Landscape Assessment of Child Protection Digital Information Systems in Rwanda

May – June 2021

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Data for Impact

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Abbreviations

CPMIS	Child Protection Management Information System
D4I	Data for Impact project
DCOF	Displaced Children and Orphans Fund
ICRP	Integrated Child Rights Policy
IZU	Inshuti z'Umuryango
USAID	United States Agency for International Development
UNICEF	United Nations Children's Fund
USSD	Unstructured Supplementary Service Data
M&E	monitoring and evaluation
MIGEPROF	Ministry of Gender and Family Promotion
MINIJUST	Ministry of Justice
MINEDUC	Ministry of Education
MIFOTRA	Ministere de Fonction Publique et du Travaille
MIS	management information system
NIDA	National ID Agency
SOPs	standard operating procedures
RIB	Rwanda Investigation Bureau
PWDs	Persons with disabilities
USAID	United States Agency for International Development

Introduction

Background

The Government of Rwanda is strongly committed to ensuring that all children achieve their full potential in a safe and protective environment through the work of the National Child Development Agency (NCDA), a newly established government institution. The NCDA was established by the Presidential Order N° 083/01 of 28/08/2020[1] and is a merger of the former National Commission for Children (NCC) and the National Early Childhood Development Program (NECDP). In August 2011, through the Ministry of Gender and Family Promotion (MIGEPROF), the government cabinet approved the National Integrated Child Rights Policy[2] (ICRP) to govern and guide government interventions for children's care reform. This followed the ratification of the United Nations (UN) Convention on the Rights of the Child (UNCRC), encouraging governments of countries around the globe to address the rights and needs of children, mainly focusing on the following thematic areas: health, education, labor, governance, and access to justice. The objectives of the ICRP policy are strengthening the thinking and analysis around policies related to children and the coordination and implementation of government activities for realization of children's rights. The ICRP supersedes the 2016 National Early Childhood Development Policy[3] (ECDP), the Orphans and Other Vulnerable Children (OVC) Policy, the Policy on Street Children, and the Child Labor Policy.[4]

The ICRP policy applies to children from the time before their birth until they reach the age of 18 years. The ICRP of Rwanda is based on seven key themes: Identity and Nationality; Family and Alternative Care; Survival, Health and Standards of Living; Education; Protection; Justice; and Child Participation.

The NCDA has a mandate to coordinate and oversee implementation of the national ICRP policy, and to protect children and eliminate all forms of violence whether physical, moral, psychological, or any other ill-treatment committed against a child, among many other responsibilities (Official Gazette n° Special of 04/09/2020).[5]

A strategic plan for implementation of the ICRP[6] has been developed. This five-year strategic plan gives the NCD Agency and its partners detailed operational guidance to improve joint planning, as well as coordination of and reporting about interventions meant to contribute to the realization of children's rights. It contributes to the creation of an environment in which a child's development, survival, protection, and participation is assured through a well-coordinated and multi sectoral approach where the welfare and dignity of children are ensured so they may reach their full potential (Ministry of Gender and Family Promotion, 2011).

The NCDA, in collaboration with the Data for Impact (D4I) project, funded by the United States Agency for International Development (USAID) Center on Children in Adversity (CECA) and

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[1] http://www.ecd.gov.rw/index.php?id=39
[2] https://ncc.gov.rw/fileadmin/templates/document/ICRPOLICY_approvedbytheCabineton30092011.pdf
[3] http://www.ecd.gov.rw/fileadmin/user_upload/Policies/EARLY_CHILDHOOD_DEVELOPMENT_POLICY_2016.pdf
[4] https://www.ncc.gov.rw/fileadmin/templates/document/national_policy_for_ovc.pdf
[5] https://www.minijust.gov.rw/fileadmin/user_upload/Minijust/Publications/Official_Gazette/_2020_Official_Gazettes/_September/B_OG_n_Special_of_04_09_2020_Inteko_NYARWANDA_Ururimi___NECD___HEC___INTEKO_Umuco___NCD.pdf
[6] https://www.socialserviceworkforce.org/system/files/resource/files/National-Integrated-Child-Rights-Policy.pdf

partners, are collaborating to strengthen the collection, management, analysis, and use of routine data to support program planning and monitoring of alternative care provision in line with the UN Alternative Care Guidelines and Rwanda's national ICRP.

Justification for Conducting a Landscape Assessment

To better understand the current digital information systems and data in the child protection sector, D4I conducted a high-level landscape assessment of the child protection digital information systems assessing aspects such as governance, indicators captured, users, architecture, and visualization tools. The assessment seeks to understand the context and environment in which the various child protection related systems operate and identify the gaps and opportunities for an integrated national child protection monitoring and information management system.

The landscape assessment workshop aimed to understand the roles of those stakeholders working in care reform—specifically, their experience in assessing, monitoring, and using information about child protection and care, as well as noting any information gaps in the current system. The goal was to highlight the various data and information systems currently used in Rwanda for child protection and care services. This included reviewing the technology service providers and the systems information collected, platforms used, user interface, reports, dashboards, etc. The stakeholders collaboratively reviewed the systems to identify priorities and requirements for an integrated and reliable information system to support child protection and care activities.

Objectives

The objectives of the assessment were to:

a) Engage with stakeholders to understand Rwanda's child protection and care landscape.

b) Identify and review the existing management information systems (MIS) for child protection and care in Rwanda used by government ministries/departments, implementing partners, and other stakeholders.

c) Assess how the existing systems in the child protection space align with the ICRP priorities and how they meet the requirements to support child protection and care activities.

d) Undertake an analysis of information management capabilities of the systems, architecture, technology infrastructure, and interoperability feasibility.

e) Provide recommendations to the NCDA and its stakeholders on the roadmap required to develop or enhance an integrated and reliable MIS to support child protection and care activities.

Methodology

This section describes the steps followed toward conducting the digital systems assessment. It includes the first of four steps used to collect the data: pre-workshop survey, stakeholder workshop, desk review, and validation meetings conducted post-workshop.

Design and Selection of Participants

Individuals representing each of the care reform and child protection stakeholders were invited to participate in the workshop. This was done in collaboration with the NCDA, which supported and provided guidance on workshop activities. Participants selected were those performing information technology and monitoring and evaluation (M&E) duties from the NCDA, MIGEPROF, Ministry of Justice, Ministry of Education, Ministere de Fonction Publique et du Travaille, National ID Agency, SOS Children's Villages Rwanda, Rwanda Investigation Bureau, University of Rwanda, National Council of Persons with Disabilities Rwanda, Ministry of Health, National Rehabilitation Department, Rwanda Information Society Authority (RISA), and Hope and Homes for Children.

The Process

The landscape assessment was undertaken through four steps: (1) pre-workshop identification of digital systems used by stakeholders in child protection and care programming; (2) conducting the workshop where focus group discussions, self-assessments, and group assessments were completed using standard tools; (3) desk review to complement the interviews; and (4) post-workshop follow up.

Step 1: Pre workshop assessment to identify digital solutions in use

A pre-workshop stakeholder engagement survey was conducted to collect information on stakeholders working in child protection and care reform, including ICRP areas of operation, data collections tools, and digital solutions in use.

Step 2: Stakeholder assessment workshop

D4I and the NCDA conducted an assessment workshop from June 7–11, 2021 in Nyamata, Rwanda. The workshop brought together stakeholders working in child protection and care programming in Rwanda. Participants included child protection and welfare officers, representatives from government institutions (ministries and departments), and nongovernmental organizations (NGOs) that have digital solutions for supporting child protection.

Information systems assessment: During the workshop, stakeholders that own and manage digital systems showcased their systems using a standard template. The template included space for the stakeholders to share the mission and objectives of their system, how it is works in relation to child protection, who the targeted users are, how it integrates or interoperates with other systems, the main reports produced by the system, and who the users of these reports are. The presenters also discussed successes and lessons learned.

Use case analysis: This tool, based on the D4I CMIS assessment toolkit[7] was administered to key child protection actors at national and subnational levels to collect information on how their systems address a child's journey through illustrative case management, potential users, and use cases. This was aimed to help identify the case management that each system addresses and the gaps thereof.

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[7] https://www.data4impactproject.org/publications/case-management-information-systems-assessment-toolkit/

Step 3: Desk review

A review of policies, strategic plans, and standard operating procedures (SOPs) was conducted to establish the existing legislation on digital systems, including the institutional arrangements, structures, and related infrastructure, for the various data systems for child protection and care programming in Rwanda. The review provided the basis for understanding the digital systems in place at the NCDA, as well as among government agencies and implementing partners. The review provided high-level government vision and aspirations for childcare reform.

Step 4: Post-workshop validation meetings

Interviews for select stakeholders: After the assessment workshop, interviews were conducted with select stakeholders to clarify all issues not addressed during the workshop, including inconsistencies noted during their presentation, missing data as per the standard template provided, and integration with other systems, among others.

Validation meeting: Post-workshop, D4I held discussions with relevant NCDA and MIGEPROF staff and key stakeholders for input and validation to ensure the accuracy of information collected and better understand their vision in view of the findings.

Limitations

The methods described above rely on subjective views and secondary information to determine the robustness of a digital system. Thus, this can be dependent on the level of interaction between the stakeholder and NCDA that is mandated to coordinate child protection and alternative care programming in Rwanda. Consequently, digital systems playing significant roles may be omitted because they are not known to workshop participants. It should be noted that this was a general digital system mapping, and an in-depth system analysis will be conducted to further identify the robustness in supporting reporting on children's safety and wellbeing and to track services delivered to vulnerable children and households.

Findings

This section outlines the findings of the workshop and the assessment activities undertaken.

Existing Systems and ICRP Support

The workshop assessment established that there are twelve digital systems in use in Rwanda as shown in Table 1. They were presented during the workshop by the system owners and/or users. Various digital systems address different thematic areas of children's rights as listed in the ICRP (Table 1). The assessment found that:

- Multiple technology solutions are collecting siloed pieces of information and are focusing on reporting needs rather than on interventions.

- Most of the electronic systems presented focus on some of the ICRP intervention areas. There is need for a comprehensive electronic system that can support child case management and follow-up, as defined by the ICRP, and contribute to the data collection process for information needed to monitor the implementation of the ICRP. The Inshuti

z'Umuryango (IZU) system comes closest to addressing most of the ICRF key themes. However, IZU system only covers reporting and monitoring of cases but does not provide for case management monitoring.

- To achieve availability of data collection and monitoring of child protection, an enhancement of the current systems that is easy to provide robust aggregate data before development of a comprehensive case management information system (CMIS).

Table 1. Digital systems identified

System	Description	Technology	Owner	ICRP Thematic Area(s)
1. Inshuti z'Umuryango (IZU) system	A digitalized IZU (Friends of Family) reporting system (Unstructured Supplementary Service Data [USSD] code) for the timely collection, analysis, reporting, and monitoring of child protection cases in communities.	USSD, Web	NCDA	• Identity and Nationality • Family and Alternative Care • Health, Survival and Standard of Living Education • Protection
2. Sugira Muryango digital dashboard	A mobile phone-based tool and dashboard that enables team collaboration to track and monitor relevant early childhood development indicators and tracking of the Sugira Muryango program.	SMS	University of Rwanda Sugira Muryango Program	• Education • Family and Alternative Care
3. Civil Registration and Vital Statistics system	A system supporting country business processes for civil registrations and vital information management.	Web	National ID Agency (NIDA)	• Identity and Nationality • Protection
4. Gender-Based Violence (GBV) information management system	The GBV Information management system is a tool designed to improve GBV prevention, response, and coordination with the Isange One Stop Centre.	Web	MIGEPROF & Rwanda Investigation Bureau (RIB)	• Identity and Nationality • Protection • Justice
5. School Data Management system	A system for the management of all education processes.	Web	Ministry of Education (MINEDUC) & schools	• Identity and Nationality • Education
6. SMS-based reporting system for quick intervention for people with disabilities (PWD)	• Identification of all persons with disability in Rwanda (including children) • Interactive dashboards and maps relevant to Sustainable Development Goal (SDG) indicators • Case management support for those most in need • Information on disability information and services includes a chatbot • Links with relevant Government of Rwanda database for social support	SMS, Web	National Council of Persons with Disabilities (NCPD), Rwanda	• Health, Survival and Standard of Living • Protection
7. Integrated Labor Administration System (ILAS)	The ILAS covers different areas, including, but not limited to, child labor, occupational safety and health, social dialogue and collective bargaining, labor Inspection, and labor disputes.	Web	Ministere de Fonction publique et du Travaille (MIFOTRA)	• Identity and Nationality • Protection
8. Stakeholders' mapping tool	This tool provides coordination of stakeholders' interventions.	Web	MIGEPROF	None
9. RHMIS-Nutrition & Vaccination e-Registries	These e-Registries support growth monitoring and distribution of fortified blended foods and track children throughout their vaccination schedule.	Web	Ministry of Health (MOH)/Local Administrative Entities	• Identity and Nationality • Health, Survival and Standard of Living

System	Description	Technology	Owner	ICRP Thematic Area(s)
			Development Agency (LODA)/NCDA	
10. Integrated Electronic Case Management System (IECMSI)	A sector-wide system for the processing, administration, and management of judicial cases.		Ministry of Justice (MINIJUST)	• Identity and Nationality • Protection • Justice
11. SMS technology (SMS-based reporting for quick intervention)	• Helps PWDs communicate quickly with the NCPD and local government structures to obtain services or support on time. • Helps local authorities collaborate effectively among themselves and with other stakeholders in responding to PWD's needs. • Raises awareness among PWDs about their rights and in communities to fight against stigma and discrimination. • Builds a centralized database on PWD's needs to guide future interventions.	SMS, Web	NCPD	None
12. Monitoring of Reintegrated Children System (MRCS)	The primary objective of the MRCS platform is to facilitate the case management for children from institutions/orphanages to family-based care. The system has all forms related to deinstitutionalization including: • Provides a web-based reporting and communication system • Monthly and quarterly reporting platform that aggregates progress on project indicators • The platform must be user-friendly and easy to use • Functional mobile-based reporting – USSD • Provides case management tools and productivity tools (work plan and forum application) under one platform	USSD, Web	SOS Children's Villages Rwanda	• Identity and Nationality • Health, Survival and Standard of Living • Protection
13. Disability Management Information System (DMIS)	The system helps to identify, register, and certify all people with disabilities in country, including registration/certification of service providers, support monitoring on services rendered, and producing reports and dashboards.	Web	NCPD	• Identity and Nationality • Health, Survival and Standard of Living
14. Delinquency management information system	This system was developed by the Rwanda Information Society Authority (RISA) on behalf of the National Rehabilitation Service (NRS) to respond to challenges in rehabilitation, as well as the lack of accurate information on what delinquents received in rehabilitation centers, including psychosocial rehabilitation and vocational skills.	Web	NRS	• Identity and Nationality • Family and Alternative Care • Health, Survival and Standard of Living • Justice

Systems Maintenance and Support

A sustainable information system requires reliable technical support in-house or local expertise ready to provide support. Additionally, financial support is required for continuous implementation and enhancement. We documented providers of technical support and the source of funds for maintenance and enhancements for each system (see Table 2), and found that:

- Seven of the thirteen systems are supported by private institutions operating under different contracts, while the other six systems are managed by internal IT teams of the institutions (government and non-government) using the system.

- Eight of the systems are fully or partially funded by the Government of Rwanda.

- Support and maintenance for two-thirds of the systems are provided by contractors who are not government officers thus have limited knowledge on internal processes and there are no documented procedures for use. This means users depend on external technical assistance.

Table 2. System maintenance and support providers

System	Maintenance and TA	Source of funds
1. IZU System	Host Hotlink ltd	GOR, UNICEF
2. SUGIRA MURYANGO Reporting tool and digital dashboard	UR-technical team	USAID
3. Civil Registration and Vital Statistics (CRVS) system	Local company	GOR
4. GBV information management system	Local developer	GOR, partners
5. School Data Management System (SDMS)	Internal teams (MINEDUC, MINECOFIN, and NISR)	GOR, DFID, UNICEF
6. SMS-based reporting system for quick interventions for persons with disabilities	HHC and NCPD IT team	UKAID
7. Integrated Labor Administration System (ILAS)	MIFOTRA	GOR
8. Stakeholders' mapping tool	MIGEPROF IT	GOR
9. RHMIS-Nutrition & Vaccination e-Registries	MOH/HMIS team	GOR
10. Integrated Electronic Case Management System (IECMSI)	Synergy International ltd, Armenian company	GOR, UNDP, DIU, and Netherlands embassy
11. Monitoring of Reintegrated Children System (MRCS)	Eastern Software Systems (ESS) Company	SOS
12. Disability Management Information System (DMIS)	MINALOC – NIDA	Hope and Homes for Children and NCPD, with funding by UK Aid.
13. Delinquency Management Information System (DMIS)	Consultant team	GOR

Identification of Child Case Management Use Cases

The child case management process is a way of organizing work from the first contact with a vulnerable child to the last step of resolving all concerns and closing the case file. To better understand how cases are handled, a use case exercise was conducted to collect information on the detailed steps of the child safety and wellbeing journey in the Rwandan child protection context. The use case exercise used five hypothetical case studies relating to children facing adversity or in need of care and protection (see Appendix 1). The list below contains case management steps that can used for different use cases:

- Case notification
- Case registration
- Child assessment – Portage and SPDS
- Care plan
- Family tracing
- Family assessments
- Case management – Report and meeting
- Placement decision
- Referral to emergency placement services

- Child and family preparation
- Child placement into family/independent living
- Post-placement support and follow-up
- Support to family/individual care plan with services to be received
- Progress with regular follow-up
- Case file closure
- Report on services provided

Below are the use cases that we identified:

- Sexual abuse
- Child physical abuse
- Teen pregnancy
- Child labor
- Mental challenges
- Child trafficking
- Street children

- Child domestic work
- Child neglect
- Family conflict
- Emotional abuse
- Need support in justice
- Early marriage
- Online abuse

Further, the use case analysis helped in identification of the potential actors and institutions which handle children's cases. A stepwise/chronology of case management information system use will depend on the intervention step during the child case management process. Table 3 summarizes the outputs of the use case analysis.

Table 3. Use case analysis

Household	Service providers	Government stakeholders	Nongovernmental stakeholders
• Child • Parent/caregiver • Community members	• Healthcare providers • School leaders • Education officers • Social and welfare officers • Child protection welfare officers • Sector executives • Lawyers • Psychologists • Teachers • Human rights staff • Volunteers	• NCDA • MIGEPROF • MINIJUST • MINEMA • MINALOC • RIB • IZU	• UNHCR • UNICEF • NGO focal persons • Rehab centers • Rwanda Bar Association

For every case notified, the management of the case is handled by different actors, each with roles and responsibilities for better coordination.

a) **Case manager:** The case manager has overall responsibility for the case—they are responsible for ensuring the case management process is systematically followed and closed. Having a holistic and comprehensive view on every single case assigned simplifies the case management.

b) **Case worker:** Refers to someone who may be involved in providing services or support to a child in need. Their involvement may range from limited provision of services related to a specific field to working closely with the child or family on a regular basis across a broad range of issues. Their services are greatly informed by work done on the case by other case workers. Case workers play an important role in updating the case management information sheet systems.

c) **Child protection focal point:** The NCDA has a child protection officer in every district, and each partner organization/agency in child protection has nominated one person to act as the child protection focal point (CPFP). The role of the CPFP is to act as the first point of contact for any case in the area and the central liaison person between institutions (RIB, MAJ, NCDA); they may also act as the point of referral within the organization for a very specific child concern.

The types of users, their level of access, and their roles in child protection were identified during the assessment. The assessment explored usability of the system among the varied users, and it was established that half of the systems in use 58.0 percent lack the appropriate language options for users who do not speak English to be able to switch as needed.

Table 4. **Levels of access and typical user roles**

Levels	User authorities	Types
National	Administrators	CMIS staff at Ministry; system administrators; Labor administration
	Intermediate	M&E staff at Ministry; NCPD and HHC Social workers from NCDA; Ombudsman Immigration officer
	Data collectors	Receptionist; RIB investigator; medical doctor; psychologist; MAJ; report Embassy officers
Districts	Intermediate	DMO; NCPD Coord.; HHC staff; partners and BC officer
	Data collectors	Lawyers; RIB officer; prison officer; immigration officer; District officers; Child Labor Steering Committee
Sector	Intermediate	Sector mentor
	Data collectors	School head teachers; Teacher Data Managers; NCPD Coord. & AFSO; transit center officers; rehabilitation center officers; health facility-based CRs and CROs; sector-based CRs and CROs Cell executive secretaries
Villages	Data collectors	PWDs; IZUs; NCPD at cell & SEDO; cell mentor; reintegrated families; Child Labor Steering Committee

Data Transfer and Interoperability

Data sharing is a primary feature of any data management information system. The child protection supporting e-tools would better serve and improve case management if they are able to share information across different actors intervening in the child case journey. The National Data Center, the government's cloud services provider, is mandated to serve as a central data storage facility and to provide access to the applications used by government institutions.[8] The government of Rwanda enterprise framework[9] and information and communication technology (ICT) for governance cluster strategy 2020–2024[10] provide norms on enabling data sharing between public administration agencies for user-friendly and efficient public service delivery. During this assessment, we assessed the ability of the CMIS systems to share data with other applications and found that:

- GBVMIS and IECMS systems are interoperable with other systems exchanging data though APIs connected to the CRVS and NIDA systems to uniquely identify cases.

- The SOS system is also built on REDCap and uses its data export features to share data.

- The IZU system and the SMS-based system for people with disabilities do not support any interoperability. Ninety percent of the systems have API to support data sharing if the

[8] https://www.risa.rw/fileadmin/user_upload/Others%20documents/Data_Center_and_Cloud_Services_Directives.pdf
[9] https://www.risa.rw/fileadmin/user_upload/Enterprise_Architecture/GOR's%20EA%20Standards.pdf
[10] https://www.risa.rw/fileadmin/user_upload/Others%20documents/ICT4_GOV_CLUSTER_STRATEGY_2020-2024.pdf

integration is envisaged as a next step. However, a standardized framework on data exchange does not exist.

- There should be standardization across the systems and use of the NIDA Unique Identifier (UID) or National Identification Number for children under the age of 16 years to link information across systems. The UID was missing from several systems, despite information being in place to ensure data exchange through APIs and data quality.

Data Privacy and Security

Data security is a set of strategies and processes for use in securing the privacy, availability, and integrity of data. The government of Rwanda has put in place an information security policy to guide developers on security considerations while deploying systems and data sharing.[11] In May 2021, the government adopted a draft law relating to personal data protection and privacy.[12] These measures require information systems to implement data privacy and security.

We assessed how system owners control data sharing and access, as well as protection of data from unauthorized users through different forms of encryption, key management, authentication types, enforcing use of strong passwords, and use of expiring passwords as security mechanisms for password renewal, among other methods. We reviewed how CMIS implementors put in place and observe guidelines, such as how data should be collected, stored, or handled, based on its sensitivity and importance. The assessment established:

- 91% of the CMIS data are stored in a secure manner (encrypted).
- All systems presented in the workshop have implemented password-protected access and it was reported that the infrastructure on which the systems run have firewalls configured.
- 83% of the systems have efficient and secure ways for removing data from the system if requested.
- 75% of the systems offer multi-factor authorization (MFA), a key feature to ensure data privacy and access control.
- 75% confirmed that systems are locally hosted yet lack disaster recovery and system backup procedures.

CMIS Architecture and Technology

The architecture and choice of technologies selected for development of any information system dictate the behavior, scalability, interoperability, usability, and adaptability of the final products. They define the business processes and rules, systems structure, technical framework, and product technologies.

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[11] https://ncsa.gov.rw/fileadmin/documents/Policy_Guideline/National_Cyber_Security_Policy_Rwanda.pdf
[12] https://www.minict.gov.rw/fileadmin/user_upload/minict_user_upload/Documents/Laws/Draft_-_Data_Protection_and_Privacy_Law__30-JAN-2020_Thursday__Final_Draft.pdf

The assessment looked at the technology stack used to develop the systems and availability of the in-country skills necessary to support the systems. It also reviewed the software licensing model for the systems, with the following findings:

- USSD is widely used and accepted. IZU uses a short code for case reporting.

- One-third of the systems have local CPMIS implementers with IT personnel familiar with the technology stack used.

It was noted that 41.7% of the applications were licensed, 25% open-source, and 33.3% were mixed open-source and licensed hardware and software. This could have a major impact on interoperability.

Recommendations

The NCDA has a government mandate to coordinate and implement interventions aiming to foster the development, promotion, and protection of a child's rights. These diversify and stratify the NCDA's business processes as the coordinating entity and hence require collaboration and partnerships with different NGOs, government institutions, and ministries.

In terms of the NCDA's business processes and scope, as stipulated by Presidential Order N° 083/01 of 28/08/2020,[13] some of the NCDA interventions are implemented or handled by partners, government institutions, or social cluster ministries, while others are directly implemented by the NCDA at the village level or ECD center level.

This business model requires a multicomplex information system, with corresponding dashboards, to respond to NCDA KPI data needs for informed decision making and planning, in addition to features that support/integrate case management processes or any information management aspects for projects directly implemented by the NCDA. Based on the above findings, and in consideration of various aspects of the NCDA's business processes and needs, recommendations are detailed below.

Develop a Governance and Sustainability Strategy

1. The NCDA should form a steering committee composed of the institutions/stakeholders involved in child protection to coordinate all digital system-related activities. The steering committee should have sub-technical groups on information and communication technology and M&E.
2. NCDA to develop SOPs on implementation and coordination of child protection digital systems.
3. NCDA to lead in harmonization of case management, data collection, and M&E tools with all stakeholders for better information sharing.
4. NCDA to undertake a capacity building needs mapping exercise and plan for capacity building at all levels in child protection and care reform (national, district, and household levels).
5. NCDA to champion strengthening coordination and governance of child protection stakeholders to ensure that all tools, digital solution scopes, and data sets are shared to minimize duplication of effort and inefficient use of resources.

Option I: Development of a Comprehensive Child Protection Management Information System Solution

This option provides an opportunity to harmonize the multiple siloed systems into one and provides the NCDA with great control and improved data security and safety. The first step is to develop a child protection management information system. To do this, the steps would be:

1. Define longitudinal case management information system solution requirements, stakeholders, workflows, data standards, and business processes.

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[13] https://gazettes.africa/archive/rw/2020/rw-government-gazette-dated-2020-09-04-no-Special.pdf

2. Identify a minimum list of data variables for the child case file according to the ICRP's seven areas of intervention to inform/guide data requirements for the integrated child development MIS. This should be a collaborative activity that will bring data users or stakeholders to map the data needs, input, outputs, and the outcomes.

3. Collaborate with the institutions/stakeholders undertaking any child protection system development projects to support the development of an integrated child development MIS

4. Plan system integration and think beyond the scope of integrated child development management (aggregate level) to childcare management (individual case management) to contribute to the government Data Bus Initiative (childcare MIS).

5. Develop a post-project sustainability and maintenance plan to reduce the number of new IT solutions built at NCDA that are duplicative and are not interoperable.

There are various pros and cons to this approach, which the team has outlined in the table below.

Table 5. Pros and cons of developing a centralized child protection MIS

Pros	Cons
Centralized ownership and management by NCDA. • Currently, multiple systems are owned and managed by partners. Scaling and sustainability are not guaranteed.	Requires substantial coordination and collaboration of multiple partners with varied interests, roles, and responsibilities.
Improved data security and privacy. • Multiple systems are hosted by partner sites and there is no data sharing policy.	Likely to take longer to analyze, design, prioritize and develop a unionized child protection system.
Increased access to data for decision support and programming. • The current systems are siloed and lack interoperability. Centralized systems provide easy and reliable access to actionable data.	Single point of failure. In case of unavailability of this system, a broad sector of stakeholders and users will be denied access to the system. High-level service availability agreement will be required.

Option II: Enhance the Existing Systems and Build Interoperability

This option provides an opportunity for continued enhancements to one or two other systems, with interoperability as a key feature. The interoperability of these enhanced system(s) will help address the challenges of siloed systems and their lack of data exchange. To do this, the steps would be:

1. Assess digital solutions and determine which ones can be harmonized, reengineered, integrated, and/or developed from scratch based on the findings of the data needs assessment.

2. Consider undertaking an assessment of the IZU system with the view of enhancing it from a reporting tool to a comprehensive child protection and case management system.

3. Once the appropriate system(s) are identified, enhancements will need to be made to cater for all child protection services and respond to all data needs in the seven ICRP intervention areas for better individual case management and follow-up. D4I technical assistance could contribute to the development of an integrated system for child protection.

4. Explore the possibility of organizing an annual seminar on child protection at the national level.

Table 6. Pros and cons of enhancing existing systems

Pros	Cons
Easy to implement compared to building a comprehensive interoperable system from scratch.	The challenge of multiple systems will persist.
Will be widely accepted by the system owners. • Stakeholders can continue maintaining their own systems and provide only the data needed.	Requires that a data exchange standard is established and implemented by each system that needs to interoperate.
	As some of the systems are proprietary, the system owners might not be ready or willing to implement interoperability.
	Some of the systems are developed and supported by companies outside the country. The lack of skills locally, or access to the source code, might hinder interoperability.

Conclusions

Successful implementation of child protection and social welfare services is dependent upon the availability and use of relevant child protection and social welfare data. Data and information systems, such as the comprehensive child CMIS, play a crucial role in child protection, serving as the central location to store and track all client data, such as contact information, case notes, appointment scheduling and history, and client communications, and facilitating collaboration between case workers.

Developing and implementing child case management systems and data collection tools that meet case worker, organizational, and partner information needs—while supporting case workers' interactions with children and families—requires compliance with basic principles of digital systems development. These principles include user-centered system design, data-driven design, understanding the existing ecosystem, design for scale, reuse of and improvement to existing open-source innovation, and building for sustainability in collaboration with other stakeholders.

Next Steps

D4I will ensure that the digital systems report is shared out to NCDA and all relevant stakeholders who work on children programming. The immediate steps include:

1. Dissemination of the landscape assessment report to relevant stakeholders, including NCDA, USAID Rwanda, and UNICEF.

2. Support the NCDA in implementing the assessment report's recommendations.

   a. Ensure that the most viable option is selected and develop a roadmap to implement the selected option.

3. Provide technical assistance in the implementation of the selected option from the recommendations.

4. As part of learning, D4I will get explore and avail from other countries similar CPMIS assessment to share the lessons learned and best practices e.g. South Africa.

Appendix 1. Case studies: Promoting Appropriate Care for Children

Five hypothetical case studies relating to children facing adversity or in need of appropriate care and protection have been compiled to provide context and inform discussions on case management needs and processes, measures of success in case management, and service and information needs in relation to each specific case. The case studies include a description of the children's interface with and journeys in the protection system in different districts. The aim is to provide insight into the wide range of situations and needs of children that require individualized case management and support services.

Case #	Case Study
Case #1	Child outside family care
Case #2	Child separated from family in an emergency
Case #3	Child removed from the home because of a child protection issue
Case #4	Child in juvenile justice system
Case #5	Neglected child removed and placed in residential care and subsequently adopted domestically

Case #1: A child outside family care

Meet Elias, a 13-year-old boy living in Musanze District, Rwanda. His father died when he was just two years old. Elias had a learning disability and received support at the local school, but six years later, struggling to meet his most basic needs, his mother placed him in a residential care institution or "orphanage" in a different district. This was a devastating and difficult decision for both mother and son, and Elias struggled for the next three years with an untreated learning disability that lead to behavioral issues.

When the orphanage closed, Elias immediately returned home. His mother had remarried and Elias' behavioral problems became more severe. His new stepfather was abusive, pushing Elias to run away from home, and he was eventually picked up by a local organization that provides support to children living on the street and helps them return to family members. Unfortunately for Elias, caseworkers' efforts to trace his family have so far proved futile and he remains in the system.

Case #2: A child separated from family in an emergency

Eric is a 15-year-old boy living in Mahama Refugee Camp in Kirehe District, Eastern Province, Rwanda. Clashes erupted between the Burundi government and opposition forces in his town of Bujumbura four years ago. Eric's house was destroyed, so his family decided to flee and seek refuge in Rwanda. On the way to Rwanda, his family received news that the route was becoming dangerous, so his mother and father decided to stay with his siblings in Burundi. When they heard that the opposition forces were searching the town for young men, they decided to send Eric ahead alone.

He found another 16-year-old, Robert, who was also escaping the violent conflict. The two boys continued their way to Rwanda. Eric and Robert arrived at the Rwanda-Burundi Sake Border, where they met other asylum seekers. They were registered by the United Nations High

Commissioner for Refugees (UNHCR) at a border collection point, fed, and driven to Mahama refugee camp. Efforts are being made by caseworkers of an international NGO to trace Eric's family, as well as the families of other unaccompanied and separated children. Simon, one of the caseworkers, interviewed Eric to learn all he could about the boy's family. The information will go into an inter-agency child protection information management system, along with a photo of Eric. Hopefully, his parents are still alive and will be found. Eric hopes that one day soon he will be reunified with his family. He worries about them and thinks about returning to Burundi but is concerned that it is too dangerous.

Case #3: A child removed from the home because of a child protection issue

Meet Elsa, a 10-year-old girl living with foster parents in Rwarutabura suburb, Nyamirambo, city of Kigali. Before being placed with foster parents, Elsa was living with her parents and four younger siblings. Her parents are both alcoholics and her father uses and sells illegal substances. Elsa was very unhappy at home and at school. The living conditions at home were unbearable: there was never any food, and their house was dilapidated.

One day, the neighbors heard Elsa's parents fighting. This was not unusual, because the two frequently quarreled, but this time the children were crying loudly and shouting for help. The neighbors immediately called the RIB–116 toll-free number and reported the case. Nyamirambo police station was contacted. A police officer from the Child and Family Protection Unit (CFPU), a community health worker, and the leader of Umudugudu went to the house. By the time they arrived, the children were sitting on the floor, frightened and whimpering. Following an initial assessment, the children were removed from the house and taken to the hospital where it was determined that one of the young siblings had been beaten and Elsa had been sexually abused. She reported that her parents would lock her and siblings in their room to ensure they did not tell authorities. The police officer recommended emergency placement of the children into foster care, while efforts are being made to hold their parents accountable and better living conditions secured for the children.

Case #4: A child involved in the juvenile justice system

David is a 17-year-old boy who has recently been admitted to Gitagata Rehabilitation Centre, a juvenile detention facility in Rwanda. Police reports indicate that he and another boy were arrested for breaking and entering a private residence and stealing over RWF 10,000,000. He was also charged with assaulting police officers at the time of the arrest. He admitted to all the charges.

Before his arrest, David was living with his parents and five siblings—two sisters and three brothers. Due to the family's financial situation, David dropped out of school at age 14. In 2020, David met a group of boys between 16–22 years of age from the neighborhood. They became good friends after meeting several times. These boys engaged in vices such as drugs and alcohol abuse. One day, while David was hanging out with his new friends, they convinced him to accompany them on "some mission." It was during this "mission" that he got arrested. The police interrogated him for the theft incident for four days. The police did not allow him to contact his father or his brother. Further, David stated that he was beaten at the police station to confess and to reveal the names of his friends. He also mentioned that he was detained at the police station together with

adults. On the fifth day of his arrest, David's father reported that his son was missing. Accidentally, he found his son in detention at the police station. David's case was referred to the prosecutor, who charged him with theft after spending 70 days at Rumanyika home.

Case #5: A neglected child removed and placed in residential care and then adopted domestically

Tom is a 14-year-old boy who has lived at four different places throughout his childhood. His father, formerly a factory worker, died from a work-related hazard. His mother became disabled from a motor accident. At age 11, Tom left Kigali and went to live with his paternal aunt, Auntie Janet—a single woman who made a living by providing water and soft drinks to young sellers who work on the busy roads in Kayonza-Rusumo. Tom had been promised stability in his education, which had been cut short following his father's tragic passing.

Life in Kayonza city seemed like a whirlwind to Tom; he was constantly awakened by noises from cars as early as 4:30 a.m. Auntie Janet wakes up early to provide the necessary instructions to the young sellers. After two weeks, Tom realized that no mention had been made of school enrollment. He mustered the courage to ask Auntie Janet, who informed him of the need to join the business as a seller to realize his dream. He was informed that all the young sellers shared similar aspirations and were working to make that dream a reality.

Tom was, however, not as strong as these people and was soon seen as a liability. To pressure him to work harder his auntie resorted to several punitive measures, such as starvation and denial of a sleeping mat. A gardener who lived next door witnessed this treatment and contacted a social worker in the neighborhood known for her support to vulnerable children. She met with Tom and offered to get him a place in a privately owned residential home where he could go to school.

Life here is relatively better, and Tom does not suffer inhumane treatment as in the past three years. He is also happy to receive support services from the social worker and, for once, has playmates. Owing to the government's renewed efforts in transition from institutional to family-based and community-based care, Tom was recently informed by the home manager of a Rwandan married couple interested in adopting him. He was counselled and given information on the processes and what it meant to be adopted. He was open to the idea. With support from the social workers, Tom and the prospective adoptive parents are schedule to appear before the Alternative Care Panel and the High Court for an adoption order.

Appendix 2. Workshop Agenda

Table A1. Workshop agenda

Activity	Description	Responsible	Duration	Time
June 6, 2021	**Travel to Bugesera**			
Day 1: June 7, 2021				
Registration and Welcome Coffee	Attendee check-in and morning coffee	Fils	30 minutes	08:30 – 09:00
Opening Remarks	Workshop welcome note	NCDA USAID Rwanda	20 minutes	09:00 – 09:20
Participant Introductions	Participants briefly introduce themselves	All	30 minutes	09:20 – 09:50
Workshop Purpose and Objectives	Background to the D4I Activity · Context and purpose of the workshop)	Ismael	30 minutes	09:40 – 10:20
Break		**Participants**	15 minutes	**10:20 – 10:35**
M&E presentation	Rwanda child protection and Care reform Monitoring and Evaluation Practices, Trends and Technologies.	Marius	40 minutes	10:35 – 11:15
M&E Capacity Assessment Exercise	Introduction M&E Capacity Assessment Exercise	Fils	20 minutes	11:15 – 11:35
	Groups exercises.	Ismael/Fils	120 minutes	11:35 – 13:15
Lunch		**All participants**	**60 minutes**	**13:15 – 14:15**
M&E Capacity Assessment Exercise.	Group Presentations	All group	60 minutes	14:15 – 15:15
Presentation on CPMIS standards	Presentation on CPMIS frameworks and principles of digital development.	Patrick	60 minutes	15:15 – 16:15
Afternoon Break		**All**	**15 minutes**	**16:15 – 16:30**
Reflection	Participants will write in jam board what they liked and what they did not of the day, and what they would want to see on the next day	Patrick	15 minutes	17:20 – 17:35
Day 2: June 8, 2021				
Summary of daily reflection and recap	Summary of participants feedback from daily reflection exercise. Recap of Day 1 and intro to Day 2	Fils/Adolphe	15 minutes	08:30 – 08:45

Activity	Description	Responsible	Duration	Time
PPT on existing child protection and care related management information systems (IMS)	Presentation on MIS Available (NCD) on child protection and Q&A.	Marius/Thierry /Alain	60 Minutes	08:45 – 09:45
	MIGEPROF GBV system (RIB/Joel) and Stakeholders (Claire) mapping tool and Q&A	Pierre BA and IT Intern	45 Minutes	09:45 – 10:30
Break		**All**	**15 minutes**	**10:30 – 10:45**
PPT on existing child protection and care related management information systems (IMS)	NIDA System including civil registration and vital statistics (CRVS) and (Q&A)	Delegate (IT or M&E)	60 Minutes	10:45 – 11:45
	Presentation on LODA's Monitoring and Evaluation Information Systems for social Protection interventions	Delegate (IT or M&E)	60 Minutes	11:45 – 12:45
Lunch		**All participants**	**60 minutes**	**12:45 – 13:45**
PPT on existing child protection and care related management information systems (IMS)	Presentation on MIFOTRA's Integrated Labor Administration System (ILAS) focusing on child labor system component.	Delegate (IT or M&E staff)	60 Minutes	13:45 – 14:45
	Presentation on application of Big data and Data revolutions/NISR'data, metadata portals regarding children, and its accessibility	Delegate (IT or M&E)	60 Minutes	14:45 – 15:45
Afternoon Break		**All**	**15 minutes**	**16:45 – 17:00**
Reflection	Participants will write in jam board what they liked and what they did not of the day, and what they would want to see on the next day	Patrick	15 minutes	17:00 – 17:15
Day 3: June 9, 2021				
Summary of daily reflection and recap	Summary of participants feedback from daily reflection exercise. Recap of Day 2 and intro to Day 3	Fils/Adolphe	15 minutes	08:15 – 08:45
PPT on existing child protection and care related management information systems (IMS)	MOH's information management systems	Delegate (IT or M&E)	60 Minutes	08:45 – 09:45
	MINEDUC and Rwanda Basic Education Board' s information management systems	Delegate (IT or M&E)	60 Minutes	09:45 – 10:45
Break	**15 minutes**	**All**	**15 minutes**	**10:45 – 11:00**

Activity	Description	Responsible	Duration	Time
PPT on existing child protection and care related management information systems (IMS)	MINIJUST' s Rwanda Integrated Electronic Case Management System Rwanda IECMS	Delegate (IT or M&E)	60 Minutes	11:00 – 12:00
	Presentation RIB' Children Case Management System (Doesn't exist)	Delegate (IT or M&E)	60 Minutes	12:00 – 13:00
Lunch		**All participants**	**60 Minutes**	**13:00 – 14:00**
PPT on existing child protection and care related management information systems (IMS)	Presentation-NCPD' information management system including SMS technologies	Delegate (IT or M&E)	60 Minutes	14:00 – 15:00
	Presentation NRS' Street children information management system.	Delegate (IT or M&E)	60 Minutes	15:00 – 16:00
	Presentation RISA' Progress presentation on proposed software developments for child protection	Delegate (IT or M&E)	60 Minutes	16:00 – 17:00
Afternoon Break		**All**	**15 minutes**	**17:00 – 17:15**
Daily Reflection	Participants will write in jam board what they liked and what they did not of the day, and what they would want to see on the next day	Patrick	15 minutes	16:45 – 17:00
Day 4: June 10, 2021				
Summary of daily reflection and recap	Summary of participants feedback from daily reflection exercise. Recap of Day 3 and intro to Day 4	Fils/Adolphe	15 minutes	08:15 – 08:45
PPT on existing child protection and care related management information systems (IMS)	Presentation MINICT on Connect Rwanda progress	Delegate (IT or M&E)	60 Minutes	08:45 – 09:45
	Presentation on System currently funded by UNICEF	Delegate (IT or M&E)	45 Minutes	09:45 – 10:30
Break	**15 minutes**	**All**	**15 minutes**	**10:30 – 10:45**
SOS	Presentation SOS Funded system	Delegate	45 Minutes	10:45 – 11:30
UR	Presentation on Dashboard that are being developed under Sugira Muryango Programme	Delegate	45 Minutes	11:30 – 12:15

Activity	Description	Responsible	Duration	Time
Presentation	Machine learning and Artificial Intelligence applied in child protection and its contextualization	Patrick	60 minutes	12:15 – 13:15
Lunch		**All participants**	**60 minutes**	**13:15 – 14:15**
Presentation	Uptake from Above presentations; System and Future systems Integration.	Patrick/Adolphe /MIGEPROF Business Analyst and its team	80 Minutes	14:15 – 15:35
CMIS assessment tool Presentation and Discussions	Group sessions/exercise structured around the CMIS assessment tool.	All	40 Minutes	15:35 – 16:15
	Session: User requirements gathering and interoperability plan development	Patrick	30 Minutes	16:15 – 16:45
Daily Reflection	Participants will write in jam board what they liked and what they did not of the day, and what they would want to see on the next day	Patrick	15 minutes	16:45 – 17:00
Afternoon Break		**All**	**15 minutes**	**17:00 – 17:15**
Day 5: June 11, 2021				
Summary of daily reflection and recap	Summary of participants feedback from daily reflection exercise. Recap of Day 3 and intro to Day 4	Fils/Adolphe	15 minutes	08:30 – 09:00
Workplan	Work plan adjustment	All	90 Minutes	09:00 – 10:30
Break		**All**	**15 Minutes**	**10:30 – 10:45**
Workplan	Work plan adjustment	All	90 Minutes	10:45 – 12:30
Next Steps & Wrap up	Plenary to discuss next steps	Fils	10 Minutes	12:30 – 12:40
Closing Remarks	NCDA and UNICEF	NCDA and UNICEF	20 minutes	12:40 – 13:00
Lunch		**ALL**	**60 Minutes**	**13:00 – 14:00**

Appendix 3. List of Participants

Table A2. List of Participants

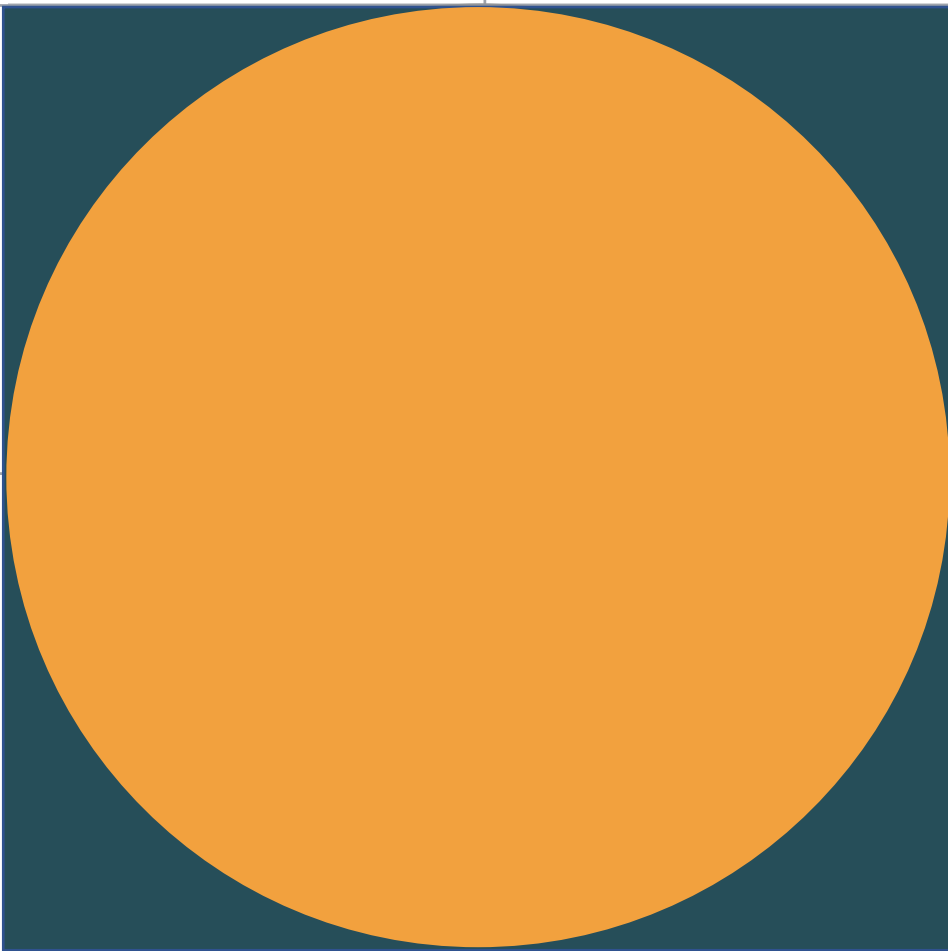| #	Name of Organization	Names	Position	Phone Number
1	Ministry of Gender and Family Promotion	UWAMAHORO CLAIRE	IT Network Officer	2.50789E+11
2	Ministry of Gender and Family Promotion	RWABUKANGA JEAN DE DIEU	IT Developer Officer	2.50784E+11
3	Ministry of Education	MWUMVANEZA LEON	IT Specialist	2.50788E+11
4	Ministry of Health	MAZIMPAKA IRAKIZA PIERO	M&E Officer	2.50788E+11
5	Ministry of ICT & Innovation	KAJANGWE MAURICE	Senior Eng. Cybersecurity	2.50789E+11
6	Ministry of Justice	TOM NTAMBARA	Director of ICT	2.50789E+11
7	Ministry of Public Services and Labor	Java K. NKUNDABAKURA	Labor Mediator Specialist	2.50788E+11
8	National Child Development Agency	NSABIMANA ALAIN PLACIDE	MEAL Advisor	2.50788E+11
9	National Child Development Agency	NDUWAYO JAMES	TMM Program Manager	2.50789E+11
10	National Child Development Agency	MUGIRANEZA THIERY	M&E Specialist	2.50788E+11
11	National Child Development Agency	UWURUKUNDO ANGE MARIUS	M&E Specialist	2.50789E+11
12	National Child Development Agency	FREYA ZANINKA DE CLERCQ	Head of Department	2.50781E+11
13	Rwanda Information Society Authority	TWIRINGIYIMANA LEONIDAS	Senior S/W Testing & Training Eng.	2.50788E+11
14	National Council of Persons with Disabilities	MURERA EMMANUEL	Disability Research & Mainstreaming Specialist	2.50788E+11
15	National Rehabilitation Service	URAYENEZA JEAN BOSCO	Planning, M&E Officer	2.50786E+11
16	Rwanda Investigation Bureau	SHIMWE JOEL	Software Engineer	2.50783E+11
17	SOS Children's Villages Rwanda	NSABIMANA MUZARIBARA	IT Manager	2.50729E+11
18	District NCDA	MUKANYAMWASA CARTAS	Child Protection Officer	2.50783E+11
19	District NCDA	HABUMUGISHA EMMANUEL	Child Protection Officer	2.50783E+11
20	National Identification Agency	BUGINGO STEPHEN	Financial and Business Specialist	2.50789E+11
21	University of Rwanda/Sugira Muryango	KALISA JOSETH	Capacity Building Coordinator	2.50789E+11

#	Name of Organization	Names	Position	Phone Number
22	University of Rwanda/Sugira Muryango	Dr. Celestin Twizere	Director	2.50789E+11
23	University of Rwanda/Sugira Muryango	HITIMANA ERIC	Dashboard Developer	2.50789E+11
24	University of Rwanda/Sugira Muryango	MUKASINE Angelique	Dashboard Developer	2.50789E+11
25	Hope and Homes for Children	MUCYURANYANA JACQUES	MEAL Manager	2.50789E+11
26	Hope and Homes for children	TWAGIRIMANA REMY	IT & Data Manager	2.50789E+11
27	Data for Impact	FILS UWITONZE	M&E RESIDENT Advisor	2.50788E+11
28	Data for Impact	ADOLPHE KAMUGUNGA	CMIS Coordinator	2.50789E+11
29	Data for Impact	Patrick Gicuki	IT ADVISOR	2.46783E+11
30	Data for Impact	Nyanzi Ddumba Ismael	M&E, RESIDENT ADVISOR	2.54722E+11

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