data community/ ecosystem: A 'data community' might refer to those data practitioners, data publishers, startups, businesses, advocates, and policymakers who together foster a data culture and network of people and organizations interested in using and learning about data. A 'data ecosystem' takes into account the wider environment and context within which a data community might exist - the technologies and tools, basic infrastructure, governance, sectors, businesses, training within which data innovation takes place.

Data Revolution: refers to the transformative actions needed to respond to the demands of a complex development agenda and private sector needs, improvements in how data is produced and used; closing data gaps to prevent discrimination; building capacity and data literacy in "small data" and big data analytics; modernizing systems of data collection; liberating data to promote transparency and accountability; and developing new targets and indicators.(Source: Data Revolution Group)

Open standards: An open standard is developed and maintained collaboratively and transparently, and can be accessed and used by anyone. Open standards which specify formats are referred to as open formats.

Personal Data: personal data, also described as 'personally identifiable information', is data from which a person's identity can be discovered. If data can be combined with other information to identify a person, that data will still be 'personal data'.

Data Soveghnity : A country principle whereby structured and unstructured national data for a is entirely accessed by own country and subject to the laws of the country in which it is located. Such data should also be hosted locally or out of the country upon agreed terms.

1.2 Policy Rationale

While the global trends position data as a strategic inducement to economies' development, Rwanda has already made enormous and investments in data development especially in areas related to technology infrastructure development, legal and policy frameworks and establishing institutions like the National Institute of Statistics, all that has put in place conducive enabling environment for the data ecosystem to thrive. Specifically, there already huge repositories of data-sets across Government institutions as well as private sector and these will be analyzed with intelligent tools and specialized skills to create useful insights for unprecedented benefits to the economy. As a complementary effort, this policy therefore comes to establish set of consistent rules, procedures & strategies to generate and open more data for user communities and drive an industry of big data analytics to power national tech-innovation efforts. The Smart Rwanda Master Plan highlights building a big data analytics industry as major research areas for the next 5 years and also 2013 strategy by the National Institute of Statistics recommends putting in place a data revolution policy. The data revolution policy therefore comes to set a framework to start intelligent data analytics activities to establish an innovation ecosystem powered by data, leveraging on already edge-cutting technology developments in the country, to generate insights that would spur innovations, business intelligence, data-enabled ICT applications among for social economic transformation.

1.3. Strategic benefits of Data revolution

With data analytics, Rwanda stands to enjoy several benefits including some of the following:

a) **Enhancing Transparency and promoting citizen participation:** Open Data will help increase transparency about what government is doing, thereby increasing awareness about how the country's natural resources are managed, how public revenues are spent and how government business is transacted and managed.
b) **GDP contribution:** With implementation data initiatives, data shall be treated as a national sovereign asset monetized and contribute to through producing and opening more data, making analytics and insights which inform decision making processes, driving innovation, selling data insights, making informed investments based on data among others.
c) **Monitoring Development Progress**: Opening data and conducting analytics will help to monitor and evaluate the progress of national development programs like vision 2020, EDPRS II, 7 Year Government Program, 17 Indicators of sustainable development goals, Specific Sector (s) Targets, the Smart Rwanda 2020 master plan will only be evaluated with availability of granular data. Development of data-driven applications and service delivery.
d) **Development of data-driven applications and service delivery:** There are several data bases like land system which served to enabled GIS mapping of street names, Ubudehe database has classified Rwandans according to economic status categories and shaped tailored services, business registry database has served to authenticate

companies with Tax identification numbers, citizen registry data authenticates citizens to access all G2C services online among others. Availability of data insights driven from analytics will potentially support innovation to develop applications and systems especially by young technology entrepreneurs.

e) **Data for Researchers:** Research is critical to inform policy and national development strategies, however several researchers needs quality data for their analysis in order to produce quality findings. Opening data and derived insights will give an opportunity to academia and other research groups easily access data that is stored within institutions.
f) **Value for Money in Investments**: Opening data and analytics will potentially help find and track value for money in different investments the Government undertakes across all sectors. When data is available and used to inform business models and feasibility studies, it will enhance implementing projects with highest precisions knowing the actual benefits visa-avis the investment made.
g) **Data for Geospatial infrastructure:** The data revolution initiative will foster to generate and use more geospatial information to support ongoing smart city (s) efforts for referencing in real time places and locations using geographic coordinates as well as other geo-related services.
h) **Entrepreneur Portal** : Develop and intelligent portal where entrepreneurs can join the community and analyze data to find opportunities, capital, and advice on setting up and starting a new business. They can also find talent and partners within the community

1.4 Policy and Legal Framework

Rwanda has already enacted legal, policy and regulatory regimes guiding access to information in general and personal data protection, privacy and confidentiality matters. The organic law on statistics No.45 of June 2013 stipulates mechanisms for coordination of statistical articles in regards to production, access and dissemination of data while the Penal Code (Articles 286 and 287), and Law No. 18/2010 of 12/05/2010 relating to Electronic Messages, Electronic Signatures and Electronic Transactions , specifies data confidentiality matters. Regarding hosting, a Ministerial order N°001/MINICT/2012 of 12/03/2012 law provides that all critical information data within Government should be hosted in one central national data center.

With existing legal regimes for privacy and data protection, the national Data Revolution Policy finds a firm ground for practical implementation following consistent rules on data classifying, releasing data, safeguarding privacy, using open licenses and technical standards. For Open Data, there must not include the release of Personally Identifiable Information (PII), unless it is with the personal data producer's consent or is required by law. This policy therefore recommends reviewing and updating all existing laws and regulations to ensure that development activities recommended in this policy and matters for data protection and privacy are legally guaranteed.

2. SITUATIONAL ANALYSIS OF DATA ECO-SYSTEM IN RWANDA

Between July and August 2013, an Open Data Readiness Assessment ('ODRA') was conducted for a sample of 15 organizations, including Government and private sector and SWOT analysis of the data environment in Rwanda was made and the exercise identified several strong opportunity factors which could be leveraged to promote development of a data eco-system in Rwanda. These factors already in place include the existence of huge data repositories within Governments, the level ICT infrastructure development, leadership and political will, streamlined institutionalization, huge demand for data. The ODRA highlighted a great efforts made to develop the data industry by both Government and private sector, notably companies like Tumenye-Rwanda that deals with providing a range of information on national social development through their portal, ESRI-Rwanda that deals with development of geographical mapping and distribution of GIS related software, the University of Rwanda's Centre for Geographic Information Systems and Remote Sensing (CGIS) among others.

There are other databases across Government with huge amount of databases with massive repositories that serve as a foundation to other services including Irembo citizen portal that keeps all transactions of Government services, Government Command Center that tracks key performance indicators for major national projects, Smart FMS managing national budgets, E-Procurement used for public tendering process, Integrated Electronic Case Management System with repository of all files public cases, Ubudehe Data Base which tracks citizens' poverty levels and profiles, National Citizen Registry with all citizens bio-metric-data , Business Registration Database storing active profiles of all registered companies, Tax payment Database at Rwanda Revenue Authority, Health public Insurance Database for health sector , Pension Database managed by RSSB, Census and Survey Database for general population by national institute of statistics, Telecom Mobile Subscribers Databases, Agriculture Systems among others. The ambitions to build a data industry is also powered by a pool of world class research academies established in Rwanda whose aim is to educate and produce experts in STEM science and specifically data related fields. Among the academies include African Institute of Mathematical Sciences a global center of excellence dealing in research programs in mathematics, African center of excellence in data sciences, Carneage Mellon University offering world class ICT engineering expertise, African center of excellences in the Internet of Things among others.

From policy perspective, the Smart Rwanda Master Plan (SRMP) places use of data at the heart of national development by identifying special areas including where data will be applied. These include big-data analytics, Internet of Things, Digital Lifestyle and Mobility, Creative Industries among others. Also SRMP commissions a Broadband for all policy where millions of connected people & smart devices combined with information systems, will generate huge amount of data across multiple domains.

While Rwanda has enabling factors to drive the data revolution, the ODRA report identified the weaker side of data environment in Rwanda that needs a strong attention through specific

policy actions. These areas include the silo-based way of data handling operations, lack of centralized data portal, inadequate hosting services; limited skill sets in data field, limited budget and a lot of un-digitized information.

3. NATIONAL DATA REVOLUTION FOR RWANDA

The following section outlines the core vision, objectives and pillars of data revolution policy. The pillars are aligned with strategic objectives to harness the insights that would come with data analytics.

3.1 Vision

Build an innovation-data-enabled industry to harness rapid social economic development.

3.2 Objectives

This policy aims to achieve the following objectives:

1. To establish standards & principles for data management.
2. To establish a framework to develop human resource capacity for data industry development.
3. To establish a framework for data creation, release, and analytic and re-use cycle.
4. To drive development of data based innovations for job creation across public & private realms.
5. To establish data governance institutional framework.

3.3. Policy Areas for Data Revolution

Referenced from the policy objectives, the data revolution policy points out five key policy areas:

1. Principles and procedure for Data Revolution Policy
2. Human Capital & Resource Capacity Development
3. Technology & Innovations
4. Data Development Cycle
5. Role of Private sector & partnerships

3.3.1 Principles for Data Revolution Policy

These principles are built on broader ICT strategic expectation of "open by default, security by design, privacy protection, innovation and public-private partnership" as enshrined in the Smart Rwanda 2020 Master plan:

1. **Data classification:** An exercise shall be undertaken to classify all data for sensitive and non-sensitive sets. Non-sensitive information shall open by default and in accordance with existing laws while sensitive data carrying personally identifiable information, information relating to people's privacy, commercial sensitivities and concerns of national security, shall not be published. In classification, data will be categorized into four areas including:

a) *Data files to be made freely available to users on open data portal or other forums*
b) *Licensed data files requiring user's requisition first but obtained at a free cost,*
c) *Data enclave files whose access controlled to provide a powerful virtual data productive environment like analytical tools.*
d) *Paid data files requiring user's payment to access.*

2. **Data sovereignty:** Data revolution will embrace the principle of national data sovereignty whereby Rwanda shall retain exclusive sovereign rights on her national data with control and power over own data. In conformity with this principle, Rwanda will however be open under agreed terms and governed by Rwandan laws, host her sovereign data in a cloud or collocated environment in data centers within national premises or outside of Rwanda. In building a robust data industry, Rwanda will put in place adequate legal, policy, infrastructure and privacy environment conducive for offering data hosting services to other external Governments or Private data owners.

3. **Easily Accessible & Usable:** Data owners should make their data discoverable and easily accessible in order to make their data available to the widest range of users for the widest range of purposes. A key rule is that that all data non-sensitive data shall be publicly consolidated and published on a central national data portal or other visible forums.

4. **Granularity:** Raw data, as collected at source, will be published where possible with the highest possible level of granularity, not in aggregate or modified forms.

5. **Completeness & Accuracy**: Data published by all key players should be of high quality in terms of accuracy and completeness.

6. **Openly licensed**: Data will be published in reusable, machine-readable and modifiable formats which enables free reuse, including commercial aspects.

7. **Data Intellectual property:** A principle will be observed that anyone using data will recognize the author of the data throughout all process of sharing and reusability.

8. **PPP as investment model:** The mode of investment in data industry in Rwanda shall go through private sector and another innovative ways of funding.

3.4.2 **Human Capital & Resource Capacity Development**

There is a need to build a pool of human resources and data skills to support implementation of the Data Revolution policy. The skill sets and roles required are diverse, and include data scientists, data protection policy experts, data miners, application developers among others.

The industry will be analyzed to identify the data related skill gap, develop and implement appropriate national capacity building program across private and public domain. Several development partners shall have a critical role to contribute in data capacity building notably, the training program of the African Centre of Excellence in Data Science that Rwanda will host under the University of Rwanda will include knowledge and skills required for big data analysts using existing data repositories from different institutions.

3.4.3 **Technology Innovation**

The huge chunks of government data, insights derived from analytics can be used in innovative ways to create useful tools like mobile applications, USSD, information system software that would allow people navigate modern life more easily. Data and insights derived from analytics will be leveraged by existing innovation efforts like incubation hubs, funding frameworks like Rwanda innovation fund, a pool of knowledge from the eco-system at Kigali innovation city among others to develop practical services and data-driven applications in a diverse range of fields and sectors. To realize the true value of data revolution initiative, the opened data shall be analyzed to derive important insights hence the Government will up measures to avail relevant and adequate technology infrastructure ranging from special software and hardware, storage services among others for this purpose.

3.4.4**. Data Development Life-Cycle**

The data development life-cycle should be strengthened and streamlined by by coordinating resources to support the chain flow of data development. The Data Revolution Policy sets out clear guidelines governing development cycle process for data, which start from a stage of data production or creation, data consolidation and collection, data storage, publication on national portal or public access to data, a analytics and data utilization . Technology tools like management information systems will be put in place in different sectors and made interoperable according to the government enterprise architecture to exchange data.

3.4.5 **The Private sector & Partnerships:**

A sustainable data revolution requires building strong collaborative frameworks between Government and Private sector players with all user groups at local, regional and international levels actively involved. There should be a strong engagement between demand and supply sides to create synergies for data exploitation. Coordinated by the National Data Office, the Government of Rwanda will be put in place a mechanism to collaborate with all key private players in data space.

4. GOVERNANCE FRAMEWORK

A successful Data Revolution Policy for Rwanda requires that various key players are coordinated and work together. Within Government a National Data Office shall be a body established with highly skilled experts in data science field to coordinate the rest of stakeholders and drive the implementation data revolution policy. The National Institute of Statistics (NISR) is mandated supervise all efforts leading to implementation of Data Revolution Policy.

4.1 The National Data Steering Committee

A dedicated steering committee for data revolution shall be established to take decisions and guide implementation of data revolution policy. Among other responsibilities, the steering committee will be meeting for ensuring that data-holding agencies and ministries are complying with data policies, following up on political decisions to release high-profile, high-value datasets by ministries and agencies, and ensuring key performance indicators are met.

4.2 Data Revolution Office

Implementation of data revolution policy will require a dedicated team of data scientist on a full-time basis reporting to the National Institute of Statistics (NISR) and charged with conducting the coordination and technical work related to implementation of the data revolution policy. The national data revolution office will manage the data supply chain, portal development and operations, respond to data requests, ensure technical compliance with policies, coordinate and collect data for release, engage with data user communities, manage capacity-building activities, coordinate compliance with data privacy and confidentiality standards.

4.3 Data Focal Persons

For sustainable and streamlined coordination of activities, there shall be data focal persons within each Ministry/department/agency holding key data sets to work closely with the data revolution office on data release. The recommended approach is to decommission this task to the responsibilities of Government and Agency departments of statistics and Monitoring and Evaluation. The focal point will have responsibilities including identifying data sets from their respective organizations and sectors to be shared on the national data portal, organizing and sharing key data sets from the organizations and sectors they represent, and facilitating the work of the Data Office in their organizations.

4.4 Role of Private Sector

Building a sustainable data industry requires a strong participation of all players including the private organizations, companies, local or regional. A close collaboration between Government and private players in data space will be strengthened to identify key focal persons from relevant institutions in implementation of the data revolution policy.

5. KEY STRATEGIC POLICY RECOMMENDATIONS

a) **Institutional guidelines and procedures**: There will be issuance to all relevant institutions clear guidelines and procedures that cover the entire data development chain including data lifecycle of collection, processing, storage, and analytics. The guidelines and procedures will define in detail, the implementation and coordination mechanisms of the data revolution policy.

b) **National Data Portal**: A national data portal shall be established to provide structured and unstructured sets collected from all Government and private sector agencies. The portal will be managed by the established data management body under the National Institution of Statistics.

c) **Hosting Services:** For a data industry to thrive there has to be adequate hosting services in the country hence the Government shall put in place and implement strategies to attract more investors in data hosting service in bid to make the cost of hosting affordable. Among the strategies will include putting in place hosting incentives through lawfully and procedural standards, like subsidized costs of power, tax investment incentives, and support investors obtain stable bandwidth at good rates, Support investors to acquisition of designated land etc.

d) **Develop National Spatial Data Infrastructure**: Rwanda shall focus to work with partners to promote spatial data infrastructure. Digitization of available geospatial data that identifies and locates all national infrastructure assets could create insights for proper infrastructure planning and developing tailored services on top of such data.

e) **Global partnerships:** Building a data industry requires close collaboration with relevant stakeholders locally, regional and internationally. Government will dedicate a special attention to ensure attraction of investors in data industry and establish collaboration frameworks with corporates, financial bodies and Governments like Global Open Data Charter, Become a member of the Open Government Partnership (OGP), Champion Global Partnership for Sustainable Development Data (GPSDD) among others.

f) **Harness Global Rankings:** Rwanda shall establish formal global partnerships with data innovation organizations to support the national data development initiatives. Effective implementation of data revolution policy shall form a cornerstone to enhance Rwanda's global rankings in areas like the UN-E-Government ranking, Open Data Barometer, *City Resilience Index, Global connectivity index, among others.*

i) **Enforce Common Standards and APIs:** Through the policy, the Government will enforce open policy architecture to support interoperability of data integration systems and software. This will be supported by adoption of common international best

practice open standards and open formats readable by machines.

j) **Data classification:** The Government will undertake an exercise to classify all data for sensitive and non-sensitive sets. Non-sensitive information shall open by default and in accordance with existing laws while sensitive data carrying personally identifiable information, information relating to people's privacy, commercial sensitivities and concerns of national security, shall not be published.

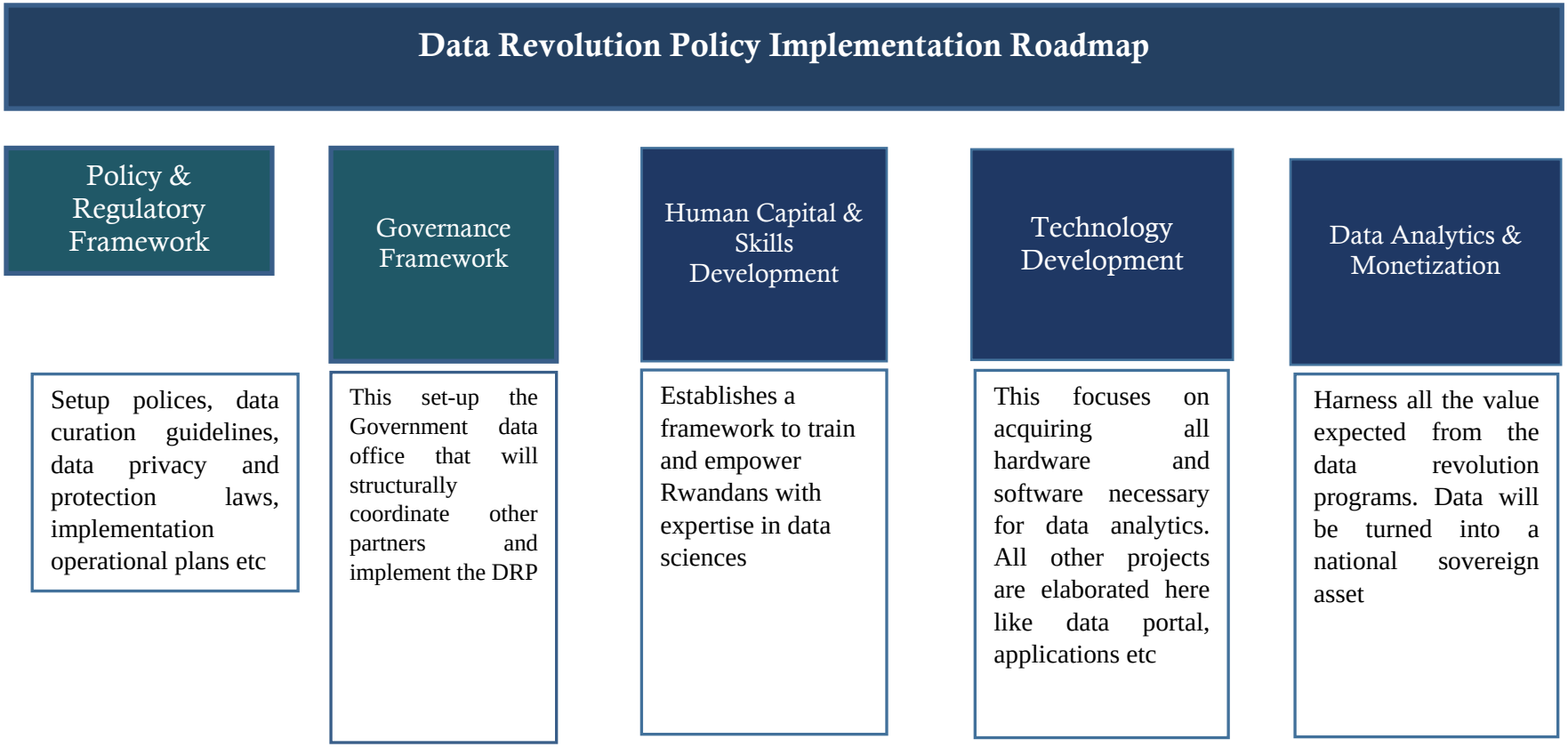
k) **Back-end MIS:** Government will put up a framework to develop institutional backend systems that shall be used to share information across and to the central platform. The system shall possess APIs that shall be interoperable with other systems. The MIS should be established in a standardize format and interoperable enough as per the Government enterprise architecture.

l) **Data Protection Law:** The Government of Rwanda shall undertake a process to harmonize laws for protection of individuals with regard to the processing of personal data and privacy. Privacy concerns exist wherever personally identifiable information or other sensitive information is collected, stored, used, and finally deleted by Government and private organizations etc. Particular health information, privacy and protection rules will be strengthened to protect patients from access of private medical information by insurances and other health business practitioners.

m) **Technology Infrastructure:** Specialized technology infrastructure like software and equipment will be required to enhance data analytics agenda a cross both Government and private space.

n) **Data Archiving Framework:** While the Government goes paperless and cashless, useful administrative and un-structured data generated from day-to-day operations, will be archived in a scientific and central repositories.

6. IMPLEMENTATION PLAN FOR 5 YEARS



Note:

The budget and projects shall be reviewed and approved by the data steering committee every year (FRW 1.790.000.000 MILLION)

ACTIVITIES	STAKE-HOLDERS	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	BLOCK BUDGET
Policy & Regulatory Framework							
Conduct an implementation study to map existing initiatives, identify priority activities with detailed execution modalities, required resources for the 5 year	NISR (lead), MYICT, MIN ECOFIN.	✓					300,500,000
Make an inventory of existing legal instruments to establish or update the data protection and privacy law.	MINIJUST (lead), NISR, STAKEHOLDERS	✓	✓				
Issue guidelines to institutions for the implementation of data revolution policy especially defining the process for opening data, anonymization and publishing data,	NISR (lead), MYICT, MIN ECOFIN,	✓	✓				
Conduct a review process of existing investment regulation regimes to include incentives for data investors and hosting service providers in particular.	RDB (lead), NSIR, MINECOFIN, MYICT	✓	✓				
Governance Framework							
Set up data revolution office	NISR (lead), MINECOFIN, MIFOTRA, MYICT	✓	✓				89,000,0000
Set-up the data revolution Steering Committee	NISR (lead), MINECOFIN, MIFOTRA, MYICT, RDB						
Appoint data focal persons within institutions and private sector	NISR (lead), MINECOFIN, MIFOTRA, MYICT, RDB		✓				
Establish a network community of data collectors/distributors.	NISR (lead), MYICT,RDB	✓	✓				
Engage local, regional and global private sector data players to invest in Rwanda and build a data innovation eco-system.	NISR (lead), MYICT,RDB,	✓	✓	✓	✓	✓	
Human Capital Development & Capacity Building							
Develop a training framework for key data contributors within Government and Private sector in preparation for Data release.	NISR (lead), MYICT, RDB		✓				
Design and Initiate special training program for data contributors, data miners and analysts, data portal operators	NISR (lead), MYICT, MINEDUC		✓	✓			
Establish framework to collaborate with academia in increasing enrollment of students in data sciences.	MINEDUC (lead), NISR, MYICT			✓	✓	✓	
Technology (Software & Hardware) Development							
Conduct big data analytics assessment in Rwanda to define the implementation modalities, key players, quick wins, medium and long term prospects	NISR (lead), RURA, MYICT, MINECOFIN			✓	✓	✓	500,000,000
Develop and launch National Data Portal	NISR (lead), MINECOFIN		✓	✓			

	MYICT, ,						
Develop the backend MIS for institutions for easy data sharing across community users	NISR (lead), MINECOFIN, MYICT		✓	✓			
Identify and procure data analytic technologies (Specialized software and hardware for big data analytics)	NISR (lead), MINECOFIN, MYICT			✓	✓		
Promote data innovation competitions for data enabled application especially among the younger innovators.	PSF (lead), NISR, RURA,MYICT	✓	✓	✓	✓	✓	
Conduct M &E for the data revolution policy	NISR (lead), MINECOFIN, MYICT, RDB					✓	